Celebrating the achievements of SDSU student research, scholarship and creative activity

SRS
STUDENT RESEARCH SYMPOSIUM

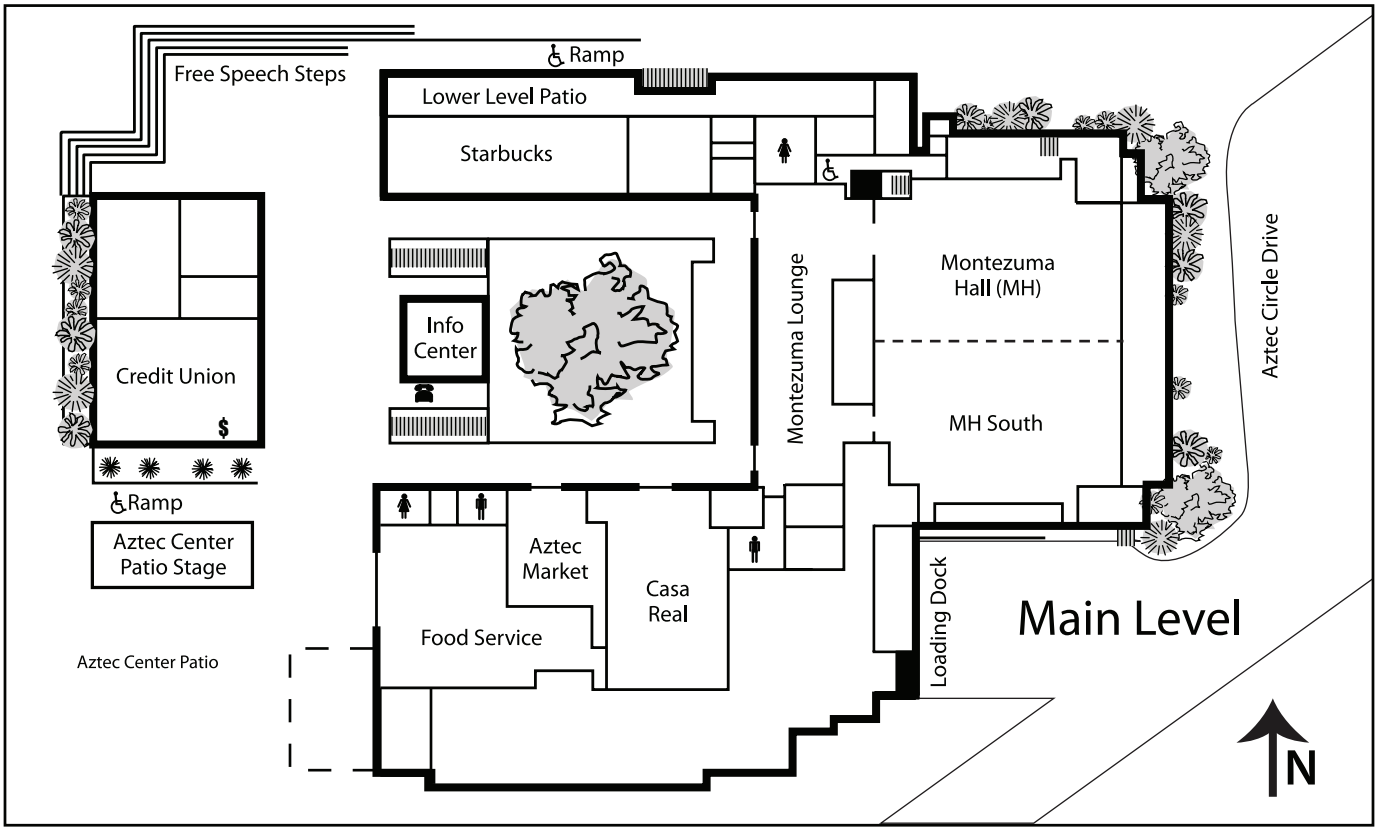
The Fourth Annual

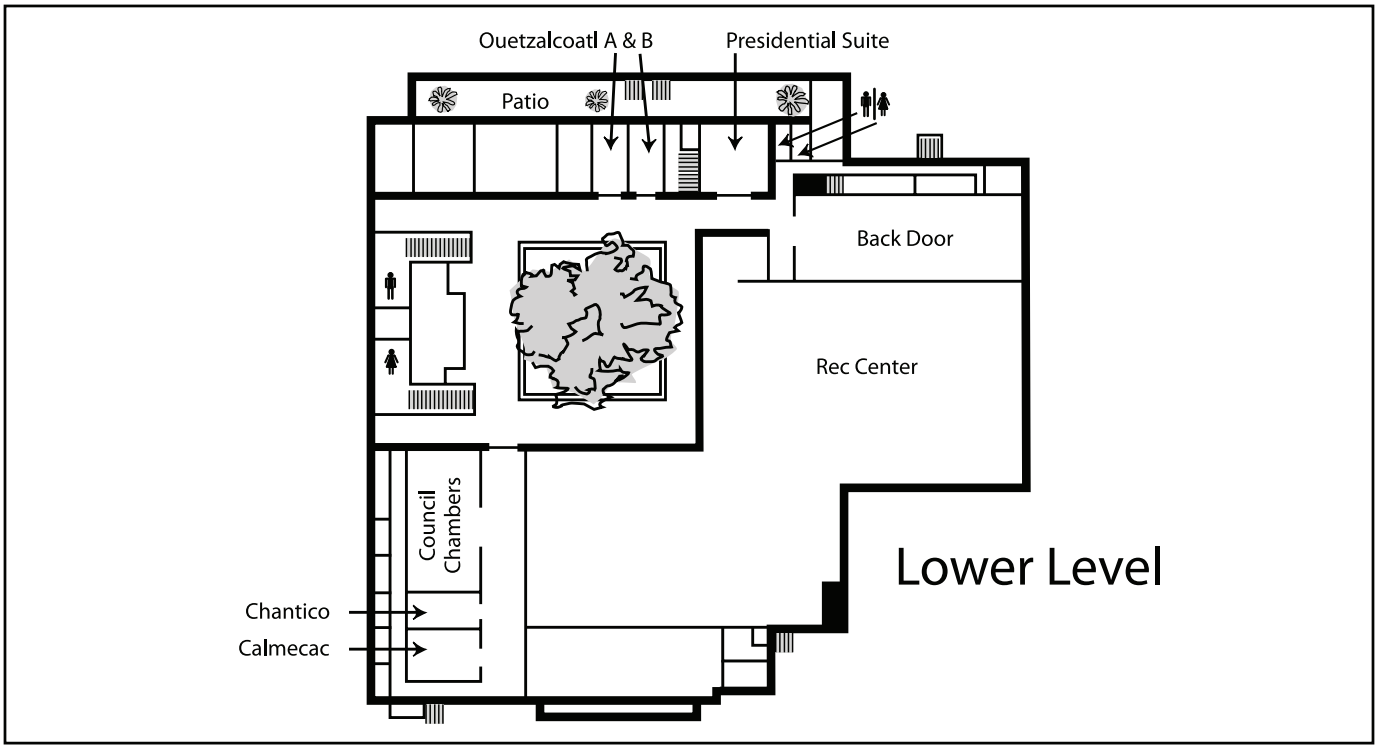
STUDENT RESEARCH SYMPOSIUM

March 4 and 5, 2011

SAN DIEGO STATE UNIVERSITY

AZTEC CENTER





Women's Restroom
Men's Restroom
Gender Neutral Restroom
Stairs
Disabled Access
Phone
$ ATM
Elevator

AZTEC PARENTS
SAN DIEGO STATE UNIVERSITY

The PRESIDENT'S LEADERSHIP fund

LIGAND

UNIVERSITY HONORS PROGRAM
SAN DIEGO STATE UNIVERSITY

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INTERNATIONAL HONOUR SOCIETY

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2011 STUDENT RESEARCH SYMPOSIUM

MARCH 4 AND 5, 2011

Celebrating the achievements of
San Diego State University students
in research, scholarship & creative activity

SAN DIEGO STATE UNIVERSITY

SAN DIEGO STATE UNIVERSITY

TABLE OF CONTENTS

Welcome from the President....4

Schedule of Events....5

Schedule at a Glance....6

Keynote Speaker....8

Awards....9

Awards Reception....10

Oral and Poster Presentations: Friday....11

Oral Presentations: Saturday....30

Abstracts....37

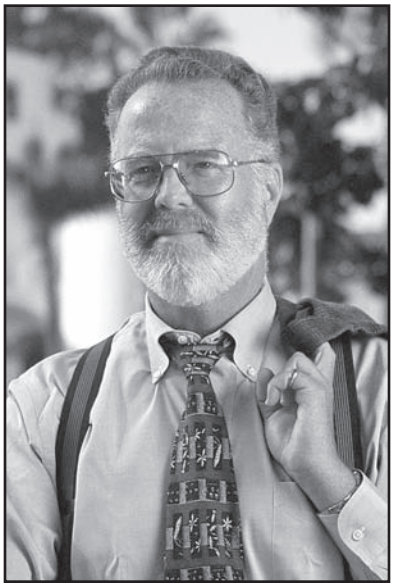
Acknowledgments....185

Notes....190

Map of the Aztec Center is on the inside of the front cover.

WELCOME FROM THE PRESIDENT

March 4, 2011



Dear Colleagues and Guests:

It is with great pleasure I welcome you to the San Diego State University 2011 Student Research Symposium. The symposium is a university-wide event to recognize and celebrate the outstanding research, scholarship, and creative activity of our undergraduate and graduate students. The symposium also identifies our most talented students who will represent SDSU at the annual California State University Student Research Competition.

This year more than 400 students are presenting their original scholarly work in a public forum that introduces community members, partners, students, and guests to our many outstanding academic programs. Moreover, the symposium provides a venue for sharing academic excellence and discovery; and it demonstrates SDSU's commitment to developing innovative solutions for our region, nation, and the world. All of these goals advance the vision of SDSU as a top urban research university.

To plan and execute an event of this magnitude required the efforts of dedicated faculty and staff members. In addition, more than 250 judges have volunteered to share their time and expertise in evaluating oral and poster presentations. These collective efforts demonstrate our commitment to fostering student scholarship and professional development, and I am grateful to all who have worked so hard on behalf of our students and the university.

Best wishes for a great symposium.

Sincerely,

Stephen L. Weber, President

San Diego State University

SCHEDULE OF EVENTS

Thursday Afternoon, March 3, 2011

1:00 pm – 4:00 pm Registration
Montezuma Hall Lounge

Friday, March 4, 2011

7:00 am – 4:00 pm Registration
Montezuma Hall Lounge

A Sessions

8:00 am – 10:00 am Session A: Poster Presentations
Montezuma Hall

8:00 am Session A: Oral Presentations
Aztec Center

10:00 am Session A: Oral Presentations
Aztec Center

B Sessions

10:30 am – 12:30 pm Session B: Poster Presentations
Montezuma Hall

1:00 pm Session B: Oral Presentations
Aztec Center

3:00 pm Session B: Oral Presentations
Aztec Center

C Sessions

1:00 pm – 3:00 pm Session C: Poster Presentations
Montezuma Hall

Saturday Morning, March 5, 2011

7:00 am – 10:00 am Registration
Montezuma Hall Lounge

D Sessions

8:00 am Session D: Oral Presentations
Aztec Center

10:00 am Session D: Oral Presentations
Aztec Center

12:00 pm – 1:00 pm Awards Reception, Aztec Center Courtyard
1:00 pm – 2:30 pm Awards Ceremony, Montezuma Hall

Thursday, March 3

1:00 pm – 4:00 pm Registration Montezuma Hall Lounge

Friday, March 4

7:00 am – 4:00 pm Registration Montezuma Hall Lounge

Time	Session Number	Session Type	Session Title	Presentation Location
8:00	A-1	Poster	Psychology I	Montezuma Hall
	A-2	Poster	Inorganic Chemistry	Montezuma Hall
	A-3	Poster	Biology/Disease	Montezuma Hall
	A-4	Poster	Engineering I	Montezuma Hall
	A-5	Poster	Bilingualism, Language Processing and Language Disorders	Montezuma Hall
	A-6	Poster	Foods and Nutrition	Montezuma Hall
	A-7	Poster	Workplace Issues	Montezuma Hall
	A-8	Poster	Analytical Chemistry	Montezuma Hall
	A-9	Poster	Early Childhood Development	Montezuma Hall
8:00	A-10	Oral	Social Psychology	Backdoor
	A-11	Oral	Engineering I	Calmecac
	A-12	Oral	Public Health I	Casa Real
	A-13	Oral	Identity and Intersections of Gender, Race, and Culture	Chantico
	A-14	Oral	Neurobiology	Council Chambers
	A-15	Oral	Health Policy	Presidential Suite
	A-16	Oral	Anthropology and Archeology	Quetzalcoatl A
	A-17	Oral	Violence and Aggression	Quetzalcoatl B
10:00	A-18	Oral	Race, Ethnicity and Socio-Economic Studies	Calmecac
	A-19	Oral	Management and Work Issues	Casa Real
	A-20	Oral	Mathematics and Statistics	Presidential Suite
	A-21	Oral	Philosophy I	Chantico
	A-22	Oral	Geography: Natural Crises	Council Chambers
	A-23	Oral	Foods and Nutrition	Quetzalcoatl A
	A-24	Oral	Critical Cultural and Feminist Representations	Quetzalcoatl B
10:30	B-1	Poster	Psychology II	Montezuma Hall
	B-2	Poster	Biochemistry	Montezuma Hall
	B-3	Poster	Bioinformatics	Montezuma Hall
	B-4	Poster	Engineering II	Montezuma Hall
	B-5	Poster	Behavioral Sciences	Montezuma Hall
	B-6	Poster	Neurobiology	Montezuma Hall
1:00	B-8	Oral	Biomedical Studies	Backdoor
	B-9	Oral	Engineering II	Calmecac
	B-10	Oral	Astronomy and Physics I	Quetzalcoatl A
	B-11	Oral	Chemistry I	Chantico
	B-12	Oral	Computational Science and Biomedical Algorithm II	Presidential Suite
	B-13	Oral	Literature	Quetzalcoatl B
	B-14	Oral	Media, Music, and Society	Casa Real
	B-15	Oral	Neuroscience	Council Chambers

Friday, March 4

7:00 am – 4:00 pm Registration Montezuma Hall Lounge

Time	Session Number	Session Type	Session Title	Presentation Location
3:00	B-16	Oral	Effects of Alcohol	Backdoor
	B-17	Oral	History	Calmecac
	B-18	Oral	Air Quality	Casa Real
	B-19	Oral	Issues in Education	Chantico
	B-20	Oral	Chemistry II	Presidential Suite
	B-21	Oral	Cardiac Cell Biology	Council Chambers
	B-22	Oral	Music and Dance in Media	Quetzalcoatl A
	B-23	Oral	Physics	Quetzalcoatl B
1:00	C-1	Poster	Health Behaviors	Montezuma Hall
	C-2	Poster	Organic Chemistry	Montezuma Hall
	C-3	Poster	Biology/Heart Disease	Montezuma Hall
	C-4	Poster	Engineering III	Montezuma Hall
	C-5	Poster	Health Studies	Montezuma Hall
	C-6	Poster	Physical Chemistry	Montezuma Hall
	C-7	Poster	Stem Cells	Montezuma Hall

Saturday, March 5

7:00 am – 10:30 am Registration Montezuma Hall Lounge

Time	Session Number	Session Type	Session Title	Presentation Location
8:00	D-1	Oral	Marine Ecology	Backdoor
	D-2	Oral	Public Health II	Calmecac
	D-3	Oral	Literacy, Bilingualism, Language Processing and Disorders	Casa Real
	D-4	Oral	Latino Identity and Community	Chantico
	D-5	Oral	Family Studies	Council Chambers
	D-6	Oral	Communication Devices and Antennas	Presidential Suite
	D-7	Oral	Body Movement, Health and Fitness	Quetzalcoatl A
	D-8	Oral	Terrestrial Ecology	Quetzalcoatl B
10:00	D-9	Oral	Biology	Backdoor
	D-10	Oral	Critical Studies of Community	Calmecac
	D-11	Oral	Clinical and Social Psychology	Casa Real
	D-12	Oral	Information Graphics and Visualization	Council Chambers
	D-13	Oral	Engineering III	Quetzalcoatl A
	D-14	Oral	Geography: Conservation	Presidential Suite
	D-15	Oral	Policy, Protection, and Urban Landscape	Quetzalcoatl B
	D-16	Oral	Philosophy II	Chantico

12:00 Reception, Keynote Address and Awards Presentation Aztec Center Courtyard and Montezuma Hall

KEYNOTE SPEAKER

Stephen L. Weber
SDSU President and Professor of Philosophy

President Stephen L. Weber has led the transformation of San Diego State University into a pioneering urban institution that powers not only the local community, but also the entire state of California. Dr. Weber will speak today about the important role that research plays at San Diego State University.

Under his guidance, students, faculty, staff, alumni and community leaders have collaborated in the university's "Shared Vision"—a commitment to reinforcing academic excellence, nurturing students, honoring diversity and social justice, carefully stewarding resources and expanding global programs.

The results: SDSU is an increasingly popular and selective choice among college-bound students and a tremendous source of pride for its nearly 300,000 living alumni and for the city of San Diego.

Throughout his tenure as president of SDSU, Dr. Weber has been engaged in civic activities on a local, national and global level. His record of accomplishment and community involvement distinguishes Dr. Weber among San Diego's leaders.

AWARDS

Awards will be presented at the Reception on Saturday, March 5, to recognize the most outstanding presentations of research, scholarship, and creative activity at the Student Research Symposium. These are:

President's Award

One President's Award will be given to the most outstanding presentation in each of the five categories—Physical Sciences; Health Studies and Life Sciences; Engineering, Informatics and Business; Humanities, Creativity, and the Arts; and Social, Behavioral and Educational Studies—and then to the next five highest rated presentations across all categories.

Those receiving a President's Award will represent San Diego State University at the California State University (CSU) Student Research Competition on May 6 and 7 at CSU Fresno.

Dean's Award

Dean's Awards of $250 each are given for oral presentations. Two awards will be given to the top two presentations in each college and one award given to the top presentation from the Imperial Valley Campus.

Provost's Award

Twelve Provost's Awards of $150 each will be given for the most outstanding poster presentations across all categories.

Undergraduate Research Excellence Award

The top ten undergraduate presentations, following those receiving a President, Dean and Provost award, will receive a certificate of recognition for their scholarly achievement. These students will be selected from both oral and poster presentations.

AWARDS RECEPTION

12:00 – 2:30 pm, Saturday, March 5

The Awards Reception is open to all student presenters, mentors, and judges.

Welcome
Thomas R. Scott, Vice President for Research

Keynote Address
Stephen L. Weber, President

Award Ceremony and Student Recognition

Undergraduate Research Excellence Awards
Christopher Frost, Division of Undergraduate Studies

Dean's Awards
Paul Wong, College of Arts and Letters
Gail K. Naughton, College of Business Administration
Ric A. Hovda, College of Education
David T. Hayhurst, College of Engineering
Marilyn Newhoff, College of Health and Human Services
Joyce M. Gattas, College of Professional Studies and Fine Arts
Stanley Maloy, College of Sciences
David E. Pearson, Imperial Valley Campus

Provost's Awards
Nancy A. Marlin

President's Awards
Stephen L. Weber

Closing Remarks
Thomas R. Scott, Vice President for Research

Poster presenters are assigned to stand by their poster during the entire 2-hour discussion. Each oral presentation is allotted 10 minutes followed by a 5-minute question and answer period.

Participants and guests are asked to enter or leave the rooms only between presentations.

Please turn off all cell phones and other devices.

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

Sessions: Friday, March 4

Session A-1
Poster: Psychology I
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

101 Poster #1 8:00 am–10:00 am
Stigma of Mental Illness: Evaluations of Competence in the Workplace
Corinne Burgamy, Psychology (U)

102 Poster #2 8:00 am–10:00 am
Diagnosis Matters: Emotional Ratings of Job Applicants with Severe Mental Illness
Elizabeth MacKinnon, Sociology (U)

103 Poster #3 8:00 am–10:00 am
Effects of Warmth and Dominance on Relationship Quality
Kelsey Novi, Psychology (U)

104 Poster #4 8:00 am–10:00 am
Seeking Peace: A Research-based Curriculum Project Utilizing Art and Educational Materials to Address the Influences of Individual, Community and Gender Factors on Teen Relationship Violence
Whitney Baumann, Child and Family Development (U)

105 Poster #5 8:00 am–10:00 am
San Diego Helping to Empower Authentic Relationships for Teens (HEART)
Libni Lopez, Psychology (U))

106 Poster #6 8:00 am–10:00 am
Interpersonal Variables and Depression in New Roommates
Jennifer Posis, Psychology (U)

107 Poster #7 8:00 am–10:00 am
Effects of Professor Bullying on College Students
Sarah Dowling, Psychology (U)

Session A-2
Poster: Inorganic Chemistry
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

108 Poster #8 8:00 am–10:00 am
Toward High-Nuclearity Gallium Nitride Molecules: Solid State Synthesis and DFT Calculations
Jason Jones, Physics (U)

109 Poster #9 8:00 am–10:00 am
New Building Blocks for the Preparation of Functional Metal Organic Frameworks
Daryl Hawkes, Chemistry (U)

110 Poster #10 8:00 am–10:00 am
Can CdSe Magic-size Nanoparticles be Doped with Manganese?
Stephen Madden, Biochemistry (U)

111 Poster #11 8:00 am–10:00 am
Synthesis and Characterization of Gallium-Tin and Indium-Tin Nitride Containing Molecules
Michelle Beoris, Biochemistry (U)

112 Poster #12 8:00 am–10:00 am
Towards the Syntheses of New Divalent Cobalt and Copper Nitride Molecules
Michael Nguyen, Chemistry (U)

Session A-3
Poster: Biology/Disease
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

113 Poster #13 8:00 am–10:00 am
A Cell-based Platform for the Discovery of Flaviviridae Protease Inhibitors.
Wesley Burford, Cell and Molecular Biology (M)

114 Poster #14 8:00 am–10:00 am
Investigating Site-specific Recombination of Bacteriophage Lambda Using Biochemical and Mathematical Approaches
Steven Esquivel, Microbiology (U)

115 Poster #15 8:00 am–10:00 am
The Rice OsSPX1 Protein Enhances Cold Stress Tolerance in Plants
Edgar Campos, Biology (U)

116 Poster #16 8:00 am–10:00 am
Role of p53 Effector Proteins in E47 Mediated Growth Arrest of Pancreatic Cancer Cells
Chiara Leroy, Biology (U)

117 Poster #17 8:00 am–10:00 am
Contribution of Pneumococcal NanA to the Activation of Brain Endothelium
Brandon Kim, Biology (D)

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

118 Poster #18 8:00 am–10:00 am
Development of a Novel Treatment Strategy for the Control of Staphylococcus Aureus Infection
Courtney Nugent, Molecular Biology (M)

119 Poster #19 8:00 am–10:00 am
Retroviral Expression of Nuclear-Targeted Peptide Inhibitors of HIV-1 Integrase
Joe Torres, Biology (U)

120 Poster #20 8:00 am–10:00 am
Group B Streptococcus Exploits the Extracellular Matrix and Integrin Machinery for Efficient Penetration of the Blood-brain Barrier
Ellese Carmona, Microbiology (U)

121 Poster #21 8:00 am–10:00 am
Expression and Purification of a Shc-binding Domain within the Suppressor of T-Cell Receptor Signaling (STS-1)
Allen Washington, Jr., Biology (U)

122 Poster #22 8:00 am-10:30 am
Exploiting Reproductive Phenotypes of Chlamydomonas reinhardtii for use in an Algal Biofuel Harvesting System
Samuel Ollar, Biology (U)

Session A-4
Poster: Engineering I
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

123 Poster #23 8:00 am–10:00 am
Real-Time Analysis of the Biomechanics and the Effectiveness of Fusionless Spinal Growth-Modulation Devices
Chaitanya Nandipati, Bioengineering (M)

124 Poster #24 8:00 am–10:00 am
Is the Pulmonary Heart Valve a Suitable Replacement for the Aortic Heart Valve, as in Ross Procedure?
Soni Mikkilineni, Bioengineering (M)

125 Poster #25 8:00 am–10:00 am
Thermal Energy Storage for Solar Power Plants
Brian Gehring, Mechanical Engineering (M)

126 Poster #26 8:00 am–10:00 am
Reduction in Intercellular Adhesion Using an Inkjet-based Printing Solution
John Sam-Soon, Bioengineering (M)

127 Poster #27 8:00 am–10:00 am
Electrical Characterization of 3-Dimensional DNA-Based Bionanoelectronics Platforms
Nasim Vahidi, Bioengineering-Bioinstrumentation (M)

128 Poster #28 8:00 am–10:00 am
Flow over a Rotating Cylinder
Ismael Reveles, Aerospace Engineering (U)

Session A-5
Poster: Bilingualism, Language Processing and Language Disorders
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

129 Poster #29 8:00 am–10:00 am
Simultaneous Gesture and Language Production in School-age Children with Perinatal Stroke
Angel Li, Speech Language Pathology (M)

130 Poster #30 8:00 am–10:00 am
Spoken Discourse in School Age Children with High Functioning Autism
Janie Lai, Speech, Language, & Hearing Sciences (M)

131 Poster #31 8:00 am–10:00 am
Verbal Fluency in Monolinguals and Bilinguals across the Lifespan
Anna Creed, Speech, Language, & Hearing Sciences (M)

132 Poster #32 8:00 am–10:00 am
Non-linguistic Inhibition in Monolinguals and Bilinguals
Dorin Paily, Speech, Language, & Hearing Sciences (M)

133 Poster #33 8:00 am–10:00 am
"L" is for Language: Developmental Profiles and School Readiness in Diverse Preschool Children
Amy Pace, Speech, Hearing, and Language Sciences (D)

134 Poster #34 8:00 am–10:00 am
Does Absence of Auditory Input to Cerebral Nervous System Development Lead to Changes in the Structure of the Brain?
Isidore Niyongabo, Psychology (U)

Session A-6
Poster: Foods and Nutrition
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

135 Poster #35 8:00 am–10:00 am
Differential Relationship between BMI and Lifestyle Seen with Age
Kerin Dooley, Nutritional Sciences (M)

136 Poster #36 8:00 am–10:00 am
High Warm Up Intensity Does Increase Maximal Effort Cycling Performance
Mark Prophet, Kinesiology (U)

137 Poster #37 8:00 am–10:00 am
The Effect of Green Tea on Inflammation and Antioxidant Enzyme Activities in Atherogenic Diet-Fed Rodents
Patcharie Elkins, Nutritional Sciences (M)

138 Poster #38 8:00 am–10:00 am
Dark Chocolate Reduces the Colon Cancer Risk by Favorable Alteraion of Cell Kinetics
Mahshid Shelechi, Nutritional Sciences (M)

Session A-7
Poster: Workplace Issues
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

139 Poster #39 8:00 am–10:00 am
How Teenagers React when the Father Travels for Work
Heather Purcell, Psychology (U)

140 Poster #40 8:00 am–10:00 am
Can Commuting Professional Women Have the Best of Both Worlds?
Lauren Cannon, Psychology (U)

141 Poster #41 8:00 am–10:00 am
Buffering the Negative Effects of Perceived Discrimination on Quality of Life
Abdifatah Ali, Psychology (U)

142 Poster #42 8:00 am–10:00 am
Using Incremental Validity to Determine Personality's Influence on Intent to Quit
Ashlee Asgharzadeh, Psychology (U)

Session A-8
Poster: Analytical Chemistry
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

143 Poster #43 8:00 am–10:00 am
Concentration and Spectroelectrochemical Study to Test Quinone Reduction Mechanism
Patrick Staley, Chemistry (M)

144 Poster #44 8:00 am–10:00 am
Zirconium Cation Exchange Columns: Phosphoric and Phosphorous Acid Coatings
James Thai, Chemistry (U)

145 Poster #45 8:00 am–10:00 am
PMAL-B-100, an Effective Amphipathic Polymer for Controlling Protein Separations in Capillary Electrophoresis
Stephanie Archibald, Biochemistry (U)

146 Poster #46 8:00 am–10:00 am
NMR study of Precursor Evolution in the Synthesis of Magic-size II-VI Semiconductor Nanocrystals
Eleonora Rachtman, Chemistry (M)

147 Poster #47 8:00 am–10:00 am
Optimization of a Home-Built Laser-Induced Fluorescence Detector for Capillary Electrophoresis Separations
Greg Solis, Biochemistry (U)

148 Poster #48 8:00-10:00 am
Electroanalytical Studies of the Reduction of Metronidazole in the Presence of Thiols
Theresa Andres, Chemistry (M)

Session A-9
Poster: Early Childhood Development
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

149 Poster #49 8:00-10:00 am
The Baby Genius Musical Curriculum: Using Observational Data to Measure School Readiness Skills in Preschoolers
Joanna Weston, Public Health (M))

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

150 Poster #50 8:00-10:00 am
Parental Stress and Children's Attachments with Their Caregivers
Kourtney Gonzalez, Child and Family Development (U)

151 Poster #51 8:00-10:00 am
Factors that Contribute to Successfully Match Caregivers and Children
Maria Zavala, Child and Family Development (U)

152 Poster #52 8:00-10:00 am
How Does the 'Goodness of Fit' between Children and their Caregivers Affect the Quality of their Interaction in Continuity of Care Settings?
Peyton Davis, Child and Family Development (U)

153 Poster #53 8:00 am–10:00 am
Parent Perspectives on Childcare
Rachel Woodside, Child and Family Development (U)

154 Poster #54 8:00 am–10:00 am
Parent Child Relationships and their Influence on Preschool Children's Behavior
Bobbi Cannon, Child and Family Development (U)

155 Poster #55 8:00 am–10:00 am
Kindergarten Readiness Music Program: A Look at Parent Provided Data on Child Development and Family Involvement
Alison Vandehei, Psychology (U)

156 Poster #56 8:00 am–10:00 am
Quality of Attachment on Social-Emotional Competence and Multiple Domains of a Child's Development
Shaghayegh Moin, Psychology (U)

157 Poster #57 8:00 am–10:00 am
Continuity of Care vs. Non-Continuity of Care: Does it affect the Quality of Interaction between Caregiver and Child?
Raquel Alva, Psychology (U)

158 Poster #58 8:00 am–10:00 am
The Quality of Caregiver-Child Interaction and Its Effects on Aggressive Behavior
Kristine Bermudez, Child and Family Development (U)

Session A-10
Oral Presentation: Social Psychology
Friday, March 4, 2011, 8:00 am
Location: Backdoor

159 8:00 am
The Relationship between Narcissism, Organic Labeling, Retailer Image, and Perceptions of Organic Foods
Jeffrey Saikali, Psychology (U)

160 8:15 am
Perceived Discrimination and Group Identification: Multicultural Identification and Mental Health
Robyn Goldberg, Psychology (U)

161 8:30 am
The Making of an American Pluralism: Ethnic Distinctions as Sources of National Inclusion
Hafsa Mohamed, Psychology (U)

162 8:45 am
The Compensatory Effect of Social Support and Social Status on Attitude Strength
Marisa Crowder, Psychology (M)

163 9:00 am
Conversion vs. Tolerance: Minority-focused Influence Strategies Can Affect Group Loyalty
Emily Shaffer, Psychology (M)

Session A-11
Oral Presentation: Engineering I
Friday, March 4, 2011, 8:00 am
Location: Calmecac

509 8:00 am
Some Investigation on Breast Cancer Tumor Detection Using Wideband Psi-shaped Patch Antennas
Treasa Hlaing, Electrical Engineering (U)

164 8:15 am
A Multi-Sensor Structure for a Mobile Robotic System
Abraham Gallardo, Computer Engineering (U)

166 8:45 am
Generation of Lift Force Due to Radial Flow from a Rotating Disc for Application on Microsystems.
Jose Navarro, Aerospace Engineering (U)

Session A-12
Oral Presentation: Public Health I
Friday, March 4, 2011, 8:00 am
Location: Casa Real

167 8:00 am
Strengthening Mindfulness, Compassion and Psychological Flexibility in Middle School Students: Results of a Mindfulness-Based Intervention Course
David Viafora, Social Work (M)

168 8:15 am
Subjective Social Status, Socioeconomic Status, and Physical and Mental Health in Latinas
Martha Solórzano, Public Health (M)

169 8:30 am
Feasibility and Preliminary Findings of a Faith-based Study Targeting Correlates of Physical Activity Among Young Latinas
Monica Morello, Public Health (M)

170 8:45 am
Assessing the Influence of a Latino Faith-based Program on the Health Practices of Congregants, the Role of Promotores, and Organizational Practices of the Church
Stephanie Escobar, Public Health (M)

171 9:00 am
Physical Activity, Screen Time, and Sugar-sweetened Beverages: Examining Factors Associated with BMI in Children Stratified by Gender and Ethnicity
Griselda Cervantes, Public Health (M)

172 9:15 am
Evaluation of the Bixby Reproductive Health Education Program in Secondary Students in San Quintin, Mexico
Margarita Chalita, Public Health (M)

173 9:30 am
A Pilot Intervention for the Prevention of Tick-borne Diseases in San Quintin, Mexico.
Christine Williams, Public Health (M)

Session A-13
Oral Presentation:
Identity and Intersections of Gender, Race, and Culture
Friday, March 4, 2011, 8:00 am
Location: Chantico

174 8:00 am
Radical Divisions: Divergences in Radical Feminist Theory and Activism of the US Women's Liberation Movement
Jessica Spain, Women's Studies (M)

175 8:15 am
From Broadway to Hollywood: Female Tap Dancers Kick Up Their Heels
Bethany Elkin, Musical Theatre (M)

176 8:30 am
Jimmy Carter and the Gay Rights Movement
Ashley Boyd, Women's Studies (M)

177 8:45 am
Analysis of Children's Literary Criticism: How Scholars Examine Gender, Race/Ethnicity, and Sexuality in Picture Books
Irina Chukhray, Women's Studies (M)

178 9:00 am
Narratives of Voluntary Childlessness: Pronatalist Discourses and Communicative Resistance to Reproduction
Julia Moore, Communication (M)

179 9:15 am
Que Soy?–A Conversation about Hybridity and the Rise of the Pocho
Paris Brown, English (M)

180 9:30 am
The Sky is the Limit: Aesthetics and Archetypes for Chinese Women in Twentieth Century China to Present
Michael Tetreault, Interdisciplinary Studies (M)

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

Session A-14
Oral Presentation: Neurobiology
Friday, March 4, 2011, 8:00 am
Location: Council Chambers

181 8:00 am
High-Throughput Screening of Small Molecules that Activate MEF2 and Drive Neurogenesis.
Sam Sances, Chemistry and Biochemistry (U)

182 8:15 am
Application of MEF2C-programmed hESCs for a Neurodegenerative Model using Optogenetics
Nima Dolatabadi, Biology (U)

183 8:30 am
A Human Neuronal Model to Study SORL1 Variants in Sporadic Alzheimer's Disease
Daniel Williams, Cell and Molecular Biology (U)

184 8:45 am
Analyzing the Role of Sphingolipids in Memory Formation and Retention in Drosophila.
James Parker, Biology (U)

185 9:00 am
Consequences of an Early Neurotropic Enterovirus Infection on CNS Development and Memory Function in the Surviving Host
Donn Van Deren, Jr., Cell and Molecular Biology (M)

Session A-15
Oral Presentation: Health & Policy
Friday, March 4, 2011, 8:00 am
Location: Presidential Suite

186 8:00 am
Moderators of the Impact of a Colorectal Cancer Video on Deaf Individuals
Lisa Nguyen, Public Health (U)

187 8:15 am
Realigning Juvenile Justice: California's Desperate New Reform
Jennifer Martinez, Criminal Justice (U)

188 8:30 am
Exploring Familial Psychosocial Factors and Barriers that Affect the Oral Health Behaviors and the Early Development of Childhood Caries in Hispanic Preschoolers
Daniela Calderon, Public Health (U)

189 8:45 am
Serious Psychological Distress in Sexual Minorities in California: Implications for Public Health, Policy and Practice. Analysis of the 2007 California Health Interview Survey (CHIS)
Justin Curole, Epidemiology (M)

190 9:00 am
Magnet Status, Nurse-Physician Collaboration, and Evidence-Based Practice
Ani Sekayan, Nursing (M)

191 9:15 am
Off Label, Off Limits?: Assessing the Regulation, Debate, Enforcement, and Potential Policy Considerations of Off-label Promotion
Timothy Mackey, Global Health (D)

192 9:30 am
Research Design and Methods for the NARCH (Native American Research Center for Health) Periodontal Study
Balambal Bharti, Epidemiology (D)

Session A-16
Oral Presentation: Anthropology and Archeology
Friday, March 4, 2011, 8:00 am
Location: Quetzalcoatl A

193 8:00 am
Changing Time: Community Response, Reorganization, and the Transformative Role of the 2007 Solomon Islands Tsunami
Benjamin Nugent, Anthropology (M)

194 8:15 am
Status and the "Lower class": Health, Disease, and Biological Affinity of the Late Classic Maya Suburb Community of Guerra, Benavista del Cayo, in the Western Belize Valley
Erin Blankenship-Sefczek, Anthropology (M)

195 8:30 am
Refocusing Food-Centered Celebrations in the Childcare Setting
Elizabeth Herlihy, Anthropology (M)

Session A-17
Oral Presentation: Violence and Aggression
Friday, March 4, 2011, 8:00 am
Location: Quetzalcoatl B

196 8:00 am
An Analysis of Peer Delinquency's Mediational Effects on Delinquent Behavior and Relationship Violence
Rachel Dyson, Psychology (U)

197 8:15 am
Depressive Symptoms, Anxious Attachment, and Teen Relationship Violence Perpetration: A Longitudinal Study
Neri Martinez-Arango, Psychology (U)

198 8:30 am
Use of Self-Defense in Dating Violence: A Descriptive Study
Miguel Martin Del Campo, Psychology (M)

Session A-18
Oral Presentation:
Race, Ethnicity and Socio-Economic Studies
Friday, March 4, 2011, 10:00 am
Location: Calmecac

199 10:00 am
Dual-Language Education: Pathway to Closing the Achievement Gap
Rhianna Casesa, Policy Studies (M)

200 10:15 am
Critical Engagement, Building Connections, and Bridging the Gap
Samuel Teres, Policy Studies in Language and Cross Cultural Education (M)

201 10:30 am
Organizing Against Racism: Why Theory Matters
Joseph Bishop, Philosophy (M)

202 10:45 am
Exposing the Storm: Examining Perceptions of Post-Katrina Recovery
Halei Griffin, Communication (M)

Session A-19
Oral Presentation: Management and Work Issues
Friday, March 4, 2011, 10:00 am
Location: Casa Real

203 10:00 am
Factors Which Determine the Relevance of Person-Job Fit and Person-Organization Fit
Sara Tabrizi, Finance (U)

204 10:15 am
Diversity Climate, Job Satisfaction, and Altruism toward the Workplace: Does Race Matter?
Bahareh Soltani, Psychology (U)

205 10:30 am
The Effects of Inclusion and LMXSC on Job Satisfaction and Altruism
John Andrew Galleta, Psychology (U)

206 10:45 am
Impresario and Prima Donna in Venice, 1651-1668: Linking Management Principles of Marco Faustini, the Emergence of the Prima Donna and Managerial Concepts for Today's Business Executives
Breena Loraine, Music and Business (U)

207 11:00 am
The ABC's Of Toys: Typography as a Tool in the Polarization of Gender in Children's Toys
Courtney Harmon, Art Design (M)

Session A-20
Oral Presentation: Mathematics and Statistics
Friday, March 4, 2011, 10:00 am
Location: Presidential Suite

208 10:00 am
Probabilistic Assessment of Cloud Fraction from Bayesian Blending: A Test for ARSCL and TSI Observations
Max Velado, Statistics (M)

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

209 10:15 am
The True Dimension of a Class of Goppa-like Codes Beating the Best-known Codes
Kyle Marshall, Mathematics (M)

210 10:30 am
Limited Precision Quantization for LDPC Decoding
Raymond Moberly, Computational Science (D)

211 10:45 am
Improving Prospective Elementary Teachers' Number Sense: Extending a Local Instruction Theory from Mental Computation to Reasoning about Fraction Magnitude
Ian Whitacre, Math Science Education (D)

212 11:00 am
Quantile Regression: A Comparison of Bayesian and Frequentist Methods
Kameryn Denaro, Computational Science with an emphasis in Statistics (D)

Session A-21
Oral Presentation: Philosophy I
Friday, March 4, 2011, 10:00 am
Location: Chantico

213 10:00 am
Infinite Justification
Andrew Greetis, Philosophy (M)

214 10:15 am
Seeking Virtue in Beauty: A Glimpse of Arete through the Lens of Chinese Aesthetics
Reanne Brandt, Philosophy (M)

215 10:30 am
Economic Man, Socialization and Freedom of the Will
Aaron Elliott, Philosophy (M)

216 10:45 am
The Future Lay in Our Hands: Tool Use and Human Evolution in Li Zehou and 2001: A Space Odyssey
Jordan Schummer, Philosophy (M)

Session A-22
Oral Presentation: Geography and Natural Crises
Friday, March 4, 2011, 10:00 am
Location: Council Chambers

217 10:00 am
Mapping Vulnerability to Drought in the Krishna Basin, Southern India
Alex Messina, Geography (M)

218 10:15 am
Day Labor in the Downturn: Spatial Survival Strategies in San Diego Day Labor Markets: 2006–2011
Sean Crotty, Geography (D)

219 10:30 am
Evacuation in the Austrian Alps: Linking Interdisciplinary Risk Analysis with Simulation Models for Emergency Planning
Grant Fraley, Geography (D)

220 10:45am
Determining Expected Building Losses from Earthquakes in San Diego, CA: An Application Using HAZUS-MH MR4
Nicole Simons, Geography (D)

221 11:00 am
Meta-analysis in Hydrology: An Application for Land-cover Change Experiments
Ryan Bart, Geography (D)

Session A-23
Oral Presentation: Foods and Nutrition
Friday, March 4, 2011, 10:00 am
Location: Quetzalcoatl A

222 10:00 am
Effects of Contaminated Fish Oil on the Risk Factors of Cardiovascular Disease
Maggie Mae Camaclang, Nutritional Sciences (U)

223 10:15 am
Characteristics Associated with Child Compliance to Accelerometer Measurement
Kevin Kong, Epidemiology (M)

224 10:30 am
Understanding the Relationship between Park Characteristics and Physical Activity Level
Stephanie Child, Health Promotion (M)

225 10:45 am
Intuitive Eating and Intrinsic Motivation for Physical Activity Among College Males
Kari Wasilenko, Public Health (M)

Session A-24
Oral Presentation:
Critical Cultural and Feminist Representations
Friday, March 4, 2011, 10:00 am
Location: Quetzalcoatl B

227 10:15 am
On the Origin of Species
Lyubov Klimova, Graphic Design (M)

228 10:30 am
Masham's Influence on Locke...Can it be true?
Karl Kyler, Philosophy (M)

229 10:45 am
Biblical Perfection: Using Profanity and Anti-feminism to Promote God's Word
Joan McClain, Communication (M)

230 11:00 am
Cultivating the Landless: The Question of Land in Moma Lola
Ashley Greenwood, Women's Studies (M)

Session B-1
Poster: Psychology II
Friday, March 4, 2011, 10:30 am–12:30 pm
Location: Montezuma Hall

231 Poster #1 10:30 am–12:30 pm
Home Literacy Environment and Maternal Responsiveness as Predictors of Preschool Outcomes
Caitlin Phillips, Psychology (M)

232 Poster #2 10:30 am–12:30 pm
The Impact of Maternal Input on Language Acquisition: a Cross Cultural Study
Sophie Rimbaud, Psychology (D)

233 Poster #3 10:30 am–12:30 pm
Parent-Child Reading Styles and the Home Literacy Environment Questionnaire as Predictors of Narrative Complexity and School Readiness
Michelle Jackson, Psychology (M)

234 Poster #4 10:30 am–12:30 pm
Early Narratives in English Language Learners
Matthew Ignacio, Linguistics (U)

235 Poster #5 10:30 am–12:30 pm
BMI Correlates with Olfactory Processing Speed in Older Adults
Roberto Zamora, Psychology (U)

236 Poster #6 10:30 am–12:30 pm
Children With Heavy Prenatal Alcohol Exposure are Distinguishable from Children with ADHD and Controls on Visuospatial Memory
Mike Kirkpatrick, Psychology (U)

237 Poster #7 10:30 am–12:30 pm
Diffusion Tensor MRI Analysis of Cerebral White Matter Development after Perinatal Brain Injury
Brian Mills, Psychology (M)

238 Poster #8 10:30 am–12:30 pm
Spatial Memory Development in Children with Prenatal Stroke
Sara Himmerich, Psychology (M)

239 Poster #9 10:30 am–12:30 pm
The Effect of Aging on Anticipatory Contrast in Rats
David Maasberg, Psychology (M)

240 Poster #10 10:30 am–12:30 pm
The Differential Role of Education on Metamemory Accuracy in Healthy Aging and Alzheimer's Disease
Jacquelyn Szajer, Psychology (M)

Session B-2
Poster: Biochemistry
Friday, March 4, 2011, 10:30 am–12:30 pm
Location: Montezuma Hall

241 Poster #11 10:30 am–12:30 pm
Purification of Drosophila Muscle Myosin for X-ray Crystallography to Determine Molecular Mechanism
James Caldwell, Biochemistry (D)

242 Poster #12 10:30 am–12:30 pm
Characterization of Novel Proteins Involved in Binding to the Protein Shc
Spencer Swarts, Biochemistry (D)

243 Poster #13 10:30 am–12:30 pm
Ubiquitin Carboxyl Hydrolase-L3 (UCH-L3): A Molecular Sensor of Protein Stability
Octavio Romo-Fewell, Chemistry (U)

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

244 Poster #14 10:30 am–12:30 pm
A Comparison of the Non-Aqueous Electrochemistry of Nitroimidazoles and Nitrobenzenes upon Addition of L-Cysteine
Martha King, Biology (chemistry minor) (U)

245 Poster #15 10:30 am–12:30 pm
Electrochemical Studies of 5-Nitroimidazoles as Possible New Antimicrobial Drugs
Kylene Monsalud, Chemistry (U)

246 Poster #16 10:30 am–12:30 pm
Correlation of Half Wave Potentials of Possible Antimicrobial 5-nitroimidazole Drugs with Calculated Gas Phase Electron Affinities
Maurice Horton, Chemistry (U)

247 Poster #17 10:30 am–12:30 pm
San A-amide and Heat Shock Protein 90 Binding Studies Using Surface Plasmon Resonance
Maria Barbara Guillergan, Biology (M)

248 Poster #18 10:30 am–12:30 pm
Stability and Potency of Differential Forms of Drosophila SREBP
Mohammad Hadayat, Biology (U)

Session B-3
Poster: Bioinformatics
Friday, March 4, 2011, 10:30 am–12:30 pm
Location: Montezuma Hall

249 Poster #19 10:30 am–12:30 pm
Tools for Quality Control and Preprocessing of Metagenomic Datasets
Robert Schmieder, Computer Science (D)

250 Poster #20 10:30 am–12:30 pm
Predicting Phage Lifestyle Preferences from Genomes: Lytic vs. Lysogenic
Katelyn McNair, Computational Science (M)

251 Poster #21 10:30 am–12:30 pm
Understanding the Dynamics of Viral and Microbial Communities in Cystic Fibrosis by Metagenomic and Metatranscriptomic Screening
Yan Wei Lim, Cell and Molecular Biology (M)

252 Poster #22 10:30 am–12:30 pm
Implementing the Google Web Toolkit to Improve BLAST Output
Brad Hull, Computer Science (M)

253 Poster #23 10:30 am–12:30 pm
Identification of Genes Involved in Iron Reduction in Anaerobic Arctic Peat Soils
Archana Srinivas, Ecology (D)

254 Poster #24 10:30 am–12:30 pm
Geographical Impact on Metagenomes
Daniel Pick, Computational Science (D)

255 Poster #25 10:30 am–12:30 pm
The Modeling of Interactions between Small Molecules and Intermediates of DNA Recombination
Gabriel Vahi-Ferguson, Biology (U)

256 Poster #26 10:30 am–12:30 pm
Metabolic Analysis of Marine Microbial Communities
John Haggerty, Biology (U)

257 Poster #27 10:30 am–12:30 pm
Training a Neural Network to Recognize Phage Structural Proteins
Michael Arnoult, Biology (U)

258 Poster #28 10:30 am–12:30 pm
Phylogeography of the Sidewinder Rattlesnake: Testing the Phylogenetic Affinities of Populations from Baja and Sonora Mexico
Nikki Berneberg, Biology (U)

Session B-4
Poster: Engineering II
Friday, March 4, 2011, 10:30 am–12:30 pm
Location: Montezuma Hall

259 Poster #29 10:30 am–12:30 pm
Semigraphoids and their Varieties
Laura Silverstein, Mathematics (M)

260 Poster #30 10:30 am–12:30 pm
Microwave Breast Cancer Detection by Ultra-Wideband (UWB) Microstrip Slot Antennas
Kirthika Nahalingam, Electrical Engineering (M)

261 Poster #31 10:30 am–12:30 pm
Lagrangian Coherent Structures and Particle Dynamics in Turbulent Separated Flow
Daniel Nelson, Aerospace Engineering (D)

262 Poster #32 10:30 am–12:30 pm
Structures of Counter-flow Flames
Vaishali Amin, Engineering Sciences (Mechanical and Aerospace Engineering) (D)

263 Poster #33 10:30 am–12:30 pm
Turbulence Generation and Particle Dynamics in Shocked Particle Laden Flow
Sean Davis, Engineering Sciences/Applied Mechanics (D)

264 Poster #34 10:30 am–12:30 pm
Preliminary Investigations in Current-Activated Tip-based Sintering (CATS): Modeling and Experiments
Ahmed El Desouky, Mechanical Engineering (D)

265 Poster #35 10:30 am–12:30 pm
Densification Mechanism behind Spark Plasma Sintering (SPS) and Application
Wei Li, Engineering Science (D)

510 Poster #36 10:30 am–12:30 pm
A Two Dimensional Study of a Morphing Wing for Wind and Wave Energy Conversion
MacPhee David, Mechanical Engineering (D)

Session B-5
Poster: Behavioral Sciences
Friday, March 4, 2011, 10:30 am–12:30 pm
Location: Montezuma Hall

266 Poster #37 10:30 am–12:30 pm
Effects of Caregiving Location and Caregiving Onsets for Alzheimer's Disease Patients
Catherine Sumida, Psychology (U)

267 Poster #38 10:30 am–12:30 pm
Perception of Gang Violence Among Residents of a Migrant Colonia in Rural Mexico
Joanna Jacobsen, Public Health (M)

268 Poster #39 10:30 am–12:30 pm
A Critical Analysis of Advanced Placement Courses: An Examination of How Racism is Structured within Education
Linda Munoz, Chicana/o Studies & English Literature (U)

269 Poster #40 10:30 am–12:30 pm
The Psychological Differences in Contrasting Venues of Vocal Performance
Elly Roseberry, Vocal Performance (M)

270 Poster #41 10:30 am–12:30 pm
Empowering the Individual: a Case Study Illustrating the Effects of Peer Mentoring at the Undergraduate Level
Erica Faasee, Child and Family Development (U)

271 Poster #42 10:30 am–12:30 pm
Baccalaureate Institutions in Psychology Study
Kimberly Sablan, Psychology (U)

272 Poster #43 10:30 am–12:30 pm
Classic Maya Eccentric Caches: A Window to Maya Cosmology
Marcos Ramos-Ponciano, Anthropology (M)

273 Poster #44 10:30 am–12:30 pm
Dimensions of Loneliness in Maltreated Children
Ana Guaderrama, Psychology (U)

274 Poster #45 10:30 am–12:30 pm
Maltreatment Experience Related to Ecological Factors and Familial Interactions
Amanda Chiapa, Psychology (M)

275 Poster #46 10:30 am–12:30 pm
Does Project Based Learning Affect Attendance?
Jeffrey Newman, Policy Studies (M)

Session B-6
Poster: Neurobiology
Friday, March 4, 2011, 10:30 am–12:30 pm
Location: Montezuma Hall

276 Poster #47 10:30 am–12:30 pm
Enhanced Susceptibility or Resistance to Neurodegeneration/Autoimmune Disease in Mice Infected with Coxsackievirus Shortly after Birth
Lindsay Southgate, Kinesiology (U)

277 Poster #48 10:30 am–12:30 pm
Striated Muscle Dysfunction Associated with Huntington's Disease Amyloid Accumulation in the Drosophila Model
Raul Ramos, Biology (U)

278 Poster #49 10:30 am–12:30 pm
CNS Developmental Defects Following Recovery from Enterovirus Infection during the Neonatal Period
Sonia Maciejewski, Microbiology (U)

279 Poster #50 10:30 am–12:30 pm
Signals Inducing Oligodendrocyte Progenitor Maturation and Myelination
Lydia Rojas, Chemistry (U)

280 Poster #51 10:30 am–12:30 pm
Modeling Schizophrenia Using hiPSC-derived Neurons
Samantha Larkin, Biology (U)

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

281 Poster #52 10:30 am–12:30 pm
Induction of a Functional Antiviral Response in Persistently Infected Neural Progenitor and Stem Cell (NPSC) Cultures
Ginger Tsueng, Biology (D)

Session B-8
Oral Presentation: Biomedical Studies
Friday, March 4, 2011, 1:00 pm
Location: Backdoor

282 1:00 pm
AGR2 and MUC5AC: Changes in Airway Epithelium in Mucous Metaplasia
Maria Gutierrez, Chemistry and Biochemistry (U)

283 1:15 pm
Effect of Group B Streptococcal Colonization on the Gene Expression Profile of Vaginal Epithelial Cells
Alyssa Jimenez, Microbiology (U)

284 1:30 pm
Metagenomic Analysis of Phages and Prophages from the Oxygen Minimum Zone off Iquique, Chile
Noriko Cassman, Bioinformatics/Medical Informatics (M)

285 1:45 pm
Genetic and Immune Factors Contribute to Racial Disparities in Colorectal Cancer
Ranor Basa, Cell and Molecular Biology (M)

286 2:00 pm
Effects of Hepatitis C Virus Infection on Host Cell Signaling Cascades
Lauren Aguado, Microbiology (M)

287 2:15 pm
Expression of a High Molecular Weight Multi-Subunit Mammalian IKK Complex: For Use in Biochemical and Biophysical Studies
Danielle DiTirro, Molecular Biology (M)

288 2:30 pm
Mathematical Modeling of Cystic Fibrosis
Sara Zarei, Computational Science (D)

Session B-9
Oral Presentation: Engineering II
Friday, March 4, 2011, 1:00 pm
Location: Calmecac

289 1:00 pm
Design and Analyses of a Multi-Window Aperture Structure for a Small Particle Solar Receiver
Ioana Broome, Aero Engineering (M)

290 1:15 pm
Effect of Channel Height and Air Velocity on Flame Spread in Simulated Microgravity Flow Environment Using Couette Flow
Karen Hung, Mechanical Engineering (M)

291 1:30 pm
Effect of Velocity and Oxygen Composition on Thin Fuel Opposed Flow Flame Spread in the Narrow Channel Apparatus
Jacob Pepper, Mechanical Engineering (M)

292 1:45 pm
Effect of Variable Guide Vanes and Natural Gas Hybridization for Accommodating Fluctuations in Solar Input to a Gas Turbine
Kyle Kitzmiller, Mechanical Engineering (M)

293 2:00 pm
Novel High-efficiency 3D ITO-less Flexible Organic Solar Cells
Shanel Miller, Bioengineering (M)

294 2:15 pm
Home Side Auto-demand Response System
Prakash Jha, Electrical Engineering (M)

Session B-10
Oral Presentation: Astronomy and Physics
Friday, March 4, 2011, 1:00 pm
Location: Quetzalcoatl A

295 1:00 pm
White Light Vortices Interaction and Control
Cory Stinson, Physics (M)

296 1:15 pm
Response of a Jammed System of Telechelic Associating Polymers to External Stress
Adam Coleman, Physics (M)

297 1:30 pm
Spin-Up Evolution Of Neutron Stars in X-Ray Binaries
Eric Mckenny, Physics (M)

298 1:45 pm
Two Age Sensitive Detached Eclipsing Binaries in the Open Cluster NGC 6819
Mark Jeffries, Jr., Astronomy (M)

299 2:00 pm
Comparing the Random Phase Approximation to Full Configuration-Interaction Calculations of Atomic Structure
Micah Schuster, Computational Science (D)

300 2:15 pm
Projected Hartree-Fock in a Shell Model Basis
Joshua Staker, Computational Science (D)

Session B-11
Oral Presentation: Chemistry I
Friday, March 4, 2011, 1:00 pm
Location: Chantico

301 1:00 pm
Ultrasensitive Detection of Chem/Bio Agents Using Multi-Photon Laser Wave-Mixing Spectroscopy
Jorge Jimenez, Chemistry (U)

302 1:15 pm
Investigation of a Suspension of Sub-micron Carbon Particles Generated by a Hydrocarbon Cracking Chamber
Paul Schroeder, Physics (U)

303 1:30 pm
Pressure Driven Paper Chromatography
Caroline Davis, Chemistry (U)

304 1:45 pm
Sensitive and Selective Detection of Proteins by Nonlinear Laser Wave Mixing and Capillary Electrophoresis
Ashley Warren, Chemistry (U)

305 2:00 pm
Effects of Varying CO_2 Injectant Concentration and Seepage Velocity on Reservoir Porosity and Permeability for Applications in Carbon Capture and Sequestration
Christopher Binter, Geological Sciences (M)

306 2:15 pm
Synthesis and Application of Various Metal-NHC Carbene Complexes
Maulen Uteuliyev, Chemistry (M)

Session B-12
Oral Presentation:
Computational Science and Biomedical Algorithms
Friday, March 4, 2011, 1:00 pm
Location: Presidential Suite

307 1:00 pm
A Java Implementation of the Phage Proteomic Tree
Andres Blanco Revah, Computer Science (U)

308 1:15 pm
Rapid Sequence Searching Using Hashing
Daniel Cuevas, Computer Science (U)

309 1:30 pm
Computer Simulation of Crista Structure in Mitochondria
John Waynelovich, Math (U)

310 1:45 pm
Bayesian Joint Modeling of Longitudinal Data with Correlated Binary Outcome
Jeff Ledahl, Computational Science (D)

311 2:00 pm
Vortex Ring Dynamics and Interactions in the Nonlinear Schrödinger Equation
Ronald Caplan, Computational Science (D)

312 2:15 pm
Phage Detector: A Novel Algorithm for Finding Prophages in Microbial Genomes that Combines Similarity-based and Composition-based Strategies
Sajia Akhter, Computational Science (D)

313 2:30 pm
Unified Curvilinear Ocean Atmosphere Model-Large Eddy Simulation of Geophysical Fluid: Scale Dependent Assumptions
Mohammad Abouali, Computational Science (D)

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

Session B-13
Oral Presentation: Literature
Friday, March 4, 2011, 1:00 pm
Location: Quetzalcoatl B

314 1:00 pm
Universalism and Particularism in the Post-colonial Characterizations of Shakespeare's The Tempest and Toni Morrison's A Mercy
Sarah Forest, English (U)

315 1:15 pm
Domesticity and the Moderns
Shannon Brown, English (M)

316 1:30 pm
Daniil Kharms and Absurdism
Susan Hogan, Creative Writing: Poetry (M)

317 1:45 pm
A Thinking Woman Sleeps with Monsters: Monsters and Mythical Creatures in Feminist Poetry
Cristina Dominguez, Women's Studies (M)

Session B-14
Oral Presentation: Media, Music, and Society
Friday, March 4, 2011, 1:00 pm
Location: Casa Real

318 1:00 pm
Listening for an Answer: The Composition of Music as a Complement to the Scientific Method
Derek Jeppsen, Music: Electro-Acoustic Composition (U)

319 1:15 pm
Cultural Identity Reflected in Music: Ramiro Cortés and Xochitl
Sarah Moody, Musicology (M)

320 1:30 pm
Music as Text for Transformative Pedagogy
Carlos Hernandez, Policy Studies (M)

321 1:45 pm
Sound in Sight: "Messa di Voce" and the Study of the Singing Voice
Pamela Narbona Jerez, Musicology (M)

322 2:00 pm
Musical Resistance in Mexico
Christopher Mena, Single Subject Teaching Credential: Music (M)

Session B-15
Oral Presentation: Neuroscience
Friday, March 4, 2011, 1:00 pm
Location: Council Chambers

323 1:00 pm
Atypical Lateralization of Functional Connectivity in Autism Spectrum Disorders as Detected by Independent Component Analysis
Ryan Cardinale, Psychology (U)

324 1:15 pm
Stroke Risk and Qualitative Neuropsychological Performance: Differentiating Subtypes of Mild Cognitive Impairment
Yuliana Cabrera, Psychology (U)

325 1:30 pm
The Profile of Prospective Memory Impairment in Older Adults and Implications for Everyday Functioning
Brittnie Bloom, Psychology (U)

326 1:45 pm
A Longitudinal Investigation of Mattis Dementia Rating Scale Subscale Scores in Individuals with Manifest Huntington's Disease
Daniel Brown, Psychology (U)

327 2:00 pm
Neuropsychological Functioning Predicts Occupational Attainment in an Indian Cohort
Alex Liu, Psychology (U)

328 2:15 pm
The Anterior Cingulum Integrity Predicts Neurocognitive Performance in Traumatic Brain Injury: a Quantitative Tractography Study
Daniela Braga, Psychology (U)

Session B-16
Oral Presentation: Effects of Alcohol
Friday, March 4, 2011, 3:00 pm
Location: Backdoor

329 3:00 pm
Drinking Bout and Ingestive Position Preference Characteristics of Oral Alcohol Consumption in Selectively Bred Ethanol-Preferring (P) Rats Given Intermittent Access to 20% Ethanol
Jason Dudley, Psychology (U)

330 3:15 pm
Vitamin D as a Potential Therapeutic for Fetal Alcohol Spectrum Disorders
Joseph Happer, Psychology (U)

331 3:30 pm
The Effects of Prenatal Alcohol Exposure on Choline Metabolism: Implications for How Choline May Moderate Alcohol's Teratogenic Effects
Tanya Nguyen, Clinical Psychology (D)

332 3:45 pm
Executive Function Deficits Predict Adaptive Behavior Outcomes in Children with Heavy Prenatal Alcohol Exposure
Ashley McKenzie Ware, Psychology (M)

333 4:00 pm
Are Children with Heavy Prenatal Alcohol Exposure Characterized by a Sluggish Cognitive Tempo?
Diana Graham, Behavioral Neuroscience (M)

334 4:15 pm
Response Inhibition in Children with Heavy Prenatal Alcohol Exposure
Jessica O'Brien, Psychology (M)

Session B-17
Oral Presentation: History
Friday, March 4, 2011, 3:00 pm
Location: Calmecac

335 3:00 pm
Civil War Baseball: How America's Past Time Flourished During America's Greatest Conflict
Caitlin Wion, History (U)

336 3:15 pm
Profiles in Crisis: The Character of the U.S. President during Critical Economic Eras of American History and the Structure of Courageous Political Opportunities for Leadership
Alejandro Renteria, Political Science and International Business (U)

337 3:30 pm
Savages or Saints?: Early Mormon Conceptions of Native Americans
Jennifer Lindell, History (M)

338 3:45 pm
Questioned Loyalties: Public Perceptions of Varina Davis and Mary Lincoln, 1861–1865
Michelle Hamilton, History (M)

Session B-18
Oral Presentation: Air Quality
Friday, March 4, 2011, 3:00 pm
Location: Casa Real

339 3:00 pm
Traffic-related Air Pollution in the Community of San Ysidro, California, in Relation to Northbound Delays at the US-Mexico Border
Jill Dumbauld, Public Health (M)

340 3:15 pm
Roadside Pollution Measurements and Traffic Volume in a US-Mexico Border City: Tijuana, B.C.
Edgar Rodriguez, Public Health (M)

341 3:30 pm
Agricultural Burn Events in Imperial County, California: Measured with Real-time Particulate Aerosol Monitors
Christopher Carey, Public Health (M)

342 3:45 pm
Smoke-free College Campuses: No Ifs, Ands, or Toxic Butts
Michael Sawdey, Public Health Epidemiology (M)

343 4:00 pm
A Cross-Sectional Analysis of the Factors of Violation of Maine's Legislation Prohibiting Smoking in Vehicles Containing Children
Katie Callahan, Public Health, Epidemiology (M)

344 4:15 pm
The Association Between Active and Passive Smoking and Latent Tuberculosis Infection: Results from NHANES
Ryan Lindsay, Public Health/Global Health (D)

Session B-19
Oral Presentation: Issues in Education
Friday, March 4, 2011, 3:00 pm
Location: Chantico

345 3:00 pm
How and Why do Mexican-American Undergraduate Students Make Sense of their Preparation and Motivation to Attain a Bachelor's Degree?
Roman Liera, Psychology (U)

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

346 3:15 pm
Response to Intervention: An Analysis of Incarcerated Students Needs and their Readiness to Respond.
Elsa Carrillo, Psychology (U)

347 3:30 pm
Critical Math: How Can a Program Focusing on Algebra be Developed to Serve English Language Learners K-8th?
Elena Bolanos, Policy Studies (M)

348 3:45pm
Is it Time to Go Charter? What it takes to Go Charter and How We Can Learn from this Movement
Armando Leon, Policy Studies (M)

349 4:00 pm
An Elementary Look at Productive Disposition
Alison Williams, Education (M)

350 4:15 pm
Creating an Articulated Mandarin Program in San Diego
Yan Jiang, Policy Studies in Language and Cross-cultural Commmunication (M)

Session B-20
Oral Presentation: Chemistry II
Friday, March 4, 2011, 3:00 pm
Location: Presidential Suite

351 3:00 pm
Self-assembly of Group-III Tin Nitride Clusters: Unique Anionic Ammonia and Ammonium Analogues
Robert Wilson, Chemistry (D)

352 3:15 pm
Doping Test by Capillary Zone Electrophoresis
Srilatha Vydha, Chemistry (D)

353 3:30 pm
Towards the Rational Design of Functional Solids: Synthesis and Characterization of Porphyrin-Based Solids for Catalysis and Gas Sorption
Derek Butler, Chemistry (D)

354 3:45 pm
Synthesis of New Allyl Palladium Chloride Phosphine Complexes and their Application in Aryl Amination Reactions
Reji Nair, Chemistry (D)

Session B-21
Oral Presentation: Cardiac Cell Biology
Friday, March 4, 2011, 3:00 pm
Location: Council Chambers

355 3:00 pm
Hematopoietic Stem Cell Specific Gene Modulation
Jeff Bernitz, Biology (U)

356 3:15 pm
Preconditioning Involves Selective Mitophagy Mediated by Parkin and p62
Genaro Hernandez, Biology (U)

357 3:30 pm
Induction of Autophagy in the Heart by Simvastatin
Pam Lee, Cell and Molecular Biology (M)

358 3:45 pm
Non-random DNA segregation in Cardiac Stem Cells
Balaji Sundararaman, Molecular Biology (M)

Session B-22
Oral Presentation: Music and Dance in Media
Friday, March 4, 2011, 3:00 pm
Location: Quetzalcoatl A

359 3:00 pm
Effective Warm-Up Techniques for Musical Theatre Dance
Roger Ellis, Musical Theatre (M)

360 3:15 pm
The Language of War: Cultural Interaction Presented in Documentary Film
Pat Clark, Theater, Television and Film (M)

361 3:30 pm
The "Second Banana": A Critical View of Secondary Characters in Musical Theatre
Timothy Allen, Musical Theatre (M)

362 3:45 pm
Emotion Through Tap: The Expressive Qualities of Rhythm, Sound, and Style in an American Dance Form
Cassie Abate, Musical Theatre (M)

Session B-23
Oral Presentation: Physics
Friday, March 4, 2011, 3:00 pm
Location: Quetzalcoatl B

363 3:00 pm
Exploring Uses of Ferromagnetic Material through Electron Spin
Katherine Beauvais, Physics (U)

364 3:15 pm
The Hyperpolarizabilities of Atomic Eigenstates
Brandon Rigsbee, Physics (U)

365 3:30 pm
Creation of the Devil's Vortex Lens
Danielle Doughty, Physics (U)

512 3:45 pm
Polymer Gel and Magnetic Resonance Relaxometry Based 3D Dose Monitoring
Ranjit Hira, Physics (M)

513 4:00 pm
Localization of White Matter Changes in Normal Subjects with APOE e2 and e4 Genotypes
Shawn Newlander, Physics (M)

Session C-1
Poster: Health Behaviors
Friday, March 4, 2011, 1:00 – 3:00 pm
Location: Montezuma Hall

366 Poster #1 1:00–3:00 pm
Cognitive Responses to rTMS Treatment in a Pilot Test of Bipolar Depression
Christopher Johansen, Public Health (M)

367 Poster #2 1:00–3:00 pm
Alcohol Dependence in the United States: A Study of Alcohol Dependence among Hispanics versus the Non-Hispanic Population
Claudia Llamas, Social Work (M)

368 Poster #3 1:00–3:00 pm
Father Influence on Children's Eating Behaviors and Health
Humberto Parada, Public Health (M)

369 Poster #4 1:00–3:00 pm
Examination of a Self-monitoring Exercise on Fatigue and Depression Among African American Cancer Survivors
Maggie Syme, Public Health (M)

370 Poster #5 1:00–3:00 pm
Comparative Study of Drinking among Community College and 4-year University Students: A Preliminary Investigation
Marc Emerson, Public Health (M)

371 Poster #6 1:00–3:00 pm
Indoor air Pollution and Traditional Cooking Methods: A Solomon Islands Case Study
Luke Campanella, Environmental Health (M)

372 Poster #7 1:00–3:00 pm
Self-rated Health Status and Smoking
Nouran Mahmoud, Epidemiology (M)

373 Poster #8 1:00–3:00 pm
Hookah at Home Project
Reem Daffa, Global Health (D)

Session C-2
Poster: Organic Chemistry
Friday, March 4, 2011, 1:00 – 3:00 pm
Location: Montezuma Hall

374 Poster #9 1:00–3:00 pm
Tagging of Sansalvamide A Derivatives
Mark Petersen, Blochemistry (U)

375 Poster #10 1:00–3:00 pm
Complexation of Trialkylboranes for Rapid Determination of Regioselectivity in Hydroboration Reactions
Yaqian Liu, Biology (U)

376 Poster #11 1:00–3:00 pm
Synthesis of Small Molecules Targeting Bacterial DNA Repair Mechanisms
David Jones, Chemistry (M)

377 Poster #12 1:00–3:00 pm
Synthesis of Extremely Hindered Imidazolylphosphine Ligands for Catalysis
Farhana Barmare, Chemistry (M)

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

378 Poster #13 1:00–3:00 pm
Synthesis, Optical Properties and Surface Modification of Magic-size Semiconductor Nanomaterials
Ke Gong, Chemistry (M)

379 Poster #14 1:00–3:00 pm
Synthesis of Sansalvamide A Peptidomimetics
Joseph Kunicki, Chemistry (U)

380 Poster #15 1:00–3:00 pm
Bismuth Halide Salts: Precursors to High Nuclearity Molecules
Robert Gilley, Chemistry (U)

Session C-3
Poster: Biology/Heart Disease
Friday, March 4, 2011, 1:00 – 3:00 pm
Location: Montezuma Hall

381 Poster #16 1:00–3:00 pm
Telomere Length Preservation by Pim-1 Manipulation of the Shelterin Complex
Lauren Neidig, Cell and Molecular Biology (U)

382 Poster #17 1:00–3:00 pm
Genetic Deletion of Pim-1 Causes Premature Cardiac Senescence
Shabana Din, Cell and Molecular Biology (D)

383 Poster #18 1:00–3:00 pm
Using Drosophila as a Model System to Study Restrictive Cardiomyopathy
Madhulika Achal, Microbiology (M)

384 Poster #19 1:00–3:00 pm
Gene Silencing in Cardiac Myocytes
Clarissa Damasco, Biology (U)

385 Poster #20 1:00–3:00 pm
Statistical Analysis of a Novel Method to Measure Mammalian Neonatal Cardiocyte Contractility
Esteban Vazquez-Hidalgo, Biology (U)

386 Poster #21 1:00–3:00 pm
Gene Expression Dependence of the Calcium Transient Signal Accompanying Neonatal Cardiocyte Contraction
Samantha Anderson, Biology (U)

387 Poster #22 1:00–3:00 pm
Contractility Assessment in Neonatal Cardiocytes
Delnita Moore, Biology and Africana Studies (U)

388 Poster #23 1:00–3:00 pm
Pim-1 Engineered Bone Marrow Cells Improve Cardiac Function after Delivery into the Infarcted Myocardium.
Pearl Quijada, Cell and Molecular Biology (D)

Session C-4
Poster: Engineering III
Friday, March 4, 2011, 1:00 – 3:00 pm
Location: Montezuma Hall

389 Poster #24 1:00–3:00 pm
Simulation of Fluid Flow in a Small Particle Solar Receiver
Adam Crocker, Mechanical Engineering (M)

390 Poster #25 1:00–3:00 pm
Numerical Modeling of a High Temperature Hydrocarbon Reactor
Mugdha Dokhale, Mechanical Engineering (M)

391 Poster #26 1:00–3:00 pm
An Age-Sensitive Binary Star Near the Turnoff of the Open Cluster M11
Ernest Bavarsad, Astronomy (M)

392 Poster #27 1:00–3:00 pm
Numerical Validation of Fire Spread and Burn Rates in NIST's Wildland-Urban Interface Fire Dynamics Simulator
Drew Castle, Mechanical Engineering (M)

393 Poster #28 1:00–3:00 pm
Quantifying the Effect of Santa Ana Winds on Wildland Urban-Interface Fires in San Diego County
Ethel Santos, Mechanical Engineering (U)

394 Poster #29 1:00–3:00 pm
Relation Between Marine Microbiomes and Pollution Levels
Rosa Lemus, Mathematics (U)

Session C-5
Poster: Health Studies
Friday, March 4, 2011, 1:00 – 3:00 pm
Location: Montezuma Hall

395 Poster #30 1:00–3:00 pm
Effectiveness of a Peer Educator-based Self-management Intervention among Latinos with Type 2 Diabetes: the Pivotal Role of "Dosage"
Johanna Euyoque, Psychology (M)

396 Poster #31 1:00–3:00 pm
Action, Interrupted: Sensitivity to Event Structure Extends to Novel Complex Events
Iris Broce, Psychology (U)

397 Poster #32 1:00–3:00 pm
Associations between Impulsivity and Alcohol Ratings
Ariana Stickel, Psychology (U)

398 Poster #33 1:00–3:00 pm
HIV-Associated Deficits in Visuospatial Temporal Order Memory
Calhuei Hoebel, Psychology (U)

399 Poster #34 1:00–3:00 pm
Negative Emotions and Health Behaviors among Mexican-American Women: Does Language Matter?
M. Alicia Nunez, Psychology (U)

400 Poster #35 1:00–3:00 pm
Socio-cultural Variables in Youth Access to Tobacco: Changes over the Past 10 Years.
Alejandra Morlett, Psychology (U)

401 Poster #36 1:00–3:00 pm
Parental Influence on Health Locus of Control Beliefs in Children
Anna-Michelle McSorley, Psychology (U)

402 Poster #37 1:00–3:00 pm
Medical Healthcare Use among Latinos Differing in Legal Status
Luz Garcini, Clinical Psychology (D)

403 Poster #38 1:00–3:00 pm
Environmental Influences on Cardiovascular Disease Risk: Objective versus Subjective Neighborhood Characteristics in Relation to Metabolic Syndrome Factors in Mexican-American Women
Smriti Shivpuri, Clinical Psychology (D)

Session C-6
Poster: Physical Chemistry
Friday, March 4, 2011, 1:00 – 3:00 pm
Location: Montezuma Hall

404 Poster #39 1:00–3:00 pm
The Mechanisms of Proton-Coupled Electron Transfer with the Addition of 1,4-Dimethylpiperazine-2,3-dione in the Non-Aqueous Electrochemistry of p-Phenylenediamines
Laurie Clare, Chemistry (M)

405 Poster #40 1:00–3:00 pm
Comparison of Proton-coupled Electron Transfer with Quinones in the Presence of Acids to Phenylenediames in the Presence of Bases
Christina Newell, Chemistry (U)

406 Poster #41 1:00–3:00 pm
The Effects of Amide Hydrogen Bonds on the Aprotic Electrochemistry of 2,3,5,6-Tetramethylphenylene-Diamine
Shawn Pavlovsky, Chemistry (U)

407 Poster #42 1:00–3:00 pm
Very Strong Redox-Dependent Hydrogen Bonding between a bis-Dimethylaminophenylurea and a Cyclic Diamide
Karina Kangas, Chemistry (U)

408 Poster #43 1:00–3:00 pm
Computational Study of Oxygen Atom Transfer Reactivity in Cis and Trans Dioxo-Mo(VI) Complexes
Amy Arita, Chemistry (U)

Session C-7
Poster: Stem Cells
Friday, March 4, 2011, 1:00 – 3:00 pm
Location: Montezuma Hall

409 Poster #44 1:00–3:00 pm
Differentiation of Adipose Progenitor Cells through Beta-Catenin Activation
Myrna Martinez, Microbiology (U)

410 Poster #45 1:00–3:00 pm
Characterization of SET Domain Proteins in Planarians
Jessica Torres, Cell and Molecular Biology (U)

411 Poster #46 1:00–3:00 pm
A Mouse Model to Track Cardiac Progenitor Cell Fate In-vivo
Roberto Alvarez Jr, Biology (D)

412 Poster #47 1:00–3:00 pm
The Impact of Coxsackieviral Infections on Cardiac Stem Cells and Heart Development
Jon Sin, Cell and Molecular Biology (D)

413 Poster #48 1:00–3:00 pm
Pim-1 Kinase Antagonizes Cardiac Stem Cell Senescence
Michael McGregor, Molecular Biology (M)

414 Poster #49 1:00–3:00 pm
Culture Methods Can Influence the Genetic Stability an Phenotypic Properties of Human Embryonic Stem Cells
Shannon Waltz, Biology (U)

415 Poster #50 1:00–3:00 pm
Reprogramming of Monocytes into Induced Pluripotent Stem Cells from Diverse Populations
Seema Patel, Biology (U)

416 Poster #51 1:00–3:00 pm
The Role of Protein Glycosylation Involved in Regulating Pluripotency in HPSCs
Kelley Fracchia, Biology (U)

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

Sessions: Saturday, March 6

Session D-1
Oral Presentation: Marine Ecology
Saturday, March 5, 2011, 8:00 am
Location: Backdoor

417 8:00 am
Developing a New Tool to Examine Physiological Stress in Cetaceans: Measuring Glucocorticoids in the Blubber of Arctic Bowhead Whales to Assess Population Health.
Jennifer Keliher-Venegas, Marine Biology (U)

418 8:15 am
Seagrass Nursery Habitat Function: Relative Effects of Habitat Structure and Prey Density on Mesopredator Foraging Efficiency
Alexandria Warneke, Biology (U)

419 8:30 am
Distribution of Algal Photosynthates as Seen Using Planar Optodes
Allison Gregg, Biology (U)

420 8:45 am
Copper Tolerance in Bacteria Associated with Macrocystis pyrifera
Julia Busch, Cell and Molecular Biology (M)

421 9:00 am
Spatial Patterns of Invertebrate Settlement in Giant Kelp Forests
Dana Morton, Biology (M)

Session D-2
Oral Presentation: Public Health II
Saturday, March 5, 2011, 8:00 am
Location: Calmecac

422 8:00 am
Using a Community Based Participatory Research (CBRP) Approach to Identify and Address Environmental Health Concerns in Indigenous Communities of Baja California Mexico
Paula Stigler, Global Health (D)

423 8:15 am
A Faith-based Program to Increase Physical Activity among Pre-adolescent Latinas and their Mothers and Improve the Mother-daughter Relationship
Nancy Espinoza, Public Health (D)

424 8:30 am
The Role of Psychosocial Resources and Risk Factors in the Association between Socioeconomic Status and Cardiometabolic Risk in Mexican-American Women
Addie Fortmann, Clinical Psychology (D)

425 8:45 am
Parent-mediated Behaviors are Associated with Children's Sugar-sweetened Beverage Consumption
Nanette Lee, Health Behavior (D)

Session D-3
Oral Presentation: Literacy, Bilingualism, Language Processing and Disorders
Saturday, March 5, 2011, 8:00 am
Location: Casa Real

426 8:00 am
Acoustic Properties of /l/ as Produced by English Monolingual, Spanish Monolingual, and Spanish-English Bilingual Children: A Retrospective Study
Paige Branson, Speech, Language, & Hearing Sciences (U)

427 8:15 am
Research Findings on Families of English Language Learners
Rosella Rivera, Teaching Credential (M)

428 8:30 am
Patterns of Lexical Activation and Decay During Sentence Processing
Michelle Ferrill, Language and Communicative Disorders (D)

429 8:45 am
Language and Affective Expression in Children with Perinatal Stroke
Philip Lai, Language and Communicative Disorders (D)

430 9:00 am
Influence of Speaker Intent on Speech Movement Variability
Dorothy Yang, Speech, Hearing, and Language Sciences (D)

431 9:15 am
Plausibility, Grammaticality and Pupillometry
Roberto Gutierrez, Language & Communicative Disorders (D)

Session D-4
Oral Presentation: Latino Identity and Community
Saturday, March 5, 2011, 8:00 am
Location: Chantico

432 8:00 am
Socialism, Muralism and Politicism: Art and Socio-Political Movements in Latin America with Emphasis on Mexico and Chile
Brian Mohler, ISCOR, Political Science and American Indian Studies (U)

433 8:15 am
Working-class Latin@ Drag Shows in Southern California: A Place for Healing
Alejandra Gonzalez, Chicana/o Studies (U)

434 8:30 am
Latino Parent Participation in Student Education and Critical Pedagogies that Acknowledge Culture in Teaching and Learning
Vanessa Lara, Chicana and Chicano Studies (U)

435 8:45 am
Microcredit in the Valley of Oaxaca: An Anthropological Study of Development and Women's Narratives at the Local Level
Jessica Bates, Anthropology (M)

Session D-5
Oral Presentation: Family Studies
Saturday, March 5, 2011, 8:00 am
Location: Council Chambers

436 8:00 am
Continuity of Care, Cortisol, and Stressed Out Children
Matt Jakstis, Psychology (U)

437 8:15 am
Preliminary Results and Challenges on the Implementation of an Evidence-based Group Intervention (Triple P- Positive Parenting Program) in a Head Start Community Setting
Nancy Calderon, Psychology & Spanish (U)

438 8:30 am
The Role of Goodness of Fit on the Social Emotional Development of Children in Centers that Practice Continuity of Care
Rachel Crain, Child and Family Development (U)

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

439 8:45 am
Relationship Between Quality of Childcare and Problem Behavior in Children
Katelyn Yarnold, Psychology (U)

440 9:00 am
Relationship between Family Violence and Substance Use in College Students
Julia Vasquez, Psychology (U)

Session D-6
Oral Presentation:
Communication Devices and Antennas
Saturday, March 5, 2011, 8:00 am
Location: Presidential Suite

441 8:00 am
Radio Frequency Identification (RFID) Reader Antenna for Ultra High Frequency (UHF) Worldwide Applications
Elias Mireles, Electrical Engineering (M)

442 8:15 am
Design of a Balun-free UWB Modified Archimedean Spiral Antenna
Balamurugan Shanmugam, Electrical and Computer Engineering (M)

443 8:30 am
Robust MPEG-4 AAC Encoded Audio Transmission over Wireless Channels
Deepak Rawat, Electrical Engineering (M)

444 8:45 am
Very Compact Multiband Antenna System for 4G LTE USB Devices with MIMO Implementation
Anup Kulkarni, Electrical and Computer Engineering (M)

445 9:00 am
A Wideband Aperture-Coupled Pentagon Shape Dielectric Resonator Antenna
Manveer Brar, Electrical and Computer Engineering (M)

446 9:15 am
Two Channel TI-ADC for Communication Signals
Xiaofei Chen, Electrical Engineering (D)

447 9:30 am
Investigations on a Novel Folded Ring Resonator Antenna with Multiband Characteristics
Nathan Labadie, Electrical Engineering (D)

Session D-7
Oral Presentation:
Body Movement, Health, and Fitness
Saturday, March 5, 2011, 8:00 am
Location: Quetzalcoatl A

448 8:00 am
The Complex Movement of Tahitian Dance: Part 1 Hip Motion and Associated Leg Muscle Involvement
Tracy Bach, Biology (U)

449 8:15 am
Effects of Foot Position during Squatting on the Quadriceps Femoris: An Electromyographic Study
Nicholas Murray, Kinesiology (M)

450 8:30 am
Influence of Infra-patellar and Supra-patellar Straps on Quadriceps EMG Activity and Onset Timing during the Body-weight Squat
Rachel Straub, Exercise Physiology and Nutrition (M)

451 8:45 am
A System for Observing Fitness Instruction Time in Group-Exercise Classes (SOFIT-X)
Megan Duesterhaus, Exercise Physiology and Nutritional Sciences (M)

452 9:00 am
Heavy Exercise Does Not Alter Specific Ventilation Heterogeneity In Trained Athletes
Vincent Tedjasaputra, Exercise Physiology (M)

453 9:15 am
Coefficient of Variation of Various Thermoregulatory Responses to Exercise in the Heat
Laura Palombo, Exercise Physiology (M)

454 9:30 am
Alteration of Gait Cycle Parameters in Overweight and Obese Teenagers
Yelizaveta Manuel, Bioengineering (M)

Session D-8
Oral Presentation: Terrestrial Ecology
Saturday, March 5, 2011, 8:00 am
Location: Quetzalcoatl B

455 8:00 am
Search for Ultrathin Undescribed Archaea
Harmony Saunders, Biology (U)

456 8:15 am
Embryological Correlates of Dormancy in the Fairy Shrimp Branchinecta lindahli
Joseph Ochaba, Biology (U)

457 8:30 am
The Rattlesnake Strike
Sean Tangco, Biology (U)

458 8:45 am
Phylogenetic Relationships, Species Limits, and Historical Biogeography of the Emoia cyanura Species Group (Squamata: Scincidae)
Elaine Klein, Evolutionary Biology (M)

459 9:00 am
Measuring the Behavioral Effects of Artificial Hibernation in a Captive Population of Endangered Southern Mountain Yellow-Legged Frog (Rana muscosa).
Frank Santana, Ecology (M)

460 9:15 am
Rodent Seed Preference in Coastal Sage Scrub Communities: New technologies, New Insights
Alissa Brown, Ecology (M)

Session D-9
Oral Presentation: Biology
Saturday, March 5, 2011, 10:00 am
Location: Backdoor

461 10:00 am
Sca-1 Knockout Impairs Myocardial and Cardiac Progenitor Cell Function
Brandi Bailey, Biology (D)

462 10:15 am
Shelterin Complex Influenced by Pim-1 Preserves Telomere Length in Cardiac Progenitor Cells
Travis Cottage, Biology (D)

463 10:30 am
Molecular Analysis of Recombinant Coxsackievirus Instability Over Time Suggests Chronic/Sporadic Viral Replication During Persistent Infection in the Heart
Scott Robinson, Biology (D)

464 10:45 am
Natural Selection for Attenuated Coxsackievirus B3 Variants in Persistently Infected Neural Progenitor and Stem Cell (NPSC) Cultures
Ross Rhoades, Biology (D)

465 11:00 am
Differential Neural Stem Cell Tropism and Host Gene Expression Identified for Two Contrasting Neurotropic RNA Viruses Following Infection of the Neonatal CNS
Jenna Tabor-Godwin, Cell and Molecular Biology (D)

466 11:15 am
A Planarian Ortholog of LIS1 is Required for Stem Cell Maintenance
Martis Cowles, Cell and Molecular Biology (D)

467 11:30 am
Computational Tools for the Analysis of Cardiocyte Functional Data
David Torres Barba, Computational Science (D)

Session D-10
Oral Presentation: Critical Studies of Community
Saturday, March 5, 2011, 10:00 am
Location: Calmecac

468 10:00 am
Communal Ties Among the Residentially Challenged
Samira Rostami, Communication (U)

469 10:15 am
The Manifold Voices of Public Art: Perspectives from the Chula Vista Community
Abril Ibarra, Art History (U)

470 10:30 am
No One Walks Alone: An Investigation of the Veteran and the Community in Rodgers and Hammerstein's Carousel
Kati Donovan, Musical Theatre (M)

471 10:45
Stakeholder Perceptions of Family and Community Involvement in Schools
Laura Kikuchi, Critical Literacy & Social Justice (M)

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

472 11:00 am
Leftover Borscht
Marisa Scheinfeld, Art (M)

473 11:15 am
Local Perspectives on Environmental Degradation and Community Infrastructure in Los Laureles Canyon, Tijuana, Mexico
Rebecca Grover, Geography (M)

474 11:30 am
Linking Neighborhoods to Health in Accra, Ghana: Comparing Perceptions of Health to Census and Women's Health Survey Data
Marta Jankowska, Geography (D)

Session D-11
Oral Presentation: Clinical and Social Psychology
Saturday, March 5, 2011, 10:00 am
Location: Casa Real

475 10:00 am
Cross-National Differences and Cultural Dimensions of Work and Personal Life Integration
Renee Payne, Psychology (U)

476 10:15 am
Borderline Racist: Ethnic Minority Reactions to Arizona's Immigration Law
Bradley Weisz, Psychology (U)

477 10:30 am
Systematic Stereotyping of Severe Mental Illness: Extending the Stereotype Content Model to Mental Illness Subgroups
Liz Meagor, Psychology (U)

478 10:45 am
Impact of 7.2 Easter Earthquake on Imperial Valley Undergraduates
Mariel Pina, Psychology (U)

479 11:00 am
Effect of Gender Violations on Prosocial Behavior among Mexican Americans
Jesus Quintero, Psychology (U)

480 11:15 am
Protective Effects of Digital Manipulation Warning Labels On Body Image
Anne Julian, Psychology (M)

Session D-12
Oral Presentation:
Information Graphics and Visualization
Saturday, March 5, 2011, 10:00 am
Location: Council Chambers

481 10:00 am
Infographics: Bringing Visual Clarity to Complex Information
Elizabeth Rossi, Graphic Design (M)

482 10:15 am
Information Graphics: Visually Interpreting Scientific Data
Jill Hollingsworth, Art Design (M)

483 10:30am
Materializing the Body through Performative Frames of Sexual Pathology and Assimilation: An Analysis of Direct-to-Consumer Pharmaceutical Ads on Erectile Dysfunction
Maria Visperas, Media Studies (M)

484 10:45 am
Subvertising
Wendy Shapiro, Graphic Design (M)

485 11:00 am
Measure Your Choices
Kizzy Ezirio, Graphic Design (M)

Session D-13
Oral Presentation: Engineering III
Saturday, March 5, 2011, 10:00 am
Location: Quetzalcoatl A

486 10:00 am
Ciprofloxacin Contamination of Natural Waters: Developing Pollution Limits to Minimize Environmental Reservoirs of New Antibiotic Resistance
Rory Klinger, Environmental Engineering (M)

487 10:15 am
Application of Lean Concepts to Office Related Activities in Construction
Ana Catarina Pestana, Civil Engineering (M)

488 10:30 am
The Application of Thermography in Determination of Sampling Points in GreenWaste Composting
Saeideh Abolghasemi Riseh, Environmental Engineering (M)

489 10:45 am
Advanced Models for Fluid-Structure Interaction Engineering Problems
Marco Petrolo, Aerospace Engineering (D)

490 11:00 am
Multi-variable Newton-Based Extremum Seeking
Azad Ghaffari, Electrical and Computer Engineering (D)

491 11:15 am
Non Linear Aeroelastic Analysis of Joined Wing Configurations
Rauno Cavallaro, Aerospace Engineering and Engineering Mechanics (D)

Session D-14
Oral Presentation: Geography and Conservation
Saturday, March 5, 2011, 10:00 am
Location: Presidential Suite

492 10:00 am
Analysis of Sea Turtle Nest Temperatures and Future Global Warming Effects on Two Coasts of Mexico
Allison Baxter, International Business and Environmental Science (U)

493 10:15 am
Environmental Perceptions and Social Attitudes Regarding the Multiple Species Conservation Program in San Diego County
Jaime Speed Rossiter, Geography (M)

494 10:30 am
Effects of Riparian Restoration and Associated Changing Flows on Summer Stream Temperatures
Cleo Neculae, Geography (M)

495 10:45 am
What Statistical Model Can Better Detect Land-change Drivers? A Comparative Study of Survival Analysis, Logistic Regression and Multivariate Linear Regression
Ninghua Wang, Geography (D)

496 11:00 am
Modeling Human-Environment Interactions and their Ecological Implications in the Chitwan Valley, Nepal
Alex Zvoleff, Geography (D)

497 11:15 am
Neighborhoods, Health, and Remote Sensing
Christopher Lippitt, Geography (D)

498 11:30 am
Socio Páramo, Land-use Change, and Local Livelihoods: An Analysis of Payment for Ecosystem Services (PES) as a Strategy to Jointly Reach Conservation and Development Goals in Highland Andean Grasslands
Leah Bremer, Geography (D)

Session D-15
Oral Presentation:
Policy, Protection, and Urban Landscape
Saturday, March 5, 2011, 10:00 am
Location: Quetzalcoatl B

499 10:00 am
Pamo Valley Sustainable Homes
Mark Corcoran, City Planning (M)

500 10:15 am
Scratching the Historical Record: Sampling Land Use in Barrio Logan
Jeannette Shindell, Art and Design (M)

501 10:30 am
Effective Color Schemes for 3D Animations of Urban Landscapes with a Spatial and Temporal Dimension
Jennifer Smith, Geography (M)

502 10:45 am
Exploring Policy and Perception in Complex Human-Environment Dynamics in Protected Areas: A Case Study from Guizhou, China
Sarah Wandersee, Geography (D)

503 11:00 am
When Urban Taps Run Dry: Drinking Water Patterns in Low Income Neighborhoods of Accra, Ghana
Justin Stoler, Geography (D)

511 11:15 am
Signature Separability of Native and Nonnative Herbaceous Vegetation in Coastal Sage Scrub Using Spectral Time Series and Broad and Narrowband Spectral Vegetation Indices
Caitlin Lippitt, Geography (D)

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

Session D-16
Oral Presentation: Philosophy II
Saturday, March 5, 2011, 10:00 am
Location: Chantico

504 10:00 am
The Endless Cartesian Circle
Renee Madison, Philosophy (U)

505 10:15 am
Killing Time: Newton's Absolutes
Joshua Stutz, Philosophy (U)

506 10:30 am
Encountering Speed Bumps on Descartes' Epistemological Road to a Metaphysical God
Ethan Howe, Philosophy (U)

507 10:45 am
The Theory Makes the World Go 'Round
Kevin Vasquez, Philosophy (U)

508 11:00 am
Questioning the Validity of Descartes' Cogito
Calvan Christ, Philosopy

509 See page 14

510 See page 21

511 See page 35

512 See page 27

513 See page 27

Poster presenters are assigned to stand by their poster during the entire 2-hour session. Each oral presentation is allotted 10 minutes followed by a 5-minute question and answer period.

Participants and guests are asked to enter or leave the rooms only between presentations.

Please turn off all cell phones and other devices.

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

Sessions: Friday, March 4

Session A-1
Poster: Psychology I
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

101 Poster #1 8:00 am–10:00 am

Stigma of Mental Illness: Evaluations of Competence in the Workplace

Corinne Burgamy, Psychology (U)
Melody Sadler, Psychology

In today's society, social disapproval of prejudice makes measuring stigma especially vulnerable to contextual concerns. Although studies on general public attitudes display a high acknowledgment and acceptance of severe mental illnesses (SMI), prejudice remains embedded in the social interactions of people with SMI, significantly limiting their opportunities for jobs and housing. Stigma is found to vary as a function of the type of SMI, as well as by individual differences in perceiver's internal (i.e., personal values) and external (i.e., political correctness concerns) motivation to control prejudice (MCP). The current study examined competence ratings of job-applicants in a 3 (SMI Information: Symptoms, Label) x 2 (Diagnosis: Schizophrenia (SZ), Depression (DP), Control) x 2 (MCP: Internal, External) design with MCP varying within-subjects and the remaining factors varying between-subjects. Participants were randomly assigned to read a job applicant profile with either symptoms or label information for an applicant with SZ, DP, or a control. We hypothesized that competence ratings of applicants with SMI would be lower than control, and that this effect would be greater when exposed to a label compared to symptoms. Further, we also hypothesized that as internal motivation to control prejudice increases, competence ratings of applicants with SMI will also increase. Results revealed a significant interaction between SMI information, diagnosis, and internal motivation to control prejudice toward people with SMI. Overall, participants stigmatized applicants with SZ more than DP (i.e., rated them as less competent). People with high internal motivation stigmatized applicants with SZ more than DP regardless of whether the information provided was based on symptoms or a label. In contrast, people with low internal exhibited this pattern only when the SMI information was conveyed through a label. They showed the opposite pattern when SMI information was provided via symptoms. For people who are low in internal motivation and thus more susceptible to external influences on their behavior toward the mentally ill, social tuning may play a role in how they choose to respond. Understanding the influence of motivation and PC on stigma has important ramifications for reducing stigma and improving the plight of those suffering with SMI.

102 Poster #2 8:00 am–10:00 am

Diagnosis Matters: Emotional Ratings of Job Applicants with Severe Mental Illness

Elizabeth MacKinnon, Sociology (U)
Melody Sadler, Psychology

It is well documented that the public views individuals with SMI as incompetent, violent and even homicidal, which can lead to denial of their basic rights. Perceiver's emotional evaluations is an important factor in the decision to interact with a person or not, especially in a workplace environment. We are interested in looking at positive and negative emotional evaluations of a job applicant, and how those evaluations may change as a function of the applicant having been diagnosed with schizophrenia (SZ) or major depressive disorder (DP). The current experiment was a 3(SMI: DP, SZ, Control) x 2 (Emotion: Positive, Negative) repeated measures ANOVA with the first two factors varying between participants and the last factor varying within participants. One hundred and thirty participants were randomly assigned to a condition in which they read about an applicant with DP, SZ, or no SMI. Participants were instructed to rate the applicants as if they were making the hiring decision. Applicant qualifications were held constant. When presented with a job applicant with SZ or DP, participants saw the applicant's SMI label and corresponding symptoms. For participants in the control condition, the job applicant did not portray a SMI label or symptoms. Participants completed a survey in which they evaluated the applicant, as well as their emotional responses to them. Results revealed that there was a significant difference between the control and SMI; people rated applicants with an SMI more negatively than applicants in the control group. Results also revealed that people rated applicants with SZ lower than applicants with DP. These findings suggest that positive and negative emotions towards job applicants with a SMI may vary according to the SMI disorder, but overall more negative emotions were felt toward applicants with a SMI. Further research that explores interventions tailored to specific SMI diagnoses is suggested.

103 Poster #3 8:00 am–10:00 am

Effects of Warmth and Dominance on Relationship Quality

Kelsey Novi, Psychology (U)
Allison Vaughn, Psychology

What are the effects of interpersonal warmth and dominance on relationship quality? Interpersonal theory (Wiggins, 1995) focuses on the communication and interactions between two people and these interactions can be defined in terms of warmth (affiliation) and dominance (control). Warmth and dominance can be examined at different levels including the trait level (general interaction style) and the state level (specific behavioral interactions). This

study had two primary goals when addressing the aforementioned research question: 1) to investigate the relative importance of trait versus state levels of interpersonal warmth and dominance and 2) to investigate the relative importance of a participant versus their roommate's levels of interpersonal warmth and dominance. Fifty new roommate pairs (n=100) completed trait measures of interpersonal warmth and dominance. They engaged in three conversations (neutral, positive, and negative), completing state measures of warmth and dominance after each conversation. Finally, they completed a measure of roommate relationship quality. Multilevel modeling was used to estimate the actor-partner interdependence model (Kenny et al., 2006). Roommate relationship satisfaction (including cohesion and conflict) was predicted by the actor and partner interpersonal variables of state warmth and dominance. Across three different conversations, actor effects of warmth (beta=.05) and dominance (beta=-.06) significantly predicted relationship satisfaction. The warmer and less dominant a person rated their roommate during a conversation, the more satisfied they were in that relationship. However, only partner effects of warmth (beta=.03) significantly predicted relationship satisfaction. That is, the warmer a person's roommate rated them during a conversation, the more satisfied the person was in that relationship. These state effects remained significant after controlling for trait levels of warmth and dominance, highlighting the importance of various levels of measurement. When studying relationship processes, the behavioral interchange (i.e., state level) provides more predictive ability than cross-situational (i.e., trait level) measures alone. Furthermore, the actor and partner effects emphasize the value of collecting data from both members of a dyad.

104 Poster #4 8:00 am–10:00 am

Seeking Peace: A Research-based Curriculum Project Utilizing Art and Educational Materials to Address the Influences of Individual, Community and Gender Factors on Teen Relationship Violence

Whitney Baumann, Child and Family Development (U)
Audrey Hokoda, Child and Family Development

The extensive research on Teen Relationship Violence (TRV) highlights the prevalence and seriousness of the problem, as well as the negative effects TRV has on both the victim and the perpetrator. The recorded prevalence statistics on TRV range from 10% to 75%, vary based upon the type of abuse, and the sample population. The acts that are considered to be TRV can include-but are not limited to- physical, psychological and/or sexual abuse. In order to effectively address a complex problem like TRV through intervention and prevention programs, the curriculum utilized must be research based. Additionally, it is equally as important for intervention/prevention curriculum to take into consideration the issues and influential factors specific to TRV and adolescence. "Seeking Peace" is a project that includes a combination of research based curriculum and personal accounts of hands-on experiences implementing TRV prevention activities. The curriculum presented in this project utilizes art to educate youth on TRV, and help promote healthy relationship beliefs in adolescent individuals. Educational materials like newsletters were also developed as a means to promote the understanding of the social, communal and gender influences on TRV.

105 Poster #5 8:00 am–10:00 am

San Diego Helping to Empower Authentic Relationships for Teens (HEART)

Libni Lopez, Psychology (U))
Audrey Hokoda, Child and Family Development

Dating violence is the "physical, psychological or sexual control or dominance over another person in a dating relationship" in youth (Wekerle & Wolfe, 1999, p. 453). One in five adolescent females has been physically or sexually abused within a dating relationship (Silverman, Raj, Mucci, & Hathaway, 2001). Dating violence is related to depression, suicidal attempts, drug/alcohol abuse, and criminal activity (National Center for Injury Prevention and Control, 2001). Further, dating violence in adolescence is a predictor for subsequent relationship violence in adulthood (Betz, 2007). This high prevalence and the serious effects associated with dating violence demonstrate the need for youth-serving agencies to effectively and sensitively respond to the particular needs of youth victims. A new program called Helping to Empower Authentic Relationships for Teens (HEART) is a comprehensive, evidence-informed program funded by the Department of Justice, Office on Violence Against Women (OVW). HEART was developed by the Union of Pan Asian Communities, the County of San Diego Office of Violence Prevention (OVP), and San Diego State University (SDSU) and primarily targets Asian/Pacific Islanders, African Americans, and Latino/a young men and women, ages 13–24 in City Heights. Youth serving agencies (e.g., Overcoming Gangs and Beyond), and faculty and students from 3 departments (Child and Family Development, Psychology, Counseling and School Psychology) help run the program that has 3 stages. In the first stage, SDSU student interns and Youth Agency mentors engage youth participants by offering culturally relevant and youth-focused programs related to dating violence. In the second stage, youth "Super Mentors" provide youth participants direct services such as mentoring, dating violence education, and peer support. In the final stage, youth mentors link youth victims to receive evidenced-based and trauma-focused psychotherapeutic services (Trauma Recovery Empowerment Model: TREM) provided by UPAC therapists and SDSU MFT graduate students. Following the 3 year program, we expect that the super mentors and SDSU students will have increased self-efficacy for leadership and public speaking skills and increased knowledge of teen relationship violence, community resources, and treatment strategies. Youth attending TREM sessions are expected to show a decrease in trauma and depressive symptoms .

106 Poster #6 8:00 am–10:00 am

Interpersonal Variables and Depression in New Roommates

Jennifer Posis, Psychology (U)
Allison Vaughn Psychology

Depression in college students is one of the big predictors of whether or not a college student stays in school or drops out. The mental health of a college student clearly impacts their mood and adjustment to college life. And in an interaction with a roommate, the combination of interpersonal styles plays a part in mapping onto depression. We examined the relationship between interpersonal complementarity (in terms of warmth and dominance) and depression in new roommate dyads. Specifically in this study, we wanted to examine whether roommate dyads interpersonal warmth or dominance at the trait and state levels would predict depression. Fifty new roommate pairs (n=100) completed trait measures of interpersonal warmth and dominance. They engaged in conversations and completed state measures of warmth and dominance after each conversation. Finally, they completed the Beck Depression Inventory. Data were analyzed using hierarchical linear modeling to control for non-independence in roommates' responses. At the trait level, interpersonal dominance and interpersonal complementary in terms of dominance significantly predicted depression. The less dominant a person rated their roommate and the less they complement each other, the higher their own depression. However, the state level, interpersonal warmth significantly predicted depression. The less warm a person rated their roommate during a conversation, the higher their own depression. Depression did not differ as a function of gender, ethnicity, or length of the relationship. The results suggest that the participants who are interpersonally dominant may influence their roommate at the broader (trait) level, whereas roommates who are warm may influence their roommate at the state level. These findings highlight the importance of looking at interpersonal variables at both trait and state levels.

107 Poster #7 8:00 am–10:00 am

Effects of Professor Bullying on College Students

Sarah Dowling, Psychology (U)
Richard Graf, Psychology

This study hypothesized that students who have witnessed a professor bully students in college will be more likely to bully other students than those who have not witnessed a professor bully. Also, students who have a close relationship with a bullying professor will be more likely to bully than those without a close relationship. Lastly, it was hypothesized that men in college will be more susceptible to modeling professor bullying than will women in college. One hundred and eleven San Diego State University students voluntarily answered a questionnaire that inquired about witnessing bullying in college and self-reported bullying behaviors. A three-factor between subjects analysis of variance revealed that students who had witnessed a professor bully reported more bullying behavior than those who had not witnessed a professor bully. This is consistent with modeling theory and research by Bandura as cited by Tedeschi and Felson (1994). The current study demonstrated that bullying does occur in college and that professors can have a negative impact on their students. It is important to note that a professor's bullying behavior towards a student not only affects that student, but other students who are witnessing the bullying behavior. The effect of closeness to professor on modeling bullying behavior is best investigated at a smaller institution that likely has smaller class sizes and thus more intimate relationships between professors and students.

Session A-2
Poster: Inorganic Chemistry
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

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108 Poster #8 8:00 am–10:00 am

Toward High-Nuclearity Gallium Nitride Molecules: Solid State Synthesis and DFT Calculations

Jason Jones, Physics (U)
Miriam Bennett, Chemistry

Bimetallic molecules containing gallium and tin bound to nitride have been synthesized in our laboratory and DFT calculations have been conducted to study their molecular properties. These clusters contain weak tin-nitrogen bonds which would allow for condensation reactions to occur resulting in exchange of tin for other metals. We hypothesized that condensation of these clusters could occur at low temperatures in the solid state leading to formation of unprecedented high nuclearity gallium nitride molecules. Our initial results, which will be presented here, indicate that the gallium tin nitride clusters are indeed reactive toward condensation at low temperatures.

109 Poster #9 8:00 am–10:00 am

New Building Blocks for the Preparation of Functional Metal Organic Frameworks

Daryl Hawkes, Chemistry (U)
Laurance Beauvais, Chemistry

By devising methods to prepare metal organic frameworks (MOFs) with coordinately unsaturated metal centers, better catalysts and better gas sorption agents can be prepared. Our

ABSTRACTS

strategy for MOF synthesis uses organic building blocks with two distinct metal sites. The first metal site defines the framework of the porous solid and the second metal site houses the reactive metal site that defines the solids functionality. Our group has successively synthesized MOFs using tetra (4-carboxyphenyl) porphryin (TCPP) as a building block, but the solids have limited porosity due to the tendency of TCPP to form aggregates. To overcome this problem, we are preparing two new building blocks. The trigonal planar molecule, 5,10,15-tris(4-carboxymethylphenyl)corrole should afford three-dimensional structures. Alternatively, perbrominating the pyrrole positions of TCPP gives a ruffled porphyrin which should not form aggregates due to its inability to form pi-stacking interactions, and, thus, afford more open frameworks. The synthesis of these building blocks will be presented, and the initial attempts at MOF synthesis will be discussed.

110 Poster #10 8:00 am–10:00 am

Can CdSe Magic-size Nanoparticles be Doped with Manganese?

Stephen Madden, Biochemistry (U)
Greg Kalyuzhny, Chemistry and Biochemistry

Reducing a material down to the nano-scale changes the material's properties, which has initiated extensive research on nanoparticles (NPs) and has led to many unique optical, electrical, chemical and mechanical traits. Small semiconductor NPs ($d < 2$ nm), also called magic-size nanoparticles (MSNPs), were first described in 1993 but have become the subject of intense research (with particular focus on CdSe) over the last five years. Doping of NPs is the process of introducing an impurity, usually a transition metal, to the core structure of the pure NP. Doping of CdSe MSNPs with Mn has not been reported, while doping of larger particles was previously demonstrated at high temperatures. Here we present the optical spectra and electron microscopy images of CdSe MSNPs, which were presumably doped with Mn (II) ions. The doping was attempted at low temperatures (T<120C) with additions of 5-20 fold molar excess of manganese nonanoate to cadmium precursor during the conventional synthesis of CdSe MSNPs. A new sharp absorbance peak emerges at 430 nm indicates that we have, in fact, doped CdSe at low temperatures. Elemental analysis studies are in progress to confirm the presence of manganese in our final product. We believe we have successfully doped CdSe MSNPs with Mn, which has never been done before, and the low temperatures of our method allow for a more energy efficient synthesis. Currently, we are conducting elemental analysis to break down the MSNPs and ensure that Mn is present in our product. If we do discover Mn in our product we will know that Mn has attached to the core structure of the NPs changing its optical effects.

111 Poster #11 8:00 am–10:00 am

Synthesis and Characterization of Gallium-Tin and Indium-Tin Nitride Containing Molecules

Michelle Beoris, Biochemistry (U)
Miriam Bennett, Chemistry and Biochemistry

We have determined that self-assembly reactions of gallium and indium halide salts with tris-(trialkyltin)amine are a facile synthetic route to unprecedented bimetallic gallium-tin nitride and indium-tin nitride clusters. Several new high-nuclearity molecules have been isolated utilizing this method. These compounds have been structurally characterized revealing unusual binding modalities. Additionally, the compounds have been spectroscopically characterized. We postulate that using alternative gallium and indium halide salts with tris-(trialkyltin)amine will produce other gallium-tin nitride and indium-tin nitride clusters that may be of interest as precursors to nanomaterials.

112 Poster #12 8:00 am–10:00 am

Towards the Syntheses of New Divalent Cobalt and Copper Nitride Molecules

Michael Nguyen, Chemistry (U)
Miriam Bennett, Chemistry

The focus of my research is the synthesis of unprecedented high-nuclearity cobalt and copper nitride molecules. These molecules are of interest for their bonding and structural properties as well as their magnetic properties. The targeted nitrides are potential precursors to novel bulk magnetic materials and nano-scale magnetic materials for technologically significant applications. Polynuclear molecules containing divalent transition-metal nitrides are rare and there are no examples containing divalent cobalt or copper. Our hypothesis was that these molecules could be accessible through the chemical reactions of (Me3Sn)3N with cobalt(II) and copper(II) halides. Our initial results indicate that that this chemistry should indeed serve as a viable route to the formation of the corresponding nitride molecules.

Session A-3
Poster: Biology/Disease
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

113 Poster #13 8:00 am–10:00 am

A Cell-based Platform for the Discovery of Flaviviridae Protease Inhibitors.

Wesley Burford, Cell and Molecular Biology (M)
Roland Wolkowicz, Biology

Some of the most common human viral diseases are caused by members of the Flaviviridae family, which include Hepatitis C (HCV) and Dengue (DenV). As flaviviruses, both are positive strand RNA genomes translated into a single polyprotein, which is subsequently cleaved by both host and viral proteases (PRs) into structural and non-structural proteins, necessary for viral replication. The inhibition of polyprotein processing will halt viral replication making the viral PR a prime target for drug development. We are thus developing a cell-based assay that will greatly facilitate the discovery of novel PR inhibitors against HCV and DenV. HCV, the major cause of liver cancer, relies on two major PRs; NS2-NS3 and NS3-NS4A. NS3, the main catalytically active PR, works in conjunction with its cofactors, with exact roles yet to be deciphered. DenV, the etiological agent of Dengue Fever, Dengue Hemorrhagic Fever, and Dengue Shock Syndrome, relies on its PR; NS3, known to cleave itself from NS2B, which will be subsequently required for its full activity. The assay relies on our recently published assay originally adapted to HIV-1 PR. In our assay, the viral PR is inserted between the Trans-activation domain (TAD) and the DNA binding domain (DBD) of the yeast Gal4 prototypic transcription factor. We will insert the NS3 sequence with the NS3/4A boundary for HCV, and the NS2B/NS3 sequence for DenV. The PR/Gal4 fusion protein will activate a reporter gene (the green fluorescent protein or luciferase) only when inhibited, rendering the reporter a sensor for PR activity. If PR is active, it will cleave itself from the Gal4 fusion, separating the DBD and TAD, thus loosing the ability of activating the reporter. If inhibited, the PR/Gal4 fusion protein will be intact, and thus able to activate the reporter. The assay will thus facilitate the discovery of PR inhibitors. Hepatocytes, a typical target for HCV, will be also used for DenV, as these are commonly used as a model for DenV infection. This will be the first of such assays developed in a relevant cellular context for the discovery of drugs against HCV and DenV.

114 Poster #14 8:00 am–10:00 am

Investigating Site-specific Recombination of Bacteriophage Lambda Using Biochemical and Mathematical Approaches

Steven Esquivel, Microbiology (U)
Anca Segall, Biology

Bacteriophage lambda is a large class of temperate phages that establishes lysogeny by inserting its genome into that of its host, *E. coli*, and becoming a prophage. When the DNA of lysogenic bacteria is damaged, essentially all prophages excise and return to the lytic cycle to produce new phage particles. Both integration into and excision from the chromosome of the host entail a site-specific recombination event, performed by a phage-encoded recombinase named Integrase. The recombination reaction proceeds through a pseudo-symmetric intermediate called a Holliday junction. The recombining DNA substrates (which we collectively refer to as A) undergo one round of catalytic events—DNA cleavage, strand exchange, and ligation—to generate the first Holliday junction isomer (B). This initial Holliday junction isomerizes to a different conformation, which we call C. Finally, the C Holliday junction isomer undergoes another round of catalytic events to generate the substrates, which we collectively refer to as E. The Holliday junction conformation appears to determine whether the reaction proceeds forward to products E or backwards to regenerate substrates A. Ultimately, we would like to understand how the Integrase protein accomplishes Holliday junction isomerization at the molecular level, and what features regulate this event. To address this goal, we are combining biochemical assays with mathematical modeling approaches to determine the equilibrium constants of each of the reaction steps. We monitor recombination by using radiolabeled substrates and measure the rates of the complete recombination reaction. We have isolated the Holliday junction intermediates, re-loaded them with proteins, and monitor the second round of catalytic events or the reverse of the first round of catalytic events. We have also used two isomers whose conformation is biased towards either the B or the C conformation. We assumed that the catalytic events that convert B to A and C to E are not affected by the biased conformation of the B or C Holliday junctions. Therefore, by comparing reaction rates of the B -> A and C -> E using the different Holliday junction substrates, we extracted the equilibrium constants and obtained a ratio of the C:B isomers for the different biased Holliday junctions. This project has been funded by NSF grant 0827278 Interdisciplinary Training in Biology and Mathematics and by NIH grant R01-GM52847.

115 Poster #15 8:00 am–10:00 am

The Rice OsSPX1 Protein Enhances Cold Stress Tolerance in Plants

Edgar Campos, Biology (U)
Wenqiong Joan Chen, Biology

Cold is an adverse abiotic stress affecting many economically important crops. Plants' survival strictly depends on their intrinsic molecular and cellular mechanisms regulating cold stress response. Regulation of cold signaling pathways involves components such as protein kinases, transcriptional factors, reactive oxygen species (ROS), and secondary messengers, eg. calcium and phosphate. OsSPX1, a rice protein containing a conserved SPX domain (SYG1/Pho81/XRP1 proteins in yeast), was recently shown to enhance cold stress resistance in transgenic Arabidopsis and tobacco plants. We aim to understand the molecular mechanisms of how OsSPX1 functions in enhanced cold stress tolerance. Here we focus on characterizing transgenic Arabidopsis plants that overexpress an TAP-tagged OsSPX1 protein, using a variety of molecular and biochemical approaches. We have obtained T3 transgenic homozygous plants which overexpress rice OsSPX1 in both wild type Arabidopsis and an atspx1 null mutant. OsSPX1 was fused to a Tandem Affinity Purification (TAP)-tag (3xFLAG-2xSTREP) for native protein complex purification and

protein-protein interaction studies. The DynaBeads® system from InvitrogenTM was used to identify proteins that interact with OsSPX1 *in vivo*. We have successfully captured OsSPX1 with the anti-Flag antibody, as confirmed by Western blot analysis. Potential OsSPX1-interacting proteins were also identified via liquid chromatograph coupled with mass spectrometry analysis (LC-MS/MS). We have further characterized these transgenic plants regarding their resistance to cold stressors, and found that transgenic plants overexpressing OsSPX1 exhibit a significant increased resistance to cold stress. We have applied a TAP-tagging system to identify proteins and protein complexes that interact with OsSPX1 *in vivo*. We will confirm TAP-Tagging results using strategies such as a yeast two-hybrid system and co-immunoprecipitation. Functional genomics and traditional mutagenesis will be employed to further investigate the nature of these interactions. We have successfully expressed recombinant OsSPX1 proteins in *E.coli* in order to generate antibodies for future studies.

116 Poster #16 8:00 am–10:00 am

Role of p53 Effector Proteins in E47 Mediated Growth Arrest of Pancreatic Cancer Cells

Chiara Leroy, Biology (U)
Chris Glembotski, Biology

According to the National Cancer Institute, pancreatic ductal adenocarcinoma (PDA) kills approximately 43,140 people per year, less than 5 years after they were diagnosed. In previous work, it was found that Id3 proteins are highly expressed in PDA. Id3 proteins belong to the Id protein family, which are Helix-Loop-Helix (HLH) transcription factors. The Id family of proteins typically acts as repressors because they form non-functional heterodimers with their target genes. The high expression of Id3 proteins in PDA prevents necessary basic-Helix-Loop-Helix (bHLH) transcription factors from binding to DNA to activate transcription. One bHLH of interest is bHLH E47. It was found that if bHLH E47 was overexpressed, theoretically tilting the E47/Id3 balance, it caused PDA cell growth arrest. A microarray assay was performed and one of the pathways shown most perturbed in PDA when bHLH E47 was overexpressed was the p53 signaling pathway. p53 has been shown to be critical in angiogenesis, growth arrest, DNA repair, and apoptosis. The perturbations in the p53 signaling pathway are interesting because research has indicated that p53 is mutated and therefore non-functional in PDA. Yet upon the overexpression of bHLH E47, many of p53's target genes have been properly activated. The object of this study was to determine if E47 was causing PDA cell growth arrest by activating p53 responsive genes. Investigations to examine the bHLH E47 as well as the role of p53 target genes in PDA were performed through immunohistochemistry and real-time PCR. Upon comparison of PDA with overexpressed E47 versus our PDA cell line model through immunohistochemistry, a higher signal of p53 was detected in both the cytoplasm and nucleus. PCR assays confirmed the activation of several p53 target genes, including p21, which is involved in the p53 cell cycle arrest pathway, and TP53INP1, which is involved in the p53 apoptotic pathway. The characterization and understanding of the mechanisms of which bHLH E47 causes pancreatic ductal adenocarcinoma growth arrest holds promise as a potential clinical therapy for a disease which currently has no cure.

117 Poster #17 8:00 am–10:00 am

Contribution of Pneumococcal NanA to the Activation of Brain Endothelium

Brandon Kim, Biology (D)
Kelly Doran, Biology

Meningitis is the main neurological complication of systemic infection with *Streptococcus pneumoniae* (pneumococcus). In order to invade the central nervous system SPN must penetrate human brain microvascular endothelial cells (hBMEC), the single cell layer that comprises the blood-brain barrier (BBB). We have shown recently that the pneumococcal surface-anchored neuraminidase, NanA, promotes immune activation and BBB invasion; however the host cell receptor and signaling mechanisms leading to chemokine induction are not known. Previous studies using bacterial NanA mutants have mapped IL-8 induction to the N-terminal lectin binding domain with limited contribution of the sialidase catatlytic activity. Here we further demonstrate that both recombinant NanA protein and a NanA protein that is deficient in enzymatic activity activate IL-8 transcription and protein sec retion from hBMEC. Our data also indicate that bacterial uptake and chemokine induction is significantly reduced in a Focal Adhesion Kinase (FAK) deficient cell line. This suggests a novel role for FAK and FAK signaling in host defense during pnuemococcal infection. As FAK is a non receptor protein tyrosine kinase involved in signaling downstream of integrins, continued studies seek to characterize the role of integrins and integrin signaling pathways modulated by NanA during the pathogenesis of pneumococcal meningitis.

118 Poster #18 8:00 am–10:00 am

Development of a Novel Treatment Strategy for the Control of Staphylococcus Aureus Infection

Courtney Nugent, Molecular Biology (M)
Kelly Doran, Biology

Staphylococcus aureus is a Gram-positive pathogen with disease pathology ranging from skin infections to more invasive sepsis disorders, pneumonia, abscesses and death. The incidence of S. aureus infection in the United States has dramatically increased in recent years, with severe invasive S. aureus infections

now comprising the majority of infections in hospital admissions. Invasive infections include bacteremia, soft tissue infection, osteomyelitis, epidural abscess and meningitis. With the emergence of methicillin-resistant strains of *S. aureus* (MRSA) there has been increased interest in the development of novel effective treatment strategies. The innate immune system serves as the first line of defense to the body's hostile takeover by microbes. Numerous cell populations including neutrophils, macrophages, dendritic cells and T cells are involved in innate immune function, releasing various mediators such as alarmins, cytokines and chemokines. Amongst those compounds capable of activating the cells comprising the innate immune system is the complement fragment C5a. The principal role of native C5a is to recruit inflammatory cells and lymphocytes to the site of tissue injury or infection, and then activate various effector responses. We have developed a unique innate immune activator known as EP67 that was originally derived from the C-terminal region of human C5a. EP67 induces the activation of macrophages and dendritic cells resulting in the synthesis and release of multiple cytokines important for the activation of innate immunity. Using a murine necrotic skin lesion model we have determined that administration of EP67 effectively limits *S. aureus* skin abscess formation and reduces the bacterial load at the site of infection. A reduction in efficacy of EP67 was observed when experiments were conducted in a CD88 -/- mouse line, indicating that this C5a receptor (CD88) is involved in EP67 induction of innate immunity. On-going experiments are in place to determine the effects of EP67 on *S. aureus* blood stream dissemination from the lesion site, and to measure neutrophil recruitment and cytokine/chemokine induction at the site of EP67 treatment. Results of this research indicate that methods specifically designed to activate host immunity could be an effective way of treating problematic *S. aureus* infections.

119 Poster #19 8:00 am–10:00 am

Retroviral Expression of Nuclear-Targeted Peptide Inhibitors of HIV-1 Integrase

Joe Torres, Biology (U)
Roland Wolkowicz, Biology

Human Immunodeficiency Virus (HIV) is the causative agent of Acquired Immunodeficiency Syndrome (AIDS), a condition in which the immune system is destroyed and places the host at risk of life-threatening opportunistic infections. HIV has contributed to the deaths of over 30 million people and it is estimated that there are currently over 33 million people living with it. There is currently no vaccine or cure for HIV and the treatments available inevitably fail, due to the high mutation rate of the virus. Currently, the most effective treatment for persistent HIV infection consists of Highly Active Antiretroviral Therapy (HAART), which uses inhibitors that target viral proteins. HIV integrase (IN) presents an attractive target for treatment because it plays a critical role in the viral life-cycle. IN is essential for inserting the genome into the DNA of the host cell and is required for the production of infectious virions. Unfortunately, there is only one FDA approved IN inhibitor available so far and resistant viruses to it have already been identified. This highlights the need for novel antivirals targeting IN to enhance the effectiveness of HAART. To address this, we adapted various peptide inhibitors of IN in order to better elucidate the function of IN in the viral life-cycle and demonstrate the potential of peptide libraries. We hypothesize that fusion of a nuclear localization sequence (NLS) to peptides that inhibit IN will further decrease IN activity and thus effectively result in a reduction in HIV infection efficiency. For this purpose, retroviral vectors were developed to enable the stable expression and localization of peptides in a T-cell line that represents a natural target for HIV infection. The vector expresses a red fluorescent protein (mCherry) downstream of an internal ribosome entry site (IRES), which allows sorting of peptide-expressing cells. To assess the inhibitory effect of the peptides on infection efficiency, VSV-G pseudotyped non-replicative HIV, harboring enhanced Green Fluorescent Protein (eGFP) is used to differentiate infection rates between cells expressing nuclear peptides, non-nuclear peptides, and cells that lack peptide expression. Infection efficiency will be quantified by measuring eGFP fluorescence (HIV infected cells) using flow cytometry.

120 Poster #20 8:00 am–10:00 am

Group B Streptococcus Exploits the Extracellular Matrix and Integrin Machinery for Efficient Penetration of the Blood-brain Barrier

Ellese Carmona, Microbiology (U)
Kelly Doran, Biology

Group B *Streptococcus* (GBS) is the leading cause of pneumonia, sepsis and meningitis in newborn infants and also increasingly recognized as agents of invasive infections in adults. In order to cause central nervous system infection, blood-borne GBS must interact with and breech the blood-brain barrier (BBB), comprised primarily of a single layer of brain microvascular endothelial cells (BMEC). While GBS adheres to and invades human BMEC, the specific GBS factors that contribute to this process are only beginning to be elucidated. Surface filamentous structures known as pili have been discovered recently in the Gram-positive streptococcal pathogens that cause invasive disease in humans, including GBS. We have shown that the GBS protein involved in pilus formation, encoded by pilA, facilitates bacterial interaction with the BBB, however the molecular mechanisms governing these interactions have not been characterized. Sequence analysis of GBS PilA revealed an Integrin I-like domain, which resembles the human A3 domain of von Willebran factor (VWA), a molecule shown to interact with the extracellular matrix component collagen. Here we demonstrate that wild-type GBS binds to collagen

while the isogenic GBS PilA-deficient mutant exhibited a significant reduction in collagen binding. We have purified recombinant PilA protein and observed that PilA binds directly to collagen I using an ELISA based assay. Our results also demonstrate that collagen stimulated GBS invasion into brain endothelium, while invasion by the PilA-deficient mutant strain was unaffected by the addition of collagen. These results suggest that collagen acts as a molecular bridge to promote interactions between bacterial pili and host factors, likely integrins, on the cell surface. In support of this hypothesis we have further demonstrated that activation of Focal Adhesion Kinase (FAK), a non-receptor protein tyrosine kinase involved in signaling downstream of integrins, is required for GBS internalization into brain endothelium. Our studies suggest that GBS PilA hijacks integrin signaling pathways for efficient penetration of BBB endothelium which contributes to the pathogenesis of meningitis. Supported by the NIH/NIGMS SDSU MARC Program 5T34GM008303 -21A1.

121 Poster #21 8:00 am–10:00 am

Expression and Purification of a Shc-binding Domain within the Suppressor of T-Cell Receptor Signaling (STS-1)

Allen Washington, Jr., Biology (U)
Tom Huxford, Chemistry and Biochemistry

T lymphocytes, or T-cells, are integral components of the adaptive immune system. Each T-cell expresses a unique receptor on its surface that recognizes foreign peptides presented on the surface of damaged cells. Engagement of the T-cell receptor (TCR) initiates signaling pathways that lead to activation of humoral immunity and lymphocyte expansion. Faulty regulation of these responses can, at their worst, be manifest as debilitating cancers including lymphoma and leukemia. The Suppressor of TCR Signaling (STS) is a newly characterized family of proteins shown to be important in TCR-dependent immune responses. STS-1 is specifically known to function by negatively regulating the signaling pathway. Previous studies have shown that STS-1 is capable of functioning as a phosphatase through its use of carboxy terminal region, currently known as the Phosphoglycerate Mutase domain. This particular domain has been studied biochemically and structurally and has been proposed to have high affinity for ubiquinated and phosphorylated proteins. In contrast, the structure and function of the STS-1 amino-terminal region have yet to be investigated fully. In order to characterize the observed binding interaction between STS-1 and phospho-Shc, we have prepared full length recombinant STS-1. STS-1 protease reactions were performed in order to isolate two stable fragments of the protein. These two were then tested for phospho-Shc binding by monitoring their affinity for peptides *in vitro*. This experiment revealed that only one of the two STS-1 proteolytic fragments bound to the peptide. The amino-terminal sequence of the fragment was determined and the binding fragment was identified as amino acids 35-319, which correspond to the STS-1 amino-terminal region. This portion of STS-1 was then successfully expressed on its own and further Shc binding assays confirmed the binding potential of this region. Efforts are currently under way to crystallize and determine the x-ray crystal structure of the STS-1(35-319) fragment alone and in complex with its Shc binding partner.

122 Poster #22 8:00 am-10:30 am

Exploiting Reproductive Phenotypes of Chlamydomonas reinhardtii for use in an Algal Biofuel Harvesting System

Samuel Ollar, Biology (U)
John Love, Chemistry

The depletion of fossil fuel reserves has been a topic of debate since M. King Hubbert published his peak oil theory in 1956. More recently, increased green house gases released into the atmosphere such as carbon dioxide and various oxides of nitrogen from burning fossil fuels have been associated with global warming. This presents a need for alternative fuel sources. Replacing fossil fuels with renewable carbon neutral sources such as algae, solar and turbine technology can reduce the global carbon footprint while paving the way toward a cleaner energy future. Micro algae are promising candidates for replacing petroleum based liquid fuels in current combustion technology. This is due to their potential for producing high yields of useable energy without depleting land that would otherwise be used for food. Presently, the most cost prohibitive steps of fuel production from algae are found in the processing. By engineering specific properties into a transgenic algal species, this project aims at eliminating the need for costly harvesting processes. We propose using *Chlamydomonas reinhardtii* as a model for future applications because it naturally expresses sex-determined phenotypes during sexual reproduction that may be used to reduce the cost of harvesting. Another benefit is its ability to reproduce both sexually and asexually providing the opportunity to grow monocultures of individual sex types. Under normal nutrient conditions *C. reinhardtii* reproduces asexually. When environmental conditions become nutrient poor, *C. reinhardtii* expresses agglutinins on the exterior surface of their flagella. Some cells express the + phenotype and others express the - phenotype. It has been previously determined that these agglutinins have a binding affinity for the opposite sex type agglutinin permitting cells of opposite sex type, + or -, to stick together, fuse, and form diploid zygote spores. In liquid media, this natural process causes them to flocculate. By using biochemistry and molecular cloning techniques, we propose creating transgenic strains of *C. reinhardtii* that constitutively express these agglutinins. Then monocultures of each sex type can me grown separately and mixed prior to harvesting. Ultimately, this project goal is expressing the agglutinins on other algal species that produce greater amounts of oil.

Session A-4
Poster: Engineering I
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

123 Poster #23 8:00 am–10:00 am

Real-Time Analysis of the Biomechanics and the Effectiveness of Fusionless Spinal Growth-Modulation Devices

Chaitanya Nandipati, Bioengineering (M)
Karen May-Newman, Mechanical Engineering

Adolescent idiopathic scoliosis (AIS) is a complex three-dimensional deformity of the spine where there is increased loading on the concave side. Fusionless spinal growth modulation strategies attempt to reverse the imbalance of forces while limiting curve progression and preserving spinal motion. The objective of this study was to design, test, and implement a sensor system for the measurement of real-time forces of a shape-memory alloy (SMA) staple, one of the fusionless strategies currently being investigated. A normal surgical procedure using SMA staples involves stretching the staple prongs and then implanting them in the body. As the temperature of the implanted staple and its surroundings increases, the staple will then deform back to its original un-stretched shape, causing a clamping effect. In order to measure the forces that the staple would apply to the spine during a normal surgical procedure, a single strain gauge (119.5) was instrumented onto a staple and allowed to cool in a freezer. After removal from the freezer, the strain gauge-instrumented staple was connected to a three-wire quarter bridge circuit and signal amplifier (Sensotec DV-10). Strain data was continuously recorded (DATAQ DI-148U) as the staple returned to room temperature. Next, the process was repeated with the staple prongs stretched using appropriate tools. Strain was measured continuously as the staple returned to its original shape. Measurements from the staple heating process showed a continuous increase in strain as the surface temperature of the staple increased. Conversion from strain to force using the measured cross-sectional area (3.86x10-6 m2) and known elastic modulus (280 GPa) of the staple resulted in a change in forces of 32.9±11.5 N over time. Preliminary tests of staple stretching showed a momentary increase in staple force (mean = 200 N), before the staple began to deform to its original shape. An extensive understanding of fusionless procedures will allow for the continued development of treatments for scoliosis. These initial results on forces generated on the staple during a normal surgical procedure and its eventual implantation will allow for their effects on spinal biomechanics to be better understood.

124 Poster #24 8:00 am–10:00 am

Is the Pulmonary Heart Valve a Suitable Replacement for the Aortic Heart Valve, as in Ross Procedure?

Soni Mikkilineni, Bioengineering (M)
Karen May-Newman, Mechanical Engineering

Some people are born with a heart defect that requires replacement of the aortic valve (AV) during their childhood. A surgery called the Ross Procedure has been developed in which the AV is replaced by his/her pulmonary valve (PV) to avoid the degenerative changes that occur in mechanical and biological valves. Despite the 80% positive outcome, the procedure is not always successful. The native AV and PV function under different pressure loadings. The pressure on the AV is nearly 80mmHg and on the PV is only 10mmHg. Thus, we hypothesized that the tissue strength of the PV may not be well matched to the AV pressure loading. The aim of this study was to compare the material behavior of the PV to AV tissue using biaxial stretch studies and continuum mechanics analysis. Four leaflets from four porcine pulmonary valves were mechanically stretched in a biaxial testing machine aligned in circumferential (C) and radial (R) directions. The data were analyzed in order to compare the PV to the AV, which has been tested previously in our lab. Each leaflet was stretched equibiaxially and a bilinear fit is used to identify the transition point from the stress-stretch response. Stretch (λ*), stress (T*), Pre-transitional stiffness (E_{pre}) and post transitional stiffness (E_{post}) were tabulated as shown. The anisotropy ratio, R, was calculated as the slope of a linear fit between the biaxial stress values.

Valve	λ*C	λ*R	$E_{pre}C$	$E_{post}C$ (x 10^5)	$E_{pre}R$	$E_{post}R$ (x 10^5)	T*C	T*R	R
Aortic	1.24 ± 0.10	1.24 ± 0.13	64.8 ± 24.4	1.1 ± 0.21	21.8 ± 6.1	0.31 ± 0.53	1803.2 ± 873	128.1 ± 70.3	25.2 ± 118.4
Pulmonary	1.27 ± 0.06	1.29 ± 0.07	240.9 ± 393.7	2.3 ± 0.80	212.9 ± 229.4	0.04 ± 0.03	1877 ± 1476	67.5 ± 29.7	34.2 ± 18.4

Our results show that the PV leaflets were slightly more extensible than the AV leaflets at the transitional point, but had similar stress values. Like most heart valves, PV demonstrated highly anisotropic properties with a tendency of toward more isotropic pre-transitional behavior but more anisotropy in the post-transitional range. Statistical comparison found circumferential post-transitional stiffness to be significantly higher in the PV compared to the AV ($p=0.018$). Our findings indicated that PV and AV are similar enough to validate the approach used in the Ross Procedure. These data are being further analyzed to develop a 3D mathematical description of PV material behavior known as a constitutive law.

ABSTRACTS

125 Poster #25 8:00 am–10:00 am

Thermal Energy Storage for Solar Power Plants

Brian Gehring, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

Energy storage is a critical component of the reliability and efficiency of the electric grid. Electric demand is difficult to predict, and on days when the demand is higher than expected, dirty 'peaker' power plants must be utilized to meet demand. When demand is lower than expected, plants decrease their utilization rate and run less efficiently. Storing energy on the grid helps relieve these problems as it allows energy forecasters to quickly respond to changes in demand. Energy storage is particularly important for solar energy production due to unpredictable energy input (and thus output) and low capacity factors. Thermal storage allows solar thermal power plants to produce power for longer periods of time throughout the day and early evening, making them produce energy more like traditional power plants. Thermal storage also gives the ability to time shift production of energy to times of peak demand, allowing the plant to sell the energy when prices are highest. A solar thermal power plant with storage can increase performance and reach higher levels of efficiency by load leveling production or time shifting production to times of high demand. For these reasons thermal energy storage is exceedingly important for the success and implementation of solar thermal concentrating power plants. My research focuses on developing thermal energy storage solutions for higher temperature cycles including the benefits of raising storage temperature in current plants and investigation of power cycles, working fluids, and cooling methods used by solar thermal plants. As part of the above research, the related turbomachinery for each cycle will be examined and selected for their suitability for use with solar thermal storage and will help develop criteria for experimental storage systems. The criteria developed will help determine if current storage technologies could be coupled with a higher temperature storage system and the benefits of raising the temperature of the system will be discussed and analyzed.

126 Poster #26 8:00 am–10:00 am

Reduction in Intercellular Adhesion Using an Inkjet-based Printing Solution

John Sam-Soon, Bioengineering (M)
Karen May-Newman, Mechanical Engineering

The use of stem cells in the development of new therapies has been hampered by the lack of high throughput screening tools to advance research efforts. Recently, Microstem (San Diego, CA) has patented a screening platform wherein different combinations of ECM proteins can be attached to a solid surface on a microscope slide. The plating process however has been subject to substantial cell-cell interaction which interferes with cell-matrix adhesion. Inspired by previous work on printing mammalian cells, we have adapted a conventional inkjet printer (HP Deskjet 1000) in order to uniformly deposit micro droplets of suspended cells directly onto the matrix spots thereby reducing cell to cell adhesion and improving reproducibility of the system. A slurry of 10 micron polystyrene beads representing cells in media solution and food colorant for contrast was placed in a cleaned cartridge (HP61 Black Ink). With the help of a graphical editing software (Adobe Photoshop CS3), a 300 μm circle 6 pixel in diameter, with resolution of 497 DPI (50 μm per pixel) was created and printed. A compound light microscope was then used in combination with an image capture software (ScopeTek MiniSee) to visually inspect and quantify the distribution of beads per spots (roughly 75 beads/Spot). The experimental result suggests that printing beads using this approach could potentially reduce cell-cell adhesion and cell loss by a significant factor. This method will be further optimized to deposit a uniform number of functional cells onto each ECM spot thus enabling a reliable screening tool for new stem cell therapies.

127 Poster #27 8:00 am–10:00 am

Electrical Characterization of 3-Dimensional DNA-Based Bionanoelectronics Platforms

Nasim Vahidi, Bioengineering-Bioinstrumentation (M)
Sam Kassegne, Mechanical Engineering

The electrical conductivity of DNA remains controversial, with various studies reporting, DNA has characteristic insulator properties while others report extreme conductivity (superconductive). This study investigates, experimentally, the electrical behavior and performance of a double-stranded Lambda DNA wire, on two and three dimensional electrodes, by suspending the DNA, thereby eliminating the effect of substrate that is thought to be the culprit of inconsistent results. The two dimensional DNA platform design developed in this study helped to obtain an optimized three dimensional platform. The 3-D chip architecture is fabricated with two layers: a negative photoresist (SU8), that is spin-coated on the surface of the silicon dioxide substrate and a gold layer that is sputter-coated on this photoresist layer. The DNA attachments on 3-D and 2-D electrodes were demonstrated based on the following methods: Oligo-DNA self assembly, electrostatic and, electrical field attractions. Electrical results based on I-V and R-V curves showed measurable and significant conductivity through the DNA wire that we believe could establish it as a semiconductor. A mathematical model based on I-V data as well as an electrical circuit model for lambda DNA are also developed in this study. An equivalent electrical circuit was created in PSpice where DNA is modeled as a voltage-controlled current source. This is important because having models of DNA molecules in the

form of equivalent electronic circuits would be useful in the design of nanoelectronic circuits and devices. The research presented here is characterized by a significant departure from previous studies and made unique from contributions by: (i) DNA assembly on three dimensional structures with lower resistance and higher conductivity compared to 2-D electrodes; (ii) 3-D DNA platform structures demonstrated better stability than 2-D structures; (iii) High aspect-ratio 3-D electrodes prevents the suspended DNA from substrate interaction, allowing more accurate resistance measurements; (iv) Design of narrow and tapered electrode tips helped to guide and attract DNA electrostatically between two gold posts; (v) Four-electrode designs have an advantage that almost no current flowed into the sense wires, thus the voltage drop was extremely low, allowing more precise measurements than traditional two-sensing probes.

128 Poster #28 8:00 am–10:00 am

Flow over a Rotating Cylinder

Ismael Reveles, Aerospace Engineering (U)
Nagy Nosseir, Aerospace Engineering and Engineering Mechanics

The present study investigates two-dimensional flow past a circular cylinder rotating with a constant angular velocity. The objectives of the study is to investigate the effects of rotation on the boundary layer separation and accordingly on the lift and drag forces on the cylinder. Dimensional analysis indicates that the important dimensionless numbers are the Reynolds number (Re) and the radial speed of the cylinder surface normalized by the free stream velocity (α). Flows with Re in the range 103–104 and a rotation parameter (α) in the range of 0–5 are investigated. The results are expected to shed the light on the trajectory of rotating blunt bodies (cylinders or spheres) as in the trajectory of a top-spin tennis ball or a curved pitch in baseball. Supported by the NIH/NIGMS SDSU MARC Program 5T34GM008303 -21A1

Session A-5
Poster: Bilingualism, Language Processing and Language Disorders
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

129 Poster #29 8:00 am–10:00 am

Simultaneous Gesture and Language Production in School-age Children with Perinatal Stroke

Angel Li, Speech Language Pathology (M)
Judy Reilly, Psychology

Gestural research in typically-developing children (TD) supports McNeill's hypothesis that language and gesture form an integrated system. Children with unilateral focal lesion due to a perinatal stroke (PS) provide an opportunity to test this hypothesis in the context of language delay. Studies of early language in PS infants and toddlers with right or left hemisphere injury (RHI, LHI) found site-specific differences in early lexical and gestural development: RHI for delays in gesture and a LHI for delays in language production. However, these site-specific differences resolve: spontaneous language is in the normal range by school age. Will gesture follow a similar developmental pattern? We investigated gesture and language production during a semi-structured biographical interview in ten six-year-old children with PS (5 RHI; 5 LHI) and ten age-matched TD peers. Language data were transcribed using CHAT from CHILDES. Eudico Linguistic Annotator (ELAN) software was used to code gestures and their temporal integration with speech. Two independent raters coded linguistic propositions (ellipsis; verb and its arguments), gesture types (iconic, deictic, beat, and metaphoric), gestural components (changes in hand-shape, orientation, and movement), and diversity (uniqueness). T-tests and one-way ANOVA were completed between groups (TD, RHI, LHI). Results within the PS group indicated no site-specific differences for overall gestures, gesture type, components, or diversity, thus we collapsed RHI and LHI groups. Differences between TD and PS groups were found: the TD group was more productive in overall gestures and used more diverse gestures than the PS group. The TD group produced significantly more iconic and beat gestures, whereas the PS group produced proportionally more deictic gestures. Additionally, the TD group produced more unique, multi-component gestures suggesting increased gestural complexity and a larger repertoire. Despite these group differences, the overall proportion of gesture to linguistic proposition were comparable between groups, suggesting parallel gestural and verbal production in both groups. Our results are consistent with McNeill's hypothesis: gestures and language are following similar developmental patterns in children with PS. These results also suggest the potential clinical value in incorporating gestural productivity, diversity, or complexity as outcome measures when working with children with communicative disorders.

130 Poster #30 8:00 am–10:00 am

Spoken Discourse in School Age Children with High Functioning Autism

Janie Lai, Speech, Language, & Hearing Sciences (M)
Judy Reilly, Psychology

With each passing year, the number of children diagnosed with high functioning autism (HFA) increases. While numerous studies have documented the types and severity of linguistic and social delays in toddlers and preschoolers with HFA, limited research has been done to determine how these linguistic and social profiles change over time. As the production of narratives requires

linguistic, social, and cognitive contributions, narratives are useful tools to gain a multi-faceted profile of children with HFA. To extend our understanding of spoken discourse in this population, the present study will examine narratives across two discourse contexts: a personal structured narrative elicitation task, and a semi-structured conversational task in which the participants are encouraged to produce spontaneous narratives. The goals of the study are: (1) to compare performance of HFA and typically developing (TD) school age children on personal narratives in a structured narrative elicitation task; (2) to determine whether school age children with HFA produce narratives in a semi-structured conversational task similarly to TD children; and (3) to compare the quality of structured elicited narratives to those in produced in conversation in both TD and HFA. Twelve school age children with HFA, ages 8;0 to 12;0, and 25 TD children with ages evenly distributed from 8;0 to 12;0 were administered the aforementioned narrative measures, as well as the Clinical Evaluation of Language Fundamentals – 4 (CELF-4). The transcripts were transcribed in the CHILDES format and coded by trained undergraduate and graduate students. The data were entered and analyzed in SPSS. Overall, in the structured task, the HFA group produced fewer instances of complex syntax and evaluative devices compared to the TD group. The HFA group included some narrative components, but needed more prompting from the experimenter to complete the narratives. In the conversational task, the HFA group produced fewer spontaneous personal narratives, which suggests that children with HFA may not understand the social purposes of narratives (e.g., relating to others, learning social norms). Cognitive processing (e.g., memory, attention, executive functioning), social processes (e.g., perspective taking, emotional processing), and clinical implications will be discussed with relation to the results.

131 Poster #31 8:00 am–10:00 am

Verbal Fluency in Monolinguals and Bilinguals across the Lifespan

Anna Creed, Speech, Language, & Hearing Sciences (M)
Henrike Blumenfeld, Speech, Language and Hearing Science

Fluency tasks are important in cognitive-linguistic assessment, requiring different word retrieval processes. Category tasks (e.g., naming animals) depend upon semantic mapping whereas letter tasks (e.g., naming words starting with “A”) depend upon executive functioning abilities because words can be retrieved from many semantic categories. Our study examines monolingual English and bilingual Spanish-English productions to determine fluency differences across populations and ages. We also compare the role of cognates (e.g., English “elephant”, Spanish “elefante”) for both monolingual and bilingual productions. We hypothesize that performance in both fluency tasks will change across the lifespan, and that bilinguals will produce more cognates than monolinguals. Participants included 30 young monolinguals, 32 young bilinguals, 26 older monolinguals, and 13 older bilinguals. Letter and semantic category tasks were administered, asking participants to produce as many words as possible in 60 seconds. Participants were asked to not repeat words or produce proper nouns, since these productions would not be counted. Letters used were E, P, M, A, L, and C. Categories used were animals, clothes, vegetables, fruits, and colors. Each participant was given three letters and three categories per language. Results demonstrated that younger adults produced more words in category compared to letter fluency tasks; however, there was no significant difference in performance in older adults. Young bilinguals produced more cognates than young monolinguals, especially in letter fluency tasks, perhaps using cognate status as a word retrieval strategy. Yet, older monolingual and bilingual adults produced a similar number of cognates, which could be attributed to older bilinguals relying less on cognates or older monolinguals producing them more frequently. Current analyses examine lexical diversity in productions, with more diversity expected in older adults. In future work, we will examine additional processing levels, studying syntactic (narrative fluency) production in addition to phonological/orthographic (letter fluency) and semantic (category fluency) tasks. We predict that monolinguals and bilinguals will produce similar syntactic structures; however, cross-linguistic transfer may affect bilingual results, especially in older adults. In conclusion, verbal fluency tasks may yield different performance patterns across monolinguals and bilinguals and across the lifespan, with implications for clinical practice due to their frequent use.

132 Poster #32 8:00 am–10:00 am

Non-linguistic Inhibition in Monolinguals and Bilinguals

Dorin Paily, Speech, Language, & Hearing Sciences (M)
Henrike Blumenfeld, Speech, Language and Hearing Science

During language processing, bilinguals activate their two languages simultaneously and must efficiently control their languages in a context-appropriate manner. The ability to “disengage” irrelevant information rapidly may be significant for bilinguals because an irrelevant language may become relevant when bilinguals switch languages (Blumenfeld & Marian, 2011). The purpose of this study is to investigate inhibition during a non-linguistic priming task in monolinguals and bilinguals. We hypothesize that bilinguals will release the inhibition of competing stimuli quicker than monolinguals. While looking at a screen containing four pictures in four quadrants (one target, one competitor, two filler pictures), participants were simultaneously presented with an auditory tone. Stimuli included 12 different tones that varied in terms of quality (sine wave, square wave), pitch (high, mid, low), and length (long [1000ms], short [400ms]). Each tone corresponded with a picture and participants were trained on these correspondences. Participants were instructed to select the picture that corresponded with the tone they heard. On competitor trials, two visual stimuli were present that were the same in terms of quality and

pitch, but differed in terms of length; to match the tone they heard to the picture, participants had to identify the correct length. After participants identified the picture, a priming probe was presented. The time elapsed between picture identification and appearance of the priming probe was either 200ms, 500ms, or 800ms. On priming probes, three quadrants contained black asterisks and one contained a gray asterisk. Participants were instructed to select the gray asterisk. The efficiency of their inhibition skills during the tone identification was measured by the reaction time required to identify the gray asterisk if it was in a location previously occupied by a competitor. Pilot findings suggested that bilinguals inhibited competitors at 200ms; however, no competitor inhibition was observed at 500ms and 800ms. Inhibition was not observed in monolinguals. The preliminary results suggest that bilinguals may inhibit competitors early on and more strongly than monolinguals. In conclusion, both non-linguistic and language-related inhibition are thought to provide information on the role of cognitive control in language comprehension, and on how inhibition may be influenced by bilingual experience.

133 Poster #33 8:00 am–10:00 am

"L" is for Language: Developmental Profiles and School Readiness in Diverse Preschool Children

Amy Pace, Speech, Hearing, and Language Sciences (D)
Sonja Pruitt, Speech, Language and Hearing Science

When 700 kindergarten teachers were asked what factor most restricted school readiness, the majority responded, "deficiency in language" (Rice & Wilcox, 2001). This language deficiency tends to be particularly pronounced in children from socioeconomically disadvantaged populations who are learning English for the first time upon school entry (Ginsborg, 2006; Kieffer, 2008). The purpose of our current research is to explore the language backgrounds of preschoolers who would be considered "at-risk" for such "language deficiencies" when entering kindergarten. Forty-six preschool students (Mean age = 47.98 months, SD = 6.09) across three classrooms at a San Diego elementary school are participating in our longitudinal research project. The children come from homes with varied language backgrounds (Percentage of English heard = 33.82%, SD = 25.47; Spanish = 59.12, SD = 31.23; Other = 11.58, SD = 27.74) and low levels of parental education (mothers' mean education levels = 11.14, SD = 3.7; fathers' = 10.78, SD = 3.17). At the beginning of the school year, the children as a group were performing within the typical range on two subtests of a standardized cognitive measure (subtest 1 = 11.84, SD = 2.88, subtest 2 = 13.24, SD = 3.04), an overall developmental measure (mean = 240.77, SD = 33.27), and a subtest measuring understanding of English grammar (mean = 8.24, SD = 2.11). However, tests of the children's English vocabulary (mean = 69.29, SD = 20.16) and syntax (imitation mean = 5.96, SD = 1.70; grammatic completion = 6.80, SD = 1.79) were below average. Longitudinal studies have suggested that children who are prepared in both language and literacy skills at school entry are likely to achieve academic success (Foster & Miller, 2007). Identifying the sources of potential language deficiencies is important for developing targeted language intervention strategies that will help students from disadvantaged populations succeed in and out of the classroom. This research represents the first step toward identifying the areas of language deficiency and developing a model to decrease such gaps in school readiness. We will present the developmental profiles of the children, and the model we are testing.

134 Poster #34 8:00 am–10:00 am

Does Absence of Auditory Input to Cerebral Nervous System Development Lead to Changes in the Structure of the Brain?

Isidore Niyongabo, Psychology (U)
Karen Emmorey, Speech, Language and Hearing Science

Previous neuroplasticity studies suggest that it is reasonable to hypothesize that a complete lack of auditory input to cerebral nervous system during development might lead to changes in physical structure and functional organization in human brain—especially within the auditory cortex. In the present study we investigated whether variation in auditory experience during development alters cortical thickness in the Heschl's gyrus, plantum temporale, and other brain regions in deaf adults. Cortical thickness analysis was performed on reconstructed cortical surfaces (Dale etal. 1999) from 25 structural MRIs of congenitally deaf subjects who grew up using American Sign Language (ASL) since birth and 23 MRIs of hearing controls with no knowledge of ASL. Participants in both groups were matched for gender and age, and all were right-handed. Cortical thickness was measured for three pre-specified regions of interest (ROI): Heschl's gyrus (HG), planum temporale (PT), and superior temporal gyrus. Whole brain surface analysis was also performed to investigate any other changes in the cortical thickness across cerebral cortex. The ROI results show no significant differences between deaf and hearing groups in the cortical thickness for HG, PT, and STG, which indicates that absence of auditory sensory inputs does not lead to thinner neuronal density within primary auditory cortex and its adjacent region (PT) in humans. The neuronal density in those areas is possibly maintained through cross-modality plasticity and function compensation from other brain regions. Whole brain analysis, however, found a significant increase in cortical thickness for deaf group in the left posterior middle temporal gyrus and lateral occipital gyrus in both hemispheres. The increased thickness in these regions may be due to sign language exposure and/or visual compensation for deafness.

Session A-6
Poster: Foods and Nutrition
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

135 Poster #35 8:00 am–10:00 am

Differential Relationship between BMI and Lifestyle Seen with Age

Kerin Dooley, Nutritional Sciences (M)
Mee Young Hong, Exercise and Nutritional Sciences

Many chronic diseases can be prevented or controlled through diet and lifestyle choices. The purpose of this study was to examine the differences in health behaviors and dietary intakes at different stages of life to observe where shifts in behavior take place. Health, lifestyle behaviors, and dietary intake were assessed via a questionnaire to 596 Southern Californians aged 11–90. Participants were divided into three groups based on age and stage of life: teenagers, college, and adults. Findings showed significant differences in intakes among the groups, with trends towards healthier food intake with age. Adults consumed less meat, more fish, less fast food, and had a decline in snacking. Adults and college aged were more likely to make food choices based on food labels ($P<0.01$) and follow United States Department of Agriculture (USDA) dietary guidelines ($P<0.05$). Conversely, the findings also showed a decline in exercise and an increase in body mass index (BMI) in adults, with the average BMI in the overweight category. Differences were found in whether they exercise or not ($p=.006$) as well as the strength of the exercise ($p<.000$). Correlations of exercise duration and BMI differed among the groups with a positive trend between increased exercise and a lower BMI in college aged and a negative trend in adults. No correlation was seen with teens. Reasons for weight control also differed among groups, where adults were more likely to exercise to improve health, while teens were more prone to exercise for improved physical appearance. In addition, teens were more likely to consider themselves thin or fit, whereas adults were more likely to consider themselves overweight. Other findings showed that adults and those in college were more likely than teens ($p<.000$) to take vitamins daily. In conclusion, this study found that although adults were more likely to make healthier dietary and lifestyle choices, exercise frequency and duration decreases with age and there is a shift in body image and an increase in BMI.

136 Poster #36 8:00 am–10:00 am

High Warm Up Intensity Does Increase Maximal Effort Cycling Performance

Mark Prophet, Kinesiology (U)
Fabio Comana, Exercise and Nutritional Sciences

Before any bout of exercise, it is recommended that a warm-up routine be performed in order to prevent injury to muscle and connective tissue. However, there is still controversy surrounding proper duration and intensity of warm-up exercise. Early research showed benefits of a low intensity warm-up, while recent research has shown the effectiveness of a high intensity warm-up. The purpose of this study was to determine effects of warm-up intensity on maximal endurance performance. We hypothesized that a 75% max warm-up would result in greater performance. Six subjects (5 men, 1 woman) of moderate fitness (VO2max was predicted using the Tanaka formula,) performed baseline cycling exercise at 20W as a general warm-up. Next, subjects rode a 6-minute formal warm-up at either 40% (low) or 75% (high) of their predicted VO2Max. Work was then decreased to 20W for 12 minutes to prepare for maximal effort. After the 12-minute interval, subjects rode at 85% of their VO2Max to volitional exhaustion. VO2 was measured using the ParvoMedics TrueOne 2400 (ParvoMedics, Sandy UT) and reported in 10-second averages for the first 90 seconds of maximal effort. Total time to fatigue was recorded. There was a significant increase in performance from Low to High intensity warm-ups. Time to fatigue was 180 ± 68.56 seconds for Low, and 410 ± 207.78 seconds for High. Total VO2 consumption during max effort was 35.79mL and 44.39mL, for low and high intensity warm-ups, respectively. No significant differences in heart rate were seen. These data support higher warm-up intensities for better performance during maximal effort. Higher warm-up intensity may increase priming of musculoskeletal systems to buffer lactic acid, including increases in core temperature and decreases in total peripheral resistance, both of which increase mitochondrial enzymatic rate and buffering of lactic acidosis by bicarbonate. Alternately, warm up intensity may increase VO2 kinetics, as an increase in VO2 consumption was seen after the high intensity warm-up, for identical work performed during maximal effort tests. Such a dramatic increase in performance through an acute intervention may have significant implications as to how athletes warm up before competition.

137 Poster #37 8:00 am–10:00 am

The Effect of Green Tea on Inflammation and Antioxidant Enzyme Activities in Atherogenic Diet-Fed Rodents

Patcharie Elkins, Nutritional Sciences (M)
Mee Young Hong, Exercise and Nutritional Sciences

Green tea has been vastly researched and has been linked to decreasing inflammation as well as containing antioxidants, which increases its capacity to improve cardiovascular health. This study proposed to examine if green tea polyphenol protects against the risk of cardiovascular disease by decreasing inflammation and enhancing antioxidant enzyme activities in atherogenic diet-fed rodents. Since inflammation and reactive oxygen species are key contributors in cardiovascular disease,

green tea is hypothesized to have an exceptional beneficial effect. Objective To determine the effects of green tea polyphenol on the risk of cardiovascular disease by investigating evidence of decreased inflammation and enhanced antioxidant enzyme activities in atherogenic diet-fed rodents.Methods Forty Sprague-Dawley rats participated in this study and were divided into four groups (n=10). They were stratified by weight into the control, green tea, control + DSS (Dextran Sodium Sulfate, inflammation inducer), and green tea + DSS groups, and were provided with an atherogenic diet. After completion of the treatment period, the rats were euthanized and blood samples were collected for C-reactive protein (CRP), superoxide dismutase (SOD), catalase (CAT) and blood lipid assessment. Results The epididymal fat was found to be statistically significantly lower for the green tea group compared with the control diet ($p=0.0091$). The total cholesterol and LDL cholesterol was statistically significantly lower for both for the green tea diet ($p=0.0006$ and $p<0.0001$, respectively). CRP inflammation marker was also statistically significantly lower in the green tea group ($p=0.023$). Antioxidant enzymes (SOD and CAT) were significantly higher in green tea groups compared to no green tea groups ($p=0.044$ and $p=0.001$, respectively).Conclusion.This study found that green tea decreases CRP, an important marker of inflammation, decreases cholesterol and triglycerides, and increases the activity of CAT and SOD. Since all of the measurements of these indicators supported the hypothesis, green tea has demonstrated to be beneficial in reducing the risk of cardiovascular disease. These data demonstrated that green tea may reduce the risk of cardiovascular disease by reducing inflammation, enhancing antioxidant enzyme activities, and improving blood lipids. Supported by SDSU UGP and SDSU NUTR 302L class.

138 Poster #38 8:00 am–10:00 am

Dark Chocolate Reduces the Colon Cancer Risk by Favorable Alteraion of Cell Kinetics

Mahshid Shelechi, Nutritional Sciences (M)
Mee Young Hong, Exercise and Nutritional Sciences

Colorectal cancer is one of the most commonly occurring cancers in the Western world. Because of the substantial morbidity and mortality associated with colon cancer, prevention is a desirable goal. There is increasing evidence that environmental factors, especially dietary factors, are involved in the etiology of colon cancer. Cocoa and chocolate products have among the highest concentrations of polyphenols and an increasing body of epidemiologic evidence supports that polyphenol-rich diets promote health and attenuate or delay the onset of various diseases, including colon cancer. Since colonic tumors arise from perturbations of the homeostasis among cell proliferation and apoptosis, we determined whether dark chocolate protects against colon cancer by favorable alteration of cell kinetics (cell proliferation and apoptosis). Forty eight male Spague Dawley rats were assigned to receive diets containing control (no chocolate), regular or bloomed dark chocolate (10% of diet) and injected with saline or azoxymethane (2 times at wk 3 and 4). Cell proliferation and apoptosis were determined using Ki-67 antibody and TUNEL assay, respectively. Carcinogen treatment increased proliferation index ($P=0.003$) and expanded proliferation zone ($P=0.007$). Dark chocolate diets, regardless regular or bloomed, lowered proliferation index ($P=0.001$) especially in lower 1/3 of colonic crypt ($P<0.001$) compared to control. Apoptosis was not significantly different among the diet groups. These results suggest that cell proliferation was one of the key responses to carcinogen as a function of diet. Dark chocolate reduces risk of colon cancer by inhibiting cell proliferation rather than alteration of apoptosis. This study adds new insight into the relationship between polyphenol-rich chocolate food and colon cancer prevention. This study was supported by CHNR08-810 and SDSU NUTR 302L class.

Session A-7
Poster: Workplace Issues
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

139 Poster #39 8:00 am–10:00 am

How Teenagers React when the Father Travels for Work

Heather Purcell, Psychology (U)
Shulamit Ritblatt, Child and Family Development

Teenagers benefit from having a constant father figure in their lives and having a close relationship with that father figure. This study addressed the difficulties that arise when the commuting father travels away from the family on a regular basis. Scarce research has directly examined how teenagers are affected when a father figure is gone for a significant amount of time and the dynamics between the commuter and their teenager. For the purposes of this study, commuting was defined as work-related travel that occurred at least ten times per year or being absent due to work for one full month per year. Participants voluntarily completed an online questionnaire based on their relationship to the commuter. 59 teenagers, aged 12 years and above, answered questions that inquired about their reactions to their father figure's arrival back into the household. 70 male commuters answered questions about their teenager's reactions to their departure and return from commuting. It was hypothesized that teenagers would react negatively when their father figure departed and returned from commuting. This prediction was supported by the results, which showed that teenagers experienced significantly more negative reactions to their father figure leaving and arriving from work-related travels, than those teenagers that

didn't have a father figure who travelled for work. This research provides insight into how commuting may affect teenagers in the household and suggests techniques for families to employ. Future research should address a younger population as age may affect the nature of the response.

140 Poster #40 8:00 am–10:00 am

Can Commuting Professional Women Have the Best of Both Worlds?

Lauren Cannon, Psychology (U)
Shulamit Ritblatt, Child and Family Development

In a male dominated business world a woman's efforts to become successful in her field may cease when confronted with the decision of starting a family. Previous research has shown that corporate definitions of success often require employees to sacrifice family or personal time to be a team player. This study addressed the overall life satisfaction of women with a full family life and whose professional employment involves commuting away from the home. For the purpose of this study a commuting woman is defined as the need to travel at least ten times per calendar year or is absent from the family system for at least a one-month period of time per year for the purposes of work. 57 commuting women filled out a questionnaire with the option of a follow up interview regarding their overall life satisfaction in terms of marriage communication, family leisure activities, stress level, and shared household responsibilities. It was predicted women who do not commute would show higher life satisfaction than women who do commute. The hypothesis was supported and the results denote the possible consequences of a woman longing to find high life satisfaction. This research is vital for women who seek to find fulfillment in both their professional and personal life. Future research of commuting women should investigate which careers indicate higher life satisfaction.

141 Poster #41 8:00 am–10:00 am

Buffering the Negative Effects of Perceived Discrimination on Quality of Life

Abdifatah Ali, Psychology (U)
Mark Ehrhart, Psychology

In organizational research, the negative consequences of workplace discrimination for individuals and organizations have been well documented. But, some limitations persist especially examining how perceived workplace discrimination can possibly damage an individuals' quality of life. Therefore, this study sought out to examine whether certain types of support (organizational, co-worker, leader-member exchange) can attenuate the negative effects of perceived discrimination on quality of life. We collected survey data from 297 employees of a tribal gaming casino in the southwestern U.S. Correlations and hierarchical regression analysis were used to analyze the data. Correlation results suggested there was a negative relationship between perceived discrimination on overall quality of life. Hierarchical regression analysis indicated support for the proposed interaction with organizational support, but not with co-worker support or leader-member exchange. Consistent with hypotheses, there was a negative relationship between perceived discrimination and quality of life when organizational support was low, and this relationship weakened (and actually became positive) as organizational support increased. A follow-up analysis was conducted with minority status as an additional moderator. There was a significant three-way interaction indicating that for employees who were minorities, the interaction looked similar to the two-way interaction results already described (weak negative relationship when organizational support was low and weak positive relationship when organizational support was high). However, for employees who were majority group members, there was a negative relationship between perceived discrimination and quality of life when organizational support was high and a positive relationship when organizational support was low. The overall findings suggest that when minority employees perceive discrimination at work, organizational support has the most potential as a buffer rather than the two other types of support (i.e., co-worker and leader-member exchange). In addition, not all of the interactions were in line with expectations; we discuss some of the surprising findings in terms of differences in expectations for discrimination between minority and majority group employees. Future research and practical applications will also be discussed.

142 Poster #42 8:00 am–10:00 am

Using Incremental Validity to Determine Personality's Influence on Intent to Quit

Ashlee Asgharzadeh, Psychology (U)
Lisa Kath, Psychology

Companies often aim to maintain a low turnover rate to avoid losing both time and money invested in the training process. A strategic technique for accomplishing this is to research what factors contribute to an employee's intent to quit. Past studies have shown that job satisfaction (Tett, 2003), affective organizational commitment (Tett, 2003), job-induced tension (Podsakoff, 2007), physical environment (Mylonas, 2007), and personality (Zimmerman, 2008) all individually have relationships with intent to quit. What the present study aims to look at more in depth is the effect of personality on intent to quit, over and above these other turnover predictors. This study hypothesizes that when accounting for common predictors of quitting, such as job satisfaction, affective organizational commitment, job-induced tension, and physical environment, core self-evaluations (a personality variable that measures one's general confidence and self-efficacy) predict significant additional variance in employees' intentions to quit. A second hypothesis, based on previous research, is that high core self-evaluations would relate

to a low intent to quit. A sample of 599 grocery store employees in New England completed a survey pertaining to safety and included the previously mentioned constructs. In the survey, all constructs were measured using established scales with good psychometric properties. The reliabilities (Cronbach's alpha) of all scales in the current study were above the recommended .70 value. A hierarchical multiple regression analysis affirmed the incremental validity of core self-evaluations as a predictor of intent to quit (Hypothesis 1). In addition, the analyses revealed that all constructs had a significant relationship with intent to quit with the exception of physical environment. This may be attributed to the lack of risk employees are exposed to within this particular grocery store chain. The second hypothesis was supported in that the higher core self-evaluations are, the lower their intent to quit. This conclusion is logical since employees who think less of themselves may feel that they lack control to gain success in their career. Therefore, if intent to quit is a significant concern at an organization, it may be beneficial for employers to measure core self-evaluations during the hiring process.

Session A-8
Poster: Analytical Chemistry
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

143 Poster #43 8:00 am–10:00 am

Concentration and Spectroelectrochemical Study to Test Quinone Reduction Mechanism

Patrick Staley, Chemistry (M)
Diane Smith, Chemistry

Quinones—which are important compounds in electroactive coatings and pharmaceutical research—are expected to undergo two equal, reversible, one electron reductions in aprotic solvents. However, cyclic voltammograms (CV's) for quinones almost always show that the current for the second reduction is not equal to the first—it is smaller. This study tests a hypothesis—advanced by Macías-Ruvalcaba and Evans in a 2010 paper—that some of the radical anion produced from the first reduction is trapped as a pi-dimer, which is reduced by one electron, rather than two, at the same potential as the second normal reduction. If true, this would mean that the quinones would show more ideal behavior at lower concentrations when the dimers are less likely to form, and would be less ideal at the higher concentrations when the dimer is more likely to form. It would also mean that sterically hindered quinones should show more ideal behavior at the same concentrations than unhindered quinones. By performing CV on a variety of concentrations of sterically hindered or unhindered quinones, we intend to make the pi dimer more or less kinetically favorable in order to test this hypothesis. The concentration of the pi dimer as measured by UV-Vis spectrophotometry should also be higher than that of the dianion in nearly every case. Our study will include simulated as well as experimental data in order to compare proposed mechanisms with observed ones and will use spectroelectrochemistry to confirm the existence and relative abundance of the pi dimer in solution.

144 Poster #44 8:00 am–10:00 am

Zirconium Cation Exchange Columns: Phosphoric and Phosphorous Acid Coatings

James Thai, Chemistry (U)
Christopher Harrison, Chemistry

Zirconium based High Pressure Liquid Chromatography (HPLC) columns have been a favorable choice compared to the traditional Silica based columns for the past twenty years. The chemical and thermal stability of the Zirconium based columns have allowed it to perform at a pH range of 1–14 and at high temperatures at which a traditional Silica based column would typically degrade. Throughout the past two decades, there have been an increasing amount of applications for zirconia based HPLC columns including ion exchange and reverse phase chromatography. A cation exchange system is the simplest ion exchange phase created on the Zirconium based columns. The strong Lewis acid character of Zirconium leads to a strong interaction with Lewis bases creating a nearly irreversible bond formation. Of the Lewis bases, Phosphates have been known to interact strongly with Zirconium creating a cation exchange system on the surface of the zirconia support. Phosphoric acid, specifically, has been studied as a biocompatible coating that provides coverage of the strong Lewis acid Zirconium sites making it an attractive cation exchange system. Our work has analyzed a relatively different phosphate group, phosphorous acid, noticing a significant difference in retention. Interestingly, we have found that there is a difference in selectivity and ion exchange capacity between the two different acids. We will present our findings and comparisons for both phosphoric and phosphorous acid columns with various analytes.

145 Poster #45 8:00 am–10:00 am

PMAL-B-100, an Effective Amphipathic Polymer for Controlling Protein Separations in Capillary Electrophoresis

Stephanie Archibald, Biochemistry (U)
Christopher Harrison, Chemistry

Capillary electrophoresis can be used to separate ionic species by their mass/charge ratio. When it comes to capillary electrophoresis, amphipathic compounds, compounds containing both polar and non-polar functional groups, have been used to improve protein separation. Surfactants (an amphipathic compound) can be single tailed or double tail and are used to alter and ultimately

improve these separations by interacting with the proteins. Single tailed surfactants form micelles that sit on the surface of the capillary. Likewise, double tailed surfactants form a bilayer to coats the surface. Both of which modify the capillary's electroosmotic flow (EOF) and prevent protein absorption to the capillary surface. This project focuses on the use of PMAL-B-100, an amphiphilic polymer, for both surface protection and improving protein separations. It has been found that PMAL, at low concentrations, is able to prevent protein adsorption to the surface and the capillary and able to modify the EOF. This has been proven with PMAL being present in the separation buffer and being used as a coating agent before separations. PMAL has shown that it is highly stable when coated to the surface of the capillary and can stay stable over 5 hours of continuous use. It has also shown that it can alter the EOF with the pH of the separation buffer, due to the zwitterionic nature of the compound.

146 Poster #46 8:00 am–10:00 am

NMR study of Precursor Evolution in the Synthesis of Magic-size II-VI Semiconductor Nanocrystals

Eleonora Rachtman, Chemistry (M)
Greg Kalyuzhny, Chemistry and Biochemistry

Semiconductor nanocrystals (NCs) of II-VI materials are popular due to their potential for a variety of optoelectronic applications and as fluorescent probes in biological imaging. While structure and optical properties of II-VI semiconductor NCs such as CdSe, CdS and CdTe have been thoroughly studied in the last two decades, there is still no detailed understanding of their formation mechanism. Ultrasmall semiconductor NCs with a diameter less than 2 nm, also called magic-size nanocrystals (MSNCs), were first synthesized in 1993 but have become the subject of intense research (with particular focus on CdSe) over the last five years. We used solution NMR for analysis of intermediates in the synthesis of CdSe and CdTe MSNCs carried out at moderate temperatures (≤ 100°C). Reactions of trioctylphosphine chalcogenides (TOPE; E = Se, Te) and cadmium nonanoate were monitored in hexane at 60°C by 31P and 13C NMR and optical spectroscopy. The complex of cadmium nonanoate with TOP was found to be a major intermediate and the surface ligand in the synthesis of magic-size CdSe and CdTe NCs. As reaction proceeds TOPSe in converted into TOPO and TOPO is in constant exchange between surface TOPO in TOPO in a solution . Another byproduct of the reaction was nonanoic anhydride.

147 Poster #47 8:00 am–10:00 am

Optimization of a Home-Built Laser-Induced Fluorescence Detector for Capillary Electrophoresis Separations

Greg Solis, Biochemistry (U)
Christopher Harrison, Chemistry

Laser-induced fluorescence detection coupled with capillary electrophoresis separations (CE-LIF) provides a very powerful analytical tool with high separation efficiencies, high-speed analysis, and extremely small sample requirements. Together they provide excellent separation and identification of a wide spectrum of analytes, including organic and inorganic anions, small particles as well as many biomolecules and macromolecules. In our work, a diode-pumped solid-state 532nm green laser is used as an excitation light source to provide high power and sensitivity, while limiting the cost of a home built CE-LIF instrument. The development of this instrument is multifaceted, requiring the fabrication of components ranging from a laser mount to computer control and data acquisition programs. Our work focuses on the development of these components and their optimization for CE-LIF separation and detection of fluorescently labeled biomolecules and red blood cells. Supported by the NIH/NIGMS SDSU MARC Program 5T34GM008303-21A1

148 Poster #48 8:00-10:00 am

Electroanalytical Studies of the Reduction of Metronidazole in the Presence of Thiols

Theresa Andres, Chemistry (M)
Diane Smith, Chemistry

Metronidazole (Mz) is readily available as a treatment for bacterial infections and anaerobic protozoa such as Giardia, however strains of Giardia have evolved a resistance to the drug. To make a more effective drug, it is important to understand the mechanism of action of Mz inside Giardia. It is believed that Mz is activated inside the Giardia by a reduction reaction and that it is these reduced products that lead to cell death. In order to identify the actions of the reduced Mz in Giardia, the reactivity of Mz in the presence of amino acids was analyzed using cyclic voltammetry (CV). CV studies were done in water and in dimethylsulfoxide; so far cysteine shows the greatest reactivity under both conditions. It is known that thiols undergo a substitution reaction with Mz, however, the direct reaction requires extreme conditions that would not be realistic in biological systems. It was hypothesized that the substitution reaction might be increased by the reduction of Mz to a radical anion in anaerobic bacteria so the substitution reaction was simultaneously studied in separate flasks, one with and one without a reducing agent. Results show the substitution products form slightly faster in the presence of a reducing agent yet the effects are not large enough to explain the antimicrobial activity. The CV's of Mz in the presence of thiols show no evidence of substitution products; however the reaction can be identified as a simple proton transfer to Mz's radical anion. Another hypothesis suggests that other reduced forms of Mz besides the radical anion may be the active agent. Voltammetry studies with nitrosobenzene, an analog of Mz, indicate a fast reaction with thiols that is not simply a proton transfer reaction.

Session A-9
Poster: Early Childhood Development
Friday, March 4, 2011, 8:00 am – 10:00 am
Location: Montezuma Hall

149 Poster #49 8:00-10:00 am

The Baby Genius Musical Curriculum: Using Observational Data to Measure School Readiness Skills in Preschoolers

Joanna Weston, Public Health (M))
Shulamit Ritblatt, Child and Family Development

This study aims to examine the effect of a 16-week musical curriculum on the kindergarten readiness skills of preschoolers. Twenty songs were created based on the 39 skills outlined in the Desired Response Developmental Profile (DRDP). Beginning in the Fall of 2009, these songs were taught to the children in two preschool classes at the SDSU Children's Center. Two other classrooms at the Children's Center were not given the song curriculum, and were used as a control group. The behaviors of all 4 classrooms of children were closely observed and assessed by researchers over the following academic year (ending in May of 2010).One aspect of the behavior assessment focuses on the children's displays of skill in natural settings. Our research question for this portion of the study is: Does music affect the performance and internalization of the readiness skills for the experimental group, compared with the control group? To answer this question, researchers examined qualitative observation data collected during the study period and coded for skill displays. This data was in the form of both video and written observations. It is hypothesized that children in the experimental group will, on average, perform the readiness skills with greater frequency and mastery than their counterparts in the control group. This data will be used as part of the larger study of the effect of the musical curriculum. Results are still being analyzed.

150 Poster #50 8:00-10:00 am

Parental Stress and Children's Attachments with their Caregivers

Kourtney Gonzalez, Child and Family Development (U)
Sascha Mitchell, Child and Family Development

The continuity of care study is examining the effects of continuity of care on children's development across all domains. Continuity of care can be defined as "the policy of assigning a primary infant care teacher to an infant at the time of enrollment in a child care program and continuing this relationship until the child is three (or five) years old or leaves the program" (Lally & Signer, 2003, p. 1). Within the context of this larger study, I will be examining the effects of parent stress levels on children's abilities to form secure attachments with their caregivers among four childcare centers in the San Diego area. A review of the literature has found little to no direct research done on parent stress levels and the link they have with children's attachments to their caregivers. Currently we have begun collecting data using the Parent Stress Index, a survey in which parents answer questions about their perceived levels of daily stress, as well as the Attachment Q-sort, an observational instrument using a total of 90 measures to asses children's attachment behaviors. My hypothesis is that children with parents who have a lower level of stress will consequently be more able to form a secure attachment with their caregiver as opposed to those children with parents who have higher stress levels.

151 Poster #51 8:00-10:00 am

Factors that Contribute to Successfully Match Caregivers and Children

Maria Zavala, Child and Family Development (U)
Sascha Mitchell, Child and Family Development

According to the Center for Law and Social Policy, children with secure attachment relationships with their caregivers are more likely to play, explore, and interact with adults in their child care setting. A continuity of care approach can enhance the development of secure attachments by keeping the child with the same caregiver for an extended period of time. This study is part of a larger research project determining the effects of continuity of care. The purpose of this sub-study is to examine whether the child and caregiver's temperament are matched properly to support continuity of care. It is hypothesized that temperament will affect the quality of attachment between caregiver and child. The researchers will use the Child Temperament Profiler as well as the Arnett Caregiver Interaction scale to determine comparability between child and caregiver's temperament. The Attachment Q-set will also be used to determine the children's attachment relationship with their caregivers. A total of 125 infants and toddlers, and their caregivers will participate in this study. The results of this study will contribute toward childcare facilities' approach to matching caregivers and children.

152 Poster #52 8:00-10:00 am

How Does the 'Goodness of Fit' between Children and their Caregivers Affect the Quality of their Interaction in Continuity of Care Settings?

Peyton Davis, Child and Family Development (U)
Sascha Mitchell, Child and Family Development

This study is a sub-study of a larger research project exploring the effects of continuity of care on children's long-term development. The purpose of this study is to examine the long-term effects of goodness of fit between children and their caregivers in a

continuity of care setting. Goodness of fit in this study is defined as, a positive relationship between a child and their primary caregiver through teaching styles, personality traits and temperament. Research states that in order for children to thrive in a continuity of care setting they need to have "goodness of fit" with their primary caregiver. A study conducted by De Schipper in the Netherlands examined primary caregivers, mothers and their children. In this study it was found that a child perceived as having a difficult personality, had more behavioral problems and less satisfaction in a childcare setting. In 2004 an additional publication by De Schipper discussed the stability in center day care. The results indicated, that stability in the child's life contributed to better adjustment to the childcare setting (J. Clasien de Schipper, 2004). Through observations of the interaction between the primary caregiver and child, as well as examining the child and adult temperaments, we will be determining the fit of the child and caregiver. We hypothesize that if a child has a good fit with their primary caregiver, they will flourish in a continuity of care setting. However, if a child is in a poor fit with their primary caregiver then it would not be beneficial for the child to continue with that caregiver. To assess goodness of fit, we will be using the ATQ Adult Temperament Scale and the Carey Temperament Scale. To assess quality of caregiver interaction we will be using the Arnett Caregiver Interaction Scale. This research will help us to understand if the benefits of continuity of care will out weigh the possibility of poorness of fit. This study may also able the primary caregivers to be matched with the children that best fit their temperaments.

153 Poster #53 8:00 am–10:00 am

Parent Perspectives on Childcare

Rachel Woodside, Child and Family Development (U)
Sascha Mitchell, Child and Family Development

In order for parents and caretakers to build a bridge between at home and at school, they need to know their child is in a positive and safe environment. The purpose of this study is to determine how satisfied parents are with their child's childcare setting. Today, many families rely on childcare in order to maintain careers as well as to provide for themselves. According to a study done by the U.S. Department of Education, 61 percent of children ages 0–6 who were not yet in kindergarten (about 12 million children), receive some form of childcare. Previous research has found that, when mothers reported more seeking and sharing of information about their children with their caregivers, they had more positive interactions with their children (Barfoot, 2002). This study is part of a larger study examining the immediate and long-term effects of continuity of care looking closely at the developmental outcomes of staying with the same caregiver for the first three years of the child's life. The researcher will use the Parent Perspectives on Childcare Quality Survey as well as interviews with the teachers to qualitatively collect data on the overall satisfaction of the childcare setting. This survey covers questions regarding the responsiveness to developmental needs, location, cost, and flexibility of care, caregivers' relationships with the child and parents, and responsiveness to the child's cultural background. Also, building on previous research, we will focus on variables such as marital status and employment. The results of this study will contribute to an effort for childcare settings to strengthen the relationships between parents and caregivers and to encourage feedback from parents about the care their child is receiving.

154 Poster #54 8:00 am–10:00 am

Parent Child Relationships and their Influence on Preschool Children's Behavior

Bobbi Cannon, Child and Family Development (U)
Shulamit Ritblatt, Child and Family Development

Positive family relationships can foster better behaviors in preschool age children. Research on child parent relationship training rendered support to the notion that the more involved parents are, the better their child's self-control, problem solving, and self-responsibility (Sheely &Bratton, 2010). In the research study at hand utilizing music as a tool to prepare preschoolers for kindergarten, two of the measures used were the Preschool Kindergarten Behavior Scales (PKBS) and the Parent Child Relationship Inventory (PCRI). Parents and teachers rated children on their behavior, and parents rated the parent child relationship. Using these measures, it was hypothesized that a better parent child relationship would predict a more positive score on the PKBS. It was also hypothesized that parents would be biased when rating their child's behavior compared to teacher ratings. Thus, parents would score their child's behaviors more positively than teachers would. Previous research found that parents, teachers, and school psychologists differ on ratings of children's behavior, which supports the hypothesis at hand (Stevens, 1980). Data on thirty-seven children will be analyzed for both the parent child relationship in correlation with child behavior, as well as the comparison of parent and teacher ratings on the child's behavior. The findings from the research at hand will provide important implications for not only parent child relationships but also the potential for rater bias.

155 Poster #55 8:00 am–10:00 am

Kindergarten Readiness Music Program: A Look at Parent Provided Data on Child Development and Family Involvement

Alison Vandehei, Psychology (U)
Shulamit Ritblatt, Child and Family Development

The current study, lead by Dr. Ritblatt, looks at the effects of using music-based curriculum to enhance kindergarten school readiness in pre-school children. Four classrooms in the San Diego State University Children's Center participated in the study; two control classrooms, which received no music, and two

treatment classrooms. Along with written and video observations, pre and post data were collected from parents and teachers. Data were collected from parents by the distribution of parent packets which included three measures: PKBS, PCRI and a Family Involvement Survey. The PKBS (Preschool and Kindergarten Behavior Scales) assessed the behavioral development of the children. The PCRI (Parent-Child Relationship Inventory) and the Family Involvement Survey combined assessed parents impressions of the children and their feeling on the act of parenting and involvement in their child's development. Packets were distributed to parents at the start of the study, January 2009, and again at the conclusion of the study, May 2010. It is hypothesized that data analysis from parent measures will show an increase in child development and family involvement overall, across the four classrooms. In addition, the treatment classrooms will show a greater increase in school readiness skills compared to the control classrooms.

156 Poster #56 8:00 am–10:00 am

Quality of Attachment on Social-Emotional Competence and Multiple Domains of a Child's Development

Shaghayegh Moin, Psychology (U)
Sascha Mitchell, Child and Family Development

This study is a part of a larger longitudinal research project examining the effects of continuity of care on children's long-term developmental outcomes. Continuity of care refers to a child being with the same caregiver over the first three years of childcare. The focus of this sub-study is to examine the effect of the quality of the attachment relationship between the caregiver and the child on the child's social-emotional competence and on multiple domains of the child's development. The domains of development we will be looking at include: cognitive, language, physical, social-emotional, and safe and healthy behavior. It is hypothesized that higher quality attachment relationships will be correlated with healthy child development in all of the domains being studied. Information will be collected in multiple phases on the quality of children's attachment relationship with caregivers (Attachment Q-sort), multiple domains of children's development (DOCS), and children's social emotional competence (Ages & Stages Questionnaire – Social Emotional). A total of 225 infants and toddlers, their parents, and professional caregivers will participate in this study (100 infants and toddlers, 25 providers and 100 parents). Infants and toddlers attending one of four San Diego childcare centers will be recruited with parents. This study will contribute to our understanding of the effects of attachment relationships on not only social-emotional competence but also on multiple domains of a child's development.

157 Poster #57 8:00 am–10:00 am

Continuity of Care vs. Non-Continuity of Care: Does it affect the Quality of Interaction between Caregiver and Child?

Raquel Alva, Psychology (U)
Sascha Mitchell, Child and Family Development

With the majority of young children in the daily care of adults other than their parents (U.S. Department of Education, 2010), high quality interaction between caregivers and children is a key component in development. It is widely accepted that high quality care enhances children's cognitive and social development. Previous research establishes that teacher-child relationships are particularly significant for the development of positive peer relations and children's social competence (Gerber, E., Whitebrook, M., & Weinstein, R., 2007) also, that children with high-involved caregivers displayed the highest levels of contact seeking, distance interaction, and exploratory behaviors in their caregivers presence (Anderson, C., Nagle, R., Roberts, W., & Smith, J. (1981). Emerging literature has proven that caregiver-child interactions are important in ways that we are just beginning to understand however, there is very little research on continuity of care versus non-continuity of care. This study is a part of a larger longitudinal research project examining the effects of continuity of care on children's long term developmental outcomes. Continuity of care refers to a child being cared for by the same caregiver over the first few years of life. The focus of this sub-study is to examine the association concerning quality of interaction between caregivers and children in continuity of care sites and non-continuity of care sites. It is hypothesized that children and caregivers in continuity of care sites will exhibit higher quality interaction than children and caregivers in non-continuity of care sites. Information will be collected by observers in multiple periods of caregiver's interaction with children using the Arnett Caregiver Interaction Scale (1989). The constructs evaluating quality of interaction include sensitivity, harshness, detachment, and permissiveness. Infant and toddlers attending one of four San Diego University childcare centers will be recruited along with their parents. Two of the four centers will be continuity of care site and the other two, non- continuity of care site. This study will contribute to our understanding of the effects of continuity of care on the quality of interaction between caregivers and children as well contribute to the understanding of children's long-term developmental outcomes.

158 Poster #58 8:00 am–10:00 am

The Quality of Caregiver-Child Interaction and its Effects on Aggressive Behavior

Kristine Bermudez, Child and Family Development (U)
Sascha Mitchell, Child and Family Development

This study is part of a larger longitudinal study investigating the effects of continuity of care practices versus non-continuity of care. Continuity of care is a childcare practice in which the child remains with the same caregiver for the first three to four years they are enrolled in infant-toddler childcare. This study will examine whether practicing continuity of care is more beneficial to a child's development than practicing non-continuity of care. Concurrently, this sub-study is being conducted to measure the quality of care being given at a child care center and the effects on a child's aggressive behavior. It is known that several different factors affect a child's development of aggressive behavior, including home environment, SES and parent-child attachment. But in a childcare setting, a child's adjustment during childcare also affects aggression and noncompliance (Belsky, 2001). During this longitudinal research, continuity of care and non-continuity of care will be individually assessed in whether each practice affects an infant's aggressive behavior differently. About 150 infants and their primary caregivers are participating in the present study. The Achenbach System of Empirically Based Assessment (ASEBA) and The Carey Temperament Scale (CTS) will both be used to identify and assess aggressive behavior exhibited by a child. Only specific content questions that assess aggressive behavior will be used from each measure. The Arnett Caregiver Interaction Scale will be used to measure the quality of interaction between caregiver and child. Assessing the quality of care will allow the researcher to correlate any changes in aggression to the quality of care the child receives. For this study we expect to find that higher quality interaction between caregiver and child decreases the amount of aggressive behavior within a child. Results from this study will expose how the quality of caregiver-child interaction affects a child's social developmental domain, specifically aggressive behavior. This will open a doorway to require higher standards for early childhood education to ensure optimal social development and none to minimal aggressive behavior of children cared for in early childhood education settings.

Session A-10
Oral Presentation: Social Psychology
Friday, March 4, 2011, 8:00 am
Location: Backdoor

159 8:00 am

The Relationship between Narcissism, Organic Labeling, Retailer Image, and Perceptions of Organic Foods

Jeffrey Saikali, Psychology (U)
Richard Graf, Psychology

Expanding upon prior research (Vazarie & Funder, 2006; Roberts & Robins, 2000) connecting narcissism with compulsive buying and an ostentatious display of personal resources, this study sought to find whether narcissistic individuals are prone to appraise organic foods as healthier than those foods grown conventionally. It also looked at whether organic in the name or label of a retail food item makes it more desirable, and the bearing of retailer image on perception of healthiness of products sold as organic. Data from a sample (N = 209) of undergraduate students showed no significant connection between narcissism and compulsivity to buy organic. Also, organic labeling did not substantively make a food (cheddar cheese or a granola bar) more appealing. Participants determined that organic products were not worth their extra expense compared to conventionally-produced foods. Grocery retailers with strong public images associated with healthiness were heavily linked to beliefs that products sold at their stores are healthier to consume.

160 8:15 am

Perceived Discrimination and Group Identification: Multicultural Identification and Mental Health

Robyn Goldberg, Psychology (U)
Thierry Devos, Psychology

Previous research documents a relationship between perceived racial discrimination and mental health outcomes, and the direction of this relationship varies as a function of different moderating variables, or protective and risk factors (Banks, Kohn-Wood, & Spencer, 2006; Pieterse & Carter, 2007; Williams, Yu, Jackson, & Anderson, 1997). The strength of this relationship varies as a function of different moderating variables. A protective factor will minimize the effects of perceived discrimination on mental health outcomes, whereas a risk factor will intensify these effects. The moderating variables examined in the present research are one's identification with one's ethnic group (ethnic identification), and one's identification with mainstream American society (national identification). It is hypothesized that increased levels of ethnic

identification will serve as a protective factor, minimizing the effects of perceived discrimination on mental health outcomes, whereas increased levels of national identification will serve as a risk factor, intensifying the effect. Participants were 259 Asian American undergraduate students who completed questionnaire items measuring frequency of discrimination, ethnic identification, national identification, anxiety symptoms, and depression symptoms. Frequency of discrimination was measured using the Schedule of Racist Events (Landrine and Klonoff, 1996). The Multigroup Ethnic Identity Measure was used to measure ethnic identification (Phinney, 1992). The Mainstream Comfort Subscale from the Scale of Ethnic Experience was used to measure national identification (Malcarne, et. al., 2006). An Implicit Association Test was utilized to assess the degree to which the participant associated with the concepts "anxious" vs. "calm", and "depressed" vs. "happy". These same attributes were included as an explicit measure in the questionnaire to measure anxiety and depression symptoms. Depression symptoms were also measured using the Center for Epidemiologic Studies Depression Scale (Radloff, 1977). Regression analyses will be conducted to determine whether ethnic and national identifications moderate the relationship between perceived discrimination and mental health. Racial discrimination is a pervasive social issue. The present research contributes to a better understanding of the circumstances under which the detrimental consequences of racial discrimination are likely to be pronounced or attenuated.

161 8:30 am

The Making of an American Pluralism: Ethnic Distinctions as Sources of National Inclusion

Hafsa Mohamed, Psychology (U)
Thierry Devos, Psychology

Despite the growing diversity in the U.S., research shows that European Americans are seen as more American than any other ethnic group (American=White effect, Devos & Banaji, 2005). Multiculturalism, or the idea that group differences should be acknowledged and celebrated, has been shown to produce positive outcomes with regards to implicit and explicit racial attitudes (Richeson & Nussbaum, 2004). In a series of three studies, we examined whether placing individuals in a diverse environment would reduce the American=White effect. Participants completed a Brief Implicit Association Test (Sriram & Greenwald, 2009) in which they were asked to categorize as quickly as possible pictures of individuals based on their ethnicity (e.g. African, Asian, Latino, or European American) and American or foreign symbols. In Study 1, participants were randomly assigned to one of four conditions: the number of ethnic groups made salient in each condition was manipulated such that participants were required to make distinctions either between two, three, or four ethnic groups. Studies 2 and 3 were designed to rule out the role of individuation. In Study 2, we examined the impact of introducing participants to a diverse set of individuals prior to completing the Brief IAT. In Study 3, we manipulated the number of individuals present in the Brief IAT. Across all studies, the dependent variable was the extent to which the concept American was associated with European Americans vs. Asian Americans. Results revealed that inserting people into diverse social environments reduced the American=White effect, irrespective of the opportunity to individuate the targets. Taken together, these studies suggest that inclusion in the American identity does not necessarily require downplaying or ignoring ethnic categories. In other words, a more inclusive national identity may stem from seeing others through ethnic lenses rather than as individuals. An important contribution of the present research is to demonstrate how inducing a more complex, yet categorical, mindset fosters a pluralistic definition of the American identity.

162 8:45 am

The Compensatory Effect of Social Support and Social Status on Attitude Strength

Marisa Crowder, Psychology (M)
Radmila Prislin, Psychology

People tend to their social environments when determining the certainty of their attitudes. Although many social factors may potentially influence this process, most research has focused on the effects of social support on attitude certainty. Specifically, people become more certain of an attitude when most of those around them share that attitude (Petrocelli et al., 2007). The present study introduces social status as a potential component influencing attitude certainty. We hypothesized that status functions similarly to support; higher prestige increases attitudinal certainty. The present study also hypothesized a compensatory effect of social support and status. We expect a high mark in one domain to compensate for a low mark in the other. These hypotheses were examined using a 2 (social support: minority vs. majority) X 2 (social status: low vs. high) between-subjects design. During a discussion about the legalization of marijuana, five confederates either mostly agreed (majority) or disagreed (minority) with the participant. Participants were told that their position was indicative of becoming a future leader (high status) or heard these comments being made about those in opposition (low status). We assessed attitude certainty by asking the participant about the clarity and correctness, as separate components, of their attitude. Replicating previous findings, we found a significant main effect of social support on attitude correctness. Extending previous findings, we found a significant main effect of social status on attitude clarity and attitude correctness, with both components of attitude certainty increasing with increased prestige. In support of the hypothesized compensatory effect, there was a significant interaction between social support and social status. Attitude

certainty was not affected by social status among majorities or by social support among those high in status. However, among minorities, attitude certainty was higher for those high than low in status. Additionally, among those low is status, attitude certainty was higher for majorities than minorities. This pattern of findings illustrates a compensatory effect and confirms the hypothesis that participants take favorable dimensions of social interactions to support their attitudes. The compensatory effect suggests useful strategies for combating downward social comparisons or threats to one's sense of certainty.

163 9:00 am

Conversion vs. Tolerance: Minority-focused Influence Strategies Can Affect Group Loyalty

Emily Shaffer, Psychology (M)
Radmila Prislin, Psychology

Moscovici's (1980) conversion theory postulates that differences in opinions of majorities and minorities inspire conflict and that majorities, intrigued by the uniqueness of the minority position, may examine more closely the divergent opinion. Under the right circumstances, this influence strategy may prove effective in gaining majority support and therefore effecting social change. However, past research has neglected two very important issues regarding minority influence. First, research has focused solely on the intraindividual rather than interindividual or group processes associated with minority influence. Second, research has focused almost exclusively on conversion-based strategies as a means to exert influence. Prislin and Filson (2009) have shown that advocating for tolerance of opinions, as opposed to converting others, has major implications for group identity in the aftermath of social change, such that those advocating for tolerance identified more strongly with the group. Therefore, the current study seeks to further investigate the implications of differences in group identity when using conversion versus tolerance to inspire social change. We hypothesize that stronger identification with the group when advocating for tolerance rather than conversion will result in higher group strength as illustrated by an increase in group loyalty. We also hypothesize that the effect of type of influence on group loyalty should be mediated by two separate components of group identification: group self-similarity and group valuation. These hypotheses were examined in a study that emulated a political campaign in which minorities tried either to convert their opponents to their position or advocate for tolerance of different opinions. Minorities either succeeded in becoming the majority, or failed and remained in the minority. However, those who were successful were given the opportunity to stay and help their group by generating ideas for a seemingly separate task, a measure of group loyalty. Results showed that minorities who successfully advocated for tolerance, compared to those who successfully converted opponents, were more loyal to the group. The effect of influence strategy on group loyalty was mediated by two separate components of group identification. Implications for group dynamics when using different influence strategies are discussed.

Session A-11
Oral Presentation: Engineering I
Friday, March 4, 2011, 8:00 am
Location: Calmecac

509 8:00 am

Some Investigation on Breast Cancer Tumor Detection Using Wideband Psi-shaped Patch Antennas

Treasa Hlaing, Electrical Engineering (U)
Satish Sharma, Electrical Engineering

Breast cancer is one of the most threatening cancers to women today. Detection of tumor at early stage is critical because it leads to early treatment and hence reduces chance of death due to this cancer. Currently, Clinical Breast Exam (CBE) and Mammogram is the most popular screening of breast tumor. Other researches such as tissue sampling and Magnetic Resonance Imaging (MRI) are also being studied. Our research on breast tumor detection using antennas is an emerging new technology and it is being studied at microwave frequencies. This new rising technology has many advantages over Mammogram and MRI. X-ray mammogram produces many false results, could not differentiate whether the lump is benign or malignant and very intrusive to our bodies whereas MRI machine injects iron to woman's body and thus it should not be tested often. Our research on breast tumor detection at microwave frequencies using antennas uses the contrast of dielectric constants between normal tissue and tumor to detect the early formation of lump. By analyzing the data from backward array energy, we are able to plot the scatter field graphs. This serves as the raw data to reconstruct the tumor position and size if proper image construction method is employed.

164 8:15 am

A Multi-Sensor Structure for a Mobile Robotic System

Abraham Gallardo, Computer Engineering (U)
Gordon Lee, Electrical and Computer Engineering

The goal of this project is to implement a novel control and sensor approach to telerobotic guidance. Given the dynamics of the

robot, it must account for errors and imperfections in the system. An adaptive network based fuzzy inference system (ANFIS) is used for the prediction of the robot's position. Furthermore, the robot is equipped with an array of ultrasonic sensors for obstacle avoidance, a thermopile array for the detection of animate objects, and an adaptive video stream. The objective of the ANFIS controller is to allow the robot to react and adapt intelligently during motion. All hardware and software components have been designed, tested, into a mobile robotic system, based upon the customized iRobot Create® platform; further integration and evaluation tasks are currently being performed. In a simulation environment, results of the ANFIS controller show that the proposed system is a feasible one for an autonomous mobile robotic system.

166 8:45 am

Generation of Lift Force Due to Radial Flow from a Rotating Disc for Application on Microsystems.

Jose Navarro, Aerospace Engineering (U)
Nagy Nosseir, Aerospace Engineering and Engineering Mechanics

Oftentimes in Microsystems it is important for objects to be lifted. At such small magnitudes, motor driven discs can be rotated at very high speeds (>100 kHz) and the force generated by the resulting radial flow can lift such objects. In this project the generation of radial flow in the narrow region between two parallel circular discs, an upper disc and a lower disc, is studied. The flow would occur due to the axial rotation of the upper disc and the objective is to study the lift force generated on the lower disc due to the rotation of the upper disc. As a first step in the experimental investigation, examination of the lift force caused by the radial air flow pumped through a port in the center of the upper disc is carried out. Varying air flow rates are used to lift discs with different weight and dimensions, while Non-dimensional analysis is used to plot the experimental results of the flow discharge versus the generated lift force. The experimental results are compared to theoretical results derived from Bernoulli's Principle. Through the current investigation of radial flow induced through a port, enough lift force has been successfully generated to levitate weights ranging from 0.05–0.30kg. In the future, the experimental and theoretical investigation will be extended to the radial flow generated by rotating the upper disc in order to mock an applicable device for Microsystems. Supported by the NIH/NIGMS SDSU MARC Program 5T34GM008303-21A1

Session A-12
Oral Presentation: Public Health I
Friday, March 4, 2011, 8:00 am
Location: Casa Real

167 8:00 am

Strengthening Mindfulness, Compassion and Psychological Flexibility in Middle School Students: Results of a Mindfulness-Based Intervention Course

David Viafora, Social Work (M)
Sally Mathiesen, Social Work

Over the last two decades, the research base on mindfulness-based interventions for adults has grown significantly, suggesting that it is an efficacious approach to treat and prevent a variety of mental health issues and improve psychological well-being. Mindfulness practice helps to foster one's awareness of both internal and external experiences as they take place in the present moment. Almost half of youth (46.3%) ages 13 to 18 have experienced a mental disorder in his or her lifetime. In a 12 month span, 13.1% of youth ages 8–13 experience a mental disorder, with 8.6% experiencing ADHD, 3.7% having depression, and .7% with an anxiety disorder. Only half (50.6%) of these youth received mental health treatment for their disorders. To the author's knowledge, no studies have empirically tested a strictly mindfulness-based intervention with middle school students in a school setting. The purpose of this study is to evaluate the feasibility, acceptability and benefits of a modified mindfulness-based stress reduction (MBSR; Kabbat-Zinn, 1990) course with this population in a classroom setting. Using a quasi-experimental design, the study hypothesis is that students in the mindfulness intervention group will show improvement in measures of mindfulness, psychological flexibility, and self-compassion. Participants include students from four classrooms at two middle schools who were given pre- and post-test assessments; one waitlisted classroom served as a non-equivalent comparison group. One treatment classroom is from a local school that serves youth who have been recently homeless or are currently living in a homeless shelter. A majority of students reported that mindfulness practice helped them to reduce stress, deal with difficult emotions such as anger, and cultivate calm, relaxation, happiness, and concentration. Results indicate that students in two treatment groups experienced significantly positive changes in meta-cognitive measures of mindfulness and self-compassion compared to the comparison group. Results from the second school site treatment group are ongoing. The positive outcomes add to the growing base of evidence suggesting that mindfulness-based interventions can offer mental health benefits to youth, and offer preliminary support for the feasibility and acceptability of these interventions with youth living in a homeless shelter.

168 8:15 am

Subjective Social Status, Socioeconomic Status, and Physical and Mental Health in Latinas

Martha Solórzano, Public Health (M)
Vanessa Malcarne, Psychology

Recent research suggests that subjective social status (SSS), people's subjective opinion of their place within their community and within the U.S. at large, may differentially relate to health and illness. However, there is limited research on SSS (community and U.S.) and health in general, and among Latinas in particular. The objectives of this study were to examine in a sample of Latinas: (1) the relationship of community and U.S. SSS to physical and mental health, (2) whether community and U.S. SSS have differential relationships to physical and mental health, and (3) whether community and U.S. SSS predict physical and mental health above and beyond objective SES indicators. A community-based sample of 498 English- and Spanish-speaking Latinas provided information on objective SES (education and employment), U.S. and community SSS (MacArthur Scale of Subjective Social Status), physical health (Health-Related Quality of Life-4), and mental health (Patient Health Questionnaire). A series of hierarchical linear regression analyses were performed to identify significant predictors of physical and mental health in Latinas. Covariates (age and insurance) were entered (block 1), followed by objective SES (education and employment) (block 2), and then community or U.S. SSS (block 3). For both physical and mental health, the overall models were significant (all $ps < .05$) with the community or U.S. SSS scores as significant predictors after accounting for covariates and objective SES indicators, adding 2–3% to the explained variance in each model. For mental health, the models were not significant until community and U.S. SSS indicators were entered in the final step. Results support SSS as a potentially important predictor of health outcomes in Latinas.

169 8:30 am

Feasibility and Preliminary Findings of a Faith-based Study Targeting Correlates of Physical Activity Among Young Latinas

Monica Morello, Public Health (M)
Elva Arredondo, Public Health

Physical activity (PA) rates in young Latinas are low compared to Latino boys and Caucasian youth. Youth who are inactive early in their development are at risk for leading sedentary lives as adults. Despite the benefits of PA, only a limited number of studies have focused on mother-daughter PA interventions, and even fewer have involved young Latinas. Informed by the Social Cognitive Theory, the current study examined the feasibility of implementing an 8 week mother-daughter faith based intervention targeting correlates of PA in young Latinas. 12 mothers and their daughters participated in an 8 week faith based intervention promoting PA in youth. The intervention was delivered in a group format and targeted benefits of and barriers to PA, parenting skills, family communication, nutrition, and accessing community PA resources. Participants completed brief surveys prior to and following program activities. Separate focus groups were conducted with mothers and daughters assessing their experience in the program. Preliminary data suggested improvements in communication between mothers and daughters, increased frequency of TV monitoring by the mothers, and increases in family social support for PA for daughters and mothers. Qualitative data suggest that mothers and daughters became more aware of the relationship between mental and physical health, and benefited from receiving the intervention in a group format within a faith context. Preliminary data suggest that the faith based intervention promoting PA in Latina youth appears to be feasible as all participants who initiated the program completed it. Findings suggest that physical activity can be one venue for improving family communication and mother-daughter relations. A physical activity intervention may lead to short and long term physical and emotional improvements among young Latinas.

170 8:45 am

Assessing the Influence of a Latino Faith-based Program on the Health Practices of Congregants, the Role of Promotores, and Organizational Practices of the Church

Stephanie Escobar, Public Health (M)
Elva Arredondo, Public Health

Latino children in the United States (U.S.) are one of the most at-risk groups for childhood obesity. Increased dietary intake of processed, calorie-dense foods and lack of physical activity are factors associated with the prevalence of childhood obesity. Social and environmental factors can influence children's health behaviors. The aim of this study was to assess the impact of a faith-based health promotion program on the nutrition and physical activity of Latino children. The single group intervention called Cambios Con Fe (Changes with Faith) was based on the socio-ecological model and included a promotora or lay health advisor component. Five Latino based churches within Chula Vista, California were recruited to participate in this study. Church leaders designated an adult representative to serve in the role of a promotor and three churches identified a youth leader. A total of 49 Latino parents participated and completed surveys prior to and 6 months following implementation of the intervention. Additionally, two focus groups were conducted 6 months following implementation of the intervention: one with the adult promotores and one with the youth leaders. The sample population was primarily female (92.3%), the average age was 41.2 years, 85.7% of the participants were married, 75.6% completed high school, and 83.7% were born in Mexico or another foreign country. Preliminary findings suggest that children of participants significantly decreased

their soda consumption compared to baseline measurements. Individual behaviors related to frequency of eating out at fast-food restaurants, sit-down restaurants, and park usage were not significantly different at the 6-month follow-up compared to baseline. Preliminary findings support a significant increase in participants' knowledge of organizational changes related to nutritional guidelines at the 6-month follow-up. Qualitative information from the focus groups highlights the promotores' and youth leaders' experience in the program. The results from this pilot study may provide useful information for future childhood obesity and faith-based interventions within the Latino community.

171 9:00 am

Physical Activity, Screen Time, and Sugar-sweetened Beverages: Examining Factors Associated with BMI in Children Stratified by Gender and Ethnicity

Griselda Cervantes, Public Health (M)
Guadalupe Ayala, Public Health

Childhood obesity rates among young children have increased drastically in the past 30 years. To prevent childhood obesity it is important to understand how modifiable determinants are associated with young children's BMI scores. This cross-sectional study used baseline data from the MOVE/me Muevo project to investigate the relationship between children's physical activity, screen time, and SSB consumption and their BMI. Ethnically diverse parents of 541 children between the ages of five and eight completed a self-administered survey on their child's physical activity, screen-time and SSB consumption. Children's height and weight were objectively measured and used to compute gender and age-specific BMI z-scores. Thirty-two percent of the children in this study were overweight or obese. Results from a linear regression demonstrated that physical activity was negatively associated with BMI. This relationship remained significant for girls after stratifying by gender. Screen time was positively associated with BMI. This relationship remained significant for boys after stratifying by gender. Ethnicity (Latino) also correlated positively with boys' BMI z-scores. When stratified by ethnicity, physical activity was negatively and screen time was positively associated with non-Latinos children's BMI. Among Latino children, BMI was negatively correlated with physical activity. No significant relationships were found between SSB consumption and BMI z-scores. Future childhood obesity studies should consider the needs of the population being targeted. For example, it may be beneficial to put more effort into addressing the physical activity or sedentary behavior of the child depending on his/her gender and ethnicity.

172 9:15 am

Evaluation of the Bixby Reproductive Health Education Program in Secondary Students in San Quintin, Mexico

Margarita Chalita, Public Health (M)
Noe Crespo, Public Health

The purpose of this study was to evaluate the effects of the Bixby reproductive health education program on the knowledge, intentions, and understanding of family planning among secondary school students living in San Quintin (SQ), Mexico. A quasi-experimental study design (2-group, pre-post) was used to test the feasibility of a promotor-and teacher-led 4-month intervention in 7th–9th grade students enrolled in two secondary schools in SQ Mexico. In the intervention school, teachers selected 11 students to serve as promotores and receive training and instructional materials on the topic. The promotores conducted 20–30 minute reproductive health educational sessions with their peers, in multiple groups comprised of 3 to 5 people. The control group did not receive the intervention. Both groups were tested on basic sexual health knowledge, attitudes, and family planning principles before and after the program was administered to the intervention group. A total of 199 students (94 interventions and 105 controls) participated. Multivariate linear and logistic regressions were used to test for intervention effects on several outcomes. Fifty-three percent of participants were female and the mean age was 13.8 ± 1.2 (range 12 to 17). Preliminary results did not show significant intervention-related improvements in reproductive health knowledge, intentions to be sexually active, or understanding of family planning practices. However, teachers, parents, and students were receptive to this school-based intervention and promotores were successful at implementing peer-to-peer education sessions. Although preliminary analyses did not show intervention effects on targeted knowledge outcomes, this promotor- and teacher-led family planning intervention was well received and feasible.

173 9:30 am

A Pilot Intervention for the Prevention of Tick-borne Diseases in San Quintin, Mexico.

Christine Williams, Public Health (M)
Esmeralda Iniguez-Stevens, Public Health

Research teams of Viajes Interinstitucional de Integración Docente, Asistencial y de Investigación (VIIDAI) have focused on prevention of tick-borne diseases in a rural community located in San Quintin, Mexico since 2009. Initial findings revealed a significant association between dog ownership and tick sightings in the community. A follow-up intervention, focused on proper tick removal and tick-borne disease awareness, demonstrated a significant increase in participant self efficacy related to proper

tick identification and removal. Subsequent discussions with community leaders revealed the need for additional tick-borne disease awareness education. To address this need, a pilot intervention aimed at increasing knowledge of Rickettsiosis and prevention of tick-borne diseases was conducted. Dog-owning families (n=16) from the community were recruited to participate in an interactive educational session on Rickettsiosis knowledge (e.g., modes of transmission and symptoms) and prevention (e.g., tick control). Upon program completion, participants received backpacks containing materials for tick removal and control at home (e.g., gloves, rakes, canine tick collars, alcohol wipes). An assessment of Rickettsiosis-related knowledge and knowledge of behaviors aimed at reducing the risk of Rickettsiosis (e.g., clearing brush or regularly checking for ticks) was conducted pre- and post-intervention. Results of a paired t-test showed a significant increase in overall knowledge (e.g., Rickettsiosis knowledge and preventive behavior) following the intervention ($p < 0.001$). Results of a paired t-test examining only items related to Rickettsiosis- related knowledge showed that there was a significant increase from pre- to post-intervention ($p<0.001$). However, there was no significant increase ($p = 0.119$) in knowledge related solely to behavioral items (e.g., avoiding touching ticks with bare hands, when to seek medical care). Results from this pilot study demonstrate an increase in Rickettsiosis-related knowledge immediately following the intervention. Nonetheless, the long-term effectiveness needs to be assessed. A follow-up assessment is also needed to determine the effectiveness and use of intervention backpacks. Community beautification efforts and behavioral interventions could prove beneficial in both tick control and disease prevention within this community.

Session A-13

Oral Presentation:

Identity and Intersections of Gender, Race, and Culture
Friday, March 4, 2011, 8:00 am
Location: Chantico

174 8:00 am

Radical Divisions: Divergences in Radical Feminist Theory and Activism of the US Women's Liberation Movement

Jessica Spain, Women's Studies (M)
Doreen Mattingly, Women's Studies

Radical feminist political discourse asserts that women's oppression is the first, oldest, and most primary form of oppression from which stems all "branches of racism, class hatred, ageism, competition, ecological disaster, and economic exploitation" (Crow 2000, 2). Yet despite the shared hatred of sexism as the primary oppressor of women, there exist divisions between radical feminists in both their theory and their action. In the 1960s and 1970s, second wave radical feminists laid the groundwork for a significant portion of contemporary US feminist theory. Radical feminist groups such as the Redstockings and The Feminists became forums to think and write about women's oppression. While both of these groups envisioned a future free of institutional sexism and societal gender bias, they developed distinct political stances. At the base of this division lies an oppositional understanding of who or what is to blame for the creation and perpetuation of sexism. The divergent philosophies that the Redstockings and The Feminists embraced fragmented not only radical feminist theory, but drew lines of separation among radical feminist activists that still exist today. While both groups were valuable sites for political organization, disagreements erupted between the Redstockings and The Feminist in terms of how to actualize the elimination of women's oppression. In analyzing the differences between the Redstockings and The Feminists in terms of both theory and activism, my research reveals that there is no monolithic feminist political discourse among radical second wave feminists of the 1960s and '70s despite their shared belief in the primacy of gender oppression. In an effort to move past the perception of radical feminism as a monolithic ideology, this work analyzes primary source documents written by radical feminist that have been published between 1965 and 1978. By exploring the diverse philosophies to which radical feminists have contributed as well as feminists' varied styles of activism, this research affirms that the radical feminist political discourse of the Redstockings and The Feminists, while in concert on some level, is characterized by irrefutable differences. Such an analysis affirms the existence of a highly nuanced US radical feminist movement at a time of significant social change in the United States.

175 8:15 am

From Broadway to Hollywood: Female Tap Dancers Kick Up their Heels

Bethany Elkin, Musical Theatre (M)
Rick Simas, Theatre, Television and Film

Tap dance has been an integral part of American musical theatre since the rise of minstrel shows and vaudeville in the late nineteenth century. Evidence of the popularity of tap dance can be seen in both Broadway and movie musicals. For the most part, female tap dancers are remembered as members of the dancing chorus, like the Tiller girls or the Rockettes. Three legendary female tap dancers of the 1930's and 1940's, Ruby Keeler, Eleanor Powell and Ann Miller, were charismatic, athletic dancers who deserve recognition. These women were trailblazers, making a place for themselves in a field dominated by men. Ruby Keeler's tap dancing was straightforward in the old style of vaudeville hoofers. From the waist down she was a heavy-footed "hoofer." From the waist up she maintained a feminine charm. She employed little

upper body movement. In the film 42nd Street, Keeler utilizes a wide stance with bended knees to dig her sounds into the floor. There is depth and dynamic in the sounds she creates as she emphasizes clarity rather than speed. Eleanor Powell's performance in the film Honolulu, was electrifying. She swiveled her hips to the sexy rhythms of the drums while executing intricate tap steps. She used big, sweeping movements as she danced. Powell shows off her incredible turning ability as she does maxi-fords turning in a circular formation and ends with consecutive turns into her final pose landing on the floor in a primitive crouched position. As "the tops in taps," Miller danced with an energetic and lifted style. In Shaking the Blues Away, she consistently dances with bended knees allowing her to tap fast and close to the ground. She is a master of creating dynamics as she performs consecutive paddle-and-roll turns emphasizing the separation of her heels. Her machine-gun taps are displayed as she demonstrates mile-a-minute nerve taps alternating legs. The struggles of female tap dancers to break out of the chorus and prove themselves gifted in a male-dominated field was a difficult path, but not an impossible one for talented, determined tap dancers like Ruby Keeler, Eleanor Powell and Ann Miller.

176 8:30 am

Jimmy Carter and the Gay Rights Movement

Ashley Boyd, Women's Studies (M)
Doreen Mattingly, Women's Studies

This paper examines Jimmy Carter's 1976 Presidential campaign's stance on lesbian and gay rights. During the 1970s, the gay rights movement was just beginning to make headway. Despite the movement's many political achievements on the local level, gay rights activists were having difficulty influencing federal policy due to the homophobia of elected officials and the country at large. Positioning himself differently from his colleagues, both liberal and conservative, Jimmy Carter expressed opposition to the discrimination against gays and lesbians in the United States. Through the use and analysis of archival materials such as original campaign documents, interviews, and newspaper articles, I show how Carter's strong support for human rights with an emphasis on an honest and open government, opened the door for a discussion of gay rights on the national level. It is the position of this paper that the 1976 Presidential campaign serves as a significant site of analysis for understanding the political ambitions of the LGBT rights movement in the United States.

177 8:45 am

Analysis of Children's Literary Criticism: How Scholars Examine Gender, Race/Ethnicity, and Sexuality in Picture Books

Irina Chukhray, Women's Studies (M)
Esther Rothblum, Women's Studies

The Civil Rights Movement, the Women's Movement, and the Gay Liberation Movement experienced a boom in Black/women/and gay-friendly literature beginning in the 1960s, and spanning the 1970s–1980s. Book authors began to explore and redefine their stories in congruence with current societal upheavals. The social upheaval fostered open scrutiny on representations of gender, race/ethnicity, and sexuality in children's literature. In this body of work, I examine how scholars evaluate gender bias, representations of race/ethnicity, and sexuality in children's picture books. Basing this investigation on feminist theoretical framework by Kimberle Crenshaw and Deborah King, I investigate whether scholars evaluate picture books from a monist perspective (focusing only on one theme such as gender) or from an intersectional perspective (focusing on multiple themes such as gender, race/ethnicity, and sexuality). In conducting this meta-analysis, I discovered that scholars examining gender bias focused largely on quantity (frequency of female versus male characters) and quality (what roles female and male characters play). Scholars examining racial bias focused almost entirely on quantity (frequency of characters of color in books). Additionally, most scholars analyzing race/ethnicity focused on representations of African-American characters only. Scholars examining sexuality focused mostly on quality (whether or not gay/lesbian characters were portrayed positively) and none have focused on bisexual or transgender characters. I also provide my own analysis of texts from these tumultuous years. This investigation is unique in that not a single scholar has analyzed how other scholars examine picture books.

178 9:00 am

Narratives of Voluntary Childlessness: Pronatalist Discourses and Communicative Resistance to Reproduction

Julia Moore, Communication (M)
Patricia Geist-Martin, Communication

Past research has concluded that voluntarily childless individuals are often seen as deviant and deficient in terms of desire, action, and personality. However, research has disproportionately focused on homogenous groups of voluntarily childless individuals. This study takes a first step in exploring

ABSTRACTS

other intersections of childless by choice identities. Narratives told by voluntarily childless individuals are analyzed to uncover the discourses surrounding voluntarily childless individuals, the communicative resistance used to combat these discourses, and how intersections of identity are constructed and represented through talk about voluntary childlessness. Three dialectical threads containing a pronatalist discourse and resistance are identified: doubting sincerity/reasserting insistence, expressing concern/redefining family, and mourning hypothetical loss/reclaiming and redefining the word "selfish."

179 9:15 am

Que Soy?–A Conversation about Hybridity and the Rise of the Pocho

Paris Brown, English (M)
Phillip Serrato, English

In this project, two Mexican Americans—each caught betwixt dual ethnicities—explore the topics of hybridity, language, and cultural ideology. The goal of this research is to complicate and better understand the issue of multiple identities. Within territorial America, those with hyphenated identities experience an oftentimes painful sense of double consciousness. In an effort to understand how hybrid identities and identifications affect Mexican Americans, particularly during adolescence, this project examines two literary texts, Matt de la Peña's Mexican *White Boy* and Sylvia González's play *The Migrant Farmworker's Son*. In the United States, resistance to cultural diversity in different ways, including a resistance to bilingualism, perpetuates language-related xenophobia for second and third-generation Mexican Americans. While acknowledging attributes of hybridity—mixed cultures—we also recognize that this multiplicity can produce anomalism within both family and state assemblages for Americans who have grown up without recognition of their Mexican ancestral lexicon. The loss of communication and identity can ultimately lead to feelings of isolation, rather than true assimilation with either culture. To supplement our discussion of the works by de la Peña and González, we draw upon personal experiences that illustrate our respective perspectives on the ways that language can be a cultural divider or border. Living in the United States as Anglicized pochos, in contrast to our Mexican ancestors, we identify the problems of living on the outside of a seemingly impenetrable speech barrier. The resulting societal expectations disassociate us from the dominant culture while simultaneously exposing us to accusations of disloyalty to our heritage. Consequently, we engage in the attempt to maintain cultural duality through hybrid associations of music, patois dialects, and other distinct forms of identity. Our project throws into relief the opposing messages that hybrid subjects must negotiate. We argue that by refusing to conform to preset notions of culture, we may be able to create new identities. While discourse constantly evolves, it may be increasingly possible to navigate these social tensions by using hybridity as a provocative force in accepting and promoting cultural multiplicity and fluidity.

180 9:30 am

The Sky is the Limit: Aesthetics and Archetypes for Chinese Women in Twentieth Century China to Present

Michael Tetreault, Interdisciplinary Studies (M)
Sandra Wawrytko, Philosophy

It is the purpose of this paper to examine the philosophy that lies behind images of Chinese women and accounts for the production of those images, by looking at the history and status of women in early twentieth century China. There seems to be a direct correlation between the status of women and manifestations of gender aesthetics in art. Does modernity require a transformation of traditional concepts of gender and feminine archetypes? Where do these archetypes come from and why are they constructed in a particular way? Images, as we shall see, can be used as a didactic tool in order to encourage certain behaviors and to provide an aesthetic archetype on which one may pattern their life or an ideal to which one can aspire. Images also can be a reflection of sociological or political patterns among various groups and thus are dependent on a variety of factors that are in a constant state of transition. This is where the idea of fluidity comes into play because the directional flow of aesthetic archetypes, especially during periods of transition, is not always the same. The flow of aesthetic archetypes is dialectical in nature. This paper also aims to demonstrate the dialectical process that accounts for much of their creation. This dialectical process of thesis, anti-thesis, and new-thesis directly relates to Li Zehou's ideas on the process of cultural and historical sedimentation.

Session A-14
Oral Presentation: Neurobiology
Friday, March 4, 2011, 8:00 am
Location: Council Chambers

181 8:00 am

High-Throughput Screening of Small Molecules that Activate MEF2 and Drive Neurogenesis.

Sam Sances, Chemistry and Biochemistry (U)
Mark Sussman, Biology

Parkinson's disease (PD) is a devastating neurodegenerative disease characterized by muscle rigidity, tremor, slowing and even loss of physical movement. PD results primarily from the loss of dopaminergic (DA) neurons in the substantia nigra pars compacta in the mesencephalon, compromising the basal ganglia

circuit that supplies neurons in the striatum with dopamine. Recently, there have been increasing efforts to develop therapies to decrease Parkinsonian symptoms and delay or even prevent their onset. Our laboratory has recently found that a constitutively active form (CA) of the neurogenic and anti-apoptotic transcription factor, myocyte enhancing factor 2 (MEF2) can promote differentiation of mouse and human NPCs into functional neurons. DA neurons were particularly enriched following this treatment, pointing to a therapeutic target in the treatment of PD. In an effort to find a more clinically available alternative to cell based therapy using lentivirally transduced MEF2CA expressing NPCs, this study focuses on screening for small molecules that activate endogenous MEF2 expression, thus avoiding known caveats to random viral integration such as tumorigenesis. Using a luciferase reporter assay, high throughput screenings (HTS) of small molecule libraries were performed on several NPC types, including rat adult neural progenitor cells (APC) and P19 mouse embryonic carcinoma cells. Compounds were tested in a 384 well format using the neurogenic small molecule Isoxazole and its analogues as positive controls. Small molecules found to activate endogenous MEF2 in these *in vitro* models in a dose-dependent manner have implications for DA-enriched neurogenesis in human ESC and induced pluripotent stem cells (iPSC), and provide the promise of potential drug therapies to treat a presently incurable neurodegenerative disease.

182 8:15 am

Application of MEF2C-programmed hESCs for a Neurodegenerative Model using Optogenetics

Nima Dolatabadi, Biology (U)
Mark Sussman, Biology

Human embryonic stem cells (hESC's) possess the innate ability to differentiate into virtually any cell type, including neurons, but to tap their therapeutic potential, we must overcome hyperplasia and tumor formation. MEF2C (myocyte enhancer factor 2C) has been previously established as both a neurogenic and anti-apoptotic factor that can promote neuronal differentiation from hESC-derived neural progenitor cells NPC's. Ergo, we derived a stable cell line that overexpressed a constitutively active form of MEF2C (MEF2CA). These cells were subsequently infected with optogenetic constructs in lentiviral vectors. We then transplanted the cells onto organotypic hippocampal slices, allowed time for differentiation of the neurons and performed analysis using a multielectrode array. The transplanted hESC derived neurons were stimulated with light in either the 477 or the 555 nm wavelength spectrum and displayed high frequency oscillations in the αand α ranges in the host hippocampal network, showing integration of the graft cells into the host network. Since disruption of neuronal network activity follows neuronal cell function losses associated with neurological disorders, transplantation of optogenetically controllable NPCs can potentially be used to restore neuronal network activity and reestablish motor and cognitive function.

183 8:30 am

A Human Neuronal Model to Study SORL1 Variants in Sporadic Alzheimer's Disease

Daniel Williams, Cell and Molecular Biology (U)
Jessica Young, Biology

Alzheimer's disease is the most common neurodegenerative disease affecting elderly adults. Sporadic Alzheimer's disease (SAD), with no known genetic cause, is particularly challenging due to the lack of appropriate animal models. Many genes have been identified in genome-wide association studies as increasing the risk of SAD, including the sortilin-related receptor SORL1. SORL1 interacts with the amyloid precursor protein (APP) and is involved in shuttling APP away from the cell surface in recycling endosomes shielding it from a probable secondary pathogenic cleavage event leading to the generation of amyloid plaques. SAD associated haplotypes in SORL1 may influence the expression of the gene, resulting in more APP being directed to an amyloidogenic pathway. Here, we confirm that the identification of a 5' risk haplotype within the SORL1 gene locus is associated with SAD patient fibroblast samples obtained from UCSD's Alzheimer's disease resource center (ADRC). The Goldstein lab has generated induced pluripotent stem cells from these patients and we are currently using neuronal differentiation techniques to test the hypothesis that these genomic variants affect SORL1 expression in human neurons. We differentiate hiPSCs down a directed neuronal lineage by fluorescence activated cell sorting for neural-specific cell surface markers, followed by growth in media containing the neurotrophic factors BDNF and GDNF. In these cultures we observe colocalization of APP and SORL1, suggesting that these molecules may interact in our system. When we compare SORL1 expression levels by quantitative RT-PCR and Western Blot analysis, we observe a marked increase in SORL1 expression in NSCs and differentiated neurons, however this increase may be lower in SAD patients with the 5' risk haplotype compared to non-demented controls. We propose to use this human neuronal model to investigate the role of SORL1 genetic variants in SAD by examining APP processing in these cells.

184 8:45 am

Analyzing the Role of Sphingolipids in Memory Formation and Retention in Drosophila.

James Parker, Biology (U)
Greg Harris, Biology

Sphingolipids and their metabolites are a diverse and ubiquitous class of molecules that have been identified as important in regulating cell functioning. Sphingolipids are known to be active along

the cell membrane and are present in high quantities, depending on the cell type in question. A good example is sphingomyelin which can constitute up to 10% of the total lipid concentration in neural tissue. This study addresses the role sphingolipids play in memory formation and retention. Our hypothesis is that sphingolipids are highly regulated in both form and quantity because they are integral to successful memory formation and retention. To test this hypothesis the Harris lab has developed a comparative behavioral study using an adapted version of a procedure established by Tully and Quinn involving the Pavlovian conditioning of *Drosophila* (*J Comp Physiol A.* 1985 Sep;157(2):263-77). This procedure couples an unconditioned-stimulus (electric shock) with a conditioned-stimulus (odors) and scores learning based on whether or not behavior (odor avoidance) associated with the application of the unconditioned-stimulus can be achieved using presentation of the conditioned-stimulus alone. The electrical shock is assumed to be an inherently aversive stimulus and learning is achieved when test populations preferentially avoid odors they associate with electric shock. The performance of wild type Canton-S fly strains is compared to the performance of two mutants, Sply and SK2. Both mutants have been characterized in the Harris lab and can't properly process sphingolipids. In a well controlled experiment any memory and learning deficiencies exhibited by Sply and SK2 may be attributed to improperly regulated sphingolipid composition. Performance deficiencies would confirm the hypothesis that sphingolipids play a role memory formation and retention, making them a candidate for therapeutic measures in cases of neural degeneracy.

185 9:00 am

Consequences of an Early Neurotropic Enterovirus Infection on CNS Development and Memory Function in the Surviving Host

Donn Van Deren, Jr., Cell and Molecular Biology (M)
Ralph Feuer, Biology

Enterovirus infections remain a serious health issue, especially in developing countries, and infection during pregnancy may result in severe harm to the fetus, newborn infants, and children. Coxsackieviruses are significant human pathogens, and the neonatal central nervous system (CNS) is a major target for infection. Despite the extreme susceptibility of newborn infants to coxsackievirus infection, a distinct tropism for the CNS, and a relatively high infection rate among infants, few studies have been aimed at determining the long-term consequences of infection on the developing CNS. We recently described a neonatal mouse model of coxsackievirus B3 (CVB3) infection, and discovered that proliferating stem cells in the CNS were preferentially targeted for infection. Nestin+ cells in neurogenic regions of the CNS underwent apoptosis following inoculation with a recombinant virus expressing eGFP (eGFP-CVB3), indicating that resident neural stem cells may be depleted following infection. Furthermore, virus persistence, chronic neuroinflammation, and reduced brain wet weights was observed in mice surviving neonatal infection. Therefore, mice surviving neonatal infection were tested for behavioral abnormalities and memory impairments. We determined memory deficiencies in surviving mice utilizing the Morris Water Maze Task. We hypothesized that memory deficiencies might be detected in surviving mice given a relatively low viral inoculum with no obvious histological signs of CNS disease. Hence, mock-infected mice were compared to two groups of mice inoculated with high (107 pfu) or low (105 pfu) levels of eGFP-CVB3, and mice were analyzed for memory impairments 90 days post-inoculation. Longer time achievements to the platform during swim trials was prominent in high-titer infected mice, as compared to mock mice. Following the completion of behavioral studies, the brains of infected and mock-mice will be harvested and inspected for histopathology (H&E, Oil Red O, and Nissl), astrogliosis/microgliosis (GFAP/Iba1 immunofluorescence) and viral persistence (real time RT-PCR). We suggest that developmental defects induced by a relatively common infection during the neonatal period may be long-lasting, and the prognosis for newborn infants recovering from acute infection needs to be re-explored. With this in mind, long-term neurological sequelae might be expected following neonatal CVB3 infection.

Session A-15
Oral Presentation: Health & Policy
Friday, March 4, 2011, 8:00 am
Location: Presidential Suite

186 8:00 am

Moderators of the Impact of a Colorectal Cancer Video on Deaf Individuals

Lisa Nguyen, Public Health (U)
Vanessa Malcarne, Psychology

More than 20 million people in the United States have some form of hearing loss. The Deaf community strongly identifies with being deaf and uses American Sign Language (ASL) as their primary form of communication. Because of this, the difficulties with communication they face can lead to lack of information and misunderstandings about self-care and preventive behaviors that promote health. Since colorectal cancer is the third most common cancer in the nation, it is important to reach out to underserved populations on this topic. To this end, a colorectal cancer education video was prepared for the Deaf community, in ASL and

with closed captioning. The video has been shown to be effective at increasing knowledge about colorectal cancer prevention. In the present study, demographic characteristics were examined as possible influences on the response of Deaf persons to the colorectal cancer education video. A variety of statistical analyses were conducted to determine whether demographic characteristics of the sample moderated their response to the colorectal cancer education video. Variables considered as possible moderators included age, education, gender, and ethnicity. Results showed that ethnicity had the most significant effect as a moderator. Focusing on these variables helped us understand who responds best to the education program, and who may need a different approach. These findings can potentially decrease health disparities in this country and bring better access to health care for Deaf individuals.

187 8:15 am

Realigning Juvenile Justice: California's Desperate New Reform

Jennifer Martinez, Criminal Justice (U)
Gregory Thompson JD., Public Affairs

In mid 1990's California's juvenile justice system failed to rehabilitate youth and practiced illegal and unsafe conditions. Governor Schwarzenegger signed a consent decree but immediately realized that the consent decree was not working to rehabilitate offenders and was not affordable. California Senate Bill 81 was passed to fix this by transferring authority over most of California's Juvenile felons from the state of California to counties. The objective of this study is to identify significant policy issues raised by realignment of California Juvenile Correctional System in three areas: cost, ward population and its implications on public safety, and recidivism. Data was gathered from California Department of Corrections and Rehabilitation's Division of Juvenile Justice and data from San Diego County's Probation Department. Qualitative research observation originated from interviews with: probation officers, juvenile judge, and CDCR officials.

188 8:30 am

Exploring Familial Psychosocial Factors and Barriers that Affect the Oral Health Behaviors and the Early Development of Childhood Caries in Hispanic Preschoolers

Daniela Calderon, Public Health (U)
Tracy Finlayson, Public Health

Preschool-aged children from families with a low income have a high prevalence of developing Early Childhood Caries, particularly preschool-aged children from low income, Hispanic families. The objective of this study is to achieve a detailed understanding of the family factors that affect the oral health practices of preschoolers. We sought to identify the most significant and potential family based psychosocial factors and barriers for Hispanic mothers of preschoolers associated to the actual carrying out of the recommended child dental care in the household.

189 8:45 am

Serious Psychological Distress in Sexual Minorities in California: Implications for Public Health, Policy and Practice. Analysis of the 2007 California Health Interview Survey (CHIS)

Justin Curole, Epidemiology (M)
Hector Lemus, Public Health

Approximately 24.6 million (11.3%) of Americans suffer from serious psychological distress (SPD). SPD is correlated with symptoms of depressive and anxiety disorders. The purpose of this study was to estimate the prevalence and correlates of SPD in a population sample of gay and bisexual men (GBM). The results of this study will add to the serious dearth of research on the association of various demographics on mental health in this under researched population. Historically, researchers have not examined mental health in GBM to the same extent as the heterosexual population. Recent research suggests that GBM are at elevated risk for serious mental health disorders including depression, anxiety, substance abuse, and suicide. While population studies have examined GBM, very few of these assess mental health. This lack of population based psychiatric research exists primarily because sexual orientation is generally not captured in large-scale surveys. The California Health Interview Survey (CHIS) is the nations largest health survey (N=24,266,000), and one of the few cross-sectional population based surveys that collects sexual orientation information. This secondary analysis of CHIS data had the following hypothesis: GBM will show an increase in SPD prevalence when compared to heterosexual men. Also, GBM racial minorities and selected covariates will show increase in SPD prevalence. Sexual orientation, general and mental health variables as well as standard demographics were included in analysis, using a bivariate logistic model (α=.05). The outcome variable SPD, based on the Kessler 6 (K–6) scale, scores >13 defined SPD. Preliminary results show the 30-day SPD prevalence for GBM was 6.5% (vs 3.1% in the heterosexual male population). The year SPD prevalence for GBM was 15.4% (vs 6.6%). Ethnic minority GBM showed similar year SPD prevalence but Caucasian GBM showed slightly lower (14.9%). Thirty-four percent of GBM needed help for mental health problems, compared to 13.4% of heterosexual men. This research has important practical implications in psychiatric epidemiology, planning and public policy in California and the United States. Future research should routinely collect sexual orientation variables on health surveys so that researchers can quantify health disparities in sexual minority populations.

190 9:00 am

Magnet Status, Nurse-Physician Collaboration, and Evidence-Based Practice

Ani Sekayan, Nursing (M)
Jaynelle Stichler, Nursing

The processes of nurse-physician collaboration and evidence based practice are important determinants of the quality of care delivered in the critical care setting. The purpose of this study was to explore the relationship between nurse-physician collaborative behavior (NPCB) and Evidence-based Practice (EBP) and examine differences in NPCB and EBP in Magnet designated (MDH) as compared to Magnet pursuing (MP) hospitals. This study used a cross sectional, descriptive, mixed methods correlational and comparative design. The convenience sample used represented three large hospitals in a healthcare system. The Collaborative Behavior Scale–Nurse-Physician (CBS-NP) and the EBP Implementation Scale (EBPI) were the two instruments used. The qualitative piece was the pilot exploration of the difference in perception between nurses and physicians regarding nurse-physician collaboration. After IRB approval, the consent letter, demographic survey, and the study instruments were grouped for distribution. Although there was no significant difference between MDH and MP hospitals on the CBS scale, the ANOVA performed on the EBPI scale between the MDH and MP hospitals showed a significant difference between the EBPI total score ($F(2, 84) = 11.55$, $p < .001$) and all the subscales of the EBPI. The physicians had a total mean of 64.35 ($SD = 11.12$) higher than the total mean of the nurses in the three hospitals ($M = 53.4$, SD=13.17). A t test conducted between the physician and nurse groups showed significant differences between the two groups on the CBS total scale ($t(123) = 4.16$, $p < .001$) and all the subscales of the CBS ($p < .001$). Although there was no significant difference between MDH and MP hospitals on the CBS scale, there was a statistically significantly difference on the EBPI scale. The findings supported the hypothesis that there is a significant difference between the perceptions of nurses and physicians toward collaboration. The physician perceptions are important to understand to eventually create action plans appropriate to improving collaboration in the workplace. This study provides baseline data from which individual units may develop performance improvement initiatives to improve practice and satisfaction with the workplace.

191 9:15 am

Off Label, Off Limits?: Assessing the Regulation, Debate, Enforcement, and Potential Policy Considerations of Off-label Promotion

Timothy Mackey, Global Health (D)
Thomas Novotny, Public Health

Off-label prescribing of drugs by physicians has documented risks and benefits and is wide-spread in clinical practice. The prevalence of off-label uses in at-risk patient populations is staggering, evidencing the necessity of use for unapproved indications and dosages for patients who do not otherwise have access to approved treatment options. Off-label promotion occurs when pharmaceutical manufacturers engage in promotion of these off-label uses which often lack adequate clinical data to substantiate marketing claims and may endanger the public health. Such off-label promotion directly to physicians and patients has historically been prohibited by U.S. law. However, failed government guidance, industry-based litigation, and the resulting diminished capacity of regulators to police such illegal practices has created an environment of complacency which has had dire consequences for patient safety and healthcare fraud and abuse waste. Though appropriately targeted and regulated off-label promotion could benefit at-risk populations who lack access to life-saving treatments, the current regulatory scheme does not incentivize these efforts. Instead illegal off-label promotion by the industry has emerged, resulting in the off-label promotion of drugs in conflict with safety notifications and which have been removed from the market due to safety concerns. Pharmaceutical manufacturers engage in this activity for the sole purpose of profit, often developing marketing campaigns specifically targeting off-label uses not supported by scientific evidence while enjoying increased drug sales. This has led to prosecution of such illegal acts by corporate whistleblowers, resulting in some of the largest civil and criminal fines in U.S. history. However, such whistleblower led enforcement actions are inadequate in deterring continued illegal off-label promotional by the industry and ensuring patient safety. In order to address these challenges, we propose the development of targeted exemptions of off-label promotion review required by the FDA for certain at-risk populations provided that certain requirements of enrollment, risk-management, and pharmacovigilance are met. We also advocate for increased enforcement powers for regulators in dealing with illegal off-label promotion which presents a clear patient safety risk. The confluence of these policy proposals serves to increase drug access for patients who lack treatment and disincentive illegal industry marketing which threatens the public health.

192 9:30 am

Research Design and Methods for the NARCH (Native American Research Center for Health) Periodontal Study

Balambal Bharti, Epidemiology (D)
Suzanne Lindsay, Public Health

Background: Cardiovascular diseases have been recently shown to have an infectious etiology. For example, bacteria have been implicated as the causative agent in subacute bacterial endocarditis. The association between infections and the cardiovascular

system, especially oral infections such as gingivitis and periodontal disease are gaining wider acceptance. Research is needed to assess the effectiveness of interventions designed to treat infections and as a result improve the functioning of the vascular system. Objectives: A current ongoing study is designed to investigate the relationship between periodontal health and vascular function in a population of young Native American men and women. It will also measure improvement in vascular function after treatment of periodontal disease. This presentation will describe the study, its methods and hypothesized results. Methods: 200 men and women with four levels of periodontal disease are being recruited into the study from patients served at the San Diego Indian Health Council's Rincon Dental Clinic. At baseline cases will be compared to controls in terms of their vascular function. This case control phase will be followed by a prospective phase that will assess the effectiveness of treatment for periodontal disease and any change in vascular function as result of the treatment. The association and treatment effect will be assessed adjusting for confounders and other covariates. Discussion: The goal of this presentation is to describe the design,implementation, and current status of this study.

Session A-16
Oral Presentation: Anthropology and Archeology
Friday, March 4, 2011, 8:00 am
Location: Quetzalcoatl A

193 8:00 am

Changing Time: Community Response, Reorganization, and the Transformative Role of the 2007 Solomon Islands Tsunami

Benjamin Nugent, Anthropology (M)
Matthew Lauer, Anthropology

On April 2, 2007 an earthquake and subsequent tsunami struck the Western Province of the Solomon Islands. This event not only caused significant damage to terrestrial and marine communities, but also heavily impacted the human populations that depend on these ecosystems for their livelihoods. This presentation will draw on research conducted in the affected villages to examine the transformative role the disaster played in shaping village settlement patterns. Data was collected over a two-week period in July 2010 where semi-structured group interviews and participatory mapping exercises were conducted in Vonavona Lagoon and on Vella Lavella and Ranongga islands. Results show that prior to the disaster the affected villages had simmering tensions over land distribution and crowded village sites. In the aftermath of the earthquake, the villagers responded by capitalizing on the disruption to peacefully resolve these long-standing internal tensions over landuse. As elsewhere in Island Melanesia land is held under customary ownership, a communal tenure arrangement that is flexible and fluid. Its fluidity, however, generates social tensions over ownership and resource access. This presentation details how, in the context of a traditional system of land tenure, Solomon villagers cope with wide-scale environmental disruption. More broadly it reviews the concept of resilience in the context of adaptive capacity and vulnerability, in particular the aspects that contribute to a community's ability to rapidly mobilize the forces necessary to manage varying levels of stress. Studies in contexts such as the Solomon Islands may contribute to disaster avoidance, relief, and response by characterizing the human and environmental dynamics that increase vulnerability to natural disasters.

194 8:15 am

Status and the "Lower class": Health, Disease, and Biological Affinity of the Late Classic Maya Suburb Community of Guerra, Benavista del Cayo, in the Western Belize Valley

Erin Blankenship-Sefczek, Anthropology (M)
Arion Mayes, Anthropology

As part of the San Diego State University Mopan-Macal Triangle Archaeological Project (MMTAP), both large urban centers and small, rural Maya communities were excavated in order to gain a comprehensive understanding of Maya social structure and daily life (Ball and Taschеck, 1991). This study focuses on the low status community of Guerra, which surrounds the site of Benavista del Cayo in the Western Belize Valley. Previous analysis has been done on the royal elite individuals (Mitchell, 2006) and the sub-elite individuals (Black, 2007) of Benavista concluding that the groups were not biologically related. The major question of this study centered on whether the low-status individuals of Guerra were related to the sub-elite individuals, showing both ascribed and achieved status existing simultaneously in this Maya community. Standard protocol data collection was used for age, sex, and pathological assessment. Using non-metric dental traits Guerra individuals exhibit similar characteristics to the sub-elite population suggesting a biological relationship between the two subgroups, and the possibility of achieved status. Additionally, this study looked at overall health and disease of the Guerra community. The results indicate the existence of infectious disease and malnutrition through the documentation of boney changes such

as osteomyelitis, and cribra orbitalia. And dental pathology which includes linear enamel hypoplasias, ante-mortem tooth loss, calculus build-up, and dental wear. This indicates that the population underwent biological stress throughout life. Together with the previous studies, these findings add to the comprehensive understanding of Maya daily life, the original goal of the MMTAP.

195 8:30 am

Refocusing Food-Centered Celebrations in the Childcare Setting

Elizabeth Herlihy, Anthropology (M)
Elisa Sobo, Anthropology

With childhood obesity on the rise, some parents in the USA have pushed back against the provision of 'junk food' at school. Despite our love of cupcakes, ethnographic data from a childcare center that recently adopted a 'celebrations policy' banning birthday cake and encouraging parents to consider non-food related methods of celebration suggest that, given proper support, such policies may be viable in other preschools and schools. This presentation identifies cultural factors that can be leveraged in implementing such a policy as well as cultural barriers that may need to be overcome. It further explores how the policy, meant to diminish the association between food and celebrations by redirecting the focus onto the child, seems also to have the secondary benefit of eliminating commercialism in the classroom and competition among parents.

Session A-17
Oral Presentation: Violence and Aggression
Friday, March 4, 2011, 8:00 am
Location: Quetzalcoatl B

196 8:00 am

An Analysis of Peer Delinquency's Mediational Effects on Delinquent Behavior and Relationship Violence

Rachel Dyson, Psychology (U)
Emilio Ulloa, Psychology

The current study explores the connection between two disturbing phenomenon among youth: delinquency and dating violence. Delinquent behavior is a growing social threat to community safety as well as the safety of the individual committing it. Young adults, ages 18-24 currently represent 16% of all incarcerated inmates in the United States, not including the large number of incidences that are cleared or not reported to authorities. Predictors of these criminal behaviors include having delinquent peers, having weak family and community commitment, and truancy. Delinquent behaviors have also been linked to a number of adverse effects (i.e., lower socioeconomic status, drug and alcohol abuse, risky behavior, etc.). Similarly, the effects of relationship violence are widespread including low self-esteem, risky sexual behavior, drug and alcohol abuse and depression. The influence of peer delinquency has been linked to both relationship violence and delinquent behaviors throughout the literature. However, limited research has explored the mediational role of peer delinquency on the relationship between delinquency and relationship violence perpetration. This study aims to clarify this relationship and analyze the role that peer delinquency plays in mediating these two variables. 141 college students completed an online survey assessing dating behaviors. The SAGE Baseline survey was included to measure levels of individual and peer delinquency, while the CTS was used to measure both perpetration and victimization of dating violence. A mediational model was tested to determine if peer delinquency mediated the relationship between dating violence perpetration and delinquent behavior. Dating violence perpetration was positively correlated with delinquent behavior ($\beta = .287$, $p < .002$), and peer delinquency ($\beta = .217$, $p < .018$). Peer delinquency was positively correlated with delinquent behavior ($\beta = .315$, $p < .001$). A third regression analysis revealed that the effect of dating violence perpetration on delinquent behavior was attenuated after controlling for peer delinquency. Sobel's test of the indirect effect confirmed that peer delinquency was a significant mediator between relationship violence perpetration and delinquency ($z = 1.98$, $p < .054$) . These results should be considered for possible prevention and intervention methods along with future research implications.

197 8:15 am

Depressive Symptoms, Anxious Attachment, and Teen Relationship Violence Perpetration: A Longitudinal Study

Neri Martinez-Arango, Psychology (U)
Emilio Ulloa, Psychology

Teen Relationship Violence (TRV) is commonly defined as the physical, psychological, and sexual abuse of an intimate partner. This recently emerged public health issue has been associated with many negative outcomes including: eating disorders, suicidal thoughts, suicide attempts, drug abuse, binge drinking, excessive smoking, anxiety, post-traumatic stress and depression. Recent studies suggest that 1 in 10 teens are physically abused, 2 in 10 are verbally abused and 3 in 10 are psychologically abused. One of the antecedents related to TRV that has received some attention in the literature is the construct of attachment styles. The present study uses the construct of anxious attachment and predicts a positive association to TRV perpetration, as suggested by the literature. Furthermore, the present study uses depressive symptoms as a possible mediator to help explain said relationship. One-hundred and ninety three middle school and high school students with at least one dating experience were selected as part

of a longitudinal study. Students were recruited from two schools in San Diego County and were given self-reported questionnaires on TRV and possible risk/preventive factors at time 1, and at time 2 ten months after. For the current study, the following scales were used: the perpetration subscale of the Conflict in Adolescent Dating Relationships Inventory (CADRI), the anxious attachment subscale of the Adult Attachment Scale (AAS), and the Modified Depression Scale. A mediational model was tested and the following was determined: higher scores in anxious attachment at time 1 were positively associated with higher scores in depressive symptoms at time 2 and higher scores in TRV perpetration at time 2; high scores in depressive symptoms at time 2 were associated with high scores in TRV perpetration at time 2; the impact of anxious attachment on TRV perpetration was attenuated after controlling for depressive symptoms. Sobel's test of the indirect effect showed depressive symptoms partially mediated the relationship between anxious attachment and TRV perpetration. These findings have implication for the development of prevention/intervention curriculum that addresses anxious attachment as a possible risk factor for TRV perpetration.

198 8:30 am

Use of Self-Defense in Dating Violence: A Descriptive Study

Miguel Martin Del Campo, Psychology (M)
Emilio Ulloa, Psychology

Dating Violence (DV) has been a growing interest for researchers. However, many studies investigating dating violence and dating violence only ask participants to report the frequency of abusive behaviors within dating relationships. The context and motives underlying dating violence have only recently emerged as a focus of dating violence research. Self-defense is often discussed in the context of dating violence as an overlooked variable and potential explanation for reported violence and aggression rates. Many studies which find a large percentage of women perpetrating abuse speculate that most women use violence to defend themselves from men's abusive behaviors. However, few studies attempt to directly test the use of self-defense as an explanation for perpetrating abuse. Most studies which report self-defense as a motive for abuse use anecdotal data resulting in a deficiency of empirical evidence; and many limit themselves to physical abuse even though researchers are reporting significant differences between types of abuse. Furthermore, most of these studies focus solely on reporting about women's potential defensive behavior, leaving researchers with little knowledge of men's potential use of self-defense. This is particularly striking considering the increasing evidence of women's perpetration and co-combative relationships. Data was collected from 141 undergraduate students in an introductory psychology course via an online survey. Participants who reported perpetrating abuse on a modified version of the Revised Contact Conflicts Scale were asked if they perpetrated because their partner abused them first, taking type of abuse into account. Results indicate that both men and women report perpetrating abuse in self-defense significantly more often than not. These results hold true when looking at individual types of abuse. No significant differences in use of self-defense between genders were found, with one exception: women reported using self-defense against physical abuse significantly more than men. The current study provides evidence for the widely asserted notion that much of women's reported perpetration of abuse is due to self-defense. However, it also provides evidence that men perpetrate in self-defense as much as women. It is important that the issues of self-defense and co-combativeness be considered both in research and the community when investigating relationship abuse.

Session A-18
Oral Presentation:
Race, Ethnicity and Socio-Economic Studies
Friday, March 4, 2011, 10:00 am
Location: Calmecac

199 10:00 am

Dual-Language Education: Pathway to Closing the Achievement Gap

Rhianna Casesa, Policy Studies (M)
Cristina Alfaro, Policy Studies

In an educational system focused upon high-stakes testing, research has shown that dual language programs offer the best advantages to all students: those whose primary language is not English, as well as native English speakers. Despite the abundance of research that shows the academic effectiveness of dual language programs in both authentic tests as well as standardized tests, dual language programs are not employed often enough to truly begin to close the achievement gap between minority students and the majority. This study examines, through both qualitative and quantitative research, the relationship between culture, language, self-esteem, and achievement by studying dual language and English-only programs in California, with the goal of expanding efficient programs to further close the achievement gap.

200 10:15 am

Critical Engagement, Building Connections, and Bridging the Gap

Samuel Teres, Policy Studies in Language and Cross Cultural Education (M)
Cristina Alfaro, Policy Studies

The purpose of this research is to study pedagogical structures that have the potential to mitigate the achievement gap between students from white, affluent backgrounds and students from culturally and linguistically diverse/low socioeconomic backgrounds. Specifically, this study investigates the relationship between an interdisciplinary, problem-posing, dialogue-based approach to the curriculum areas of Ninth Grade English-Language Arts and World Geography and student performance on a standardized achievement test, using a one-group pre-test/post-test quasi-experimental design. The pre-test and post-test are taken from released Grade 9 English-Language Arts California Standards Test questions. In addition, the "dialogic density" (Nystrand, Wu, Gamoran, Zeiser, and Long, 2003) of classroom discussions will be evaluated by periodically videotaping discussion sessions, at least once per week, and then analyzing the discussions captured on the videotapes using CLASS 4.24 (Nystrand, 2002), a computer program developed for investigating classroom discourse. Finally, a rubric will be used as an ongoing data collection tool in order to obtain an assessment of how the students' proficiency with critical thinking skills in the context of the problem-posing framework changes over the course of the study. It is expected that mean student scores on the post-test will be higher than mean student scores on the pre-test. It is also expected that any change in students' critical thinking proficiency as measured by the rubric will be related to any change in the dialogic density of classroom discourse over the course of the study, which should offer explanatory value to understand the change in student achievement scores between the pre-test and post-test. The participants for this study are drawn from the 18 ninth grade students who attend an alternative education program offered through a local school district.

201 10:30 am

Organizing Against Racism: Why Theory Matters

Joseph Bishop, Philosophy (M)
Thomas Weston, Philosophy

I will show some of the lures of the white skin privilege theory and then raise its weaknesses. As an alternative, I propose a class analysis of racism and show its advantages. After reviewing these competing theories, I will show how the class analysis is a better theory to combat racism since it aims for class solidarity and critiques the material basis of racism: the profits generated by the capitalist class from racial inequality.

202 10:45 am

Exposing the Storm: Examining Perceptions of Post-Katrina Recovery

Halei Griffin, Communication (M)
Carmen Lee, Communication

The aftermath of Hurricane Katrina exposed perceptions of sociodemographic discrimination that has continued to permeate our society and the political institutions that govern it. The present research relied upon the results of the 2006 Hurricane Katrina anniversary poll, in which 300 randomly selected residents of Orleans Parish were interviewed to determine their opinions on topics of racial discrimination and poverty, trust in the government and FEMA assistance. The present study analyzed differences in perceptions of government response effectiveness to Hurricane Katrina based upon three distinct socioeconomic variables: race, income, and political affiliation. Together, these findings suggest that a racial disparity continues to exist between Blacks and Whites in the United States.

Session A-19
Oral Presentation: Management and Work Issues
Friday, March 4, 2011, 10:00 am
Location: Casa Real

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203 10:00 am

Factors Which Determine the Relevance of Person-Job Fit and Person-Organization Fit

Sara Tabrizi, Finance (U)
Lynn Shore, Management

A great deal of research has been conducted on PJ Fit and PO Fit. PJ Fit refers to an individual's assessment of whether their skills match the job requirements, and PO Fit reflects an individual's assessment of whether their values and personality match the organization's values and personality. Previous studies comparing PJ Fit and PO Fit have shown that neither of these types of fit is consistently better at predicting employee attitudes and behaviors. However, despite the importance of understanding the differential impact of PJ Fit and PO Fit, there are not a lot of articles that clarify the main factors which determine if PJ Fit or PO Fit is more relevant. In this review article, I show that the importance of PJ Fit and PO Fit is dependent upon three main factors: 1. the ages of the individuals in the sample, 2. cultural effects, and 3. the particular outcomes being examined. After individuals take a look at the various factors, they can better make a judgment on which type of fit is more relevant to them in their particular situation. The article concludes with recommendations of future research

that would further the understanding of the differing roles of PJ Fit and PO Fit in work settings. An important issue looked at in this article is related to the first factor of age, specifically there is a discussion of how the decision of whether to use students or full-time adult employees in the sample affects study results.

204 10:15 am

Diversity Climate, Job Satisfaction, and Altruism toward the Workplace: Does Race Matter?

Bahareh Soltani, Psychology (U)
Lynn Shore, Management

It is predicted that minority Americans will comprise 38 percent of the population in the United States by 2025 (U.S. Census Bureau, 2002). Estimates like this, along with the reality that many Americans spend the majority of their waking hours at work, create an impetus for research that considers the impact of the increasingly diverse workplace in the United States. Therefore, this study examines the effects of diversity climate, which is defined as an "employee's perceptions that an organization adheres to fair personnel practices and the degree that minority employees are integrated into the work environment" (Mor Barak, Cherin, & Berkman, 1998, p. 83). A total of 150 participants' responses were examined in this secondary analysis of an original study carried out by Dr. Lynn Shore and colleagues. Participants, who were full-time employees of various racial and ethnic backgrounds, took a confidential online survey that contained various questions about their organization, work group, and job characteristics. It was hypothesized that race-ethnicity would serve as a moderator in the relationship between diversity climate and both job satisfaction and organizational citizenship behaviors (or OCBs, which are organizationally relevant actions taken by employees that go beyond the formal requirements of a job (Smith, Organ, & Near, 1983). Specifically, this study hypothesized that as the level of diversity climate rises, Whites will rate themselves as having lower levels of job satisfaction and as exhibiting lower levels of OCB, whereas minorities will rate themselves as experiencing higher levels of job satisfaction and as exhibiting higher levels of OCB. Results of this secondary analysis, as well as a discussion of its implications and contributions to research on diversity in the workplace, will be discussed.

205 10:30 am

The Effects of Inclusion and LMXSC on Job Satisfaction and Altruism

John Andrew Galleta, Psychology (U)
Lynn Shore, Management

While the concept of work group inclusion is still in its infancy, empirical studies have found it to be related to some positive outcomes for individuals and organizations; including job satisfaction and turnover intentions. However, at present, little is known about the underlying reasons for these findings. Therefore, the present study draws upon social exchange theory and the norm of reciprocity (Blau, 1964; Gouldner, 1960) to hypothesize that work group inclusion encourages employees to reciprocate this beneficial treatment. Specifically, we expect that employees who perceive that they are included by their work group will have higher job satisfaction and will behave altruistically toward other work group members and toward the supervisor. We also propose that leader-member exchange social comparison would moderate the relationship between work group inclusion and these positive outcomes such that a high quality relationship with the manager would enhance the positive effects of work group inclusion. A total of 544 participants' responses were examined in this secondary analysis of an original study carried out by Dr. Lynn Shore and colleagues. Participants, who were full-time employees of various racial and ethnic backgrounds, took a confidential online survey that asked various questions about their organization, work group, and job characteristics. Results suggest that work group inclusion does encourage reciprocation among employees. Specifically, as predicted, work group inclusion is positively associated with job satisfaction, altruism toward the work group and toward the supervisor. While leader-member exchange social comparison is positively associated with supervisor-directed altruism, it does not serve to moderate relations between work group inclusion and positive outcomes. Implications of these results for work group inclusion research are discussed

206 10:45 am

Impresario and Prima Donna in Venice, 1651-1668: Linking Management Principles of Marco Faustini, the Emergence of the Prima Donna and Managerial Concepts for Today's Business Executives

Breena Loraine, Music and Business (U)
Eric Smigel, Music and Dance

The managerial practices of Marco Faustini, impresario from 1651-1668, ultimately secured the foundation of Western opera as a sustainable art form. Furthermore, his actions contributed to the emergence of the prima donna phenomenon in Venice, commencing with the stardom of Anna Renzi. This study revealed that, although Renzi's stardom was the result of several factors, including her talent and the publications of the Accademia degli Incogniti, her fame was most notably due to the managerial expertise of Faustini. This research classified Faustini's managerial practices, utilizing the Eight Attributes of Management Excellence model, developed by Peters and Waterman, and defined throughout their book In Search of Excellence. Additional contemporary business theories were also integrated to assess Faustini's leadership skills. While research on Faustini and Renzi has provided historical analyses, sources do not exist that intricately dissect

ABSTRACTS

Faustini's managerial techniques with the use of a contemporary business model, unequivocally argue a direct correlation to Renzi's stardom and the emergence of the prima donna phenomenon, or definitively claim that Faustini's managerial principles are appropriate for today's business executives. This honors thesis uniquely linked the management principles of Faustini, the emergence of the prima donna, and managerial concepts for contemporary business leaders. Knowledge of this interrelationship contributes to historically informed performances of repertoire from this period, successful management practices for contemporary businesses, and holistic creations of business plans and models.

207 11:00 am

The ABC's Of Toys: Typography as a Tool in the Polarization of Gender in Children's Toys

Courtney Harmon, Art Design (M)
Susan Merritt, Art Design and Art History

The aisles of toy stores in the United States are clearly divided into two main categories—toys for girls and toys for boys. Products in these two sections are differentiated both by color and the disparate themes of the toys, which promote vastly different play experiences for boys and girls. This distinction is magnified in the product logos where typography enhances gendered voices. This project questions the social implications when typography is used as a marketing strategy in the polarization of gender in children's toys and examines the typographical distinctions between male and female toy brands, including letter style, weight, color, texture, and shape. The results of the study were translated into the design of separate toy brand-inspired abecedarian alphabets to illustrate the underlying sexist messages of the toys' themes.

Session A-20
Oral Presentation: Mathematics and Statistics
Friday, March 4, 2011, 10:00 am
Location: Presidential Suite

208 10:00 am

Probabilistic Assessment of Cloud Fraction from Bayesian Blending: A Test for ARSCL and TSI Observations

Max Velado, Statistics (M)
Sam Shen, Mathematics and Statistics

This paper provides a method to blend two observed cloud fraction datasets at the South Great Plain (SGP), United States through the Bayesian posterior estimation. The total sky image (TSI) camera observation is used to determine the prior distribution. A regression model and the active remote sensing of clouds (ARSCL) radar observation are used to determine the likelihood function. The posterior estimate is a probability density function of the cloud fraction, whose mean is used as the optimal blend of the two observations. The data at hourly, daily, 5-day, monthly, and annual time scales are considered. Some physical and probabilistic properties of the cloud fractions are explored from radar, camera, and satellite observations and NCAR Community Atmosphere Model (CAM5) output. Our results imply that Beta distribution is a reasonable model for the cloud fraction for both short and long-time mean, the SGP site's cloud fraction was the lowest in 1998 during the period of 1996–2009, the radar observations usually lead to larger cloud fractions than the camera observations, and among the TSI, ARSCL, GOES8 satellite, and CAM5 data, CAM5 has the strongest seasonal cycle, GOES8 the weakest, and ARSCL and TSI in the middle.

209 10:15 am

The True Dimension of a Class of Goppa-like Codes Beating the Best-known Codes

Kyle Marshall, Mathematics (M)
Michael O'Sullivan, Mathematics and Statistics

The paper presents a construction of subfield-subcodes of generalized Reed-Solomon codes, which are Goppa-like, but simpler. The idea mimics a technique utilized by Roseiro et al which uses Delsartes' Theorem to guarantee a large dimension by ensuring that the kernel of the dual map is large. The method produced several codes over different fields which beat the best known codes.

210 10:30 am

Limited Precision Quantization for LDPC Decoding

Raymond Moberly, Computational Science (D)
Michael O'Sullivan, Mathematics and Statistics

Contemporary technologists are looking for implementation strategies that will enable the realization of Low Density Parity Check codes in applications for wireless communication and data storage. Interest in iterative decoder design using a small number of quantization bits has been established by the published works of Zhang and Parhi and by the recent work of Planjery and Vasic. Both teams have devised designs suitable for digital logic implementation, for example in Field Programmable Gate Arrays (FPGA). The author has devised an approach like that of Planjery and Vasic, using our previous results from finding an optimal quantization and and a flexible implementation approach using a table-lookup within an FPGA. Unlike the Binary Symmetric Channel approach, we take full advantage of the receiver sampling resolution available on a Gaussian channel, this combined with the ability to select the quantization adaptively as the channel conditions change, allows improved gains, exceeding 0.5 dB. This research presents synthesis results showing the latency and footprint of the key computational component of the decoder design.

Knowing the per-iteration computational latency and knowing how the number of iterations affects the decoder, we can evaluate trade-offs between per-iteration decoding gain and total decoding gain as a function of computational time and energy.

211 10:45 am

Improving Prospective Elementary Teachers' Number Sense: Extending a Local Instruction Theory from Mental Computation to Reasoning about Fraction Magnitude

Ian Whitacre, Math Science Education (D)
Susan Nickerson, Mathematics and Statistics

We report on results of a classroom teaching experiment (Cobb, 2000) in a mathematics content course for prospective elementary teachers. This classroom teaching experiment represents the most recent phase in on ongoing design research effort, which involves both achieving learning outcomes and building theory (Gravemeijer, 1999). Our previous research involved the design and elaboration of a local instruction theory for students' development of number sense (Nickerson & Whitacre, 2010). A local instruction theory consists of "the description of, and rationale for, the envisioned learning route as it relates to a set of instructional activities for a specific topic" (Gravemeijer, 2004, p.107). The previous classroom teaching experiment focused on the topic of whole-number mental computation. In the recent classroom teaching experiment, the local instruction theory was applied to reasoning about fraction magnitude – another microcosm of number sense. In design research, theory informs practice, and practice feeds back to inform theory. The empirical aspects of our research involve documenting collective classroom activity and analyzing student learning. We focus here on our analysis of interview data. Seven students were interviewed pre- and post-instruction. Interview participants were asked to evaluate the relative sizes of pairs of fractions. A team of researchers worked to refine an extant coding scheme found in the literature (Smith, 1995). The refined scheme was used to code the pre/post data. A comparison of interview participants' pre/post responses reveals that they became more flexible in their reasoning about fraction magnitude. Furthermore, their reasoning shifted from traditional procedures and perspectives to less conventional and more sophisticated strategies and perspectives. These results provide evidence that students developed improved number sense in this area (Markovits & Sowder, 1994; Smith, 1995). Furthermore, the results parallel those concerning mental computation in our earlier research. These findings support the conjecture that our local instruction theory serves its purpose of shaping instruction in such a way that substantial number sense development occurs for students in the course. The findings from interviews, together with our ongoing analysis of collective activity, will inform further theorizing that we hope will lead to additional contributions to the literature.

212 11:00 am

Quantile Regression: A Comparison of Bayesian and Frequentist Methods

Kameryn Denaro, Computational Science, Statistics (D)
Barbara Bailey, Mathematics and Statistics

Traditional methods for modeling a response, y, based on a set of predictors, $x = \{x1, \ldots, xn\}$, is through linear regression methods. In this case, we focus on modeling the conditional mean of y based on x. Instead of focusing on the conditional mean, we can focus on the conditional quantile of y based on x. Linear quantile regression and other quantile methods are discussed in Roger Koenker's book, Quantile Regression. Koenker has developed quantile regression methods in the linear case and the non-linear case. We are interested in extending these quantile regression methods into Bayesian models using WinBUGS. We are going to compare the different methods with data on the incidence of mumps in the United States from 1953 to 1989. There are 1587 observations. The response variable is mumps which is the natural logarithm of the number of mumps cases reported per million (based on the 1970 census). The explanatory variables are year (x1), longitude of each state's centre (x2), and latitude of each state's centre (x3). This dataset was presented in Chaudhuri and Loh's paper, Nonparametric estimation of conditional quantiles using quantile regression trees. We will compare our results to the ones presented in their paper and compare and contrast Bayesian and frequentist methods for quantile regression. We compare and contrast linear regression, quantile regression, generalized linear models, and Bayesian methods to this dataset. To analyze these data, we will use R for the frequentist methods and WinBUGS to perform Gibbs sampling to fit Bayesian models. The WinBUGS software package is used to construct a Markov chain whose stationary distribution is the joint posterior of the unknown parameters of the specified model, conditional on the observed data. In WinBUGS we can draw inferences about our parameters and evaluate the Markov Chain Monte Carlo (MCMC) performance. We analyze and compare the Bayesian OLS with the Bayesian Quantile Regression estimators for the Mumps dataset.

Session A-21
Oral Presentation: Philosophy I
Friday, March 4, 2011, 10:00 am
Location: Chantico

213 10:00 am

Infinite Justification

Andrew Greetis, Philosophy (M)
Steve Barbone, Philosophy

Epistemic infinitism—a theory of the structure of justification—has been discussed and almost universally rejected, beginning with Aristotle. However, the view has enjoyed a recent revival due to arguments by Peter Klein, Scott Aikin, and Jeremy Fantl, among others. Roughly, the view holds that the structure of justification is an infinite set of non-repeating reasons beginning with the proposition in question. I inquire into the most important arguments surrounding this view. First, I examine a reductio ad absurdum of infinitism. The reductio is roughly as follows: since propositions are only justified by other propositions (according the infinitist), there is no way to distinguish between truth-conducive and non-truth-conducive chains of propositions. I argue that the reductio applies to the leading epistemic theories of justification (various forms of coherentism and foundationalism) as well, thereby greatly reducing the force of the argument by showing that it is not a special problem for infinitism. Moreover, I argue that infinitism can plausibly respond to the reductio. Second, I examine whether infinitism can plausibly solve the regress problem, which according to most epistemologists is the most central problem facing theories of knowledge. The problem is essentially this: if reasons justify propositional beliefs and the reasons themselves must be justified, then it is unclear how justification obtains. Does justification result from self-evident beliefs, which transfers justification to other beliefs? Does justification emerge from a coherent set of beliefs? Or, does justification result from an endless set of non-repeating propositions? Finally, I examine whether infinitism leads to skepticism or whether it can plausibly respond to skepticism. Most of us profess to know a great deal and place much importance on our knowledge claims. Thus, we should strive to provide an analysis of the structure of justification and normative strictures for how we ought to justify or revise the beliefs we hold. By examining infinitism—a theory, which I believe has been too hastily dismissed in philosophical history—I hope to move closer to a complete and accurate analysis of justification.

214 10:15 am

Seeking Virtue in Beauty: A Glimpse of Arete through the Lens of Chinese Aesthetics

Reanne Brandt, Philosophy (M)
Steve Barbone, Philosophy

In the paper, "Seeking Virtue in Beauty: A Glimpse of Arête through the lens of Chinese Aesthetics," I explore the role of beauty in both Aristotelian and Chinese accounts of virtue. Specifically, I will argue that the role of beauty in an Aristotelian account of virtuous behavior does not capture the depth and interconnectedness of human experience in the world. Furthermore, according to a Chinese account of aesthetics, beauty understood as an internal quality means that individuals do not merely find beauty out in the world but that they also create beauty by seeking harmony within their environment. By focusing on articles by Li Zehou, Gabriel Richardson Lear, and Nicholas Gier, I find that our pursuit of beauty informs our pursuit of virtue. Although Aristotelian and Chinese accounts of virtue contrast in many ways, the comparison of these apparently divergent philosophical traditions can illuminate and inform our current conceptual framework concerning virtue ethics.

215 10:30 am

Economic Man, Socialization and Freedom of the Will

Aaron Elliott, Philosophy (M)
Mark Wheeler, Philosophy

Simon Blackburn's offers an account of decision theory in which the principle of economic man, that agents always act in the way that maximizes their expected utility, ought to be considered true only if it is viewed as a definitional and analytic claim, as opposed to the traditional empirical or normative interpretations. I argue that, despite Blackburn's claim to the contrary, it is possible to preserve both the benefits of his analytic interpretation and the benefits of an empirical interpretation without committing the economist's fallacy. I do this by isolating his definition of utility (a construction from preference) from his definition of preference (a construction from choice behavior) and argue that this is the correct way to view utility but not the correct way to view preferences. If we take a more conventional (folk psychological) understanding of preferences, as opposed to the functionalist understanding Blackburn employs, we can preserve the analytical aspect through the definition of utility and the empirical aspect through talk of preferences as actual mental entities or states. Next I suggest that (1) sociology is equipped with the tools for explaining the causal history of preference formation, chiefly

through socialization; (2) since preferences are the efficient causes of our choices, the causal history of preferences is part of the causal history of choices; and therefore (3) there is a deterministic causal history of our choices that undermines the tenability of holding any position of radical (or libertarian) freedom of the will, even if material determinism is false.

216 10:45 am

The Future Lay in Our Hands: Tool Use and Human Evolution in Li Zehou and 2001: A Space Odyssey

Jordan Schummer, Philosophy (M)
Sandra Wawrytko, Philosophy

In my paper I will evaluate the aesthetic and evolutionary theory of Chinese philosopher Li Zehou and discuss their connection with Stanley Kubrick's 1968 film masterpiece 2001: A Space Odyssey, and Arthur C. Clarke's landmark science fiction novel of the same name. I will explicate Li's theory that the foundation of human existence is the manufacture and manipulation of tools (not consciousness or language use as some have hypothesized). I will argue that 2001 ought reasonably to be interpreted as a work depicting humankind's past and future in terms of our complex relationship with our tools. Throughout this explication I will identify the source of inspiration for many of Li's ideas in the Chinese philosophical tradition, but also in the work of Kant and Marx, whose ideas Li wishes to synthesize in a new "philosophical anthropology." I will introduce a number of Li's technical terms, including the "humanization of nature," the "naturalization of humans," and the notion of the human animal plus its tools as a "supra-biological being." I will then show that although Li's work was not available to Kubrick and Clarke and thus could not serve as a direct inspiration for their film/novel, they nonetheless anticipated many of Li's most profound ideas in 2001. Kubrick and Clarke establish the "humanization of nature" at the beginning of 2001 when Moonwatcher, the patriarch of the hominid clan to whom the audience is introduced, discovers that an animal bone could be used as a weapon. This idea is culminated in the character of HAL 9000, which shows a nature humanized to the point that the human being becomes almost obsolete in the presence of its tools. HAL 9000 plus his human creators forms a supra-biological being par excellence. I conclude my paper with a discussion of the relative optimism and pessimism of Li, Clarke, and Kubrick about the future of humanity and its relationship with its tools. I will discuss, e.g., how Li's optimism is informed in terms of a combination of his unique aesthetic theory and his confidence in the power of Confucianism.

Session A-22
Oral Presentation: Geography and Natural Crises
Friday, March 4, 2011, 10:00 am
Location: Council Chambers

217 10:00 am

Mapping Vulnerability to Drought in the Krishna Basin, Southern India

Alex Messina, Geography (M)
Trent Biggs, Geography

A river basin is "closed" when all the water resources are allocated for human use and any increased use in one area will decrease availability in another. Assessment of available water resources and where and how they are used is important for managing this scarce resource. In the Krishna Basin where demands are twice allocations, canal flow data is unavailable due to the politically sensitive nature of the water allocations and a remote-sensing approach is necessary. This study proposes to apply the Surface Energy Balance Algorithm for Land (SEBAL) using publicly available MODIS satellite imagery to map spatial distribution of actual evapotranspiration (ETactual) and assess the impact of the 2003–04 drought. Mapping upstream-downstream variability of drought effects at the intra-basin scale, and average consumptive use at the basin-wide scale will highlight which areas of the Krishna Basin are vulnerable to drought.

218 10:15 am

Day Labor in the Downturn: Spatial Survival Strategies in San Diego Day Labor Markets: 2006–2011

Sean Crotty, Geography (D)
Fernando Bosco, Geography

The economic downturn of the past 3 years has affected people at virtually every economic level. Though much attention has been paid to those at the highest income levels, those at the lowest level of the spectrum have and continue to face and adapt to challenges to their economic survival. Day laborers: predominantly immigrant men, who wait for temporary work in public and semi-public spaces in metropolitan areas throughout the United States, are one such group. This paper draws on 5 years of fieldwork to examine the effects of the economic downturn on the informal day market in the San Diego Metropolitan Area.

ABSTRACTS

The findings indicate that the day labor market has changed in size and demographic composition, but also that the changes to the day labor market are geographically distinct and depend largely on the situational characteristics of particular hiring sites. The results of this research are instructive for local government and community planners engaged in day labor management and poverty reduction. Failure to account for the differences between hiring sites necessarily reduces the effectiveness of anti-poverty and day labor management activities. This paper demonstrates how taking the site and situational characteristics of particular day labor spaces into consideration, as well as the demographic makeup of the laborers who use the space, we can better understand the material effects of the economic downturn and work to alleviate them.

219 10:30 am

Evacuation in the Austrian Alps: Linking Interdisciplinary Risk Analysis with Simulation Models for Emergency Planning

Grant Fraley, Geography (D)
Piotr Jankowski, Geography

The number and intensity of natural hazards in alpine environments have been on the rise in recent years. At the same time, significant investments have been made in developing new tourist facilities, transportation networks and infrastructure. Clearly, these two opposing trends have been on a collision course exposing the existing and newly developed infrastructure to natural hazards like flooding, landslides/rock-fall and avalanches. In order to minimize the loss of life and infrastructural damages new approaches for interdisciplinary and integrated natural risk management are necessary. This research introduces a novel solution to natural hazard risk management linking an interdisciplinary multi-hazard risk model with advanced simulation methods for evacuation planning. The integrated model supports a multi-hazard risk analysis by calculating spatial extent and intensity of all hazards relevant to a specific area and the related risk. For evacuation planning, the risk analysis reveals the number of people exposed to different hazard intensities. This approach results in calculating hazard intensity and risk based priority of the population as vital information for evacuation planning. A multi-objective optimization model is employed to generate favorable evacuation plan alternatives by including results of the expert-informed risk analysis in the state of Carinthia, Austria. A multi-objective genetic algorithm was developed to generate several alternative evacuation plans. The algorithm generates solutions minimizing the cost and risk of sheltering evacuees, the evacuation clearing time, and the aggregate risk of evacuation routes. Results of the model illustrate the trade-offs between different evacuation planning objectives and provide greater understanding of the link between alpine hazards and communities.

220 10:45am

Determining Expected Building Losses from Earthquakes in San Diego, CA: An Application Using HAZUS-MH MR4

Nicole Simons, Geography (D)
Piotr Jankowski, Geography

Along the western coast of the United States, where wildfires, landslides, and drought are frequent, earthquakes have the potential to be the most disastrous natural hazard of all. Earthquake events are unpredictable, widespread, and can vary in magnitude creating a dangerous and difficult situation to prepare for. Currently, earthquake vulnerability assessments and damage estimates are completed for the City of San Diego in compliance of the 2000 Disaster Mitigation Act. However, they are conducted at the census tract level and the input data utilizes the spatially problematic general building stock that is included with FEMA's loss estimation software HAZUS-MH. While the general building stock data are acceptable for creating damage estimates for a cities hazard mitigation plan, these values do not necessarily represent the true picture of where and how much assistance will be needed in a specific census block, neighborhood, or city block because they do not account for spatial differences within each census tract thereby inhibiting emergency response. Therefore, the overarching goal of this research is to identify locations within San Diego, CA, that are at a higher risk of damage and estimating more precisely the expected building losses induced by a simulating a significant earthquake occurring along the Rose Canyon fault along the San Diego coast using HAZUS-MH and ShakeMaps. Preliminary results have clearly identified locations within the study area that are particularly vulnerable to the simulated earthquake event. The resulting final HAZUS-MH output tables will help to create a map delineating hotspots where particular addresses will incur substantial damage. The final results of this analysis are forthcoming and will be reported at the conference.

221 11:00 am

Meta-analysis in Hydrology: An Application for Land-cover Change Experiments

Ryan Bart, Geography (D)
Allen Hope, Geography

Meta-analysis is used extensively in medicine and psychology to synthesize results from multiple studies; however, there has been limited application of the technique in hydrology. Hydrological studies are dominated by single-watershed experiments, which make understanding the 'true' effect of land-cover change on river flow a challenge. This paper reports on the outcome of a pilot study using meta-analysis to synthesize the results of six paired-watershed experiments that examined river flow response following wildfire in large Southern California watersheds. Post-fire river flow has previously been shown to be highly variable in

these watersheds, with many watersheds exhibiting no change in river flow after fire. It was hypothesized that this apparent insensitivity to fire may be partly due to weakness in the river-flow change signal of individual watersheds. Combining the results from each paired watershed experiment into a single analysis was intended to strengthen the river-flow change signal relative to inherent variability in the data. An effect size was calculated for annual flows during the first five post-fire years and each year was analyzed separately using a random effects model. Preliminary results indicate that the regional effect of fire on annual river flow was not significant. Despite inconclusive evidence of river-flow change, this study shows that the meta-analysis framework represents an important tool for analyzing land-cover change experiments at a regional scale. Future analyses will include evaluating the results of different measures of effect size and different effect models, as well as assessing the influence of temporal autocorrelation on the regional post-fire prediction. The results also point to the need for large numbers of experiments in land-cover change studies.

Session A-23
Oral Presentation: Foods and Nutrition
Friday, March 4, 2011, 10:00 am
Location: Quetzalcoatl A

222 10:00 am

Effects of Contaminated Fish Oil on the Risk Factors of Cardiovascular Disease

Maggie Mae Camaclang, Nutritional Sciences (U)
Mee Young Hong, Exercise and Nutritional Sciences

A growing body of epidemiological, clinical and experimental data suggests that consumption of fish or fish oil rich in with n-3 fatty acids may reduce risk for occurrence of cardiovascular disease (CVD). Recent evidence suggests due to marine pollution, fish contamination of polychlorinated biphenyls (PCBs) are still present in fish oil, even when claimed to be treated to remove dioxins, PCBs, and mercury. A study was conducted to determine if contaminated fish oil affects the beneficial effects of fish oil on the risk factors of CVD. It was hypothesized that contaminants attenuate or even negate the anti-CVD benefits of fish oil. Thirty Sprague-Dawley rates rats were divided into three groups of ten and fed control diet, fish oil diet or contaminated fish oil diet (4000 ng contaminants/ml fat). After nine weeks of feeding, blood was collected to measure lipids, glucose, hemoglobin, C-reactive protein (CRP), creatine kinase (CK), and lactate dehydrogenase (LDH). Body weight gain, 48-hour food and water intake, organ weights were also measured. Fish oil regardless contamination decreased triglyceride, LDL cholesterol, CRP levels and increased HDL cholesterol level while only non-contaminated fish oil decreased LDH activity ($P<0.05$). Fish oil and contaminated fish oil showed a higher kidney weight as compared to the control ($P<0.05$). All other organ weights, weight gain and food intake were not significantly different among the groups. Fish oil with contaminants at the level of 4000 ng/ml fat showed no significant difference on the risk factors of CVD compared to non-contaminated fish oil. Longer duration of study is needed to fully determine the effects of contaminated fish oil on heart health. This study was supported by SDSU UGP and SDSU NUTR 302L class.

223 10:15 am

Characteristics Associated with Child Compliance to Accelerometer Measurement

Kevin Kong, Epidemiology (M)
Carol Macera, Public Health

Obesity has reached severe levels both in the United States and abroad, and childhood obesity carries with it the added problem of an extensive latency period for problems to manifest. Physical activity interventions directed towards child obesity require objective data (usually by accelerometer) to ensure that the intervention had an impact on the target population. However, characteristics associated with compliance to accelerometers by children have not been well studies. This study's overall hypothesis is that parent's education and the child's body mass index (BMI) will be positively related to compliance, whereas the child's age and exercise per week will be negatively related to compliance. The study included 178 child participants and their primary caregivers from the MOVE/me Muevo study in the San Diego county region. A cross sectional study was conducted with these participants to identify factors associated with child compliance with accelerometer use. Using binary logistic regression, the following variables were tested for their relation to compliance: child age, child BMI, parent education level, parent BMI, child gender, and child days of exercise per week. Main effect variables were chosen for inclusion into a final model by conducting a univariate analysis on variables and included those that were significant at an alpha level of 0.2. Those variables that were significant in the univariate model were included into the multivariate model. Of the variables tested, and after adjusting for all other variables, child age, parent education, and parent BMI were significantly related to child compliance at an alpha level of 0.05. Increasing childhood age was associated with decreasing levels of child compliance (P-value= 0.029). Increasing levels of parent education was associated with increasing child compliance (P-value=0.0060). Increasing levels of parent BMI was associated with increased child compliance (P-value = 0.0248). These results, that child age, parent BMI, and parental education are related to compliance, suggest that there are factors not readily influenced by researchers that affect compliance. This could lead to changes in study design such as oversampling of groups with lower rates of compliance.

ABSTRACTS

224 10:30 am

Understanding the Relationship between Park Characteristics and Physical Activity Level

Stephanie Child, Health Promotion (M)
Elva Arredondo, Public Health

Background: Despite the benefits of physical activity, less than half of Latinos living in California engage in the recommended amount of physical activity. Public parks are a low- or no-cost resource for individuals to engage in leisure time physical activity; however, many park visitors are not engaging in physical activity. Studies suggest that access to parks is associated with physical activity, but few studies examine the impact of specific park features on physical activity. The current analysis explores the relationship between modifiable park characteristics, the observed physical activity levels of its users, as well as the demographics of those users. Methods: The analysis examines eight public parks in Southern San Diego. Data were collected using the System for Observing Play and Active Recreation in Communities (SOPARC). Using momentary time sampling, the demographic characteristics and the physical activity of park users were coded. Each of the eight parks were observed an average of 17 times during various times and days of the week and weekend to capture a representative sample of park users. Descriptive statistics of the park users demographics and physical activity level were calculated for each type of target zone. Results: Females were most likely to be found on playgrounds while seniors were most likely to be located walking on paths or in a pool. If available, fitness rooms were especially attractive and encouraged high levels of physical activity. Organized soccer leagues utilized open grass fields and encouraged vigorous activity. Parks with baseball fields drew the largest crowds, however many users were observed as sedentary in these target areas. Implications: Preliminary results suggest an association between park features and the likelihood of engaging in physical activity as well as attracting users. Findings from the current study shed light on how environmental factors influence physical activity levels in public parks, as well as the characteristics of the features that attract park users. This knowledge can be used to guide development of future park sites as well as improve current ones, which may promote physical activity among low active communities.

225 10:45 am

Intuitive Eating and Intrinsic Motivation for Physical Activity Among College Males

Kari Wasilenko, Public Health (M)
Hala Madanat, Public Health

As the obesity epidemic continues, evidence suggests restrictive dieting does not result in weight-loss maintenance and is associated with a variety of negative health outcomes. An alternative to restrictive dieting, Intuitive Eating (IE), is characterized as eating in response to physiological cues versus external or emotional reasons and is associated with various positive health outcomes for both genders. Among females, IE is positively related to intrinsic motivation to engage in physical activity which is an indicator of increased exercise adherence. This study examined the relationship between IE and intrinsic motivation for physical activity among 169 college males. Participants completed the Intuitive Eating Scale (IES), a Behavioral Regulation in Exercise Questionnaire-2 (BREQ-2) and demographic variables. As expected, IE was significantly associated with lower body mass index ($p < 0.01$). However, contrary to our hypothesis, IE scores were negatively associated with intrinsic regulation ($p < 0.01$). These findings suggest eating behaviors and motivation for physical activity may be related differently across genders. Further research is needed to assess physical activity motivation and eating behaviors among males.

Session A-24

Oral Presentation:

Critical Cultural and Feminist Representations

Friday, March 4, 2011, 10:00 am

Location: Quetzalcoatl B

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227 10:15 am

On the Origin of Species

Lyubov Klimova, Graphic Design (M)
Susan Merritt, Art Design and Art History

To celebrate the 150th anniversary of Charles Darwin's Origin of Species free copies of the book were distributed at the top 100 university campuses across the United States. The book opens with a "Special Introduction" written by creationist Ray Comfort, which attempts to debunk Darwin's theory of evolution. The "Special Introduction" begins with an abridged biography of Darwin's life, and transitions into Comfort's argument about "the unscientific belief that nothing created everything," Hitler's connection to the theory of evolution, as well as, Darwin's own racism and sexism. I loaned my free copy to a number of people, and asked them to comment on the text in the "Special Introduction." After receiving and evaluating their feedback, I analyzed the text based on the different persuasion techniques used by Ray Comfort to discredit Darwin. With the use of graphic design and typography, I identify these techniques within the context of the original book format. My work highlights some of the more obvious, as well as some of the more inconspicuous persuasion techniques, with the goal of providing the reader with a better understanding of methods of persuasion to which they are often exposed, and in the process heightening their critical thinking.

228 10:30 am

Masham's Influence on Locke...Can it be true?

Karl Kyler, Philosophy (M)
Steve Barbone, Philosophy

Not only are female philosopher's rarely discussed, but even less so is their influence on male philosophers. As a matter of fact, it is almost unheard of. A possible example, however, is the relationship between Damaris Masham and John Locke. John Locke, a famous philosopher of his time, had close ties with Damaris Masham, daughter of Ralph Cudworth, a highly esteemed Cambridge Platonist. Cudworth was of interest and importance to Locke, but Locke was unable to attain any of Cudworth's works. There is evidence, though, of some of the ideas advanced by Cudworth in Locke's work. Could it be the case that Locke learned of the Cambridge Platonist's works via Masham? It is clear that Masham was very well educated, but the means of which are not yet certain. Due to the lack of available works on Masham and Locke together, only inferences can be made in regard to the educational impact Masham could have had on Locke. Some suggest that Masham was strictly the vehicle by which the ideas of Cudworth traveled to Locke. I, along with others, am not as inclined to agree. Masham's education was diverse, and her opinion evolved with her age and exposure, which I believed served Locke in his philosophical pursuits. This study is important because it helps establish the importance of this 17th century woman philosopher on and in the canon of Western philosophy.

229 10:45 am

Biblical Perfection: Using Profanity and Anti-feminism to Promote God's Word

Joan McClain, Communication (M)
William Snavely, Communication

The late 20th century has seen a rise in reformist Christian churches, touting an indiscriminately conservative doctrine. One such church is lead by Mark Driscoll in Seattle, WA, which juxtaposes modern music and tattooed pastors with strict fundamentalist doctrine, most notably with regard to women's roles. Here we provide an investigation of the rhetoric used in the Bible with regard to women as a base to study the rhetoric used by Driscoll. The method by which we approached this study was critical rhetorical analysis, to understand how Driscoll's conservative fundamentalist rhetoric works to convince his socially liberal audience into accepting the subjugation of women. We hypothesized that we would find the use of fear appeals, ad hominem attacks and slippery slope arguments. The problem with these methods of persuasion is the fallacious use of argument, and the reason for immediate concern is that these methods are working. We found in each case that we were correct, and the language that Driscoll uses in these arguments and attacks are extremely aggressive. To women he frequently speaks in a demeaning manner, most commonly insulting their intelligence due to lack of biblical understanding or having agreed with feminism. Additionally, he presents many of his ideas with vulgarities, which is clearly working for his youthful audience. On whether the church should accept modernity, "Culture is an old whore, and modernity and post modernity are simply her old and new dresses" (Driscoll, 2004, p.161). Driscoll often shifts the problems of the church or with women onto men. "The problem with our churches today," Driscoll claims in a recent sermon, "is that the lead pastor is some sissy boy who wears cardigan sweaters…gets his hair cut at a salon instead of a barber shop…and generally swishes around like Jack from Three's Company whenever Mr. Roper was around" (Driscoll, 2009). Driscoll's vehement attacks and fallacious arguments are merely touched on here. Yet he is inarguably quantitatively successful, as his church has reached a staggering 10,000 and is growing in a city where most churches are declining. This study exposes the brashness and harm of this boisterous declaimer's havoc on Christendom and feminism, concluding that awareness and knowledge of this movement may keep it from spreading much further.

230 11:00 am

Cultivating the Landless: The Question of Land in Moma Lola

Ashley Greenwood, Women's Studies (M)
Elizabeth Colwill, Women's Studies

In the genre blending feminist ethnographic text *Moma Lola: A Vodou Priestess in Brooklyn*, author Karen McCarthy Brown claims that traditionally in Haitian vodou the land, family and the spirits are collapsed. Diaspora devotees not only have to deal with the loss of land in a literal sense, substituting dirt floors and tin roofs for cement ceilings and linoleum floors; the diaspora also loses a homeland. Loss of homeland is an incredibly traumatic experience that can be felt from exile, from processes of colonization, or from both. Brown's text follows Moma Lola, a Haitian-American vodou priestess practicing in Brooklyn, over the course of ten years. Vodou has deep ties to the land, both physical and spiritual. This reverence to land is best exemplified by the vodou spirit Azaka. He appears as a poor country farmer, reminding Haitians of their rural mountain roots, their families and their communities. While reading Brown's text, it struck me that Azaka may be even more important to devotees in the diaspora, where (farm)land is absent, and family and community may be absent or distant. If, as Brown argues, all vodou is a "healing rite" (Brown 10), how is one healed of loss of land?

Session B-1
Poster: Psychology II
Friday, March 4, 2011, 10:30 am–12:30 pm
Location: Montezuma Hall

231 Poster #1 10:30 am–12:30 pm

Home Literacy Environment and Maternal Responsiveness as Predictors of Preschool Outcomes

Caitlin Phillips, Psychology (M)
Margaret Friend, Psychology

A child's earliest cognitive achievements are embedded in social context. Research suggests that responsive and contingent parenting has a positive impact on cognitive development. Further, children reared in home environments rich in literary exposure and shared-reading experiences are competent in a range of developmental outcomes. Of interest are the impacts of maternal responsiveness and the home literacy environment (HLE) over time. This longitudinal study investigates maternal responsiveness and the HLE in the second, third, and fourth year of life as they relate to school-readiness and language development. In the current wave, data are being collected on 40 mother-child dyads (4:3 to 5:11). Parents will complete the HLE Questionnaire (HLEQ). Maternal responsiveness and child language complexity and diversity will be assessed through a 10-minute observation of toy play. School-readiness will be assessed with The Lollipop Test. It is predicted that the HLE and maternal responsiveness will be stable over time, and that the HLE and maternal responsiveness will be associated with language proficiency and school readiness. Previous research indicates stability in the HLEQ from the second to the third year and this is supported by preliminary data from the third to fourth year ($r=.712$, $N=16$, $p= .002$). There is no evidence of a relationship between the HLEQ and the Lollipop Test. This may result from low variability in the HLEQ due to social desirability effects. We expect observed parent-child interaction data to clarify this finding.

232 Poster #2 10:30 am–12:30 pm

The Impact of Maternal Input on Language Acquisition: a Cross Cultural Study

Sophie Rimbaud, Psychology (D)
Judy Reilly, Psychology

This paper presents a longitudinal study of language development in American English-speaking children and French-speaking children from similar socio-economic backgrounds. The investigation starts at the age when children begin producing multi-word utterances to the age when most children produce multi-clause utterances. The focus of this study is the maternal input. We compare how the French with the American mothers speak to their children. Language and culture influence us and our attitudes on parenting are socially constructed objects, language style can be viewed as an indicator of the culture being transmitted. We assume the hypothesis that the culture would mediate the maternal input, and in turn the child's language acquisition. We address the following questions: are the discourse functions used by the mothers similar in both countries? Is there a relation between the maternal input and the development of the child's syntax? The present study includes data from four families, two from Lyon, France and two from Providence, RI. Data were collected every two months from 18 to 36 months of age. Families were visited and videotaped for 60-minutes while they were engaged in their ordinary daily life. Data were transcribed with the CLAN program, using codes for discourse functions, e.g., commands, requests. Grammatical complexity was measured for mothers and children using the mean length utterance (MLU, a measure of linguistic productivity). A higher MLU indicates a higher level of language proficiency. The first results showed that both American mothers and children have highter mlu's and longer multiclausal utterances compared to their French peers: Moreover, French mothers and the American mothers speak differently to their children:. French mothers more imperatives and yes/no questions while American mothers use more declaratives and nominal questions (whose expected answer is a noun). For both groups, mothers-child conversations are social events, but French mothers seem to be more controlling of activities. These findings suggest that discourse functions may be culturally determined.

233 Poster #3 10:30 am–12:30 pm

Parent-Child Reading Styles and the Home Literacy Environment Questionnaire as Predictors of Narrative Complexity and School Readiness

Michelle Jackson, Psychology (M)
Margaret Friend, Psychology

Research shows that children who are frequently read to by their caregivers are associated with having both more complex narratives as well as higher school-readiness scores. Research also shows that these effects are stronger when parents use dialogic and interactive reading styles. Of interest in the present study is the impact of the home literacy environment and parent-child reading styles on both narrative production and school-readiness as children approach preschool. This longitudinal study will also examine the relationship between narrative production and school-readiness in 4 to 6 year olds. Data has been collected on 28 parent-child dyads and will be compared with archival data from children's previous laboratory visits. The Home Literacy Environment (HLE) was assessed through parent report on the HLEQ. Parent-child reading style and narrative complexity were assessed through laboratory observation of parent-child reading and narrative production activities. Child language measures were transcribed from a 30 minute session: 10 minutes of toy play; 10

minutes of shared reading; and 10 minutes of narrative elicitation. Transcripts will be analyzed for narrative complexity and parent-child reading style. Finally, school readiness was assessed by The Lollipop Test: Diagnostic Screening Test of School Readiness. It is predicted that the HLEQ and parent-child reading styles will differentially predict narrative production and school-readiness scores, but that parent-child reading styles will be the better predictor. It is also predicted that more complex narratives will be associated with higher school-readiness scores.

234 Poster #4 10:30 am–12:30 pm

Early Narratives in English Language Learners

Matthew Ignacio, Linguistics (U)
Judy Reilly, Psychology

Narratives represent a child's first use of decontextualized language and research suggests that narratives serve as a bridge to developing literacy, a critical component of academic success. By high school, English language learner (ELL) students in the US have a documented gap in academic performance, with literacy playing a significant role. In California's K-12 public school system, 25% of all students are ELLs and 42% of California's kindergartners are ELLs. The goal of the present study is to investigate early indicators of literacy by examining oral narratives produced by ELL and monolingual English (ME) California kindergartners. Participants included 32 five and six-year-old ELL children and ME children from the same low socio-economic status school. The ELL children came from a Spanish language background. All children were presented with two stories (each a sequence of four pictures) and asked to "tell the story that goes with the pictures." Narratives were transcribed using CHAT from the Child Language Data Exchange System (CHILDES) and were analyzed for linguistic structure: complex syntax (variety of clauses) and morpho-syntactic (grammatical) errors; and narrative structure: the use of narrative components (including setting, problem, reaction, and consequence) and overall narrative quality. Results show that the ELL children performed comparably to their ME peers on the cognitive measures of narration—narrative quality and narrative components. The narratives of both groups also had similar levels of syntactic complexity. However, as expected, the ELL group produced significantly more grammatical errors than the ME group. Thus, the difficulty for ELL kindergartners lies primarily in their morpho-syntactic proficiency. These results have strong implications for intervention and school policy regarding education for English language learners, and more generally, for any children who are initially not fluent in the language spoken at school.

235 Poster #5 10:30 am–12:30 pm

BMI Correlates with Olfactory Processing Speed in Older Adults

Roberto Zamora, Psychology (U)
Claire Murphy, Psychology

Olfactory loss is present with increased age and may be accompanied by a change in eating habits, along with an overall decrease in food enjoyment. Participants, in past studies, with olfactory dysfunction reported less satisfaction with food, and consumed more in hopes to achieve fulfillment. Thus individuals with olfactory loss may have increased food intake, thereby resulting in a higher BMI. Behavioral olfactory tests have found a relationship between BMI and olfaction, suggesting individuals with higher BMI tended to have lower olfactory scores. There is however little research that examines BMI in relation to olfactory event-related potentials (OERPs). The objective of the current study was to examine the relationship between BMI and P3 amplitudes and latency. Twenty eight adults (two age groups: 18-25 and 65+) from the San Diego Community participated in the study. Fourteen odor stimuli were randomly delivered twice through an olfactometer as participants focused on a crosshair on a computer screen. The stimuli were followed by a change in the screen that displayed four odor identification choices. Participants were instructed to press a button on a response pad corresponding with the correct choice out of 4 possible options. OERPs were recorded at Fz, Cz, and Pz electrode sites; the latencies and amplitudes were averaged. In a bivarate analysis with all participants included, a positive correlation for BMI and latency was present for all electrode sites indicating that as BMI increased latencies also increased. In further analyses, each age group was separately examined. The correlation between BMI and latency remained statistically significant at all electrode sites for older adults but not for young adults. Thus this study indicates that BMI has a significant relationship with olfactory function as measured with event-related potentials in older adults. The results raise interesting questions regarding the role of chemosensory function in the development of obesity.

236 Poster #6 10:30 am–12:30 pm

Children With Heavy Prenatal Alcohol Exposure are Distinguishable from Children with ADHD and Controls on Visuospatial Memory

Mike Kirkpatrick, Psychology (U)
Sarah Mattson, Psychology

Prenatal exposure to alcohol is associated with impaired visuospatial processing and memory, and is related to increased rates of ADHD. Previous studies suggest that attention deficits may impact visuospatial memory performance. The current study assessed children with heavy prenatal alcohol exposure, ADHD, and typically developing controls on visuospatial memory tasks to determine whether there is a unique effect prenatal alcohol exposure on these skills. 100 subjects (7-13 yrs, M 9.937) in 3 groups participated: children with heavy prenatal alcohol exposure (ALC, N=38), non-exposed children with ADHD (ADHD, N=29), and age- and sex-matched controls (CON, N=33). %76.1 of the children in the ALC group met DSM-IV criteria for ADHD. Subjects were administered the spatial recognition memory (SRM) and

pattern recognition memory (PRM) tests from the CANTAB. Raw scores were analyzed using a 2 x 3 ANOVA with test as the within-subjects factor and group as the between-subjects factor. The group main effect was significant ($F(2, 97) = 5.315$, $p = .006$). Poc-hoc analyses revealed that the ALC group performed worse than both CON ($p = .003$) and ADHD ($p = .020$) groups, which did not differ from each other ($p = .561$). There was a differential relationship between IQ and memory scores: IQ was significantly correlated with PRM scores in only the ALC group, and with SRM scores in the CON and ADHD groups, but not in the ALC group. Results were unchanged when children in the ALC group without ADHD were excluded. ALC subjects were distinguished from ADHD and CON subjects on visuospatial memory tests. Results did not appear to be solely attributable to IQ. These findings show the utility of comparing children with FASD and ADHD by illustrating unique deficits related to prenatal alcohol exposure and help define the profile of children with FASD by comparing them to children who display similar clinical symptoms

237 Poster #7 10:30 am–12:30 pm

Diffusion Tensor MRI Analysis of Cerebral White Matter Development after Perinatal Brain Injury

Brian Mills, Psychology (M)
Pamela Moses, Psychology

Structural neuroimaging techniques are useful to understand how the brain develops following early injury. Previous cognitive studies conducted with children who had suffered a unilateral perinatal lesion suggest that there are alterations in the brain, which allow for further development. Our previous structural analyses of brain volume point to alterations specific to the white matter in the brain. The purpose of this study was to understand the structural development of the brain after early injury and to identify alternative patterns of development. Alterations may be apparent in the injured hemisphere and may even be pervasive enough to effect development in remote areas of the uninjured hemisphere as well. The current study used magnetic resonance imaging (MRI)-based diffusion tensor imaging to assess the structural integrity of white matter tracts in both the injured and uninjured hemispheres after unilateral perinatal injury. Previous analyses of fractional anisotropy (FA), the measurement of the movement of water along the principle axis of a tract, have show abnormalities in intact portions of tracts in injured and uninjured hemispheres. The observed reductions in FA are suggestive of disruption or maldevelopment of the fiber pathways. The purpose of this study was to further characterize the state of the tissues in the sites of abnormalities. The current study measured radial diffusivity (RD), which reflects the degree to which the movement of water is restricted in the direction perpendicular to the principle axis. We measured radial diffusivity within the major cerebral fiber tracts. Participants included 6 individual with lesions due to perinatal stroke and 22 aged matched controls. The analyses revealed converging evidence for abnormalities in the injured hemisphere. For example, the corticospinal tract, one of the major descending white matter tracts in the brain, showed degradation of the pathway seen as compromises in both the perpendicular and primary diffusivities. We also found that areas remote from the site of insult showed abnormal patterns of development. The uninjured superior longitudinal fasciculus for instance, a major white matter tract connecting posterior to anterior regions, similarly showed signs white matter compromise in both axis of the tract.

238 Poster #8 10:30 am–12:30 pm

Spatial Memory Development in Children with Prenatal Stroke

Sara Himmerich, Psychology (M)
Pamela Moses, Psychology

Children with prenatal stroke represent a unique population within which to study cognitive development and plasticity. Previous research with children who sustained unilateral prenatal stroke shows that this group exhibits deficits in visuospatial processing, as measured by drawing and block construction tasks. These deficits are less severe than, but often mirror those seen in adults. To extend our knowledge on early spatial development, this research examines spatial working memory in toddlers with early brain injury. This study includes 27 children with prenatal focal lesions (PL) and 27 typically developing (TD) children, ages 1 year to 2 years and 9 months (divided into four age groups), in a cross-sectional design, to examine developmental change and possible effects of early injury on spatial memory. The task requires children to search for a toy hidden beneath one cup within an array of cups after a period of delay. Children's performance is tested as the number of cups increases (from 2 to 4 to 6) and the length of delay time increases (from 1 to 5 to 10 seconds). Children are given two chances to show mastery at each level of the task conditions. Analysis of the subjects who respond correctly shows that TD children and PL children have increased success in remembering the hiding location with age. Differences between the children with early injury and controls are evident when they are between 1 year 6 months and 1 year 9 months. At this age, TD children get more items correct on their first attempt than children with early injury. With a second exposure, children in the PL group can respond correctly with an overall accuracy similar to the TD group. Thus this study reveals a mild impairment in the PL as they engage their visuospatial working memory in the middle toddler years.

239 Poster #9 10:30 am–12:30 pm

The Effect of Aging on Anticipatory Contrast in Rats

David Maasberg, Psychology (M)
Paul Gilbert, Psychology

The orbitofrontal cortex (OFC) has been shown to play an important role in the anticipation of future rewards. Research has suggested that functional changes in the OFC may occur as a result of aging. The aim of the present study was to examine the anticipation of future reward in 7 mo and 26 mo old Fischer 344/Brown Norway rats using an anticipatory contrast paradigm. Young and old rats were divided randomly and assigned into one of two conditions. In the first condition, subjects were given a water solution containing 2% sucrose for 3 min followed immediately by a water solution containing 32% sucrose for 3 min. In the second condition subjects were given a water solution containing 2% sucrose for 3 min followed immediately by a water solution containing 2% sucrose for 3 min. Across 10 days of testing, in the first condition, 7 mo rats consumed significantly less 2% solution and significantly more 32% solution. In contrast, 26 mo rats showed no significant decrease in their consumption of the 2% sucrose solution, nor did they show a significant increase in their consumption in the 32% solution. In the second condition there were no significant differences between 7 mo and 26 mo rats in consumption; however, both groups consumed significantly more of the first 2% solution than the second 2% solution. Therefore, these data suggest that age-related changes in the brain may be impairing the ability to anticipate future rewards.

240 Poster #10 10:30 am–12:30 pm

The Differential Role of Education on Metamemory Accuracy in Healthy Aging and Alzheimer's Disease

Jacquelyn Szajer, Psychology (M)
Claire Murphy, Psychology

Deficits in metamemory abilities have been found to accompany both healthy and demented aging, and various models link related phenomena, such as high-confidence false recognition, to declines in executive functioning associated with normal aging and dementia (Cosentino, 2007). While research has shown that levels of education play a beneficial role in preserving cognitive abilities throughout the lifespan (Borroni, Alberiei, Agosti, Premi, & Padovani, 2008; Proust-Lima, Amieva, Letenneur, Orgogozo, Jacqmin-Gadda, & Dartigues, 2008), very few studies have investigated how education levels influence metacognitive abilities. Using a sample of 296 older adults, 138 controls, and 158 patients diagnosed with probable or possible Alzheimer's Disease (AD), metacognitive judgments during an episodic recognition task were analyzed for accuracy, and results were compared across education levels. Results for the control group indicated that higher levels of education were associated with more accurate metamemory, regardless of age. Results for the AD group revealed that education plays a beneficial role in metamemory accuracy through old age, but that this benefit degrades as aging continues. Implications and applications are discussed.

Session B-2
Poster: Biochemistry
Friday, March 4, 2011, 10:30 am–12:30 pm
Location: Montezuma Hall

241 Poster #11 10:30 am–12:30 pm

Purification of Drosophila Muscle Myosin for X-ray Crystallography to Determine Molecular Mechanism

James Caldwell, Biochemistry (D)
Tom Huxford, Chemistry

Myosins comprise a large super family of molecular motors that fulfill a variety of cellular functions. Class II myosins are well known due to their function in muscle contraction. The use of *Drosophila* melanogaster as an *in vivo* expression system for myosin proteins has been developed and many different isoforms have been successfully expressed and purified on a small scale for biochemical studies by the Bernstein group. A substantial problem persists due to the low level of material, that the high-resolution structural studies of these isoforms have been limited to the use of homology modeling based upon scallop or chicken crystal structures. Therefore, an atomic resolution model of *Drosophila* myosin would be of great interest, as it would allow for further insight into the mechanism by which myosin drives the function of muscles. My research goal is to determine the molecular structure of the myosin head motor domain (S1) from *Drosophila*. The initial step of my research entails the acquisition of milligram amounts of myosin S1 required for crystallization trials. Due to the paucity of myosin purified through manual dissection and purification, a His-tagged embryonic myosin isoform clone was designed and constructed. Bestgene Inc. injected the plasmid in fly embryos. The transgenic larvae were propagated and crossed to produce a fly line that expressed His-tagged myosin in the Mhc10 background (myosin null in flight and jump muscle). Myosin was extracted using a bulk purification protocol. The His-tagged myosin was isolated by Ni2+-chelating affinity chromatography. The myosin was digested with chymotrypsin to remove the C-terminal alpha-helical tail and His-tag. I plan to use size exclusion chromatography to obtain homogeneous S1. I have found that the preparation of 2.0 mg pure concentrated myosin is possible, which is critical for crystallization trials. After solving the initial apo "rigor-like" conformation of embryonic S1, my goal is to solve other conformations by binding the purified S1 with different ATP analogs prior to crystallization. The x-ray crystallography determination of a *Drosophila* myosin would provide the first insight into the structure/function relationship and pave the way for comparative studies with subsequent myosin isoforms and mutants.

242 Poster #12 10:30 am–12:30 pm

Characterization of Novel Proteins Involved in Binding to the Protein Shc

Spencer Swarts, Biochemistry (D)
Peter van der Geer, Chemisty and Biochemistry

Signal transduction within an organism typically involves the binding of an extra-cellular ligand to a transmembrane receptor. This binding produces a conformational change in the intracellular domain of the receptor, which results in subsequent binding of other proteins, culminating in some biochemical change within the cell. Shc, a protein known to interact with activated tyrosine receptor kinases (TRKs), is a well-characterized protein involved in binding to a receptor and recruiting other proteins into a complex. Proteins that behave in this manner are termed "adaptor proteins", and Shc is one of many required for successful signal transduction along the Ras/MAPK pathway. Recently, it was shown that Shc interacts with a number of uncharacterized proteins, one of which is termed STS-1 (Suppressor of T-cell Receptor Signaling). Sts-1 is a 70 kDa protein with four purported domains; an N-Terminal UBA (Ubiquitin Associated), central 2HPE (2- histidine phosphoesterase) and SH3 domains, and a C-Terminal PGM (phosphoglycerate mutase) domain. Affinity purification using peptides based on Shc phosphorylation sites has shown that Sts-1 binds to the phosphorylated Tyr317 region of Shc. To better characterize the mechanism of binding, we mutated essential residues in each of the domains od Sts-1 to create a number of mutant proteins that could then be screened for binding activity to Shc. Specifically, we created constructs with a deleted UBA domain and mutated essential residues in the 2HPE, SH3, and PGM domains. Preliminary results indicate that the 2HPE domain is responsible for mediating the interaction between Shc and Sts-1. Although it is often a daunting challenge, elucidating signal transduction pathways give us insight into the multitude of processes necessary for even a simple cellular response. Perhaps more importantly, it allows us to examine how diseases, like viruses and cancer, can hijack our normal cellular machinery for there own proliferation.

243 Poster #13 10:30 am–12:30 pm

Ubiquitin Carboxyl Hydrolase-L3 (UCH-L3): A Molecular Sensor of Protein Stability

Octavio Romo-Fewell, Chemistry (U)
John Love, Chemistry

Protein stability is an important factor in many cellular processes as well as for therapeutic applications. The accurate assessment of protein stability, as well as exploring new means to enhance protein stability is of keen interest. To achieve this we are exploring the properties of ubiquitin carboxyl hydrolase-L3 (UCH-L3), a protease that cleaves proteins N-terminally fused to ubiquitin. Based on the hydrolysis rate we are exploring whether UCH-L3 is capable of differentiating between proteins with different thermal stabilities. First, we developed a panel of mutants derived from streptococcal protein G that span a thermal stability range from 28-100 ° C. The genes for these variants were fused N-terminal to the gene for ubiquitin. To explore the activity of UCH-L3 *in vivo*, *E. coli* (BL21) cells were cotransformed with plasmids coding for both the enzyme and the fusions in compatible plasmids. After protein induction the hydrolysis rates were estimated with SDS-PAGE. For further characterization, ex vivo and *in vitro* assays were run with extracts and the purified enzyme and substrates. In addition, size exclusion chromatography and CD (Circular dicrhoism) studies were performed in order to determine the extent of oligomerization rate and the melting temperature (Tm) of the substrates. In the three formats tested *in vivo*, *ex vivo* and *in vitro*, the hydrolysis was similar and consistent. Hydrolysis of the different constructs by UCH-L3 is correlated to the thermal stability of each particular test protein. Interestingly, the enzyme is capable of differentiating between substrates with only one amino acid change, even a position far from the cleavage site.

244 Poster #14 10:30 am–12:30 pm

A Comparison of the Non-Aqueous Electrochemistry of Nitroimidazoles and Nitrobenzenes upon Addition of L-Cysteine

Martha King, Biology (chemistry minor) (U)
Diane Smith, Chemistry and Biochemistry

In this study the electrochemistry of the nitroimidazole metronidazole is compared to that of the nitrobenzene 4-nitroanisole, both with and without the presence of L-cysteine. The aim is to gain insight into the reactivity of metronidazole, and thereby an understanding of its possible mode of action as a drug against *Giardia lamblia*. In order to probe the reactivity of the reduced metronidazole, we are investigating the CV behavior of metronidazole in DMSO in the presence of different boc and methyl ester protected amino acids. These studies show that the thiol-containing amino acid, L-cysteine, reacts particularly readily with the metronidazole radical anion. We hypothesize that this may be the underlying cause for the activity of the drug and its subsequent medicinal effect. Nitrobenzenes are studied by way of comparison because they show similar electrochemical behavior as nitroimidazoles, yet are not active as a drug against *Giardia lamblia*. An observation that nitrobenzenes react differently with cysteine than metronidazole would support the hypothesis that the reactivity of metronidazole with cysteine is responsible for cytotoxicity in *Giardia lamblia*. CV studies were run by adding aliquots of a DMSO solution of the boc and methylester protected L-cysteine to 1 mM metronidazole or nitroanisole in 0.1 M NBu4PF6/DMSO using a glassy C working electrode. The results suggest that cysteine

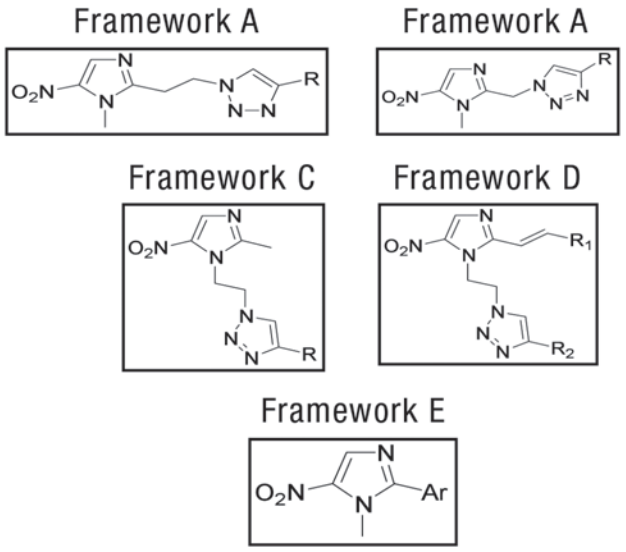
reacts with both nitrobenzenes and nitroimidazoles in a very similar manner. In both cases, addition of the cysteine causes the current for the reduction peak to increase and that of the return oxidation peak to decrease. A new irreversible oxidation peak also appears at more positive potentials. The observed cyclic voltammetry appears to be most consistent with an overall 2 e-, 2H+ reduction process with the cysteine acting as an acid, with the final product being the nitrosobenzene or imidazole. In conclusion, general similarities in electrochemistry exist when L-cysteine is added in increasing concentrations to 4-nitroanisole and metronidazole. These initial results do not rule out cysteine as a basis for cytotoxicity in anaerobes, but neither do they support it. What can be confirmed is that the electrochemical studies are consistent with cysteine acting as an acid.

245 Poster #15 10:30 am–12:30 pm

Electrochemical Studies of 5-Nitroimidazoles as Possible New Antimicrobial Drugs

Kylene Monsalud, Chemistry (U)
Diane Smith, Chemistry and Biochemistry

The anaerobic protozoan, *Giardia lamblia* is commonly treated with metronidazole (Mz). It is believed that metronidazole is activated *in vivo* by reduction of the 5-nitroimidazole (5-NI) ring at its core. In order to counter Mz-resistant strains of Giardia, a variety of 5-NI derivatives are being investigated as possible new drugs that fall into structures that we have labeled A, B, C, D, and E, as shown below:



The ease of reduction of the new 5-NI's is being characterized by using cyclic voltammetry (CV) to measure the half-wave potential, E1/2, for their reversible one electron reduction in dimethyl sulfoxide (DMSO). Measurements were conducted under anhydrous conditions with ferrocene0/+1 as an internal reference point for measuring the $E_{1/2}$. Pt, Au, and Ag were used as counter, working, and pseudoreference electrodes respectively. Our hypothesis is that the $E_{1/2}$ values are indicative of the compound's human cell toxicity and antigiardial activity. Comparing the biological data to the $E_{1/2}$ values to find a correlation, compounds with $E_{1/2}$ values that are too positive indicate that they are easily reduced and thus, may be effective against Giardia, but also toxic to human cells. 5-Ni compounds with $E_{1/2}$ values that are too negative indicate that they are not easily reduced and thus, will not be effective against the bacteria. Measurements for Mz's $E_{1/2}$ values were -1.56 V versus ferrocene $^{0/+1}$, while the $E_{1/2}$ values for some of the new 5-Ni's range from -1.45 V to -1.56 V. Within each framework's A, B, C, and D, $E_{1/2}$ values were closer to each other, while framework E has $E_{1/2}$ values that extend a wider range.

246 Poster #16 10:30 am–12:30 pm

Correlation of Half Wave Potentials of Possible Antimicrobial 5-nitroimidazole Drugs with Calculated Gas Phase Electron Affinities

Maurice Horton, Chemistry (U)
Diane Smith, Chemistry and Biochemistry

Giardia lamblia is a water-born protist. When humans are infected, a major symptom is diarrhea, which is one of the leading causes of death in the World. Currently the most effective drug of choice is a 5-nitroimidazole (5-NI) named metronidazole. However, resistant strains of the *Giardia lamblia* are appearing. It has been proposed that metronidazole is activated *in vivo* by a reduction reaction. If this is so, the redox potential of possible new drugs is important to consider and study. If the potential drug that is being studied is too hard to reduce, meaning it has too negative of an $E_{1/2}$ value, the drug will not be able to be reduced and therefore will not be active against *Giardia lamblia*. However, if the drug is too easy to reduce, meaning it has too positive of an $E_{1/2}$ value, human cells will be put at risk of being attacked by the reduced form of the drug. In order to guide synthetic efforts, gas-phase electron affinities of possible new 5-NI drugs are being calculated using the Density Functional Theory (B3LYP) method. Most of the compounds are calculated using the cc-PVDZ basis set, although some of the heavier elements require the CEP-121G basis set. The sum of electronic and thermal energies of the radical anion are subtracted from the neutral compound to attain the electron affinity. These values are then compared to experimentally determined $E_{1/2}$ values for the reversible one electron reduction of the 5-NI in DMSO. The results so far indicate that there is a linear correlation over a surprisingly large range of different compounds. If the results of many compounds have a consistent relationship, it will be possible to "synthesize" the drugs on a computer and be able to predict the $E_{1/2}$ value. This process will potentially save time that is wasted synthesizing and testing compounds with $E_{1/2}$ values that are too positive or too negative.

ABSTRACTS

247 Poster #17 10:30 am–12:30 pm

San A-amide and Heat Shock Protein 90 Binding Studies Using Surface Plasmon Resonance

Maria Barbara Guillergan, Biology (M)
Shelli McAlpine, Chemistry

Heat Shock Protein 90 (Hsp90) is a molecular chaperone that folds and assembles immature polypeptides to mature and functional proteins. Hsp90 has three distinct domains; the N-terminal ATP binding domain; the middle domain, which binds to most of Hsp90's client proteins; the C-terminal domain, which is involved in dimerization of Hsp90. There are over one hundred Hsp90 client and chaperone proteins, many of which play a role in cellular signaling. Hsp90 is directly involved in stabilization of many proteins as well as indirectly linked to numerous intracellular signaling pathways. Currently, Hsp90 is up-regulated in many cancer types, which makes it an attractive oncogenic target; it directly and indirectly regulates proteins that are involved in programmed cell death and cell survival. Recently, we have shown that Sansalvamide A (San A), binds in a pocket between Hsp90's N-middle domain, and it inhibits binding between Hsp90 and several C-terminal client proteins. Defining the molecular interactions between Hsp90 and San A derivatives, and how these affect Hsp90/chaperone proteins interactions, will facilitate the development of novel Hsp90 inhibitors. Currently, we have developed potent San A compounds 122 and 145. Described are our studies that use Surface Plasmon Resonance (SPR) to characterize the binding characteristics between these derivatives and Hsp90. The SPR technique eliminates the need to use labeled San A derivatives and it allows binding interactions to be observed in real time. In using this technology, we confirmed that these San A derivatives bind to Hsp90 at the same site as the San A peptide. Further, we showed that compound 145 bound to Hsp90 with a high affinity. Future studies need to be done to assess binding characteristics for compound 122 and other molecules, where the success of these studies will allow us to engineer potent Hsp90 inhibitors.

248 Poster #18 10:30 am–12:30 pm

Stability and Potency of Differential Forms of Drosophila SREBP

Mohammad Hadayat, Biology (U)
Robert Rawson, Genetics

Lipids represent a critical component of cells for membrane synthesis and energy storage. Lipid metabolism must be tightly regulated within cells because if cells lack a sufficient amount of lipids they are unable to proliferate and conversely if there are too many lipids present then a toxic environment is created in which the cells are unable to survive. Sterol Regulatory Element Binding Protein (SREBP) is one of the major regulators of lipid synthesis. Although SREBP is a transcription factor, its precursor is an endoplasmic reticulum transmembrane protein. As with mammalian cells, insect cells cleave the precursor SREBP via the site-1 and site-2-protease (S1P, S2P) or a caspase. We examined the stability and potency of both caspase-cleaved and S2P-cleaved *Drosophila* SREBP (dSREBP) in order to determine whether these two forms exhibit differential stability and/or transcriptional activity. We employed Cycloheximide or Anisomycin over a specific time course to inhibit de novo protein synthesis. This allows us to view the degradation of the aforementioned forms of cleaved dSREBP via western blotting. Additionally, to determine the transcriptional potency of the two forms of dSREBP we utilized the luciferase expressing vector under the control of the insect SREBP response element (SRE). We co-over-expressed the luciferase plasmid with caspase-cleaved or S2Pcleaved SREBP.

Session B-3
Poster: Bioinformatics
Friday, March 4, 2011, 10:30 am–12:30 pm
Location: Montezuma Hall

249 Poster #19 10:30 am–12:30 pm

Tools for Quality Control and Preprocessing of Metagenomic Datasets

Robert Schmieder, Computer Science (D)
Robert Edwards, Computer Science

High-throughput sequencing has revolutionized microbiology and accelerated genomic and metagenomic analyses; however, downstream sequence analysis is compromised by low-quality sequences, sequence artifacts and sequence contamination, eventually leading to misassembly and erroneous conclusions. These problems necessitate better tools for quality control and preprocessing of all sequence datasets. Here, we present tools for easy and rapid quality control and data preprocessing (PRINSEQ), automatic identification and removal of sequence artifacts (TagCleaner), and contaminants (DeconSeq) in metagenomic datasets. These tools incorporate different algorithms suitable for each task and were evaluated on both artificial and real datasets. They are publicly available through user-friendly web interfaces and as standalone versions. The web interfaces allow online analysis of genomic or metagenomic datasets and generation of the output using our computing resources. The results can be exported for subsequent analysis, and the required databases used for the web-based versions are automatically updated on a regular basis. This set of tools allows scientists to efficiently check and prepare their datasets prior to downstream analysis. The web interfaces for each tool are simple and user-friendly and the standalone versions allow offline analysis and integration into existing data processing pipelines. The results reveal whether the sequencing

experiment has succeeded, whether the correct sample was sequenced, and whether the sample contains any contamination from DNA preparation or host. All tools provide a computational resource able to handle the amount of data that next-generation sequencers are capable of generating and can place the process more within reach of the average research lab.

250 Poster #20 10:30 am–12:30 pm

Predicting Phage Lifestyle Preferences from Genomes: Lytic vs. Lysogenic

Katelyn McNair, Computational Science (M)
Robert Edwards, Computer Science

There are two distinct phage lifestyles: lytic and lysogenic. The lysogenic lifestyle has many implications for phage therapy, genomics, and microbiology, however it is often very difficult to determine whether a newly sequenced phage isolate grows lytically or lysogenically from only the genome. Using the ~200 known phage genomes, a supervised random forest classifier was built to determine which proteins of phage are important for determining lytic and lysogenic traits. A similarity vector is created for each phage by comparing each protein from a random sampling of all known phage proteins to each phage genome. Each value in the similarity vector represents the protein with the highest similarity score for that phage genome. This vector is used to train a random forest to classify phage according to their lifestyle. To test the classifier each phage is removed from the data set one at a time and treated as a single unknown. The classifier was able to successfully group 221 of the 227 phages for whom the lifestyle is known, giving my algorithm an estimated 3% error rate. The classifier also identifies the most important genes for determining lifestyle; in addition to integrases, expected to be important, the composition of the phage (capsid and tail) also determines the lifestyle. A large number of hypothetical proteins are also involved in determining whether a phage is lytic or lysogenic.

251 Poster #21 10:30 am–12:30 pm

Understanding the Dynamics of Viral and Microbial Communities in Cystic Fibrosis by Metagenomic and Metatranscriptomic Screening

Yan Wei Lim, Cell and Molecular Biology (M)
Forest Rohwer, Biology

Cystic Fibrosis (CF) affects approximately 30,000 individuals in the United States, and complications associated with the illness can lead to respiratory failure and death. CF is an autosomal recessive genetic disorder cause by mutations in the Cystic Fibrosis Transmembrane Regulator (CFTR) ion channel gene. This leads to an abnormal clearance of mucus in the lung. Complications associated with the illness include chronic microbial and viral bronchial infections. However, the members of these microbial and viral communities are not well characterized. Our goal is to understand the evolutionary dynamics of the microbial and viral community in CF lungs. Here, we present the methodology to study the microbial and viral community in CF sputum using a metagenomic approach, and the gene expression dynamics of microbial assemblages associated with CF using a metatranscriptomics approach. Freshly collected CF sputum samples were processed to enrich for viral and microbial cells followed by high-throughput sequencing. An aliquot of the sputum was added into Trizol LS within an hour after collection for microbial RNA extraction. A subtractive hybridization-based method was used to remove human RNA and bacterial rRNA prior to whole transcriptome amplification. For microbial metagenomes, host cells were depleted by osmotic lysis and DNase was used to remove free DNA prior to microbial DNA extraction. Viral DNA and RNA were extracted from filtrated and DNase-treated sputum. Viral and microbial nucleic acids were then subjected to high-throughput 454 pyrosequencing that yielded millions of reads. Metagenomes were compared to the non-redundant nucleotide (nt) database to assign taxonomy. Metatranscriptomes were compared to the ARB-SILVA rRNA database, the non-redundant protein (nr) database and the SEED database for taxonomic, functional and subsystem-based assignments. This data provides new information on the diversity and ecophysiology of microorganisms closely associated with CF lungs during the exacerbation and non-exacerbation periods.

252 Poster #22 10:30 am–12:30 pm

Implementing the Google Web Toolkit to Improve BLAST Output

Brad Hull, Computer Science (M)
Robert Edwards, Computer Science

The SEED is a genomics and metagenomics database that allows people to view, modify, and create annotations to any genomes published in it. It's a very populare tool for microbiologists to use, and is constantly evolving to meet its users' needs. It is programmed in Perl CGI for both easy modification by programmers as well as simple code-to-web translation. One important tool in the suite of functions the SEED provides is the Basic Local Alignment Search Tool (BLAST). This program provides a protein-by-protein comparison of two genomes, and is used to discover the function of proteins by finding common similarities. Its current interface is Perl-based, with the data being output to a bar-chart-like picture that is produced by the gd graphics library. The purpose of this project is to recode the BLAST output using more modern programming tools and methods. Perl is staying as the code base so that it is compatible with the SEED's framework; but the gd graphics library has been switched to the Cairo graphics library for more vibrant colors and easier graphic objects creation. Another new addition is the implementation of the Google Web Toolkit,(GWT) an AJAX toolkit that focuses on the creation of interactive browser-based applications.

253 Poster #23 10:30 am–12:30 pm

Identification of Genes Involved in Iron Reduction in Anaerobic Arctic Peat Soils

Archana Srinivas, Ecology (D)
Dinsdale Elizabeth, Biology

Iron reduction is an important metabolic pathway in anaerobic environments. In arctic peat soils, it is an important pathway for respiration. This pathway has major implications for understanding the factors which act as controls over CO_2 and CH_4 fluxes from the arctic soil ecosystem. We investigated two metagenomes which were obtained from soils acquired from two different depths of our research site on the Arctic Coastal plain near Barrow. The first metagenome consists of sequences from a soil sample acquired from a depth of 0 – 10 m from the research site. The second metagenome consists of sequences from a soil sample acquired from a depth of 10 – 20 m from the same research site. Once the DNA was extracted from the soil samples, sequenced and assembled, they were uploaded in MG – RAST server (the Metagenome - Rapid Annotation using Subsystems Technology) and annotated. The results from the two metagenomes were subjected to a phylogenetic profile comparison to see what phyla, order and genera were represented in each metagenome. A metabolic profile comparison was also done between the two metagenomes to identify the major metabolic pathways represented in each metagenome, find pathways involved in or associated with iron reduction and by looking for genes/sequences coding for the enzymes which are involved directly or indirectly with the iron reduction metabolic pathway. Approximately 95% of both metagenomes were made up of bacterial sequences from phyla such as Proteobacteria, Actinobacteria, and Bacteroidetes with Proteobacteria making up the majority of it. When the metabolic profiles represented in the two metagenomes were compared, unclassified sequences were found in both metagenomes which have been related to sequences encoding the iron – sulfur metabolic pathway (these sequences are experimental). The metagenome from the second soil sample obtained from a depth between 10 – 20 m also contained an unclassified sequence which is most probably related to sequences encoding iron – sulfur cluster assembly. These preliminary results are promising and seem to indicate that iron reduction is indeed an important metabolic pathway in these soils and from these results it is probable that the iron reduction increases with depth as more anaerobic conditions prevail, unless cryoturbation (mixing of soil layers due to annual thaw and freeze of soil) has disturbed soil layers.

254 Poster #24 10:30 am–12:30 pm

Geographical Impact on Metagenomes

Daniel Pick, Computational Science (D)
Forest Rohwer, Biology

In recent years biologists have collected and sequenced large amounts of genetic material from environmental samples. The study of such material is known as metagenomics, and metagenomic data sets have become publicly available at archives such as MG_RAST, http://metagenomics/nmpdr.org, and CAMERA, http://camera.calit2.net. In Dinsdale et al2, it was shown that metagenomic analysis can explain the variance among and within environmental samples, and in Willner et al.3it was shown that dinucleotide composition defines a metagenomic signature which can explain up to 80% of the variance between biomes. Many metagenomic data sets have been annotated with the geographical coordinates where the samples were taken, enabling them to be integrated with digital map data using geographic information systems (GIS). Recently, Parks et al.1 developed GenGIS, an open source geospatial information system for genomic data for the purpose of generating and testing new hypotheses regarding global biodiversity. In this study, we are searching through a wide variety of maps available from online resources for meaningful correlations to metagenomes available from publicdatabases. We hypothesize that there are previously undiscovered correlations between such geographical features as sea surface temperature, UV light, organic pollution, and calculated metagenomic characteristics such as dinucleotide ratios and hits to metabolic subsystems. We are using a variety of computational tools to curate the data, compute meaningful statistics, map the data, and summarize the results. These tools include PRINSEQ, a publicly available tool for metagenomic data cleaning developed by the Edwards lab at SDSU; the R open source language to calculate statistical correlations, and ArcGIS, http://www.arcgis.com, to map the data on a variety of digital maps. We hope to build a model that finds correlations between geographical features and metagenomic signatures.

255 Poster #25 10:30 am–12:30 pm

The Modeling of Interactions between Small Molecules and Intermediates of DNA Recombination

Gabriel Vahi-Ferguson, Biology (U)
Peter Salamon, Mathematics and Statistics

The Segall lab has previously identified peptides that have antibacterial activity at least in part because they interfere with DNA repair processes. The most potent peptide, WRWYCR, has been shown to bind to the central DNA repair intermediate, the Holliday Junction (HJ), with high affinity and stability and such activity contributes to bacterial cell death. Small molecule analogs of the

peptides were isolated that are more potent antibacterial compounds than the peptides. These analogs also interact with HJs and inhibit DNA repair enzymes. Quantifying these differences will help explain the differences in the activities of the peptide and the small molecule, and will help us design compounds with higher affinity for their specific target. We used a solution-based fluorescence assay to measure binding between the peptide and small molecule to the HJ.We measured the amount of fluorescence in reactions containing known amounts of a small molecule and a HJ with and without a fluorophore at the presumed binding site of the HJ. Since binding quenches fluorescence, this assay lets us infer the binding affinity of the small molecule. The project examined all possible mechanisms involving at most two small molecules attaching to the HJ. Specifically, the mechanisms explored the possibility of binding between a HJ and (1) only one ligand molecule, (2) two ligand molecules binding independently, or (3) a ligand dimer. In addition the potential dimerization of the small molecule ligand in solution was also examined.Each of our six mechanisms gave us a set of equilibrium constants, and the goodness of fit between modeled and actual data revealed the most likely mechanism of binding. A combination of the sum of squared errors and the Akaike Information Criterion (AIC) suggested the most likely predicted mechanism. This project was funded by NSF grant 0827278 Interdisciplinary Training in Biology and Mathematics to AS and PS.

256 Poster #26 10:30 am–12:30 pm

Metabolic Analysis of Marine Microbial Communities

John Haggerty, Biology (U)
Elizabeth Dinsdale, Biology

The microbial diversity of the marine community is dynamic and influenced by carbon input, pollutants and intraspecies interactions. To understand the effect of environmental conditions on microbial metabolic processes, metagenomes from nutrient rich marine systems and nutrient poor coral reefs were compared. Two metagenomes were sequenced and compared with two publicly available metagenomes. The kelp forest of Point Loma and the sandy bottom shore of Mission Beach in San Diego were sequenced on a 454 pyrosequencer and analyzed on MG-rast along with a metagenome from the Sargasso Sea and a coral atoll in Polynesia. We hypothesis that low nutrient availability on coral reefs is reflected in higher proportions of metabolic functions that increase virulence and nutrient retention within the microbial communities. An initial comparison to Point Loma, Mission Beach and Sargasso Sea shows high proportions of Nitrosopumilus maritimus, an ammonia oxidizing Archaea. The lowest proportion of this Archaea was found in the coral reef environment. The bacterial communities showed shifts from Rhodobacterales or Burkholderiales dominated in nutrient rich regions to Rickettsiales dominated in coral reef system. Rhodobacterales and Burkholderiales include common surface water dwelling marine bacteria and methylotrophs. Rickettsiales in the coral reef system is dominated by endosymbionts. Relative virulence was higher for the coral atoll, indicating pressure to survive nutrient limitations and community competition. The coral atoll shows sequences with higher drug resistant properties and antibiotic resistance along with sequences to facilitate uptake like increased siderophores. Metagenomics provides a unique opportunity to assess community structure and adaptations to environmental stressors. Highly competitive communities, exhibited in coral habitats, present an opportunity for finding antibiotic compounds.

257 Poster #27 10:30 am–12:30 pm

Training a Neural Network to Recognize Phage Structural Proteins

Michael Arnoult, Biology (U)
Victor Seguritan, Biology

Bacteriophages are the single most abundant biological entity on earth, and influence every environment in which bacteria exist. Research of bacteriophages, their physical components, and functions are therefore of great interest to the scientific community. There are no current algorithms which reliably analyze phage structural protein sequences and predict their function. The research conducted is aimed at developing a new tool that will the classify phage structural proteins using Artificial Neural Networks, a computational method of analysis inspired by biological neurons. Features of phage protein sequences with known classifications are used to train the neural networks. The networks then predict whether an unknown sequence produces a protein of a specified function. Analysis of the predictions will allow biologists to decide, with some accuracy, which proteins are the most appropriate candidates for their research needs. The training and testing of Neural Networks for this purpose in BioInformatics is a multiple-step process. Known phage major capsid proteins and tail proteins were collected, and rid of sequences with inappropriate descriptions. The percent compositions of the amino acids, as well as four other mathematical representations of positive and negative sequence examples were used to train neural networks. In test cases, the neural networks classify phage major capsid sequences and non-major capsid sequences with an average of 90% accuracy. Several neural networks will be trained using multiple combinations of the mathematical representations, and tested using phage and non-phage genomes; comparisons will

provide insights into the differences between phage structural proteins with respect to a variety of molecular and organismal perspectives. The validity of some of the predictions will be determined experimentally and by ClustalW analysis. This project was funded by NSF grant 0827278 Interdisciplinary Training in Biology and Mathematics to AS and PS.

258 Poster #28 10:30 am–12:30 pm

Phylogeography of the Sidewinder Rattlesnake: Testing the Phylogenetic Affinities of Populations from Baja and Sonora Mexico

Nikki Berneberg, Biology (U)
Tod Reeder, Biology

The goals of this research project is to study the phylogeography of the Sidewinder Rattlesnake (Crotalus cerastes) which is found in the warm deserts of Baja and Sonora Mexico, southern California, Arizona and Utah. This area is of interest due to the climatic and geological changes that have occurred over the last ten million years. Earthquakes, volcanic activity, erosion, and climatic changes have created sub-populations of Sidewinder Rattlesnakes on either side of the Colorado River. This study greatly expands upon research done by a former graduate student, by including many new geographic samples from Baja and Sonora Mexico, important geographic regions of the Sonoran Desert which were not represented in the previous study. These new samples allow me to look at the phylogenetic placement and affinities of populations from Baja and Sonora with respect to more northern populations that have been included in previous studies. New samples were obtained from the San Diego Natural History Museum, with DNA being extracted, and the targeted gene (i.e., ND1) amplified using the polymerase chain reaction (PCR). This study uses the mitochondrial ND1 gene due to its wide use in phylogenetic research done on other lizards and snakes, allowing for easy comparison to previously collected data. Amplified DNA was then purified and sent to be sequenced. In all ND1 gene sequences were obtained for approximately 100 individuals. The aligned DNA sequenced data are being analyzed using modern model-based phylogenetic methods (i.e., maximum likelihood and Baysian inference). The mitochondrial data currently supports four major regional clades: Sonoran Desert, Colorado Desert, South Mojave Desert, and North Mojave Desert. The final analyses will include the new Mexican samples to confirm the phylogenetic affinities of the sampled individuals to the already identified regional clades. This will allow us to test whether the southern extent of the Colorado River acts as a strong geographic barrier, as it appears to in the north. If this southern region of the Colorado River is a barrier to historical gene flow, the Baja individuals should cluster with the Colorado River clade and the Sonoran individuals should cluster with the Sonoran Desert clade.

Session B-4
Poster: Engineering II
Friday, March 4, 2011, 10:30 am–12:30 pm
Location: Montezuma Hall

259 Poster #29 10:30 am–12:30 pm

Semigraphoids and their Varieties

Laura Silverstein, Mathematics (M)
Michael O'Sullivan, Mathematics and Statistics

Semigraphoids are probabilistic conditional independence structures that are combinatorial by description. We will give a complete classification of semigraphoids on at most four random variables. These statistical models can be described by real algebraic varieties in the probability simplex. The varieties of the semigraphoids on binary random variables are subsequently utilized to find all conditional independence statements that are inferred.

260 Poster #30 10:30 am–12:30 pm

Microwave Breast Cancer Detection by Ultra-Wideband (UWB) Microstrip Slot Antennas

Kirthika Nahalingam, Electrical Engineering (M)
Satish Sharma, Electrical Engineering

Breast Cancer is the most common death causing cancer in women. In the United States, about 2, 07,090 new cases of breast cancer are estimated to be reported for the year 2010 as per the American Cancer Society. Early diagnosis and treatment is the better way to survive the disease and reduce the cancer mortality. Researchers are looking for an alternative to X-ray Mammography in detecting the tumor because they miss about 20% of the tumor detection and also wrong diagnosis in identifying between the malignant and benign tumor. Microwave Detection of breast tumors is an emerging technique and expected to be an alternative to today's available methods. Microwaves are electromagnetic waves that make use of the difference in the electrical properties of the normal and malignant tissue. The difference arises due to the varied water content which is three or more times higher in cancerous tissue than normal tissue. The omni-directional ultra-wideband (UWB) microstrip slot antenna which was developed earlier by our research group was adopted and used for this research in investigating the tumor detection. Array of six antennas with the breast model were simulated. Experiments were performed on breast phantom with two antennas, one on each side of the phantom. Analyses of simulated and experimented results aid in predicting the tumor information which will be presented in the symposium.

261 Poster #31 10:30 am–12:30 pm

Lagrangian Coherent Structures and Particle Dynamics in Turbulent Separated Flow

Daniel Nelson, Aerospace Engineering (D)
Gustaaf Jacobs, Aerospace Engineering

Two-phase flows are present in a wide variety of physical systems, such as liquid fuel combustors, volcanic eruptions, and climate modeling. Two-phase flows are composed of a carrier phase, most often air or a gas, and a second phase, such as liquid fuel droplets in combustors or solid particles as found in volcanic eruptions. Generally, real systems are characterized by complex turbulent interactions between the carrier phase and the solid or liquid particle phase. The complex physics associated with these flows are highly non-linear and chaotic, leading to a need for computationally expensive simulations and difficulty modeling them accurately. Recent advancements in highly parallel computing architectures and high-order computational methods have allowed greater fidelity in the simulation of this class of flows. In addition, a novel theory for Lagrangian analysis of turbulent flows provides significant advantages over more common analysis techniques in the fixed Eulerian frame. This new Lagrangian Coherent Structure (LCS) theory identifies transport barriers in the flow and provides far greater detail in turbulent structures. Preliminary work has been performed on modeling turbulent flows with high-order Computational Fluid Dynamics (CFD) methods, with LCS analysis as a next step. A three dimensional diffuser geometry provides a means to ensure a non-trivial boundary layer separation point and fully developed turbulence downstream of the slope. The LCS method provides an effective means of illuminating features in this flow, such as separation location and turbulent mixing regions. Flow through the diffuser is studied in detail using an in-house high-order Discontinuous Galerkin (DG) Spectral Element Method. Laminar flow is enforced at the inflow boundary and the diffuser length ensures a fully developed turbulent outflow condition. Development of turbulent flow structures and separation location are examined as a function of Reynolds number. Diffuser flows have been studied extensively in two dimensions, however Direct Numerical Simulation (DNS) of fully turbulent three dimensional diffusers have not received much attention. This work will provide unprecedented detailed insight into turbulent mixing and quantitative insight into transport of fuel and air mass. In addition, utilizing benchmark geometries provides correlations between geometry and mixing levels.

262 Poster #32 10:30 am–12:30 pm

Structures of Counter-flow Flames

Vaishali Amin, Engineering Sciences (Mechanical and Aerospace Engineering) (D)
Gustaaf Jacobs, Aerospace Engineering

The objective of this research work is to test a detailed chemical-kinetic mechanism (San Diego Mechanism) by comparing extinction strain rates measured in a counter-flow configuration with those found in numerical computations. We will also develop reduced mechanisms by deleting unnecessary steps and identifying steady-state species. We aim to minimize uncertainties in the rate parameters employed and also to find species and reactions crucial to describe the system being investigated.

263 Poster #33 10:30 am–12:30 pm

Turbulence Generation and Particle Dynamics in Shocked Particle Laden Flow

Sean Davis, Engineering Sciences/Applied Mechanics (D)
Gustaaf Jacobs, Aerospace Engineering

The analysis of particles moving at high speeds in supersonic flows such as the dispersion of dust particles in an explosion or the path fuel particles follow when injected into a scram jet engine cannot be accurately mapped using current techniques. The objective of this research is to develop efficient computational methods which can model this shocked flow coupled with fluid-particle and particle-particle interactions. In combination with an intricate physical composition, these flows exhibit a large range of time and spatial scales. These complexities pose high demands on computations and experiments. Because of the high velocities, experimental observations are restricted to only large-scale effects such as particle dispersion and shock location. Within the computational domain, more detail can be obtained. Particle-laden flows are commonly computed with Eulerian-Lagrangian (EL) methods and models, where flow dynamics are determined in Eulerian frame while particles are traced in their Lagrangian frame. Typically, EL methods only compute flows using simplified models and low order of accuracy techniques. These relatively low fidelity results now show bottlenecks in the computation and analysis of shocked turbulent particle-laden flows. To understand the role of particle-particle collision, we will enhance our current EL models to account for collision through both (1) an empirical collision model and (2) a multi-scale method. In the second approach, we will couple a full micro-scale simulation of the dynamics of a small number of particles to a macro-scale model simulation. Through numerical experiments, we can understand the effect of collisions helping each approach to confirm the other. Additionally, collaborators at the Russian Academy of Science will

perform new experiments, in order to improve particle dispersion observations and validate the numerical flow statistics and shock-particle turbulence correlations. With this combined approach, we will be able to explain the detailed dynamics of this flow, explaining the generation of turbulence and particle mixing. The first step to consider will be to develop a three-dimensional version of the present code which accounts for the particle momentum transfer. At the conclusion of this research, a fully functional, efficient 3D computational model of a shocked particle laden flow will be created.

264 Poster #34 10:30 am–12:30 pm

Preliminary Investigations in Current-Activated Tip-based Sintering (CATS): Modeling and Experiments

Ahmed El Desouky, Mechanical Engineering (D)
Khaled Morsi, Mechanical Engineering

Spark Plasma Sintering (SPS) has emerged as a process with unique advantages such as lower sintering temperatures and shorter holding times than conventional sintering, in addition to the production of materials with unique microstructures and properties. However, the process has been largely limited to the production of bulk materials with simple geometries on a relatively moderate size scale. In this presentation preliminary experimental and modeling results on novel current-activated tip-based sintering (CATS) powder compacts are presented. CATS enables the selective sintering of micro-scale (and potentially nano-scale) features using a moving or stationary (electrically conductive) tip configuration. Preliminary finite element modeling results on current and temperature distributions under typical CATS conditions is also presented, in addition to a discussion on the versatility and extended applications of this new process.

265 Poster #35 10:30 am–12:30 pm

Densification Mechanism behind Spark Plasma Sintering (SPS) and Application

Wei Li, Engineering Science (D)
Randall German, Mechanical Engineering

Conventional ways of sintering PM parts are accompanied with high energy consumption, long processing time, low geometry precision, as well as significant microstructure coarsening (lowered mechanical or other desired properties). Spark plasma sintering is now considered a very promising way of cutting sintering costs and time. However, the lack of understanding in the fundamental densification mechanism involved in this process now limits the capability to predict the results. Power-law creep has been considered to be one of the more important contributions to densification happened at high temperature with assistance of pressure. There are four major types of creep mechanisms including: diffusional creep, grain-boundary sliding creep, dislocation creep (glide-controlled or climb controlled), and dispersion strengthen alloys creep. The current on-going research is to identify the specific SPS related densification mechanism. By conducting multi-step pressure SPS experiments and analyzing the stress - strain rate relationship during densification, the stress exponent or strain rate sensitivity can be determined. Through comparing the characteristic exponent value to those values representing each major creep mechanism, the specific SPS related densification mechanism can be identified.

510 Poster #36 10:30 am–12:30 pm

A Two Dimensional Study of a Morphing Wing for Wind and Wave Energy Conversion

David MacPhee, Mechanical Engineering (D)
Asfaw Beyene, Mechanical Engineering

Turbine systems are designed to optimally operate at a given specific ambient condition, i.e., wind speed. However, changing weather conditions impose variable wind speeds, so that off-design load operation is common in wind energy conversion systems. In fact, wind turbines operate most of the time at off-design load, hence, off-design load is a significant research subject in wind energy conversion. Efficiency of a wind turbine drops significantly during part-load operation. Thus, it is desirable to design/select a conversion system for passable efficiency over a wide range of wind conditions characteristic to the selected site. Recent advances in the design of adaptive structures gave rise to a new turbine concept, employing continuous shape morphing, which allows the airfoil to adapt effectively to variable aerodynamic conditions. This adaptation can offer better performance than fixed geometry airfoils or rigid, hinged flaps, and other surfaces with controlled geometry. Benefits of adaptive geometries have been particularly apparent in actively controlled blades, blade flaps, or ailerons – the later using guided deformation of flight surfaces to improve efficiency and maneuverability of aircrafts at partial speeds. Recent studies have shown that such morphing blades enhance wind energy conversion efficiencies, especially at part-load. This work is concerned with a two dimensional coupling of the fluid structure interaction inherent in a wind turbine. A parametric analysis of the blade structure and shape allows for a better understanding of the factors affecting lift and drag forces on a morphing turbine blade.

Session B-5
Poster: Behavioral Sciences
Friday, March 4, 2011, 10:30 am–12:30 pm
Location: Montezuma Hall

266 Poster #37 10:30 am–12:30 pm

Effects of Caregiving Location and Caregiving Onsets for Alzheimer's Disease Patients

Catherine Sumida, Psychology (U)
Richard Graf, Psychology

Previous research suggests that caregiver's distress is affected by the circumstances associated with the onset into the caregiving role (Gaugler, Zarit, & Pearlin, 2003). Furthermore the relationship between a caregiver and carerecipient with Alzheimer's disease (AD) is suggested to be codependent, yet little research has focused on factors of distress for AD carerecipients. The current study examines how different onsets of care and the location of care affect the carerecipient's distress. Participants were 25 older adults who previously were caregivers. These participants received a scenario in which they were asked to place themselves into the carerecipient's position. In the scenario their care began before the onset of AD, at the time of AD diagnosis, and after a tragic event caused by advancing AD symptoms. Also care began either at the carerecipient's home or at their caregiver's home. After reading the scenario the participants responded to the Depression, Anxiety, and Stress survey (DAS). It is hypothesized that AD patients whose care began after a traumatic event will be more distressed when they are moved to their caregiver's home than when their caregiver moves in with them. Each item of the DAS was analyzed and analyses revealed that the data supported the hypothesis. Interactions were significant for the item "I would feel relieved if I were once again independent" $F(2, 19) = 3.775$, $p < .042$ and "I felt sad" $F(2, 19) = 5.332$, $p < .015$. The stress of moving into another person's home could contribute to the high levels of distress especially when the transition was catalyzed by a traumatic event. Furthermore this research demonstrates that when care begins after a traumatic event the caregiver as well as the carerecipient is negatively affected. Future research should examine onsets of care and location of care and their impact on AD patient's cognitive decline.

267 Poster #38 10:30 am–12:30 pm

Perception of Gang Violence Among Residents of a Migrant Colonia in Rural Mexico

Joanna Jacobsen, Public Health (M)
Esmeralda Iniguez-Stevens, Public Health

Background: While violence is commonly reported in Mexico's urban areas, it is less documented in rural communities such as San Quintín, Baja California. San Quintín is a thriving agricultural community, where many men and women from other parts of Mexico relocate to seek employment. Many of these migrants live in colonias near San Quintín, where they may be exposed to gang violence. The present study sought to assess correlates of residents' perceptions of gang violence. Methods: Over a two day period a 104-item community health assessment questionnaire was administered to colonia residents aged 13 years and older at their homes and at a local school. Using univariate and multiple logistic regression, we assessed the association of migration and gender with perceptions of gang violence among community residents. Results: Of 169 colonia residents surveyed, 79% were female and the mean age was 30 (range 13–60) years old. The majority (80%) were born outside of San Quintín, and 24% spoke an indigenous language as their primary language. A total of 116 (75%) participants perceived gang violence as a medium or big problem. Of those who perceived gang violence as a medium or big problem, the majority (83%) were female. Preliminary results of multiple logistic regression showed that neither migration (p-value = 0.47) nor gender (p-value = 0.07) were significantly associated with perception of gang violence. Conclusion: While the present analyses did not show an association between the main predictors of interest (i.e., gender and migration) and perception of gang violence, further understanding of factors that are associated with higher perceived gang violence may help guide future violence prevention efforts in San Quintín, Mexico.

268 Poster #39 10:30 am–12:30 pm

A Critical Analysis of Advanced Placement Courses: An Examination of How Racism is Structured within Education

Linda Munoz, Chicana/o Studies & English Literature (U)
Jung Min Choi, Sociology

While many people view education as the "great equalizer" in our society, this research article illustrates that the institution of education often serves as one of the agents in reproducing social inequalities like racism, sexism, and classism. Although race, gender, and class are intimately interwoven, for the purpose of this research, it will be limited to dealing with the issue of race. Critical Pedagogy Theory is utilized as the frame work in this paper to examine the relationship between racial inequalities and

school disparities. In order to ensure equal educational opportunity and accessibility to higher education we have to investigate how racial educational inequalities persist, and how they affect the educational outcomes of high school students. One way to investigate racial inequalities is through the access and availability of Advanced Placement (AP) courses. By specifically looking at high schools, this research asks "how do school structures and curriculum serve to reproduce racial disparities in educational achievement?" In order to answer this question I looked at the San Diego Unified School District, it will provide us with a better picture of how our local students are being served and treated within our public educational system. I utilized the San Diego Unified School Districts Advanced Placement Report for 2008-2009. The findings reveal that African American and Latina/o students are not having the similar type of access to AP classes as their White and Asian peers. The differential treatment that African American and Latina/o students are receiving is also a normalized phenomenon within these institutions of education that negatively impact educational outcomes and life chances. African American and Latina/o students are not just simply being denied access to AP classes; they are also being denied the equal right to a quality education. The cycle of social inequalities is being reproduced through schools in a structured manner. I conclude by placing a call for real educational reform that addresses racial disparities within education in order to ensure that all students are provided an equal educational opportunity to learn and achieve their full potential as human beings.

269 Poster #40 10:30 am–12:30 pm

The Psychological Differences in Contrasting Venues of Vocal Performance

Elly Roseberry, Vocal Performance (M)
Eric Smigel, Music and Dance

Performance anxiety affects singers in many ways, from solidly memorized lyrics disappearing with the infamous "mind blank," stiff muscles replacing expressive features, or a relaxed and fine-tuned technique tensing up into an ugly mess between practice room and stage. Within the voluminous published literature on performance anxiety, what is often overlooked is how the specific performance venue impacts the nature of psychological trauma. This study evaluates the dissimilarities between two contexts for vocal performance anxiety: the staged production and the solo recital. The unique performance situations vary in repertoire (art song vs. opera score), acting context (single song requiring imaginative context vs. plot with collaboration and tangible detail), even rehearsal preparation (a recital receiving public critique once or twice, while a production's teamwork makes it public from the start). The distinctions between the two venues directly affect the performance and alter the performer's psyche in regards to vulnerability (ie: "hiding behind" stage props), intimidation that comes with other people present or not on stage, and concentration that is dependent on any addition to or subtraction from the singular performer facing an audience. Just as any athlete would expect in training for different sport genres, methodology to mitigate psychological anxiety in vocal performance should cater to individual situation so that preparation for performance is appropriate to a particular, not a general, context. Many existing methods offer solutions to stage fright, from the practical to the superstitious (ie: detailed mental exercises to strengthen the psyche vs. pre-performance rituals to trick the psyche), so there is no need to invent more. By outlining psychological challenges unique to different performance situations while highlighting pre-existing methods to combat them, this study provides new awareness for types of performance anxiety. General methods such as careful preparation, mental practice, breathing exercises and relaxation techniques are still relevant but can be applied with increased specificity to the context of each new performance, resulting in consistent success.

270 Poster #41 10:30 am–12:30 pm

Empowering the Individual: a Case Study Illustrating the Effects of Peer Mentoring at the Undergraduate Level

Erica Faasee, Child and Family Development (U)
Shulamit Ritblatt, Child and Family Development

Due to the current financial crisis in the public education system, university students are faced with increased class sizes, reduction in the number of classes and student services offered, along with frequent tuition increases. The unfortunate reality of this situation creates a learning environment that deemphasizes the individual. To help address these critical issues and enrich students' educational experiences, mentoring programs have been implemented in institutions of higher education. Mentoring programs that are deliberately integrated into undergraduate degree programs have proven to help support participating students' overall personal, academic and professional development. The presented case study highlights the aspects and dynamics of a peer mentoring relationship between two undergraduate Child and Family Development (CFD) students. The subsequent analysis of the case study aims to: a) give insight on the benefits that mentoring can have on an individual, specifically within a higher education context, and b) examine the differences between one on one peer mentoring and group peer mentoring through a comparison of the outcomes of the present case study and the outcomes of a mentoring program previously implemented within the CFD department. The mentor and mentee were paired prior to the start of the Fall semester of 2010, as a part of the mentoring services offered to CFD students at the CFD mentoring center. The mentor and mentee has a variety of responsibilities,

including: weekly face to face meetings, weekly journal entries, and additional individual meetings with the CFD department chair. The CFD department chair helped establish a structure, advise and guide both the mentor and mentee. The analysis of the journal content indicates that the mentoring relationship promoted individual growth for the mentor and the mentee. Therefore the outcomes align with previous research on the benefits of mentoring, and validate the presence of mentoring in universities. Additionally, the outcomes of this case study imply that mentoring can be a solution for students in need of the individualized attention that is frequently absent from university classrooms and can also provide an opportunity for students to build relationships and connect with their peers.

271 Poster #42 10:30 am–12:30 pm

Baccalaureate Institutions in Psychology Study

Kimberly Sablan, Psychology (U)
Emilio Ulloa, Psychology

The qualities of an undergraduate institution in preparing students for acceptance and completion of a doctoral program is becoming increasingly important. As Thomas V. McGovern emphasizes, "a quality undergraduate program facilitates post baccalaureate alternatives such as work or further education." Educational researchers have become attracted to the idea of examining and ranking institutions based on where doctorate recipients have completed their undergraduate coursework. Few studies, however, have investigated an institutions' ability to prepare undergraduates for doctoral programs in psychology. An exception is the work by Hall (1985a) in which rankings of institutions were based on the criteria of baccalaureate of origin and gender. However, it should be noted that this ranking was incomplete because it only included four-year, private institutions. Consequently, the goal of the present study was to create a comprehensive analysis of the most recent data available on the baccalaureate origin for doctoral recipients in psychology. The current study was designed to determine how well undergraduate programs have prepared their students for completion of doctorate programs in psychology. The data was obtained through the Integrated Science and Engineering Resources Data System, or WebCASPAR of the National Science Foundation (NSF). The current study ranks institutions in several different categories including top public and private institutions for producing Psychology PhDs, top institutions for producing Psycholgy PhDs among underrepresented and ethnic minorities, and top institutions for producing psychology PhDs within Carnegie classification. The results indicated that the rankings differ greatly when controlling for size of undergraduate program in psychology. As well, Historically Black and Hispanic serving institutions rank very high among institutions producing underrepresented and ethnic minority Psychology PhDs. Implications for undergraduate programs in psychology are discussed.

272 Poster #43 10:30 am–12:30 pm

Classic Maya Eccentric Caches: A Window to Maya Cosmology

Marcos Ramos-Ponciano, Anthropology (M)
Joseph Ball, Anthropology

For more than 200 years, archaeologists have been puzzled by the so-called "eccentric caches" of the ancient Maya. Eccentric caches are ceremonial offerings consisting of sets of chipped chert or obsidian zoomorphic and geometric shapes found deposited beneath the floors of architecture set about the built sacred landscapes of lowland Maya centers in Guatemala and Belize. They are thought to be ceremonial in nature because the caches occur in important institutional contexts (temples, burial pyramids, and royal palaces) and are found in pristine condition suggesting that they had no intended utilitarian use but were produced for some ceremonial purpose. Previous studies of these artifacts have failed to produce any concrete understandings of them, only speculations lacking convincing support. My research pioneers a new approach to the study and understanding of these enigmatic objects by evaluating the sociocultural significance of their contexts and combining the latter with iconography, archaeoastronomy, and Maya ethnology. By so doing, I have been able to develop a plausible explanation for the representational meaning of these artifacts. To the Maya, the actions of their gods during the creation are at the core of everything they represented in their art, architecture, civic planning, and even in these caches. There is now overwhelming evidence that the majority of representations of the Maya creation are based on astronomical events. Based on the ancient, sacred Maya book, the Popul Vuh, many Mayanists believe that this resulted from beliefs that the movements of the sun, moon, planets, constellations, and the Milky Way physically embodied and repeatedly replicated the actual primal creation itself. The astronomical phenomena replicate the actions of the gods because they were fixed in the sky at the time of the primal separation of the earth from the sky. It is my proposal that these ceremonial artifacts also have a manifestly astronomical theme, and that as sets many represent significant astronomical events that replicate the actions of the gods during the creation of the Maya world. Essentially, eccentric caches are cosmograms or models of the ancient skies that literally transmute into and embody the very moment and power of creation.

273 Poster #44 10:30 am–12:30 pm

Dimensions of Loneliness in Maltreated Children

Ana Guaderrama, Psychology (U)
Joseph Price, Psychology

Loneliness in children is influenced by several factors, including how well accepted they are by peers, whether they are overtly victimized, whether they have friends, and the durability and

quality of their best friendships (Asher & Paquette, 2003). In general, children who have experienced some type of maltreatment are less liked by their peers and have difficulties forming friendships (Cicchetti & Valentino, 2006). Thus, it is hypothesized, that compared to children who have not been maltreated, children who have experienced maltreatment would evidence greater feelings of loneliness in early elementary school. Data for this study were drawn from a longitudinal study of social development of maltreated children. The maltreated children and their families were recruited from a range of ethnic backgrounds from a large metropolitan area of southwestern U.S. The maltreated children and families were recruited through a local Child Welfare agency and non-maltreated children were recruited though flyers passed out in communities where maltreated children and their families resided. The sample was made up of 183 children (48.7% female), with an age mean of 4-7 years old. Ethnicity varied from African American (22.4%), Caucasian (49.7%), Hispanic/Latino (18.6%), and Native American (0.5%). Loneliness was measured using the 18-item Loneliness Questionnaire. During a home interview, children were administered the measure of loneliness. A factor analysis was conducted to determine if the loneliness scale was best represented as a single construct or as measure composed of separate sub-scales. The results revealed four factors which were labeled: social isolation, feelings of being lonely, getting along with others, and having friends. Next, reliability analyses were conducted to examine the internal consistency of these subscales. Only two subscales evidenced adequate internal consistency using Cronbach's alpha, those scales were social isolation (alpha = .670) and feelings of being lonely (alpha = .695). The Cronbach's alpha for the total 18-item loneliness scale was .71. MANOVA analyses are planned to examine potential gender by maltreatment group differences on the two loneliness subscales and an ANOVA analysis is planned for examining group differences on the total score for loneliness.

274 Poster #45 10:30 am–12:30 pm

Maltreatment Experience Related to Ecological Factors and Familial Interactions

Amanda Chiapa, Psychology (M)
Joseph Price, Psychology

Despite the literature concerning risk factors of maltreatment experience (Freisthler, Merritt, & LaScala, 2006), there is a lack of literature assessing multiple environmental risk factors observed directly in the home. The purpose of this study was to examine the relation between prior maltreatment experience and later objective observations of home and neighborhood environmental factors. The sample consisted of 176 children of mixed ethnicity, some of whom had experienced maltreatment. All children in the maltreatment subgroup had experienced neglect, and some of these children had also experienced physical abuse. A Post-Inventory Questionnaire regarding the quality of the home environment and neighborhood was completed by a trained interviewer who had previously administered interviews in the family's home. A factor analysis of the Home Environment Scale revealed two internally consistent subscales: the Home Cleanliness subscale, with 10 possible points, exhibited high internal consistency (Cronbach's Alpha of .765) and the Neighborhood Safety subscale, with 8 possible points, evidenced moderate internal consistency (Cronbach's Alpha of .679). Higher scores indicate a higher degree of maladaptive environmental factors for both subscales. The Mother's Behavior Towards Child scale evidenced high reliability (Cronbach's Alpha of .770), as well as Mother's Behavior Towards Sibling (Cronbach's Alpha of .759), with 18 possible points for each mother-child scale. Finally, a factor analysis revealed an Aggressive Sibling Interaction scale with strong reliability (Cronbach's Alpha of .835), with 4 possible points. Higher scores indicate maladaptive social interactions. ANCOVA models revealed significant positive relations between maltreatment experience and all scales, except the Neighborhood subscale. Thus, children who had been physically abused were more likely to live in an unclean home environment, experience negative behavior from their mother, have a sibling who experienced negative behavior from their mother, and engage in aggressive behavior with their sibling. Males were more likely to live in less safe neighborhoods than females. Based on the significant correlations, a series of ANCOVA analyses are planned for examining the role of maltreatment and the potential interaction with gender, frequency and severity of subtypes of maltreatment, on each scale described above.

275 Poster #46 10:30 am–12:30 pm

Does Project Based Learning Affect Attendance?

Jeffrey Newman, Policy Studies (M)
Cristina Alfaro, Policy Studies

This paper examines attendance (in the form of truancy) and it's connection to an alternative form of education called Project-based Learning (PBL). For many students large, comprehensive high schools can alienate them from the learning process. Often they are pushed out of this system and at times do not graduate. If they decide to stay in school they can go to alternative education settings where various different, or atypical, teaching methods can be employed. PBL is one such method. Project-based Learning engages the student in a hands-on, active form of learning that involves varied forms of learning such as writing, research, creating visuals, group work, critical thought and interdisciplinary connections. The focus is on making each project relevant to the student's lives and teaching to the whole student in an authentic manner. If students with a history of truancy engage in PBL then their attendance can significantly improve because Project-based Learning is more engaging than traditional curriculum.I will be exploring truancy rates in relation to PBL at a small public, charter high school where students are primarily

referred to because of past truancy issues. In order to investigate this relationship I will involve students in the action research process as they write questions, designs surveys and question their classmates to uncover student's beliefs about the ways in which they learn. Student answers to survey questions will be tallied and this will allow students and teachers alike to learn about the types of lessons that students prefer and about what they believe will keep them in school. Some suggestions will be made to inform teachers about improving their PBL lessons or creating other forms of engaging curricula.

Session B-6
Poster: Neurobiology
Friday, March 4, 2011, 10:30 am–12:30 pm
Location: Montezuma Hall

276 Poster #47 10:30 am–12:30 pm

Enhanced Susceptibility or Resistance to Neurodegeneration/Autoimmune Disease in Mice Infected with Coxsackievirus Shortly after Birth

Lindsay Southgate, Kinesiology (U)
Ralph Feuer, Biology

Coxsackievirus B3 (CVB3), a neurotropic virus which preferentially infects neural stem cells and persists in the CNS may permanently alter the expression of inflammatory genes in the CNS. We wished to determine if previous CVB3 infection during the neonatal period may provide a "fertile field" for accelerated or exacerbated neurodegenerative and autoimmune disease in the aging host. We utilized two different mouse models of disease. The first mouse model employed hAPP751 transgenic mice. These mice express amyloid-β1-42 under the murine Thy1 promoter and reproduce aspects of Alzheimer's disease-like pathology. The second mouse model utilized the experimental autoimmune encephalomyelitis (EAE) model of autoimmune disease in the CNS, whereby immunization with a myelin peptide leads to infiltration of pathogenic T cells and subsequent demyelination. In each model, 3 day-old pups were infected intra-cranially (IC) with a high dose of a recombinant CVB3 expressing eGFP (eGFP-CVB3). hAPP751 transgenic mice showed increased mortality, as compared to either infected non-transgenic littermates or mock-infected hAPP751 transgenic mice over a 7 month period. Ongoing analysis of CNS histopathology will determine if an increase in amyloid plaque formation occurred within infected hAPP751 transgenic mice. In contrast, mice previously infected with eGFP-CVB3 and immunized with myelin peptide appeared to be protected from signs of EAE disease, as compared to mock-infected control mice. Three months after neonatal infection, EAE was induced in these mice by immunization with MOG35-55 peptide emulsified in Complete Freund's Adjuvant (CFA). EAE scores (signs of disease) were evaluated over 45 days, after which the mice were killed to determine relative levels of histopathology (Luxol fast blue/PAS staining), and demyelination (immuno-histochemistry for CNPase, myelin basic protein). Our results indicate that mice infected at an early age with eGFP-CVB3 showed reduced signs of EAE disease and fully recovered within 45 days, as compared to mock-infected control mice. These results suggest that a previous neurotropic infection which persists in the host may differentially enhance or reduce a subsequent neurological disease. The induction of key inflammatory and cytokine genes, and the nature of the neurological disease may be important determinants for the enhancement or reduction of disease following neonatal CVB3 infection.

277 Poster #48 10:30 am–12:30 pm

Striated Muscle Dysfunction Associated with Huntington's Disease Amyloid Accumulation in the Drosophila Model

Raul Ramos, Biology (U)
Sanford Bernstein, Biology

Huntington's disease (HD) is a neurodegenerative disease that also affects striated muscle function. HD is caused by a mutation in the Huntingtin gene, which results in an expanded PolyQ repeat. The function of Huntingtin is unknown; however, it is ubiquitously expressed in many cell types including skeletal muscle and cardiac cells. The length of the PolyQ repeat is also important in the progression of HD. For example, disease-causing alleles possess more than 40 PolyQ (CAG40) repeats, whereas 6-35 PolyQ repeats do not appear to be pathogenic. Extended repeats result in the accumulation of extracellular, insoluble aggregates of misfolded amyloid. Studies show that, after pneumonia, cardiac failure is the most common cause of mortality in HD patients. Accumulation of expanded PolyQ in the skeletal muscle also leads to inclusion body myopathy (IBM). To clarify the relationship between heart failure and HD, as well as HD with IBM, a model of this disease was made using *Drosophila* melanogaster. *Drosophila* has proven to be an excellent model to explore human cardiac and skeletal muscle function. To explore the effects of PolyQ deposition on cardiac function and in skeletal muscle, we used the UAS-Gal4 expression system to express short PolyQ-25 and expanded PolyQ-72 peptides using cardiac and skeletal muscle specific drivers. Expression of PolyQ-72 with a muscle specific driver (24B-Gal4) revealed a drastic shortening of lifespan in flies, as ~80% died within 2 weeks, whereas expression of PolyQ-25 with the same driver showed 100% survival for that time period. Moreover, confocal microscopy revealed severe muscle defects in flies expressing PolyQ-72. Expression of PolyQ-72 with a heart specific driver (Hand-Gal4) also affected the life span of flies, as ~50% died within a 4 week period, whereas flies expressing PolyQ-25 showed over 90% survival for the same period of time.

Expression of PolyQ-72 resulted in severe dilation in the cardiac tube. Other cardiac parameters such as cardiac efficiency are significantly reduced upon PolyQ-72 expression. These results are relevant in understanding the association of HD with cardiac failure and IBM in our genetically tractable model of *Drosophila*. Supported by the NIH/NIGMS SDSU MARC Program 5T34GM008303 -21A1

278 Poster #49 10:30 am–12:30 pm

CNS Developmental Defects Following Recovery from Enterovirus Infection during the Neonatal Period

Sonia Maciejewski, Microbiology (U)
Ralph Feuer, Biology

Coxsackievirus B3 (CVB3), a member of the Picornavirus family and the *Enterovirus* genus, is a significant human pathogen of the neonatal central nervous system (CNS). Despite major tropism for the brain, few studies have investigated the long term consequences of CVB3 infection in the CNS. By utilizing a neonatal mouse model of CVB3 infection, we evaluated developmental complications in the CNS following infection. Three day old mice were infected intra-cranially with a recombinant CVB3 expressing eGFP (eGFP-CVB3); and CNS pathology was characterized by histology, immunofluorescence microscopy (using antibodies against neural cell markers, viral protein expression, and apoptosis) and brain wet weight measurements in surviving mice. Intriguingly, CVB3 persisted in the CNS as a low level, non-cytolytic infection. A significant decrease in brain wet weight measurements was seen in both young (1, 2, and 5 days post-infection - PI) and older (10, 30, and 90 days pi) mice surviving infection, as compared to mock-infected control mice. We also observed an inverse relationship between the amount of infectious virus present during acute infection and brain wet weight measurements: the more infectious virus present, the lower the brain wet weight values. This relationship became progressively stronger over time. At 10 days PI, infectious virus was no longer present. Despite the lack of infectious virus, a significant decrease in brain wet weight values was observed up to 90 days PI, as compared to mock infected control mice. We hypothesize that developmental alterations following neonatal CVB3 infection might last well into adulthood, suggesting a potential link in the establishment of behavioral disorders within the surviving host.

279 Poster #50 10:30 am–12:30 pm

Signals Inducing Oligodendrocyte Progenitor Maturation and Myelination

Lydia Rojas, Chemistry (U)
Chris Glembotski, Biology

To ensure neuronal health and survival rapid nerve impulse conduction in the central nervous system the oligodendrocytes form axons wrapped with insulating myelin sheaths. Disturbing oligodendrocytes from mediating axonal support is the cause of demyelinating diseases, such as multiple sclerosis (MS), results in neurodegeneration and loss of neuronal function. Thus an important goal for treating demyelinating diseases is promoting remyelination using stem- or neural progenitor cells which rises investigating the molecular interactions between axons and oligodendrocytes during developmental myelination and remyelination. Myelin formation in the CNS is orchestrated by a series of complex cellular and molecular interactions during which oligodendrocyte precursors (OPCs) mature and myelinate in response to signals from the axons; while molecular nature of these signals remain to be elucidated. We are investigating the role of Contactin (CNTN1) in myelin formation and maintenance since earlier studies showed that Contactin expressed by neurons contributes to the formation of paranodal junctions adjacent to the nodes of Ranvier (Boyle et al., 2001). Further work with our null mutant mice and *in vitro* studies by us and others suggest a new and more complex model in which Contactin expressed by both neurons and by oligodendrocytes regulates cellular cross-task necessary for efficient myelin formation and function. We propose to test the cell-type specific contributions of Contactin to central myelin formation using our newly generated CNTNfl/fl mice carrying the conditional Contactin mutant allele in oligodendrocytes by intercrossing the CNTNfl/fl mutation with myelin-specific CNP1-Cre transgenic mice to determine if expression of Contactin in the oligodendrocyte lineage is necessary for developmental oligodendrocyte progenitor cell (OPC) differentiation *in vivo*.

280 Poster #51 10:30 am–12:30 pm

Modeling Schizophrenia Using hiPSC-derived Neurons

Samantha Larkin, Biology (U)
Chris Glembotski, Biology

Schizophrenia affects 1% of the population but costs more than all cancers. There is no cure for this neurological disorder. With an estimated heritability of 80-85%, human induced pluripotent stem cells (hiPSCs) offer hope of modeling this genetic disorder. Skin Fibroblasts from schizophrenic and control patients were reprogrammed and differentiated to neurons *in vitro*. Schizophrenic neurons show reduced synaptic density and neuronal connectivity, and gene expression profiles of these neurons show altered dopaminergic, Glutaminergic and GABAergic activity.

281 Poster #52 10:30 am–12:30 pm

Induction of a Functional Antiviral Response in Persistently Infected Neural Progenitor and Stem Cell (NPSC) Cultures

Ginger Tsueng, Biology (D)
Ralph Feuer, Biology

Coxsackieviruses exhibit neurotropism in newborn infants thereby potentially causing serious central nervous system diseases such as meningitis and encephalitis. We previously inspected the susceptibility of murine neural progenitor and stem cell cultures (NPSCs) to coxsackievirus B3 (CVB3) infection. We determined that CVB3 may undergo virus attenuation and establish a persistent or carrier-state infection within NPSCs. Little is known about the ability of stem cells to induce an antiviral response and become resistant to infection following Type I interferon induction. Therefore, we utilized two recombinant CVB3s expressing either enhanced GFP (eGFP-CVB3) or dsRed (dsRED-CVB3) to examine the potential of persistently-infected NPSCs to support superinfection. NPSCs simultaneously infected with eGFP-CVB3 and dsRED-CVB3 supported low levels of superinfection. In contrast, persistently-infected NPSCs initially infected with eGFP-CVB3 and superinfected with dsRED-CVB3 twenty-seven days later were resistant to secondary infection. These results suggested the presence of an effective and continuous antiviral response in NPSCs. Further investigation revealed that NPSCs produced interferon, which was capable of suppressing CVB3 protein expression. Treatment of NPSCs with two concentrations of interferon α protected cells from infection with eGFP-CVB3 in dose dependent fashion. Future experiments will determine whether NPSCs isolated from interferon αα receptor knock-out fail to establish a carrier-state infection, become susceptible to superinfection, and eventually succumb to virus-mediated cytopathic effects.

Session B-8
Oral Presentation: Biomedical Studies
Friday, March 4, 2011, 1:00 pm
Location: Backdoor

282 1:00 pm

AGR2 and MUC5AC: Changes in Airway Epithelium in Mucous Metaplasia

Maria Gutierrez, Chemistry and Biochemistry (U)
Tom Huxford, Chemistry

The main building blocks of the protective mucus gel in respiratory airways are the secreted polymeric mucins MUC5AC and MUC5B. Mucous metaplasia, characterized by an increase in mucous-producing cells, is a cardinal feature in the morbidity and mortality of chronic respiratory disease states such as asthma and chronic obstructive pulmonary disease. Previous studies conducted in our laboratory demonstrated a requirement for the protein disulfide isomerase AGR2 for mucus production in the colon, but it is unclear whether AGR2 is necessary for mucus production in airways. We hypothesized that increased AGR2 expression is required for hypersecretion of MUC5AC in a mouse respiratory disease model. Subsequent immunohistochemical detection experiments showed increased production of AGR2 and MUC5AC in allergen-challenged mice compared to control mice. Further experiments will be conducted to colocalize AGR2 and MUC5AC to the same airway-epithelium cell population.

283 1:15 pm

Effect of Group B Streptococcal Colonization on the Gene Expression Profile of Vaginal Epithelial Cells

Alyssa Jimenez, Microbiology (U)
Kelly Doran, Biology

Streptococcus agalactiae (group B *Streptococcus*, GBS) infection in pregnancy is a serious problem worldwide, with GBS being the leading cause of invasive neonatal disease and a significant cause of maternal uterine infection. The gastrointestinal tract serves as the natural reservoir for GBS and is the likely source of vaginal colonization; approximately 10% to 30% of pregnant women are colonized asymptomatically with GBS. GBS causes sepsis, pneumonia and meningitis in newborns, and GBS urinary tract infections during pregnancy are associated with pre-term rupture of membranes and pre-term birth. Neonates become infected via ascending spread from the vagina and cervix across the placental barrier, or through inhalation of vaginal fluids during passage through the birth canal. GBS virulence is regulated by the two-component system CovR/CovS. One of the virulence factors regulated by the CovR/CovS system is the β-hemolysin/cytolysin (β-H/C) encoded by the *cylE* gene. To investigate the role of GBS virulence factors in vaginal niche establishment, the ability of mutant strains deficient in *CovR* or β-H/C were assayed for the ability to adhere to human vaginal epithelial cells and persist in a mouse model of GBS vaginal colonization. The deletion of *covR* resulted in increased adhesion to immortalized human vaginal epithelial cells. However, the Δ*covR* mutant strain exhibited reduced persistence in the murine vaginal vault while the Δ*cylE* mutant exhibited a similar vaginal load as the wild-type parental strain. Our results suggest that the increased β-H/C expression in the Δ*covR* mutant drives its rapid clearance from the host. In order to examine this hypothesis, we plan to characterize the differences in host response modulated by wild-type GBS and the Δ*covR* and Δ*cylE* mutants. We are in the process of performing a microarray analysis to characterize the host response during GBS colonization. A better understanding of the host response to GBS is a crucial step in elucidating how GBS may switch from a normal vaginal inhabitant to an invasive disease associated pathogen.

284 1:30 pm

Metagenomic Analysis of Phages and Prophages from the Oxygen Minimum Zone off Iquique, Chile

Noriko Cassman, Bioinformatics/Medical Informatics (M)
Elizabeth Dinsdale, Biology

Oxygen minimum zones (OMZ) are defined as coastal areas in the ocean containing less than 20 microM dissolved oxygen. Counts of the microbial and virus-like particles in an oxycline from the OMZ off Iquique, Chile over three years (2008, 2009, 2010) show viral to microbe ratios as low as 2:1 at low oxygen depths. We hypothesize the viruses are present as prophages rather than reproducing in the low oxygen waters as free living phages. We conducted lysogeny induction experiments on OMZ samples from 2009 to investigate prophages at the depth containing 0.1 microM dissolved oxygen. Microbial samples were treated with mitomycin C overnight to induce prophages. One induced and one non-induced OMZ phage metagenome from 2009 was extracted, sequenced using 454 technology, annotated with GeneMark, and assembled using the 454 newbler assembler. The size of the induced and non-induced phage metagenomes were 131 Mbp and 132 Mbp, respectively. MG-RAST and Real-time Metagenomics were used to generate phylogenetic and metabolic profiles of each phage metagenome. The induced phage metagenome had ~3 times as many hits to double-stranded DNA viruses compared to the non-induced phage metagenome. The induced phage metagenome matched more single-stranded DNA viruses than the non-induced phage metagenome. Further bioinformatic analysis on the assembled phage metagenomes will investigate the role of prophages in the metabolism of OMZ microbes. The experiments will characterize role of phages in the OMZ microenvironment.

285 1:45 pm

Genetic and Immune Factors Contribute to Racial Disparities in Colorectal Cancer

Ranor Basa, Cell and Molecular Biology (M)
Kathleen McGuire, Biology

Colorectal cancer (CRC) is the second-leading cause of cancer deaths in the United States. There is a racial disparity in CRC, with African-Americans having both higher incidence and mortality rates than Caucasian-Americans. The underlying cause of these disparities is unknown, but correcting for socioeconomic and lifestyle factors does not eliminate this disparity, suggesting that genetic factors play a role. Development of CRC occurs via two distinct mechanisms: DNA mismatch repair defects leading to microsatellite instability (MSI), and chromosomal instability (CIN). Patients with MSI colon cancer have a better prognosis than those with CIN, and their tumors have a higher cytotoxic immune cell infiltrate. Host immune-tumor interactions can be classified as either pro- or antitumorigenic; immune cells (CD8+ cytotoxic T lymphocytes and CD57+ natural killer cells) are associated with an antitumorigenic response that protects the patient against the growth and recurrence of cancer. The goal of this study is to investigate the role of these immune responses in the racial disparities observed in colon cancer. Formalin-fixed paraffin-embedded colon cancer tissue slides were obtained from the North Carolina Colon Cancer Study (NCCCS), a population-based cohort (45% African-American, 55% Caucasian-American). MSI status for each patient in the NCCCS was determined previously (Carethers et al., unpublished), with African-Americans having half the incidence of MSI as Caucasian-Americans (7% vs. 14%, respectively). Tumors from 461 patients were analyzed for the presence of CD8+ cells using immunohistochemistry; a subset comprising 126 CIN tumors were also analyzed for the presence of CD57+ cells. For each, infiltration into the tumor was quantified from three high-powered fields (HPF) in a blinded study. The difference in average CD8+ infiltration into the tumor between African-Americans and Caucasian-Americans (57 vs. 73 CD8+/HPF, respectively) was found to be significant ($p=0.022$), but CD57+ infiltration by race was not significant. A related analysis of CD57+ infiltration in CD8+-high and CD8+-low tumors revealed a significant positive correlation between infiltration of CD57+ and CD8+ cells (19 vs. 2 CD57+/HPF, respectively; $p=0.000076$), suggesting the response between CD57+ and CD8+ cells is coordinated. Together, these studies suggest that both genetic and immune factors contribute to racial disparities in CRC.

286 2:00 pm

Effects of Hepatitis C Virus Infection on Host Cell Signaling Cascades

Lauren Aguado, Microbiology (M)
Roland Wolkowicz, Biology

The Hepatitis C virus (HCV) is the leading cause of liver cancer and liver transplantation and affects 170 million people worldwide. The 9.6kb genome consists of four structural and six non-structural proteins, many of which have been individually shown to interact with and influence a number of proteins involved in intracellular signal cascades. Until recently, however, there was no known wild type virus capable of replicating in tissue culture, severely limiting the ability to study the effects of HCV infection on host cells. In 2001, a genotype 2a HCV strain named Japanese Fulminant Hepatitis Virus-1 (JFH1) was isolated and in 2005 it was shown that JFH1 could replicate in tissue culture without the addition of adaptive mutations. Using JFH1, we demonstrate that alterations in intracellular signaling cascades, specifically the MAP kinases and NF-κB cascades, in hepatocytes are not observed until approximately five days post-infection. This is probably in correlation with increased viral protein levels at this time point. We exploit the power of PhosphoFlow, a technique

based on intracellular staining for flow cytometry analysis, which relies on phospo-specific as well as antibodies which recognize total protein intracellular targets rather than surface proteins. Our preliminary data show drastic effects on the NF-κB cascade, and we are thus analyzing many of the key players of the NF-κB cascade to determine at what step increased activation is occurring. We are specifically investigating the role of IκBα, a protein which blocks activity of NF-κB transcription factors, and its effect on HCV infection. We currently hypothesize that interactions between HCV protein(s) and members of the NF-κB cascade lead to the stabilization and/or the inhibition of degradation of IκBα, thus increasing overall activation, which would probably aid the virus in establishing infection by evading host defenses.

287 2:15 pm

Expression of a High Molecular Weight Multi-Subunit Mammalian IKK Complex: For Use in Biochemical and Biophysical Studies

Danielle DiTirro, Molecular Biology (M)
Tom Huxford, Chemistry

NF-κB is a significant transcription factor that presents therapeutic potential for reducing arthritis, asthma, autoimmune disease and cancers that result from NF-κB hyperactivation. Normally NF-κB exists in mammalian cell types as an inducible transcription factor which allows cells to respond to a variety of stressful environments, but, in disease states, like asthma and cancer, inhibiting NF-κB can be a useful remedy for decreasing inflammation or cell proliferation. A key target to suppress the NFκB response is the upstream kinase, Inhibitor of κB Kinase (IKK), which is responsible for the activation of NF-κB. The IKK complex is composed of three subunits, two catalytically active kinase subunits IKKαand IKKβas wells as a regulatory subunit, IKKγ Although the IKK complex is a crucial within the NF-κB pathway, much is still unknown including its oligomerization state, full-length structure, and the mechanism by which it assembles. To facilitate these studies a protocol must be created to generate high molecular weight, multi-subunit, active IKK complex. To this end, we propose the following specific aims: 1. Prepare recombinant baculoviruses able to direct the expression of human IKKα, IKKβ, IKKγsubunits in Sf9 insect cell suspension cultures. 2. Prepare recombinant baculoviruses able to direct the expression of human IKKαIKKβ, IKKαIKKγ, IKKαIKKβsubcomplexes in Sf9 insect cell suspension cultures 3. Establish and normalize a procedure for expression and purification of homogenous active complexes containing human IKKα, IKKβ, IKKγsubunits.

288 2:30 pm

Mathematical Modeling of Cystic Fibrosis

Sara Zarei, Computational Science (D)
Peter Salamon, Mathematics and Statistics

Cystic Fibrosis (CF) is the most common autosomal recessive disease in Caucasians associated with early mortality with a reported incidence of 1 in 3200 live births. Host inflammatory responses result in airway mucus plugging, airway wall edema and eventually destruction of airway wall support structure. Despite very aggressive treatment, the median age of survival is approximately 38 years. There have been a number of studies on mathematical modeling of respiratory inflammation but none of those focused exclusively on Cystic Fibrosis. This work is a first attempt to integrate CF patients' forced expiratory volume in one second (FEV1) data into a dynamic model of the disease. The goal of our research is to use mathematical and statistical modeling techniques to better understand and control Cystic Fibrosis by capturing the complexity of interactions underlying disease activity. We used spirometric data from University of California San Diego Adult Cystic Fibrosis Center to adjust our model's constants to mimic the average CF lung's infection as a function of age. The model uses the known fractal structure of bronchioles in the lung. In this research, we simulate the lung function of CF patients by presenting a physiological model that will approximate the long term behavior of infection in CF lungs.

Session B-9
Oral Presentation: Engineering II
Friday, March 4, 2011, 1:00 pm
Location: Calmecac

289 1:00 pm

Design and Analyses of a Multi-Window Aperture Structure for a Small Particle Solar Receiver

Ioana Broome, Aero Engineering (M)
Fletcher Miller, Mechanical Engineering

This paper presents the outline of the research, design and analysis of a multi window aperture structure to be used on a small particle solar receiver. The spherical cap structure, which is 5 m in diameter, serves as the head of the pressure vessel which comprises the receiver. The interior walls of the receiver are under hydrostatic pressure of up to 5 bar. The temperature of the gasses inside the receiver will reach up to 1000° Celsius. The main design considerations are defined as a part of formulating the problem statement. Thus, the material chosen for the windows has to be very transparent to let as much light in as possible. The windows as well as the steel structure both have

to withstand high pressures and temperatures; hence the system must be made of materials with a very small coefficient of thermal expansion. Lastly, the entire structure has to be cost effective to fabricate and maintain and easy to install and replace. The structure design is being continuously optimized in efforts to improve the physical and mechanical properties of the receiver's window and increase the efficiency of the solar receiver. Subsequent to the studies and analyses ran on different geometries, a convex steel spherical cap with seven concave fused silica windows mounted on it was designed. The fabrication materials selected for this structure were: stainless steel SS316 for the shell and fused silica for the windows. The first step in determining the structure's geometry was establishing its profile. A convex shell of revolution was chosen for the steel head structure and a concave shape was found appropriate for the seven windows mounted onto the steel head. As the pressure acts from within the vessel, the steel head is under tension reducing stresses at the circular edge, while the windows are under compression. The spherical shell cap has been cut at an angle of 60° based on a stress and weight minimization study.

290 1:15 pm

Effect of Channel Height and Air Velocity on Flame Spread in Simulated Microgravity Flow Environment Using Couette Flow

Karen Hung, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

An apparatus has been developed to test the flammability of materials in a simulated microgravity flow environment for the purpose of astronaut and spacecraft fire safety. The Couette Flow Apparatus produces a linear velocity profile above the fuel to mimic the boundary layer encountered by a flame in an actual microgravity fire. Similar apparatuses have been used to test materials using a parabolic velocity profile, but the purpose of this research is to determine whether or not using a linear velocity profile above the fuel surface will produce different results. Simulated microgravity conditions were achieved by minimizing the space above and below the flame to reduce buoyant flow. The apparatus consists of a fixed bottom plate, two side walls, and a moving belt at the top to drive the flow. The belt is made of a Teflon-coated material to withstand the high temperature of the flame since they are in close contact. The side walls and the base plate contain sections of quartz windows so that images and videos can be recorded to show the flame behavior. Linear velocity profiles in the channel were not attained until after a fan was added to the outlet to help pull air through. The fan speed was determined by first setting the belt speed and then adjusting the fan speed so that the velocity in the vertical center of the channel was half of the belt speed. Air velocity measurements were made using hot wire anemometers, and flame speed was tracked using the videos taken through the quartz windows and Spotlight software. The belt velocity and channel height were varied to study their effect on flame spread.

291 1:30 pm

Effect of Velocity and Oxygen Composition on Thin Fuel Opposed Flow Flame Spread in the Narrow Channel Apparatus

Jacob Pepper, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

The most widely used method of NASA material flammability testing for non-metallic solids is NASA-STD-(I)-6001A Test 1. The Standard does not, however, account for the influence of buoyancy on flame spread. The purpose of SDSU's Narrow Channel Apparatus (NCA) is to more accurately explore microgravity flame spread phenomena by minimizing the effects of buoyancy. Also, the NCA has the ability to mimic actual (normoxic) spacecraft ventilation conditions by varying the pressure, opposed oxidizer flow velocity, and oxygen concentration in the test section. These capabilities allow the NCA the possible opportunity to replace Test 1 as NASA's primary material flammability screening method. Using two computer-operated Mass Flow Controllers, the flow of Nitrogen and Oxygen is controlled in the test section of the NCA. The NCA test section is 914.4 mm long and 83.2 mm wide. The total gap height can be set from 0.0 to 25.0 mm, depending on the desired test conditions. The NCA accommodates thin-fuel test samples that are 50 mm wide. The NCA features a removable lid that allows for easy replacement of fuel test samples. A vacuum pump and regulator is used to control the pressure in the NCA during each test. Tests were conducted with Whatman 44 filter paper for a 1cm total gap height. Opposed oxidizer flow velocity was varied in the range of 1.0 to 30 cm/s. A camera is used to record the flame spread across each test sample. These recordings were analyzed using Image Analysis Software to determine the flame spread rate under the varying test conditions.

292 1:45 pm

Effect of Variable Guide Vanes and Natural Gas Hybridization for Accommodating Fluctuations in Solar Input to a Gas Turbine

Kyle Kitzmiller, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

In recent years, several prototype solar central receivers have been experimentally demonstrated to produce high temperature and high pressure gas capable of driving a gas turbine engine [1-4]. While these prototype receivers are generally small (< 1 MWth), advancements in this technology will allow for the development of solar powered gas turbine engines at a commercial

level (sizes of at least several megawatts electric (MWe)). The current paper analyzes a recuperated solar powered gas turbine engine, and addresses engine considerations, such as material limitations, as well as the variable nature of solar input. In order to compensate for changes in solar input, two operational strategies are identified and analyzed. The first is hybridization, meaning to supplement solar input via the combustion of fossil fuels. Hybridization often allows for an increase in net power and efficiency by adding heat during periods of low solar thermal input. An alternative strategy is to make use of variable guide vanes on the compressor of the gas turbine engine, which schedule to change the air flow rate into the system. By altering the mass flow rate of air, and assuming a fixed level of heat addition, the operating temperature of the engine can be controlled to maximize power or efficiency. The paper examines how to combine hybridization with variable guide vane operation to optimize gas turbine performance over a wide range of solar thermal input, from zero to solar-only operation. A large material constraint is posed by the combustor, and to address this concern two alternative strategies – one employing a bypass valve and the other a combustor modified to allow higher temperature inlet air – are presented. Combustor modifications could include new materials and/or increased cooling air. The two strategies (bypass vs. no bypass) are compared on a thermodynamic basis. Finally, a yearly assessment of solar share and thermodynamic performance is presented for a 4.8 MWe gas turbine to identify the overall benefits of the operational strategies.

293 2:00 pm

Novel High-efficiency 3D ITO-less Flexible Organic Solar Cells

Shanel Miller, Bioengineering (M)
Sam Kassegne, Mechanical Engineering

A novel approach based on anodes made of 3-dimensional nanopillars which not only increase the area of light absorbing surface, but also improve carrier collection efficiency of bulk heterojunction organic solar cells is presented. The approach also introduces coating of anodes with a new solution-processable highly conductive transparent polymer (Orgacon) that replaces expensive vacuum-deposited ITO (Indium Tin Oxide). The high aspect-ratio 3-D electrodes which form the basis for this new architecture are patterned through MEMS/NEMS based processes. Efficiencies for these photovoltaic cells of 3-D architecture in excess of 6% have been achieved using ITO-less flexible PET (polyethylene terephthalate) substrates, 50% higher than those achieved thus far for their 2-D counterparts. Encapsulation methods to stabilize the achieved efficiencies through addressing degradation of materials within the photovoltaic cells are also presented. In addition, the described procedure, including final packaging of the solar cell, is well-suited for roll-to-roll high-throughput manufacturing.

294 2:15 pm

Home Side Auto-demand Response System

Prakash Jha, Electrical Engineering (M)
Yusuf Ozturk, Electrical and Computer Engineering

Auto-demand response is an active and ongoing research area in academics as well as industrial fraternities. It consists of developing various demand response strategies sufficing varying nature of electricity demand and supply. Users have to consider numerous factors before enrolling for a demand response system because missing deadlines can be expensive. The application developed during the research, is intended to provide users with functionality to schedule appliances at home and automate demand response strategies without knowing much about the demand response strategies. The application developed in this study, not only controls appliances in home, but also monitors near real time power consumption of appliances. The application is multi-threaded and highly configurable; its behavior can be changed by changing parameters in configuration files. The Master Controller is lightweight application and can be easily ported to handheld devices like mobile phones. New functionalities can be integrated to this application simply by adding an independent module.

Session B-10
Oral Presentation: Astronomy and Physics
Friday, March 4, 2011, 1:00 pm
Location: Quetzalcoatl A

295 1:00 pm

White Light Vortices Interaction and Control

Cory Stinson, Physics (M)
Matt Anderson, Physics

A supercontinuum light source is generated from a femto-second laser coupled into a micro-structured fiber. This light source is used in combination with a spatial light modulator to produce optical vortices. It is shown that this system allows for independent control over the vortex size, shape, position, charge, and color. The independent vortex control is demonstrated, and complex interactions between up to four vortices are examined using this optical setup.

296 1:15 pm

Response of a Jammed System of Telechelic Associating Polymers to External Stress

Adam Coleman, Physics (M)
Arlette Baljon, Physics

Solutions of self associating telehelic polymers are part of a unique classification known as viscoelastic materials. At low temperatures the end groups of these polymers connect and a network forms. Viscous response (sol) at high temperature gives rise to elastic deformation (gel) at low temperatures. When the gel is subjected to a constant stress, it will flow; however below a critical stress, it will exhibit a slow creep. This is called a "jammed" state. In this state the gel alternates between moving with and against the direction of the stress. If the dynamics are chaotic then these fluctuations are described by the Gallavotti-Cohen Steady State Fluctuation Relation (SSFR). This has been verified for other viscoelastic systems, but not yet in a polymeric gel. My research aims to investigate if the relation holds in a polymeric gel as well. To this end I use data sets generated by a computer simulation developed by Dr. Arlette Baljon, based on the Gremer-Krest bead spring model, for a system of telechelic polymers in solution. Using the linear least squares fit of the system's position data we were able to determine the shear-rate of the system and identify the stresses for which the gel is jammed. We found the fluctuations of the system are large. We verified that their probability distribution functions behave as predicted by the SSFR."

297 1:30 pm

Spin-Up Evolution Of Neutron Stars in X-Ray Binaries

Eric Mckenny, Physics (M)
Fridolin Weber, Physics

Since pulsars were identified as rotating neutron stars, precise measurements have allowed the inference of their bulk properties. Despite this success, the nature of the constituent nucleonic matter remains relatively uncertain. This investigation uses computational methods to test competing models of nuclear matter by simulating their effect on the evolution of neutron stars in Low Mass X-Ray Binaries (LXBs). For this study, data for three candidate nuclear models are provided as input for a program that self-consistently solves Einstein's Field Equations using the Hartle-Thorne Perturbative Method. A series of steadily rotating stellar models are produced from which an evolution program interpolates to simulate the spin-up behavior of a neutron star with an asymptotically decaying magnetic field according the magnetohydrodynamic Ghosh-Lamb Accretion Model. The models of neutron star matter are compared by their resulting conformity of these simulations to the observed astrophysical data. The outcome of this study may help reveal properties of ultradense nuclear matter whose confinement may preclude them from being investigated by any other means.

298 1:45 pm

Two Age Sensitive Detached Eclipsing Binaries in the Open Cluster NGC 6819

Mark Jeffries, Jr., Astronomy (M)
Eric Sandquist, Astronomy

We analyze extensive B, V, Rc, and Ic photometry and radial velocity measurements for Auner 259 and 537, two detached eclipsing binaries that are double-lined members of the open cluster NGC 6819, which is in the Kepler field. Because the stars in these binaries are near the cluster turnoff, they are evolving rapidly in size and they are age sensitive. The masses and radii of the binaries constrain the age of NGC 6819 to be 2.0-2.6 Gyr, depending on the isochrone set. Age estimates carry a precision of ~10% with the current errors on mass and radius.

299 2:00 pm

Comparing the Random Phase Approximation to Full Configuration-Interaction Calculations of Atomic Structure

Micah Schuster, Computational Science (D)
Calvin Johnson, Physics

The atomic many-body problem has many approximations that allow for the computation of atomic spectra without full diagonalization. Two such methods, Hartree-Fock and random phase approximation are compared to full CI while using the same input parameters for each method. The atomic one- and two-body interactions, used as input, are computed analytically using Slater-type orbitals, STOs. This gives a direct comparison between methods for the ground state energies for the atoms helium through neon.

300 2:15 pm

Projected Hartree-Fock in a Shell Model Basis

Joshua Staker, Computational Science (D)
Calvin Johnson, Physics

We implement projected Hartree-Fock in a shell model basis and compare against exact numerical results from full space diagonalization. We consider the accuracy of projected Hartree-Fock for the excited state spectrum in the cases of the s – d and p – f fixed parity shells as well as cases of mixed parity in the p – sd shell. The accuracy of valence proton-neutron number configurations are also considered including even-even, odd-odd, and odd-A. This research is sponsored by the U.S. Department of Energy.

Session B-11
Oral Presentation: Chemistry I
Friday, March 4, 2011, 1:00 pm
Location: Chantico

301 1:00 pm

Ultrasensitive Detection of Chem/Bio Agents Using Multi-Photon Laser Wave-Mixing Spectroscopy

Jorge Jimenez, Chemistry (U)
William Tong, Chemistry and Biochemistry

Nonlinear multi-photon laser wave-mixing spectroscopy is presented as a sensitive optical absorption-based detection method for trace-concentration protein analysis using simple capillary flow cells. Wave mixing offers inherent advantages over other detection methods including excellent detection sensitivity levels even when using micrometer thin analyte cells and high spatial resolution levels suitable for capillary flow cells, microfluidic systems and single-cell analyses. In a typical wave-mixing setup, two excitation laser beams are focused and mixed to create dynamic gratings inside the analyte. The incoming photons are then scattered off these gratings to create a signal beam that is characteristic of the analyte. Since the signal beam is a coherent laser-like beam, the optical detection efficiency is very high and the signal-to-noise ratio is excellent. Wave mixing allows sensitive detection of chem/bio agents, biomarkers and proteins at trace concentration levels. Our detection sensitivity levels are comparable or better than those of fluorescence-based methods, and yet, wave mixing can be used for both fluorescing and non-fluorescing analytes. The wave-mixing signal has a cubic dependence on laser power, and hence, one can efficiently use low laser power levels available from compact solid-state lasers. Quadratic dependence on analyte concentration also allows more dramatic detection of small changes in analyte concentration levels, and hence, wave mixing serves as an ideal sensor.

302 1:15 pm

Investigation of a Suspension of Sub-micron Carbon Particles Generated by a Hydrocarbon Cracking Chamber

Paul Schroeder, Physics (U)
Fletcher Miller, Mechanical Engineering

The SDSU Solar Energy and Combustion Lab is continuing development of a solar power plant design utilizing a small carbon particle laden flow through a central receiver which requires an on-site carbon particle generator. The effective design and implementation of such a generator will allow the plant to crack natural gas onsite and generate the required particles rather than having to import them pre-manufactured en masse and then disperse them. Over the last year and a half, a hydrocarbon cracking chamber capable of operating at 1000 degrees Celsius and five atmospheres of pressure has been built, tested, and is now being refined and its output characterized. The current and most interesting step in the experiment is calculating and attempting to maximize the overall efficiency of the conversion of acetylene gas to sub-micron carbon particles. Acetylene was chosen because of relatively low bond strength and ease of cracking in such a chamber. Efficiency is defined as that amount of carbon contained in the solid particles exiting the reactor to that contained in the acetylene molecules entering the reactor. Acetylene decomposes in the absence of oxygen at about 725 degrees Celsius with the reaction becoming more efficient as the temperature approaches our chamber limit at 1000 degrees Celsius. The particles show variations in parameters such as indices of refraction, size, bimodal size distributions, and sphericity depending on whether or not a rising or falling temperature heating profile is used. Efficiency of the chamber is calculated by performing a Mie fitting routine on different scattering matrix parameters calculated using the intensity, linear and circular polarization of light scattered from the generated carbon particles. The data collected as the temperature is falling is proving to be difficult to analyze as it leads to diverging solutions yielded by the Mie fitting routine, thus distorting efficiency values. Data will be presented that supports the dependence on temperature profile as well as data showing similarities between the two temperature profiles. An analysis of the potential causes of the discrepancy will be presented with the main candidates being an autocatalytic reaction or transient temperature zones in the chamber.

303 1:30 pm

Pressure Driven Paper Chromatography

Caroline Davis, Chemistry (U)
Christopher Harrison, Chemistry

Paper based chromatography is not a new chromatographic technique; in fact, it is probably one of the oldest. However, paper based chromatography is not just an old fashioned method of the past. Its intrinsic monolithic nature and cellulose's ability to react quite permanently with borate compounds make paper an ideal stationary phase in chromatography even today. Our devices, composed of just paper, polydimethylsiloxane (PDMS), nanoports, and electrodes provide quick, reliable separations that can be used for portable, inexpensive on-site analysis, unlike some of the more modern sophisticated techniques that require large, expensive equipment. The paper column itself can be derivatized with different borate compounds, allowing us to control the nature of the stationary phase so that a range of chromatographic separations can be achieved. The rigid structure of PDMS encasing the

paper channel allows for us to employ pressurized directional flow through our system with a simple syringe pump. Our unique T-shaped injection system allows for us to avoid using expensive multi switching valve injection systems, and eliminates a great deal of band broadening. Best of all, our device includes an on-column detection system, something that has never been used in conjunction with paper based chromatography before. This work will present our advances in the design and testing of these devices; our tests have focused on the separation of dyes as well as performing ion exchange chromatography with our paper based devices.

304 1:45 pm

Sensitive and Selective Detection of Proteins by Nonlinear Laser Wave Mixing and Capillary Electrophoresis

Ashley Warren, Chemistry (U)
William Tong, Chemistry

Multi-photon nonlinear laser wave-mixing spectroscopy is presented as a highly sensitive absorption-based detection technique for a wide range of biomedical applications including early diagnosis of viral infections. Laser wave mixing offers inherent advantages over other optical methods including parts-per-quadrillion or zeptomole level detection sensitivity, small probe volumes, small sample requirements, compact portable detector designs, and high spatial resolution that is suitable for analysis of protein. The analytical signal is a consistent laser-like beam, and hence, it can be collected with nearly 100% collection efficiency and with no optical background noise. The excitation wavelength is tuned to the analyte absorption wavelength maxima. In a typical wave-mixing setup, two laser beams are focused and mixed inside a capillary where the analytes are separated and detected. In this work, capillary electrophoresis (CE) is used to separate and identify protein analytes. The signal generated has a cubic dependence on laser power and a quadratic dependence on analyte concentration. Wave-mixing detection sensitivity levels are comparable or better than those of widely used fluorescence detection methods and yet wave mixing does not require the use of fluorescence labels and probes and many biomolecules can be detected in their native form. Potential applications include early disease diagnosis, sensitive detection of biomarkers and bio agents, cellular protein studies and protein interaction studies. This nonlinear detection method can be easily integrated into low-cost portable devices for use in the field where resources are limited.

305 2:00 pm

Effects of Varying CO_2 Injectant Concentration and Seepage Velocity on Reservoir Porosity and Permeability for Applications in Carbon Capture and Sequestration

Christopher Binter, Geological Sciences (M)
Christopher Paolini, Computational Science Research Center

The storage of carbon dioxide underground has been proposed as a method to reduce CO2 concentrations in the atmosphere. One of the main questions is how CO2 will affect the subsurface geology. To address this question, porosity, permeability and mineralogical changes must be measured around the injection well as CO2 is being sequestered. The use of Reaction-Transport Modeling (RTM) software is an advantageous tool that can be used to model these changes before site injection commences. With RTM software it is possible to quickly and easily model a range of subsurface lithologies and their response to a range of injection solutions, thus limiting costly and time intensive field experiments. This paper uses RTM software to answer two critical lithological response questions. The first question is how different CO2 concentrations in injected waters affect a lithology. This is important to better understand the optimum CO2 concentration that can be sequestered in a formation. 1D horizontal simulations were run with CO2 aqueous concentrations ranging from 0.1M to 1.0M being injected at seepage velocities of 100, 300 and 500 [cc/(cm2 yr)]/αthrough a homogenous sandstone formation. These results show that to maximize porosity a low seepage velocity near 100 [cc/(cm2 yr)]/αshould be used, and to maximize permeability a high CO2 concentration should be employed. The second question this paper addresses is how injected CO2 affects calcite in lithologies. This is important because calcite dissolution could provide pathways for CO2 to migrate towards the surface. 1D horizontal simulations for lithologies with calcite volume fractions of 5%, 10%, 20% and 40% were modeled at seepage velocities of 100, 300, and 500 [cc/(cm2 yr)]/α. All simulation results show a decrease in calcite volume, resulting from dissolution of calcite as the CO2 front migrates away from the well. However, lithologies with calcite volume fractions of 5% and 10% with 300 and 500 [cc/(cm2 yr)]/αseepage velocities show slight precipitation of calcite behind the injection front that decreases porosity and permeability. Thus to limit calcite dissolution, one can inject a second solution behind the CO2 injectant that would promote calcite precipitation and mineral trapping of CO2.

306 2:15 pm

Synthesis and Application of Various Metal-NHC Carbene Complexes

Maulen Uteuliyev, Chemistry (M)
Douglas Grotjahn, Chemistry

The syntheses of several metal-N-heterocyclic carbene complexes will be presented. The application of metal-NHC complexes as catalysts for different type of reactions will be also discussed.

Session B-12
Oral Presentation:
Computational Science and Biomedical Algorithms
Friday, March 4, 2011, 1:00 pm
Location: Presidential Suite

307 1:00 pm

A Java Implementation of the Phage Proteomic Tree

Andres Blanco Revah, Computer Science (U)
Robert Edwards, Computer Science

Bacteriophages (or simply phage) are viruses that infect bacteria. There are ~10^31 phage in the biosphere, making them one of the most abundant biological entities on the planet. Despite their great numbers and ubiquitous presence however, very little is known about phage biodiversity, biogeography, or phylogeny. The Phage Proteomic Tree (Edwards & Rohwer 2001) was the first genome phylogenetic system developed. After nearly a decade since its introduction, and with continued interest in the subject area, the programs used to create this classification are in need of several updates. The aim of this research project will be to re-write the main programs that drive the phage classification process in an attempt to improve the speed and efficiency of the execution. In particular, the new implementation will be done using the Java programming language instead of the original Perl scripts. By streamlining and improving this method of classification we hope to make the process available to a wider breadth of researchers who may need such a tool.

308 1:15 pm

Rapid Sequence Searching Using Hashing

Daniel Cuevas, Computer Science (U)
Robert Edwards, Computer Science

Much of biological and bioinformatics research today involves identifying the information from genomic or environmental sequences. A number of tools, such as BLAST, Clustal, and MUMmer, identify data using comparative analysis techniques. What separates each piece of software are their algorithms and internal data structures used to complete the sequence alignments and matches. Memory and time complexity differ greatly between algorithms, and become increasingly important as the size of reference and query sequences increase from a few thousand nucleotides to a few megabases of DNA. We have developed a new approach to comparative genomics. Using a hash-mapping algorithm, subsequence matches between two sets of genome or metagenome sequences can be found with very high accuracy. Reference sequences are broken into k length overlapping sequences and then stored in a hash table that holds the sequence's positional information. Query sequences are then broken into k length sequences and searched against the hash table to find matches. Significant matches that surpass a threshold are found and saved as output for the user to review. Although biologically significant matches do not only include exact nucleotide matches, this hash-map method shows promise in comparison to more developed and popular software, and can be used as an initial seed for slower or more complex alignment algorithms.

309 1:30 pm

Computer Simulation of Crista Structure in Mitochondria

John Waynelovich, Math (U)
Peter Salamon, Mathematics and Statistics

Recently, electron tomograms have shown that mitochondria contain individual cristae that are made up of a flat, lamellar, central structure surrounded by multiple tubular components. These tubular components join the lamella to the inner boundary membrane. The fluid like nature of phospholipid bi-layer lends itself to analysis using a thermodynamical approach. Utilizing the observed morphology as a guide, equations for a geometrically idealized crista were developed. It was then inferred that free energy was minimized in this configuration. This approach allowed the prediction of thermodynamic properties such as surface tension and pressure difference across the membrane. It also predicted the need for a tensile force oriented along the tubular components which was not obvious without this model.(1) While this model has been very useful, it does not consider the entropic contribution to the free energy of the system. Our current effort is the development of a computer simulation of an individual crista using a Monte Carlo method. We allow the crista to assume configurations based on random fluctuations in the structure. The energy associated with that configuration is calculated and the transition is either accepted or rejected based on the Boltzman distribution. This achieves two goals. The first is that it allows us to calculate the phase space associated with the entropic contribution using a numerical method rather than an analytical one. The second is that it allows us to view the model as a dynamical system rather than a static one. Stable and unstable manifolds become obvious as the system is allowed to evolve towards a lower energy state. The observation of an unstable manifold has allowed us to predict that the diameter of the tubular structure does not fluctuate freely. The recent observation of OPA1, a helical, dynamin-like protein, along the tubular structures would seem to support this finding.

310 1:45 pm

Bayesian Joint Modeling of Longitudinal Data with Correlated Binary Outcome

Jeff Ledahl, Computational Science (D)
Richard Levine, Mathematics and Statistics

Detection of glaucoma and progression of this ocular disorder has proven a challenge for ophthalmic researchers and practitioners. In particular, correlations between fellow eyes and damaged points in the visual field has left standard statistical modeling procedures inadequate for the task. In this study, a novel Bayesian joint model is developed, which combines longitudinal (multiple office visit) data with correlated binary outcome (disease onset in each eye of a subject). This model allows for incorporating random effects linear regression and logistic regression models to account for the sources of variation present in visual field data. We also develop a Monte Carlo routine for fitting the model to visual field threshold data and clinical as well as demographic parameters. We apply our methods to a study of glaucomatous progression in high risk patients towards developing automated, quantitative assessments to be used in clinical practice.

311 2:00 pm

Vortex Ring Dynamics and Interactions in the Nonlinear Schrödinger Equation

Ronald Caplan, Computational Science (D)
Ricardo Carretero, Mathematics and Statistics

Being the normal form for nonlinear propagation of envelope waves, the nonlinear Schrodinger Equation (NLSE) is an ubiquitous equation with diverse applications including light propagation through nonlinear optical media and mean-eld dynamics in Bose-Einstein condensates. One of the most interesting family of solutions to the NLSE are those which exhibit topological charge. In 2D, these coherent structures correspond to vortices while, in the more challenging 3D case, they correspond to vortex rings. Vortex rings are ring-shaped low-density structures which, due to their vorticity, form a toroidal area of very low density embedded within a constant-density background. In this talk we are interested in the structure and dynamics of vortex rings and, more specically, on their mutual interactions. Our main focus is on two-ring collisions where a wide range of collision scenaria is possible. Due to the inherent lack of a close form solution for vortex rings and the dimensionality (3D) where they live, ecient numerical methods to integrate the underlying equations have to be developed in order to perform extensive studies of collision scenaria. To this end, we have developed GPU-accelerated codes utilizing Nvidia's CUDA API. The CUDA codes running on the GPU are many times faster than their serial counterparts, and are much cheaper to run than standard parallel programming techniques such as the use of MPI and OpenMP on large clusters. In order to be able to use smaller computational grids without lowering accuracy, we use explicit high-order nite dierencing. Furthermore, to make the high-order schemes easier to implement on the GPU, we develop compact versions of the schemes together with new compact boundary conditions.

312 2:15 pm

Phage Detector: A Novel Algorithm for Finding Prophages in Microbial Genomes that Combines Similarity-based and Composition-based Strategies

Sajia Akhter, Computational Science (D)
Robert Edwards, Computer Science

Prophages are bacteriophages that cause temporarily non-lethal bacterial infections, resulting in their DNA being stably maintained in the cell and replicated along with their unwilling hosts. These mobile elements have tremendous impact on their hosts' genomes and phenotypes, leading to strain emergence and diversification, increased virulence, or antibiotic resistance. However, finding prophages in microbial genomes remains a problem with no definitive answer. The majority of existing tools rely on detecting genomic regions enriched in proteins with known phage homologs, which hinders the de novo discovery of phage regions. In this study, a weighted phage detection algorithm, Phage_detector was developed based on seven distinctive characteristics of prophages i.e. protein length, transcription strand directionality, customized AT and GC skew, the abundance of unique phage words, phage insertion points and the similarity of phage proteins. The first five characteristics are capable of identifying prophages without any sequence similarity with known phage genes. Phage_detector locates prophages by ranking genomic regions enriched in distinctive phage traits, which leads to the successful prediction of 92% of prophages (including 33 previously unidentified prophages) in 95 complete bacterial genomes with 8% false negative and 18% false positive.

313 2:30 pm

Unified Curvilinear Ocean Atmosphere Model-Large Eddy Simulation of Geophysical Fluid: Scale Dependent Assumptions

Mohammad Abouali, Computational Science (D)
Jose Castillo, Computational Science Research Center

The Unified Curvilinear Ocean Atmosphere Model (UCOAM) is a tool developed at the Computational Science Research Center of San Diego State University that uses a Large Eddy Simulation (LES) approach to solve Navier-Stokes' equations for geophysical flows. In this presentation, this tool is introduced and later it is used to verify some of the assumptions commonly used in the field of geophysical fluid dynamics. Moreover, due to more powerful computers, nowadays, there is more demand on higher resolutions studies of the atmosphere and the oceans. Therefore,

it is vital to understand how the scale will change or affect those assumptions. UCOAM is designed for high-resolution studies; hence, makes it possible to validate these assumptions in high resolutions.

Session B-13
Oral Presentation: Literature
Friday, March 4, 2011, 1:00 pm
Location: Quetzalcoatl B

314 1:00 pm

Universalism and Particularism in the Post-colonial Characterizations of Shakespeare's The Tempest and Toni Morrison's A Mercy

Sarah Forest, English (U)
Tracy Cummings, English

Literary scholars have historically been divided between universalist and particularist thinking, and the debate remains heated to this day. In this thesis, I posit that scholars viewing post-colonial characters in terms of particularity are more in line with the culturalist viewpoint that is necessary in analyzing post-colonial literatures. Using the particularist approach, I will analyze the post-colonial characters in Shakespeare's *The Tempest* and Toni Morrison's *A Mercy* by exploring these characters' universalist philosophies and the implications of their universalist agendas. The colonizer characters in these works attempt to create utopian societies under universalist philosophies, but as with all post-colonial literatures, the closed-minded thinking of universalism leads to great injustice and violations of human rights. The natives in these stories also follow universalist thinking in their resistance of and reaction to colonization, but again, universalism fails to create real solutions for the problems of colonization. Thus, a more particular philosophy on the part of these post-colonial characters could prevent the destructiveness of colonization.

315 1:15 pm

Domesticity and the Moderns

Shannon Brown, English (M)
Quentin Bailey, English and Comparative Literature

I will be examining the ways in which Modernist authors were influenced by and treated the Victorian idea of "domesticity." I will be looking specifically at works by D.H. Lawrence, Hawthorne, and Forster and how "domesticity" influences the identity of characters in different ways.

316 1:30 pm

Daniil Kharms and Absurdism

Susan Hogan, Creative Writing: Poetry (M)
Ilya Kaminsky, English and Comparative Literature

Absurdism is a literary genre that focuses on the experiences of characters in a situation where they cannot find any inherent purpose in life, most often represented by ultimately meaningless actions and events. Common elements include satire, dark humor, incongruity, and irrationality. There is not usually a traditional plot structure, and any conclusions reached tend to be ambiguous. Absurdism orginated in Russia, and the main proponents were Daniil Kharms and Alexander Vvedensky, who were writing in the 1920's-30's. In 1927, they founded OBERIU (Union of Real Art), a creative group that performed plays, held poetry readings, gave lectures, and exchanged manuscripts. Best-known examples of absurdist writers in English include Samuel Beckett (1940's) and James Tate (1990's). Daniil Kharms is best known for his absurdist prose poems and his children's poetry. The presentation will includes examples of Russian absurdist poems that I have translated into English.

317 1:45 pm

A Thinking Woman Sleeps with Monsters: Monsters and Mythical Creatures in Feminist Poetry

Cristina Dominguez, Women's Studies (M)
Lynda Koolish, English

Feminist poets have revealed that, at times, our most inspiring dreams are our nightmares. Often it is the terror, the unspoken, the darkness within us that sheds the most light on the lies of our lives, the lies we are leading in the lives we are living. Adrienne Rich states in regard to this coming to awareness, "It's exhilarating to be alive in a time of awakening consciousness; it can also be confusing, disorienting, and painful" (18). Audre Lorde also speaks of the difficult and frightening illumination that can take place in writing poetry, "Our poems formulate the implications of ourselves, what we feel within and dare make real (or bring action into accordance with), our fears, our hopes, our most cherished terrors." (16). To speak out of this darkness through poetry one can bring this unconscious wisdom to conscious knowledge. More than braving the dark in the writing process and in its finished product, Rich and Lorde become it, finding themselves through an enchanting engagement with monstrous and mythical imagery. In examining Rich's Snapshots of a Daughter-in-Law as well as Lorde's The Black Unicorn, we see that through these creatures allow the poet to speak out of the silence that has paralyzed and imprisoned her, articulating the struggle and stigma a woman experiences in finding herself and claiming the power that lies in that self, a power denied to her by society

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

ABSTRACTS

Session B-14
Oral Presentation: Media, Music, and Society
Friday, March 4, 2011, 1:00 pm
Location: Casa Real

318 1:00 pm

Listening for an Answer: The Composition of Music as a Complement to the Scientific Method

Derek Jeppsen, Music: Electro-Acoustic Composition (U)
Eric Smigel, Music and Dance

In Western culture, music has long been considered a vehicle of personal expression, but by the mid-twentieth century, composer John Cage expanded the vocabulary of music by composing pieces that form inquiries about the process of human perception itself. With his piece *4'33"* (1952), composed for silence, Cage asks the audience to redefine their relationship with sound by paying attention to the sound that is not planned—incidental sound that always surrounds us. Cage's work was expanded by other composers who determined that music is not only useful as an expressive tool, but also as a tool for studying how we organize our perceptions of the world around us. In the work of composer Iannis Xenakis, for example, compositional technique melds together with the mathematical realms of stochastics and architecture. In the work of James Tenney, composition is informed by the discipline of gestalt psychology, a study of how human perception operates. Interest in these fields of compositional research coincided with technological advances that allowed for more detailed and controlled compositions. Inspired by these lines of inquiry and with the benefit of further technological advancements, I composed curation1, which posits the broader philosophical question, "what is subjectivity?" The hypothesis of the piece is that the performer's subjective will – what they want to create – can be measured. This hypothesis is tested by creating sections of the piece where control of musical features is given to the performer, and subsequently taken away, replacing the performer with an equal weighted randomization function. The conclusions drawn from the piece intersect with principles of stochastic linguistics, as the piece approaches a sonic version of "data mining," or attaining new information by comparing multiple perspectives. Through the discussion of perceptual explorations by these composers and of my own compositional experiments, it will be shown that in certain fields of music, composition is also critical inquiry and the discovery of information, processes which complement the scientific method.

319 1:15 pm

Cultural Identity Reflected in Music: Ramiro Cortés and Xochitl

Sarah Moody, Musicology (M)
Eric Smigel, Music and Dance

The American nationalist movement in music during the early to mid-twentieth century was characterized by compositions which featured simple folk melodies played by traditional, European-style orchestras, as heard in American composer Aaron Copland's *Appalachian Spring* (1944). Concurrently, another nationalist movement, the Aztec Renaissance, occurred in Mexico, inspired by pre-colonial Aztec history. *Sinfonía india* (1936), a ballet by Mexican composer Carlos Chávez, based on traditional Aztec themes, is one important example of that renaissance. Both artistic movements, American nationalism and the Aztec Renaissance, contributed to Ramiro Cortés's cultural and musical identity. Cortés, who was born in Texas in 1933 to parents of Mexican and Spanish heritage, composed *Xochitl* in 1955. This was a period marked by American nationalism and the Aztec Renaissance of the 1930s-40s and before the Mexican-American Civil Rights Movement of the late 1960s, which would later popularize Mexican-American art in the United States. Stylistically, *Xochitl* adheres to the European orchestral style of the nationalist composers, but the use of the Aztec language, Nahuatl, in its title reveals the influence of the Aztec Renaissance. The purpose of this study will be to reveal a parallel between the complexities of Cortés's cultural identity, being the amalgamation of Mexican, Spanish, American and European traditions, and his musical output, shaped by American nationalism and the Aztec Renaissance, as evidenced in *Xochitl*. A brief biography of Ramiro Cortés, drawn from archival research, will highlight his cultural influences, and an analysis of *Xochitl* will identify musical similarities to American nationalist and Aztec Renaissance compositions. This study will illustrate how a Hispanic-American artist living in the United States between the Aztec Renaissance and the Mexican-American Civil Rights Movement reflected a complex cultural identity through his music. "

320 1:30 pm

Music as Text for Transformative Pedagogy

Carlos Hernandez, Policy Studies (M)
Cristina Alfaro, Policy Studies

This research project aims to develop curriculum that integrates contemporary music in the secondary classroom as text for transformative pedagogy. Specifically, the project seeks to incorporate contemporary music styles and genres that is both culturally relevant to students' lives as well as stimulating. It is my hope that through this curriculum students will be able to make a connection between their life at home, their community, and their school and thus find meaning in their educational experience.

Moreover, through this project I hope to demonstrate that music can be both empowering and a powerful tool for raising student's consciousness about social justice themes. That issues such as poverty, crime, war, gender equity, and social status can be safely analyzed in the classroom and used to help students become critical thinkers as well as active members of society. Furthermore, through this project I hope to be able to shift the existing banking paradigm in education by creating a new and more effective critical method of teaching and learning that will help to invigorate student's desire for learning. This curriculum research project will be mostly qualitative in nature and will be piloted in a high school classroom setting in Spring of 2011. Observations, student interviews, journal reflection, and data collection are some of the research methods being employed.

321 1:45 pm

Sound in Sight: "Messa di Voce" and the Study of the Singing Voice

Pamela Narbona Jerez, Musicology (M)
Eric Smigel, Music and Dance

The singing voice has been at the center of most major developments in the history of Western art music, yet its potential remained largely unexplored for centuries. As the only instrument capable of expressing meaning through the use of words, composers confined the voice almost exclusively to the performance of music with text. During the early years of the twentieth century, however, the introduction of new technologies along with changes in the cultural and social fabric triggered a systematic exploration of the qualities and capabilities of the voice outside of a semantic context. Today's musical landscape has been greatly enriched by these explorations, and new types of performances showcase the malleability and physicality of the voice, as well as its capacity for non-verbal communication. Among these new types of performance are hybrid art forms that offer researchers an interdisciplinary platform on which to examine the voice. One example is *Messa di Voce*, an interactive multimedia performance and installation that explores perceptual relationships through the creation and real-time projection of colorful images inspired by the vocal utterances of two performers on the stage. Created by software designers Golan Levin and Zachary Lieberman, and featuring renowned experimental vocalists Joan La Barbara and Jaap Blonk, *Messa di Voce* lies at the intersection of musical creativity, scientific inquiry, and technological innovation. *Messa di Voce* offers unique insight into the physical and psychological demands of contemporary vocal production while raising questions about perception, cognition, abstract communication and aesthetic values, all in the context of a musical performance that stretches the boundaries of musical virtuosity. *Messa di Voce* has already been the subject of studies in the fields of semiotics and technology. The present study will offer a musicological analysis of the project by focusing on the interface between the two singers and the technology that comprises the work. Interviews with the project's performers and creators, and the analysis of the creative, aesthetic, and technical issues raised during performance will reveal the challenges today's singers face when performing live using new technologies.

322 2:00 pm

Musical Resistance in Mexico

Christopher Mena, Single Subject Teaching Credential: Music (M)
Kevin Delgado, Ethnomusicology

Music has commonly been used in several different cultures as a form of social activism. Whether it be empowering a marginalized population with lyrical content, uniting a community through a shared aesthetic, or passing on to children cultural traditions that are embedded in song, music has the power to create viable social change. This paper explores 2 incidents of music as social activism in Mexico: Guelaguetza Popular in Oaxaca 2006–2010 and the founding of Jardin Kojima in Otatitlan 2009–2010. These 2 incidents provide examples of how communities use music as a counterbalance to capitalist globalizing forces that threaten these communities with cultural supplantation. *Guelaguetza*, a Zapotec word meaning reciprocity, is an annual festival that brings together the 7 regions of Oaxaca in an effort to promote peaceful coexistence through the use of music and sharing. In 2006 the mayorship of Ulises Ruiz Ortiz appropriated this festival in an attempt to capitalize on it using corporate sponsorships (Coco-Cola, Telcel, Sol). By charging exhorbitant fees to enter the festival, which was traditionally free, the organizers of the *Guelaguetza Comercial* effectively alienated the people for whom the festival was intended to serve: the poor indigenous communities of Oaxaca. These communities responded to this action by staging protests, creating blockades to the event, and also creating their own festival, the *Guelaguetza Popular*, which used local musicians and dancers that were trained in the communities. This celebration was eventually shut down with violence from the State and Federal police forces; however, the people have refused to capitulate and continue the tradition of the *Guelaguetza Popular*. The second part of this paper explores how the small pueblo of Otatitlan in the state of Veracruz has created a son jarocho music school that offers free lessons in an effort to raise awareness for sustainable living (desarollo sostenable). This school, created by members of *Grupo Yacatecuhtli*, is funded primarily through recycling and also offers classes in how to make recycled paper, animal rehabilitation, and gardening. The research for this paper was conducted in Mexico during 2 visits that occurred in June–July 2010 and also in December–January 2010.

Session B-15
Oral Presentation: Neuroscience
Friday, March 4, 2011, 1:00 pm
Location: Council Chambers

323 1:00 pm

Atypical Lateralization of Functional Connectivity in Autism Spectrum Disorders as Detected by Independent Component Analysis

Ryan Cardinale, Psychology (U)
Ralph-Axel Müller, Psychology

Autism spectrum disorder (ASD) is characterized by socio-communicative impairments, repetitive behaviors, and restricted interests with cases ranging from mild to severe. Lateralization of brain networks is an important aspect of functional development as it relates to hemispheric specialization of language and other domains. During normal development, increasing lateralization of some networks, like those for language, may enhance processing efficiency. Atypical lateralization in ASD may relate to the socio-communicative impairments (e.g., typically left-dominant language and right-dominant face processing). Many studies have noted aberrant functional organization in ASD, but none have specifically examined atypical lateralization of functional networks. Our study aimed to provide insight into atypical connectivity patterns in ASD and their relation to abnormal cognitive profiles. Two datasets consisting of 15 ASD and 15 typically developing (TD) participants, matched on age, handedness, IQ, and gender were used. One involved a visual search task, and the other a bisensory (auditory and visual) task. Temporal concatenation independent component analysis (ICA), implemented within FMRIB Software Library's (FSL) MELODIC, was used to decompose functional magnetic resonance imaging (fMRI) data into separate spatial networks. ICA is a computational method for separating the many signals detected during scanning into components that isolate neural networks. One set of ICA networks was obtained for each group and their Z-score connectivity maps, excluding regions of anti-correlation, were spatially correlated between groups to identify consistent components. The lateralization of each network extracted with ICA was assessed with a lateralization index computed as (L-R)/(L+R). The number of components estimated by MELODIC was similar for both groups. MELODIC estimated 35 components for the TD group and 34 for the ASD group. Of those, eight spatial components were matched between the groups. Lateralization indices computed for these ICA networks indicated differences in the lateralization of three network maps. Both reduced and enhanced lateralization was observed. The first network, considered a visual network, was bilateral in both groups, but the TD group had greater activation in the right hemisphere. The second network, considered to be linked with language and memory, displayed greater left lateralization and greater frontal involvement, especially in ventral lateral prefrontal cortex, but reduced involvement of posterior regions, such as angular and middle occipital gyri, in the ASD than in the TD group. The third network, considered a sensorimotor network, displayed greater left lateralization in the TD group. Our exploratory study suggests that ICA is a promising data-driven approach to the study of hemispheric asymmetries of functional networks in ASD.

324 1:15 pm

Stroke Risk and Qualitative Neuropsychological Performance: Differentiating Subtypes of Mild Cognitive Impairment

Yuliana Cabrera, Psychology (U)
Lisa Delano-Wood, Psychology

Objective : We investigated whether there were group differences by stroke risk as well as qualitative differences in neuropsychological performance (error analysis) across clinically-diagnosed MCI subtypes. Participants and Methods: Fifty-seven nondemented participants were divided into demographically-comparable groups based on cognitive status (Amnestic MCI [A-MCI]: n=37; Nonamnestic MCI [NA-MCI]: n=20). Stroke risk was derived from the Hachinski Ischemia Scale (HIS) and cognitive tasks (Digit Span and Verbal Fluency [FAS and Animals]) were examined qualitatively. Results : The NA-MCI subgroup demonstrated significantly higher HIS scores (t=-3.06, p=.003) than the A-MCI subgroup. There were no quantitative differences by MCI subgroup, however, the NA-MCI subgroup produced significantly more Intrusion and Between-Trial Capture errors (p-values).

325 1:30 pm

The Profile of Prospective Memory Impairment in Older Adults and Implications for Everyday Functioning

Brittnie Bloom, Psychology (U)
Paul Gilbert, Psychology

Prospective memory (ProM) is a critical aspect of episodic memory that involves remembering to carry out an intended action at a specific time in the future and is thought to be critical for everyday functioning. Prospective memory tasks are commonly divided into 1) event-based tasks (EB), in which a specific cue in the environment triggers the retrieval of a previously formed intention (e.g., seeing the grocery store reminds one to buy dinner on the way home from work) and 2) time-based tasks (TB), in which retrieval of an intention is cued by a specific time or time interval (e.g., remembering to take medication at 2 pm or every 4 hours).

A growing body of literature suggests that ProM is dependent on the functional integrity of the frontal lobes and their associated executive functions, with TB ProM relying more heavily on executive processes than event-based ProM. ProM deficits have been reported in older adults; however, previous studies have yielded inconsistent findings, perhaps due to the use of nonstandardized ProM measurements. In addition, the relationship between ProM and everyday functioning in aging has not been adequately investigated. The present study investigated ProM in young and nondemented older adults using a standardized Prom task, the Memory for Intentions Screening Test (MIST), which assesses event-based (EB) and time-based (TB) ProM. The participants also completed self-report measures of ProM, performance-based measures of everyday functioning, as well as a battery of standardized neuropsychological tests. The results showed that older adults displayed significant deficits in ProM relative to young adults. In addition, ProM performance was related to measures of activities of daily living, self-report measures of ProM, and standardized neuropsychological measures. The use of the MIST, with known psychometric properties, allowed for a better understanding of ProM in the context of aging. The results also suggest that ProM impairment in aging may have important implications for everyday functioning (e.g., the ability to manage medications). This study may have implications for formal assessment of ProM during clinical evaluations of neuropsychological function. The study also could lead to the development and implementation of interventions aimed at teaching compensatory cognitive strategies for ProM dysfunction to improve everyday functioning and quality of life for older adults.

326 1:45 pm

A Longitudinal Investigation of Mattis Dementia Rating Scale Subscale Scores in Individuals with Manifest Huntington's Disease

Daniel Brown, Psychology (U)
Paul Gilbert, Psychology

The present study investigated longitudinal changes across a 3-year period in total Mattis Dementia Rating Scale (DRS) scores and individual subscale scores in 47 male (n =23) and female (n=24) patients diagnosed with manifest HD at baseline. Prior studies have reported that the DRS may be a useful tool for assessing cognitive dysfunction associated with Huntington's disease. However, longitudinal changes in DRS scores, and particularly DRS subscale scores, have not been adequately assessed in this population. Repeated measures analysis of variances were used to assess total DRS scores and DRS subscale scores obtained during a 3-year follow-up. The mean age of disease onset was 41.16 (SE=1.66) years of age and the mean age at initial testing was 47.04 (SE=1.60) years of age. Total DRS scores decreased significantly ($p < .05$) at the 3-year follow-up. Subscale scores significantly decreased on the attention ($p < .05$), initiation/perseveration ($p < .001$), construction ($p < .001$), and memory ($p < .05$) subscales at follow-up. However, statistically significant decreases on the conceptualization subscale were not detected ($p = .09$). The largest effect size was found for the initiation/perseveration subscale (.480) followed by the construction subscale (.351), the attention subscale (.094), and the memory subscale (.086). The effect size for the initiation/perseveration subscale (.480) was larger than the effect size for total DRS score (.431). The results demonstrate that total DRS scores for manifest HD patients decrease across a 3-year period. In addition, the largest decrease may occur on the initiation/perseveration subscale. Although additional research is needed with a larger sample, the results offer evidence that the initiation/perseveration subscale of the DRS may be implemented as a brief measure in clinical trials to track cognitive changes associated with HD over time.

327 2:00 pm

Neuropsychological Functioning Predicts Occupational Attainment in an Indian Cohort

Alex Liu, Psychology (U)
Thomas Marcotte, UCSD

Studies in the United States suggest that cognitive functioning (as measured by IQ) may be predictive of occupational attainment. However, this relationship has not been examined in resource-limited settings, where confounding factors such as education and occupational opportunity may influence one's ultimate occupation. The goal of the present study was to investigate whether, in a group well-matched on education, neuropsychological test performance was predictive of occupational attainment and if specific cognitive domains were particularly strong predictors of this outcome. Participants included 57 HIV seronegative control participants recruited as part of a study of HIV in Pune, Maharashtra, India. Exclusion criteria included significant neurologic or psychiatric co-morbidities or ambiguous job descriptions. Participants completed a detailed neuropsychological (NP) test battery that was translated into Marathi. Raw scores were converted to unadjusted scaled scores based on the entire control group. Occupational attainment was assigned on a 9 point scale in the Government of India's National Classification of Occupations (NCO; 2004). For this analysis, jobs were grouped into two major groups: high complexity (managers, teachers) and low complexity (cab drivers, sweepers). The high ($N = 19$) and low ($N = 38$) complexity groups were well-matched on education, age, and gender. Individually, job complexity was not predicted by age or education although there was a trend for females to have more complex jobs, ($p = 0.064$). Higher overall mean NP scaled scores were associated with higher complexity jobs ($p < .01$). A linear regression model using gender and mean scaled score was significant, ($p < .01$).

ABSTRACTS

Four of the seven cognitive domain scaled scores predicted occupational attainment ($p < .01$): verbal fluency, motor functioning, speed of information processing, and working memory ($p < 0.05$). This preliminary study indicates that neuropsychological tests are predictive of a person's occupational status in India, where many external factors may also influence educational and occupational trajectories. Despite these differences, the neuropsychological battery is still an effective instrument in measuring cognitive abilities and the types of positions one might attain. Future research should examine whether occupational complexity is a factor in determining the rate at which neurologic conditions become apparent.

328 2:15 pm

The Anterior Cingulum Integrity Predicts Neurocognitive Performance in Traumatic Brain Injury: a Quantitative Tractography Study

Daniela Braga, Psychology (U)
Lisa Delano-Wood, UCSD

Objective : Since traditional MRI is frequently not sensitive enough to capture subtle TBI-related white matter changes in the context of mild to moderate TBI (mTBI), we used a diffusion tensor imaging (DTI) to quantify integrity of the anterior cingulum (AC), a white matter structure that is especially vulnerable to diffuse axonal injury. Associations between white matter integrity of the AC and executive functioning were also examined. Participants and Methods: Patients with mTBI (n = 32; 29/32 = male; mean age = 33) underwent 3T-DTI scans as well as a comprehensive neuropsychological and psychosocial evaluation. An executive functioning composite score (derived from demographically-corrected scores from the Wisconsin Card Sorting Test and the DKEFS Verbal Fluency Switching) was computed and white matter integrity was measured and quantified via mean fractional anisotropy (FA) values. Results : Correlational analyses demonstrated that FA of the AC was significantly positively related to the executive functioning composite score ($r=.52$, $p=.018$). Additionally, hierarchical regression showed that increased FA of the AC significantly predicted better executive functioning performance, even after adjusting for volume of the AC as well as post-traumatic stress symptomatology ($\alpha=.55$, $dR2=.26$, $p=.036$). Conclusions : Findings of the current study suggest that, in our sample of veterans with mTBI, poorer white matter integrity of the AC is predictive of executive dysfunction over and above the effects of post-traumatic stress symptomatology and AC volume. Importantly, these findings provide evidence that the anterior WM is vulnerable in mTBI, and they further show that AC integrity may represent a potential biomarker for TBI-related cognitive dysfunction.

Session B-16
Oral Presentation: Effects of Alcohol
Friday, March 4, 2011, 3:00 pm
Location: Backdoor

329 3:00 pm

Drinking Bout and Ingestive Position Preference Characteristics of Oral Alcohol Consumption in Selectively Bred Ethanol-Preferring (P) Rats Given Intermittent Access to 20% Ethanol

Jason Dudley, Psychology (U)
Susan Brasser, Psychology

Intermittent access to highly concentrated ethanol (20%) results in elevated voluntary ethanol drinking in standard outbred rats as well as rats genetically selected for high levels of oral alcohol preference (Simms et al., 2008; Wise, 1973). Here, we examined the detailed microstructure of ethanol ingestion (i.e., size, duration, and frequency of drinking bouts, bottle position preference, interbout intervals, and within-bout rates of ingestion) in ethanol-preferring (P) rats exposed to a 20% ethanol intermittent access paradigm to characterize initial alcohol intake responses and alterations in drinking patterns with continued long-term ethanol exposure. Male P rats were tested in 22-hr intake sessions involving voluntary access to a 20% (v/v) ethanol solution vs. water, alternating with 22-hr abstinence periods involving voluntary access to water only (45 ethanol drinking sessions total). Ethanol position (left vs. right bottle) was alternated. A control group of non ethanol-exposed P rats was given voluntary access to water only for the duration of the experiment. Lick responses to ethanol and water were monitored for quantitative analysis. During their first ethanol exposure, P rats displayed a mean preference of 72% for ethanol, which increased to 87% preference by ethanol sessions 7-9, and then stabilized. Number of ethanol drinking episodes dropped dramatically following initial ethanol exposure, while the amount of ethanol consumed/episode and within-bout rate of ingestion increased. Elevated bout sizes and rates of intake peaked within the first several ethanol sessions and then remained relatively constant. Non-exposed rats showed a strong ingestive position preference ($\alpha= 7.68$), while bottle position preference was almost entirely absent in the ethanol-exposed group ($\alpha = 1.16$). These data indicate that P rats prefer highly concentrated ethanol upon initial exposure and that measures of ethanol palatability further elevate quickly and are maintained long-term in this drinking paradigm. These results also demonstrate that the availability of ethanol in alternating locations diminishes the development or expression of ingestive position preference.

330 3:15 pm

Vitamin D as a Potential Therapeutic for Fetal Alcohol Spectrum Disorders

Joseph Happer, Psychology (U)
Jennifer Thomas, Psychology

Alcohol is a known teratogen which can cause widespread damage to the central nervous system, resulting in an array of cognitive and behavioral deficits. The range of effects is referred to as fetal alcohol spectrum disorders (FASD). In spite of precautions of alcohol's harmful effects, some women continue to drink during pregnancy, making it necessary to identify effective interventions to reduce the severity of FASD. The present study examines the therapeutic potential of vitamin D. Chronic alcohol consumption is associated with decreased nutritional intake as well as absorption. Animal studies have found that prenatal vitamin D deficiencies produce similar effects as those seen following prenatal alcohol exposure. Thus, we hypothesized that vitamin D supplementation might alleviate some FASD. Sprague-Dawley rats were randomly assigned to one of six treatment groups. Four groups were exposed to 5.25. g/kg/day ethanol via intragastric intubations during the 3rd trimester equivalent, postnatal days (PD) 4-9; the other two were sham-intubated. From PD 2-30, ethanol-exposed subjects were treated with 0, 5, 10, or 15mg/kg/day vitamin D subcutaneous injections; sham-intubated subjects were treated with 0 or 15 mg/kg/day vitamin D. On PD 30-33 subjects were tested in an automated open field. Ethanol exposure significantly increased activity levels in the open field chamber, an effect attenuated by 5 mg/kg vitamin D. Specifically, 5 mg/kg vitamin D reduced the severity of distance traveled in the center of the chamber, as well as time spent in the center of the chamber. Importantly, the behavioral effects of vitamin D supplementation were evident even though behavioral testing occurred after vitamin D treatment had ceased. Thus vitamin D may be a potential treatment for developmental ethanol's neurotoxic effects. Supported by funds from NIAAA (AA 012446) and the Kaplan Postdoctoral Fellowship from the Department of Psychology, SDSU.

331 3:30 pm

The Effects of Prenatal Alcohol Exposure on Choline Metabolism: Implications for How Choline May Moderate Alcohol's Teratogenic Effects

Tanya Nguyen, Clinical Psychology (D)
Jennifer Thomas, Psychology

Prenatal alcohol exposure can lead to a wide-range of physical and neurobehavioral anomalies. Despite ongoing health warnings, pregnant women continue to consume alcohol, making it imperative to elucidate protective factors and develop effective interventions that ameliorate alcohol's teratogenicity. Choline is an essential nutrient that influences brain and behavior development, and pre- and postnatal supplementation has been shown to reduce some fetal alcohol effects. However, it is not clear whether alcohol influences choline metabolism during pregnancy and/or whether choline supplementation compensates for an alcohol-related nutritional deficiency. Blood samples were collected from 217 pregnant women in two regions of Ukraine, 114 of whom reported moderate to heavy prenatal alcohol exposure in the month around conception and/or in the most recent month of pregnancy and 103 of whom reported little or no alcohol in either time frame. There was no effect of alcohol on plasma choline, betaine, or dimethylglycine. In a parallel study, pregnant Sprague-Dawley dams were intubated with 6.0 g/kg/day ethanol from gestational days (GD) 5-20; yoked pair-fed and ad libitum chow controls were included. Levels of choline, betaine, and dimethylglycine were measured in the blood of dams at GD 10 and 15 and in the plasma of dams and fetuses at GD 21. Prenatal alcohol exposure did not decrease plasma choline levels in either mother or fetus. However, there were age-dependent effects of alcohol on plasma betaine levels and a transient decrease in plasma dimethylglycine (both involved in the methionine-homocysteine cycle) in alcohol-exposed dams during the period of intoxication. These data suggest that alcohol does not induce a choline deficiency, but may transiently interfere with choline-related pathways, which could contribute to alcohol's damaging effects on the fetus. Alcohol-related changes in choline metabolism may not be evident in clinical populations if blood is collected outside periods of intoxication. These data have important implications for the elucidation of mechanisms by which alcohol disrupts development and may lead to a better understanding of how alcohol-nutrition interactions may influence alcohol's teratogenic effects. Supported by CIFASD AA014811 and AA 014835.

332 3:45 pm

Executive Function Deficits Predict Adaptive Behavior Outcomes in Children with Heavy Prenatal Alcohol Exposure

Ashley McKenzie Ware, Psychology (M)
Sarah Mattson, Psychology

Purpose of Study: Individuals with histories of heavy prenatal exposure to alcohol have disruptions in discrete neurocognitive domains, including executive function (EF), and demonstrate lower levels of adaptive functioning. The present study aimed to examine the relationship between EF and adaptive function skills in children and adolescents with histories of heavy prenatal alcohol exposure, non-exposed children with a diagnosis of attention-deficit/hyperactivity disorder (ADHD), and typically developing controls. Methods: As part of a multisite study, primary caregivers of 167 children (8-18y, M=12.39) completed the Vineland Adaptive Behavior Scales-II (VABS). Children completed selected subtests of the Delis-Kaplan Executive Function System (D-KEFS). Subjects comprised 3 groups: children with histories

of heavy prenatal alcohol exposure (ALC, N=72), non-exposed children with ADHD (ADHD, N=35), and typically developing controls (CON, N=60). Data were analyzed using a series of regression analyses, with VABS subscale as the dependent variable and group, D-KEFS measure, and the interaction term as predictor variables. Follow-up correlations were run to assess differences within the three groups (ALC, ADHD, CON). Alpha levels were set to .01 to correct for multiple comparisons. Results: Overall regression analyses showed that EF measures were predictive of adaptive abilities and that there were significant interactions between D-KEFS measures and group. Follow-up analyses showed that different EF measures were predictive of VABS composite score for each group, as follows: ADHD: Verbal and Design Fluency-Switching, Color Word Interference-Inhibition; ALC: Trail Making-Switching, Color Word Interference-Inhibition, Tower Test; CON: Color Word Interference-Inhibition/Switching. Similar results were found for VABS communication and socialization subscales. Conclusion: These findings support prior research in ADHD suggesting that EF deficits are predictive of poorer adaptive behavior skills and extends this finding to include children with heavy prenatal exposure to alcohol. However, the EF variables that predicted adaptive ability differed by group, suggesting unique patterns of abilities in these children. Clinical implications for this research include enhanced ability for clinicians to predict adaptive function abilities in children with histories of prenatal alcohol exposure. Research supported by NIAAA grant U01 AA014834.

333 4:00 pm

Are Children with Heavy Prenatal Alcohol Exposure Characterized by a Sluggish Cognitive Tempo?

Diana Graham, Behavioral Neuroscience (M)
Sarah Mattson, Psychology

Purpose of Study: Children with history of heavy prenatal alcohol exposure often meet criteria for attention-hyperactivity disorder (ADHD). Recent research has focused on comparisons with unexposed children with ADHD to determine if there are differences in symptomology due to etiology. Sluggish cognitive tempo (SCT), defined by symptoms such as underactivity and daydreaming, occurs in a subgroup of children with ADHD and is associated with increased internalizing behaviors. The purpose of this study was to determine whether similar findings are seen in alcohol-exposed children. Methods: As part of a multisite study, primary caregivers of 148 children (8-18y, M=12.2y), completed the SCT scale, Child Behavior Checklist (CBCL), and the Diagnostic Interview Schedule for Children (DISC). Subjects consisted of children with histories of heavy prenatal alcohol exposure (N=53), non-exposed children with ADHD (N=38), and typically developing controls (N=57). The exposed group included children with (N=35) and without (N=18) ADHD. Therefore, SCT scores were analyzed by a 2 (alcohol-exposed vs. non-exposed) x 2 (ADHD vs. non-ADHD) ANOVA. The relation between SCT and CBCL behavior scores was measured with Pearson correlations. Results: Analyses revealed a significant Exposure x ADHD interaction on SCT as well as main effects for both factors (exposed>non-exposed, ADHD>non-ADHD). Post-hoc tests showed that in children with ADHD, alcohol exposure did not affect SCT scores; children with ADHD had higher scores, regardless of exposure history. In children without ADHD, alcohol exposure had a significant effect (exposed > non-exposed). SCT was significantly ($p<.05$) correlated with CBCL Internalizing and Externalizing scores. Conclusion: Overall, children with histories of heavy prenatal alcohol exposure were characterized by elevated SCT although the elevation was significantly smaller in the exposed children without comorbid ADHD. This suggests that even in the absence of ADHD, prenatal alcohol exposure influences a sluggish cognitive tempo. SCT scores were related to internalizing behaviors, which is consistent with previous research in ADHD. However, SCT was also related to externalizing behaviors in this sample suggesting a lack of specificity. Additional study with a larger sample may provide further insight into this symptom cluster in alcohol-exposed children. Research supported by NIAAA grant U01 AA014834.

334 4:15 pm

Response Inhibition in Children with Heavy Prenatal Alcohol Exposure

Jessica O'Brien, Psychology (M)
Sarah Mattson, Psychology

Purpose of Study: Heavy prenatal exposure to alcohol leads to widespread cognitive deficits, including problems with attention and response inhibition. However, the effect of implicit cuing on inhibition remains unclear. This study examined blood oxygen level-dependent (BOLD) response in children with and without histories of heavy prenatal alcohol exposure during a task of response inhibition consisting of cued and un-cued trials. Methods: Children and adolescents (ages 8-18y) with (ALC=20) and without (CON=15) histories of heavy prenatal exposure to alcohol underwent functional magnetic resonance imaging (fMRI) while performing a Go/No-Go task. There were no significant differences in age, race, ethnicity, sex, handedness, or socioeconomic status between the two groups. Go stimuli consisted of large circles, small circles, and large squares, and no-go stimuli consisted of small squares. Unbeknownst to subjects, the large square served as a predictive cue and was followed by a No-Go trial in 87% of trials. Results: Groups did not differ on most measures of task performance (i.e., hit rate, false alarm rate, correct inhibition, false alarms, discriminability, and response bias). However, following cued stimuli, the ALC group demonstrated a lower hit rate [$F(1,27)=4.94$, $p=.035$] and more conservative response bias [$F(1,27)=5.84$, $p=.023$] compared to the CON group. Alcohol-exposed participants demonstrated

more activation during No-Go trials (inhibition) relative to Go trials in the left precuneus, cingulate gyrus, anterior cingulate and right medial frontal gyrus ($p<.05$). During cue-dependent response inhibition, the ALC group demonstrated less activation in the left pre-central and post-central gyrus ($p=.01$) compared to the CON group. Conclusion: Consistent with previous studies of response inhibition, alcohol-exposed children demonstrated greater frontal activation during inhibition than controls, despite similar task performance. This study further demonstrated that alcohol-exposed children had impaired behavioral performance on cued trials and demonstrated less activation in the pre-central and post-central gyrus relative to controls on these trials. Activation of the pre- and post-central gyri has previously been shown in studies of sequence-specific implicit motor learning, thus implicit sequence learning may be affected by prenatal exposure to alcohol, given the decrease in activation in this area in affected children.

Session B-17
Oral Presentation: History
Friday, March 4, 2011, 3:00 pm
Location: Calmecac

335 3:00 pm

Civil War Baseball: How America's Past Time Flourished During America's Greatest Conflict

Caitlin Wion, History (U)
Edward Blum, History

Baseball has long been America's favorite pastime. In the 19th century, baseball first embedded itself into the heart of Americans, and has stayed there ever since. During the Civil War, soldiers on both sides took the game around the country with them. They would play the game when not fighting and baseball would transcend army ranks and possibly even the Confederate and Union divide. Soldiers would play it during idle time, during battle, and even in prisons. The game would boost morale of the troops and of the people. The game was still played at home even though most ball players were at war. As the war made its way across the country, so did baseball. The war would end in 1865, but the game would continue on, even providing a connection between the North and the South during reconstruction. This research focuses on how baseball during the Civil War flourished across the country and became the National Game known today. Both secondary and primary sources were used for this research. When looking at baseball during the 19th century many historians study the origins of baseball before the Civil War. Most historians discuss the origins of the game before it was played in America and briefly mention the Civil War. Other historians simply discuss the modern era of baseball. However, a few discuss it being played during the Civil War in detail. In particular, both George Kirsch and Patricia Millen discuss baseball during the Civil war. Primary sources that will be used will be mostly Civil War diaries and memoirs. There will also be some artwork that will be used for analysis. The research indicates many different things. Most importantly in shows that baseball was in fact around before the Civil War and that it expanded during the Civil War. The research shows just how it was popularized and played during and after the Civil War. Most significantly, it concludes that during the nation's greatest turmoil, the greatest game solidified itself in the hearts of Americans, and that can never be broken.

336 3:15 pm

Profiles in Crisis: The Character of the U.S. President during Critical Economic Eras of American History and the Structure of Courageous Political Opportunities for Leadership

Alejandro Renteria, Political Science and International Business (U)
James Ingram, Political Science

The American Presidency is regarded as one of the highest political positions in the world because of the strong economic power of the United States. Although the United States has experienced times of economic growth and prosperity, it has nonetheless also experienced economic crises that have called upon the strong leadership of the president. The character of the president is necessary to promote and give rise to opportunities that allows the head of state to strategically and courageously take action when the nation is in economic turmoil. Former U.S. Presidents, most notably Franklin D. Roosevelt and Ronald Reagan, both had presidential characters that were able to encourage and instill confidence in the American people during times of economic instability and uncertainty. Having experienced economic upheavals during the Great Depression and in the 1980's during the Reagan years, their presidential characters led the country into economic prosperity and managed to achieve success during their presidencies. These findings expand on the importance of the president's character during times of economic crisis.

337 3:30 pm

Savages or Saints?: Early Mormon Conceptions of Native Americans

Jennifer Lindell, History (M)
Edward Blum, History

My paper examines Mormon-Native American relations on the American frontier from the 1830s through the 1850s. The paper emphasizes the increasing racialization of Native Americans in Mormon thought from the Church's inception in 1830 to the eve of the Civil War as expressed in religious publications. My paper outlines the progression of racial thought in the American North

and South before reorienting the focus to the American West. Once centered on the West, I show that Mormon-Indian relations followed a competitive model of racism that was practiced more intensely by Mormon laity than by Church leaders. Mormon leadership attempted to keep religious feelings of salvation and redemption alive much longer than ordinary Mormons who were in direct competition with Indians for resources. Violence was a symptom of this competition, but even as confrontations escalated, Mormons as a whole did not succumb to the color racism so prevalent east of the Mississippi River. As my paper shows, this is not to say that Mormons were not racist toward Indians, only that their beliefs of natives' inherent inferiority were based on level of civilization and religion rather than skin color. My research draws on several primary sources, including newspapers, missionary tracts, Mormon autobiographies and journals, and sermons, to demonstrate several points about the interaction of religion and race in nineteenth-century America. In the early years of the Mormon Church, leadership and lay Saints cleaved to an idea of the Indians as an important group responsible for a significant role in the impending Second Coming of Christ. Elite and lower-class Mormons originally held similar views about Indians, but lived experience with Indian tribes along the frontier changed attitudes. A gap grew between Church teachings and lay practices that only got wider when the Mormons migrated to Utah. Over the first decade of settlement, when faced with increasing competition and hostility, Mormon understandings of Indians transformed. Although they tried to temper their rhetoric with religious undertones, leaders stressed the differences between Mormons and Native Americans. Indians became Others, but their Otherness remained defined by civilization and religion, not skin color.

338 3:45 pm

Questioned Loyalties: Public Perceptions of Varina Davis and Mary Lincoln, 1861–1865

Michelle Hamilton, History (M)
Edward Blum, History

In recent years the differences and similarities of the North and the South before the American Civil War has sparked a fierce historiographical debate. This debate centers on culture, religion, and politics in the process neglecting nineteenth-century gender roles. At the start of the Civil War First Ladies Mary Lincoln and Varina Davis were praised as the best examples of their sex. However this praise was short lived, as both women struggled to conform to the very public role of First Lady. During their tenure as First Ladies, Lincoln and Davis were besieged by critics. Varina Davis and Mary Lincoln were openly criticized for their clothes, weight, western heritage, and political opinions. Even their loyalties to their husbands cause were challenged by their critics. What does the criticism Mary Lincoln and Varina Davis received tell us about nineteenth-century gender roles? Mary Lincoln and Varina Davis came from different regions within the United States, and yet they were both criticized during the Civil War for the same reasons. As Lincoln's and Davis's experience as First Lady showed, while the nation was divided over slavery, the nation united around a shared expectation of gender roles. Through an examination of a variety of primary sources including memoirs, letters, diaries, and newspaper accounts, I will examine the public perceptions of Mary Lincoln and Varina Davis that connected the North and the South while the nation was divided by Civil War.

Session B-18
Oral Presentation: Air Quality
Friday, March 4, 2011, 3:00 pm
Location: Casa Real

339 3:00 pm

Traffic-related Air Pollution in the Community of San Ysidro, California, in Relation to Northbound Delays at the US-Mexico Border

Jill Dumbauld, Public Health (M)
PJE (Jenny) Quintana, Public Health

The San Ysidro Border Crossing is the busiest in the world, with over 13 million personal vehicles crossing from Mexico in 2009. With homes, schools and businesses in close proximity to the crossing and to major transportation corridors, the community of San Ysidro is potentially highly impacted by border-related traffic. Though the negative health effects of exposure to traffic-related air pollutants are well documented, the relationship between border traffic and air pollution levels in San Ysidro has not been assessed. This study investigated delays at the border crossing as a source of traffic-related air pollutants in San Ysidro, especially in relation to wind direction. The air pollutants particulate matter < 2.5 micrometers in diameter (PM2.5), ultrafine particulate matter, black carbon particulates and carbon monoxide were sampled at rooftop locations, including one commercial establishment and two elementary schools in San Ysidro, and a reference site in Imperial Beach. Weather data and border delay times were also collected. Preliminary results indicate measurement sites in closer proximity to the border crossing generally have higher levels of particulate pollution, and concentrations decrease with increasing distance from the crossing. Pollution was higher during calm winds or when wind was blowing from the south or east. Black carbon pollution was significantly associated with the border delay times when the wind was blowing from the south or east, but not when the wind was blowing from the northwest. These results may inform planning for future public health and development activities in San Ysidro.

340 3:15 pm

Roadside Pollution Measurements and Traffic Volume in a US-Mexico Border City: Tijuana, B.C.

Edgar Rodriguez, Public Health (M)
Jenny Quintana, Public Health

Spending a significant amount of time in proximity to vehicular traffic has adverse effects on human health, especially to vulnerable populations such as the elderly, the immune-compromised and children. Concentrations of many traffic-related pollutants decrease rapidly with increasing distance from the road, underscoring the fact that fixed-site monitors for air pollutants in communities may not capture traffic-related exposures important to human health. Recent research reporting roadside levels of air pollution has mainly been carried out in locations such as California where regulatory interventions have improved vehicle emissions; however, few traffic-related pollutant measurement studies have been done in developing nations. The impact from traffic-related pollution in these nations may be higher since vehicular fleets may be considerably different due to increased age and emissions. In the present study, to assess temporal and spatial variation, we measured roadside pollutants at over fifty sites in the city of Tijuana, BC. In addition, to assess the potential exposure to a vulnerable sub-group spending a significant amount of time near emissions sources, we measured roadside concentrations of these pollutants in proximity to elementary schools. The relationship between traffic and pollutants was analyzed by performing twenty-minute simultaneous roadside measurements of carbon monoxide, fine particulate matter (PM2.5), ultrafine particulate matter (PM < 0.1) and black carbon. Traffic was measured by video recording the sampling session at each site and performing subsequent traffic counts. Concentrations were highly variable across different areas of Tijuana. Roadside pollutant levels were extremely high in some areas, for example ultrafine particle concentrations exceeded 100,000 pt/cc at some locations. The results also showed that ultrafine particles are highly correlated with traffic counts, as is black carbon but to a lower extent. Carbon monoxide was highly correlated with both ultrafine particles and black carbon making it a possible surrogate for near-traffic exposure measurements. These findings suggest that traffic related-air pollution may pose a significant health risk to Tijuana residents, especially children, and that air quality interventions are warranted.

341 3:30 pm

Agricultural Burn Events in Imperial County, California: Measured with Real-time Particulate Aerosol Monitors

Christopher Carey, Public Health (M)
Jenny Quintana, Public Health

Burning of agricultural fields to remove stubble and waste occurs throughout the world. However, few air monitoring studies have been conducted near agricultural fields. About 35,000 acres of agricultural fields, primarily Bermuda grass and wheat, are burned annually in Imperial County., CA. During January-March of 2009, , we monitored the air for particulate matter (PM) and aerosol black carbon during and following four burn events at locations of public access in the community at a distance of 0.1 miles to 3.5 miles from the burn. In addition, one burn event was monitored at two locations very close to the burn (50 to 5000 feet). The burning of each field lasted a few minutes and occurred between 10 am and 3 pm. Except for the aforementioned burn event, winds were calm, and the ground-level plumes was observed to go up to the inversion layer (3000' feet or higher), and then to spread out for miles at the inversion layer. Sampling began before or during each burn and continued for a minimum of 24 hours and a maximum of 72 hours following each burn. PM2.5 was sampled with active-flow pDRs (MIE pDR-1200; Thermo Electron Corp., Franklin, MA), PM10 was sampled with passive pDRs (MIE pDR-1000AN; Thermo Electron Corp., Franklin, MA) and black carbon with aethalometers (Model AE42; Magee Scientific Company, Berkeley, CA) which provided minute by minute readings. Data from the pDR were adjusted using previously published correction factors when relative humidity exceeded 60%, and co-located EBAM data was used to correct pDR readings to mass equivalents. For the one burn where the monitors were located very close to the burn, the levels of PM10 rose as high as 40,000 µg/m3 for a 5-minute averaging time and 6,500 µg/m3 for an hourly concentration during the burn. For the four other burns where monitoring locations were more distant, hourly PM2.5 levels ranged from 0.73 to 22.9 µg/m3 during the hour of the burn. For all burn events, particle pollution levels on the night (8PM-3:59AM) of a burn event were significantly higher than daytime values. These findings, if replicated, imply that the effect of agricultural burning on community health would be influenced by exposures experienced the night following the burn. In Imperial County, nighttime lowering of the inversion layer may increase exposures during the winter. Temporal patterns of community exposure to PM from agricultural burning deserve further study.

342 3:45 pm

Smoke-free College Campuses: No Ifs, Ands, or Toxic Butts

Michael Sawdey, Public Health Epidemiology (M)
Thomas Novotny, Public Health

Objective: To better estimate the burden of toxic cigarette butt waste and create awareness of the hazardous nature of cigarette butts on two large university campuses in San Diego by organizing and conducting student cigarette butt cleanup activities.

Methods: Two separate campus-wide cleanups were conducted by student volunteers at San Diego State University (SDSU) and at University of California San Diego (UCSD) between April and July 2010. Results: In one hour, 63 volunteers at SDSU collected 23,885 butts; 6,525 cigarette butts were collected in one hour by 17 volunteers at UCSD. The average number of cigarette butts picked up per individual was 379.1 at SDSU and 383.8 at UCSD (range 25-1030 per volunteer). Discussion: The amount of cigarette waste on college campuses nationally may be quite substantial given the many thousands of cigarette butts gathered at each of the San Diego institutions. In just 10 seconds on average a volunteer could locate, walk to, pickup, and put a cigarette butt in the collection bag, and then begin looking for another discarded butt indicating the saturation of cigarette butts on campus. Smoke-free policies on campus could have far-reaching effects not only in reducing smoking behavior on campus and ground cleanup costs, but also on the environment. Campus cigarette waste cleanups can be utilized to call attention to the issue of cigarette butt waste in the environment.

343 4:00 pm

A Cross-Sectional Analysis of the Factors of Violation of Maine's Legislation Prohibiting Smoking in Vehicles Containing Children

Katie Callahan, Public Health, Epidemiology (M)
Suzanne Lindsay, Public Health

Secondhand smoke (SHS) is a harmful mixture of chemicals released from the burning of a cigarette, and has been classified as a Class A carcinogen. Exposure to SHS has been proven to be related to negative health effects in humans. Children exposed to SHS are more susceptible to negative health effects because they have immature, developing bodies. SHS exposure in confined areas, such as inside a motor vehicle, is of concern due to the increased toxicity level of the SHS. The purpose of this cross-sectional study was to assess the factors associated with those who smoke in a car containing children and to determine if the estimated prevalence of those who smoke in a vehicle with children has decreased since legislation was passed in Maine in 2008. Observations were taken at different times of the day and in different seasons. Each observation period consisted of a pair of researchers whom stood at the edge of the roadside, at 7 observations sites located throughout Farmington, Maine. The researchers recorded the child passenger(s) estimated age(s), and the adult passenger(s) estimated age(s), gender, and smoking status from each vehicle. Site locations were chosen based upon ease of observation and neighborhood characteristics. Adult data (n=3937) were used to calculate the estimated prevalence and factors of violation. Of all adult observations, 8.26% were observed smoking in a vehicle containing a child, 63.38% of which were male. The estimated prevalence of those smoking in a vehicle containing children decreased from 13.08% in the fall of 2008, to 7.40% in the fall of 2010. In the final model, gender was found to be significantly associated with smoking in a vehicle, with males having increased odds of violation. Date was found to be significantly associated with violation, with odds decreasing over time and between seasons. The change in prevalence between dates indicates that smoking in a vehicle not only decreased over time, but also that season could have an effect on smoking in vehicle behavior. These results could be useful to those who are seeking to employ similar smoking in vehicles legislation, and help to improve current legislation.

344 4:15 pm

The Association Between Active and Passive Smoking and Latent Tuberculosis Infection: Results from NHANES

Ryan Lindsay, Public Health/Global Health (D)
Thomas Novotny, Public Health

BACKGROUND: Smoking may increase risk for tuberculosis (TB) mortality, morbidity, and household spread. The National Health and Nutrition Examination Survey (NHANES) may provide important information about active and passive population level cigarette smoke exposure and latent TB infection (LTBI) in the United States. DESIGN/METHODS: In 1999-2000, interviews and medical examinations were conducted in a nationally representative sample of non-institutionalized US civilians as part of NHANES. Active smoking was defined as serum cotinine concentration ≥10 ng/mL, passive smoking was defined as cotinine levels of 0.05-10 ng/mL among self-reported non-smokers, and tuberculin skin test (TST) ≥10mm indicated LTBI. We used weighted multivariate logistic regression to assess associations between active and passive smoking and LTBI among adults >20 years. RESULTS: Of 2,970 adult respondents, 802 (27%), 1008 (34%), and 247 (8%) were active smokers, passive smokers, and LTBI+, respectively. After controlling for age, gender, race/ethnicity, socioeconomic status, country of origin, household size, BCG vaccination, and having lived with someone with known TB infection, active smokers had double the risk of LTBI compared with non-smokers (OR 2.3, 95%CI 1.2-4.3). Passive smoking status was not indicative of increased risk of LTBI (OR 2.0, 95% CI 0.9-4.4) when compared to unexposed individuals. CONCLUSION: Active smoking is an independent risk factor for LTBI in the adult US population. TB control in the United States should include tobacco control as part of the integrated management of this infectious disease."

Session B-19
Oral Presentation: Issues in Education
Friday, March 4, 2011, 3:00 pm
Location: Chantico

345 3:00 pm

How and Why do Mexican-American Undergraduate Students Make Sense of their Preparation and Motivation to Attain a Bachelor's Degree?

Roman Liera, Psychology (U)
Shaila Mulholland, Education

Numerous researchers have stated that Latina/o students indicate having high aspirations of transferring to four-year universities and attaining a bachelor's degree; however, many students do not fulfill their goals of transferring (Ornelas & Solorzano, 2004). Transfer rates have been shaped by the students': college readiness (Ornelas & Solorzano, 2004); lack of knowledge about financial help, unwillingness to leave community and family, lack of family involvement (Suarez, 2003) and being "cooled out" (Conway, 2010, p. 210). Although it is important to consider external influences such as social economic status, family support, type of K-12 school (public or private), location of school (urban, rural, or suburbs), and peers, researchers should also consider individual differences among Mexican-American undergraduate students. For example, need for cognition is a psychological construct that can be used to explore how it shapes persistence and motivation to attain a bachelor's degree. Need for cognition has been defined as people's tendency to engage in and enjoy thinking (Ruiter, Verplanken, De Cremer & Kok, 2004). Need for cognition may also represent a motivational tendency that can be developed through experiences with complex endeavors to fulfill intrinsic rewards that individuals may attain from these types of efforts (Cacioppo, Petty & Morris, 1983). Researchers have found that people with high need for cognition tend to extract more from and think more about information previously presented than those with low need for cognition (Cacioppo et al., 1983). Need for cognition will be analyzed in a snowball sample of Mexican American undergraduate students who have transferred to a university from a community college. Five individual interviews will be utilized to collect data and need for cognition will be measured with an 18-item scale (Cacioppo, Petty, & Kao, 1984). Additionally, phenomenological methods will be used to explore the research questions (Creswell, 2009) and help unravel the effects of need for cognition on motivation and persistence. The conversations will be audio taped and transcribed into verbatim.

346 3:15 pm

Response to Intervention: An Analysis of Incarcerated Students Needs and their Readiness to Respond.

Elsa Carrillo, Psychology (U)
Cynthia Park, Education

This is an exploratory study to identify and assess the needs of four identified non-responders who have fallen behind academically and who are not functioning successfully in the community. This has been guided by a type of Response to Intervention (RtI) program, called SAGE. This investigation seeks to inform the SAGE program planners of the needs of these four non-responders so that the design of the SAGE program may be reviewed for its appropriateness for four typical students. A self-report assessment to assess student motivation and need to achieve was proctored on 25 students that are currently incarcerated in a high-security juvenile detention facility. Complementing the self-assessment is an instructional unit of on intrinsic and extrinsic motivation. Four of these students were purposely selected for individual follow up intervention with the researcher for four sessions. This study followed a case study approach and collected qualitative data for these sessions. From the categorical analysis of the transcripts of each session common themes such as family, academic choices, self-identity, coping, goal setting, drug use and sense of justice. Data analysis is in process of interpretation. Tentative recommendations for the SAGE program will be given upon completion.

347 3:30 pm

Critical Math: How Can a Program Focusing on Algebra be Developed to Serve English Language Learners K-8th?

Elena Bolanos, Policy Studies (M)
Cristina Alfaro, Policy Studies

The student's fundamental building blocks of math instruction begin with elementary followed by middle school, then high school and finally university. When one of the early math building blocks is not formed with problem-posing curriculum and critical thinking skills, the blocks that follow will create an achievement gap between the previously learned and the newly formed math concepts. Math is a subject that grows developmentally and it is crucial for students to form a solid foundation of math concepts at an early stage in school. The state of California has recently applied a requirement for students to earn a high school diploma. The requirement seeks for all students to pass the California High School Exit Exam (CAHSEE) beginning with the Class of 2006. The CAHSEE was developed to test students' Algebra from elementary to 7th grade skills. As previously suggested, an imbalance of math concepts will form and the achievement gap of the student will become wider if the student is unable to pass the CAHSEE after three tries. Students need to have a strong

foundation to achieve academic success. A local community charter school with the mission and vision to strive for excellence in academics is struggling to provide an effective K-8th math program. By using a mixed-methods approach, in conducting classroom observations, interviews and focus groups with teachers, the data will demonstrate the need in teaching math concepts developmentally beginning with kindergarten. With the on-going data collection, preliminary findings will suggest how teachers and their training impact the strategies used when teaching math. The purpose of this study is to find the root of the issue in mathematics. This study will provide the charter school recommendations of professional development that will offer teachers strategies to apply when teaching math and at the same time develop the students' critical thinking skills. In addition, offer the charter school suggestions of problem-posing curriculum that will help students better comprehend math concepts.

348 3:45pm

Is it Time to Go Charter? What it takes to Go Charter and How We Can Learn from this Movement

Armando Leon, Policy Studies (M)
Cristina Alfaro, Policy Studies

The purpose of this study is to investigate if charter schools can successfully provide students from a minority, low-income, critically undereducated community access to higher education. The research looks at successful elements of charter schools and lays out a pedagogical framework for the ideal charter school for the targeted community. The research uses a mixed-methods approach focusing on a qualitative analysis of charter schools and a quantitative analysis of those schools' success. The study concludes with the recommendations for improving educational opportunities for the target community which may include the opening and operation of a charter school in South San Diego County.

349 4:00 pm

An Elementary Look at Productive Disposition

Alison Williams, Education (M)
Jessica Pierson, Math and Science Education

In 2001, the National Research Council identified five "strands of mathematics" essential for success in the study of mathematics. Since then, teachers and curriculum designers have been looking for ways to incorporate these strands into their instruction. One of these strands, Productive Disposition, has proven to be more difficult to identify and foster within the mathematics classroom. Research around Productive Disposition up until this time has largely focused on adult learners (i.e. pre-service teachers) or secondary students, leaving elementary teachers with many questions about what this looks like in our primary schools. As a teacher researcher, I engaged in action research studying 1st- and 4th-grade students and their classrooms in order to better understand the role of productive disposition in the elementary school. Data collection focused on 13 case study students who exhibited a range of dispositions toward mathematics and included teacher observations, student reflections, semi-structured interviews, and problem-solving interviews. Following the data collection period, I used open coding to identify categories of productive disposition that were further refined after multiple rounds of data analysis allowed certain dominant traits to surface. From this analysis came the identification of major traits of productive disposition as it manifests itself in our youngest students. An important finding is that orienting one's teaching and student learning toward viewing mistakes as an opportunity for learning is likely to lead toward students committing more time and focus to their work. Additionally, this attitude toward mistakes often translates into heightened levels of confidence with mathematical ability and a view of oneself as a successful learner of mathematics. This confidence in one's mathematical ability was also revealed as a key component of a productive positive disposition. As an implication of this research, I suggested ways that teachers might be able to authentically develop such confidence in their students. It is through such work in the classroom that we hope to better serve our students in developing all five strands of mathematical proficiency, so as to encourage future success in the study of mathematics throughout their educational careers.

350 4:15 pm

Creating an Articulated Mandarin Program in San Diego

Yan Jiang, Policy Studies in Language and Cross-cultural Commmunication (M)
Cristina Alfaro, Policy Studies

As Mandarin Chinese getting more global attention, many K-12 schools start Mandarin Chinese as a foreign language program in San Diego. However, those programs scatter in different school districts and mainly serve for beginners. In other words, the programs are unrelated between the different grades. The students have to give up learning Mandarin or repeat basic-level Mandarin class when they step into a higher grade. None student could achieve an advanced or professional level in Mandarin under the current situation. In this view, linking the Mandarin curriculum to become an articulated program is very crucial and urgent. This project focusing on the curriculum continuity of the Mandarin classes at local public schools, aims to assess the needs of the stakeholders including students, parents, teachers and administrators towards building a continuous Mandarin program. The author chooses one elementary school to conduct a case study, through class observation, interviewing teachers, focus group with students and survey among parents in order to evaluate the necessity as well as possibility to build articulated Mandarin programs in San Diego. A streamlined Mandarin curriculum model will be designed as a result.

Session B-20
Oral Presentation: Chemistry II
Friday, March 4, 2011, 3:00 pm
Location: Presidential Suite

351 3:00 pm

Self-assembly of Group-III Tin Nitride Clusters: Unique Anionic Ammonia and Ammonium Analogues

Robert Wilson, Chemistry (D)
Miriam Bennett, Chemistry

Facile syntheses of several bimetallic, high-nuclearity, group-III tin nitride clusters have been achieved via self assembly. This work has lead to the isolation of unprecedented anionic ammonia and ammonium analogs of gallium and tin, and the first molecular monometallic gallium nitride. Synthetic control in cluster formation is exercised by elimination of neutral or anionic species from the reaction system. The compounds presented herein may serve as building blocks of higher nuclearity compounds and nano-materials.

352 3:15 pm

Doping Test by Capillary Zone Electrophoresis

Srilatha Vydha, Chemistry (D)
Christopher Harrison, Chemistry

Hemoglobin based oxygen carriers (HBOCs) are artificial oxygen carriers, synthesized by polymerizing hemoglobin. Because of their higher oxygen carrying capacity compared to normal hemoglobin, these forms have the potential, have been, used as doping methods for endurance athletes and have been included in WADA's (World anti doping agency) prohibited list of doping substances. To maintain the fairness of the competitions and continue the battle against doping it is essential to detect poly-hemoglobin if present in the athletes' blood serum, to achieve this goal it is necessary to the separate poly-hemoglobin from any hemoglobin that may be present in the serum due to cell lysis. We developed a Capillary zone electrophoresis CE method to detect HBOCs in blood serum. The advantage of our method is the simple sample preparation procedure compared to the other CE methods reported before. In our method poly-hemoglobin is added to human red blood cells, lysed and subjected to centrifugal filtration. Centrifugal filtration is performed with high molecular weight cut off filters to remove excess of low molecular weight proteins such as serum proteins and hemoglobin. The use of a highly stable phospholipid bilayer capillary coating prior to the sample injection is important in this method to suppress the electroosmotic flow (EOF) and prevent any protein adsorption. Using this method we have been able to successfully detect poly-hemoglobin and separate hemoglobin in *in vitro* doped human blood samples.

353 3:30 pm

Towards the Rational Design of Functional Solids: Synthesis and Characterization of Porphyrin-Based Solids for Catalysis and Gas Sorption

Derek Butler, Chemistry (D)
Laurance Beauvais, Chemistry

By designing strategies to prepare metal organic frameworks (MOFs) with coordinativley unsaturated metal centers, better catalysts and possibly better gas sorption agents can be prepared, especially for hydrogen fuel storage. Making these MOFs will be done using two organic building blocks using two distinct metal sites. The first metal site will be to extend the solid out in either 2D or 3D, where the second metal site will be the unsaturated site that contains the functionality. The chosen organic linker for this is tetracarboxyphenylporphryin (TCPP) as this will bind four Cd(II) ions to extend the solid, and the porphryin has four N atoms located in the ring that can be used to bind the second, functional metal. To synthesize the material, TCPP along with CdCl2 and various MX2 salts were mixed together in diethylformamide (DEF) along with MeOH and the base lutadine. Single crystals were harvested for use in structure determination using single crystal x-ray crystallography. Using powder x-ray techniques, composition of the sample was determined. Thermogravemetric analysis was used to look at the loss of solvent molecubhj les for the structure. By using UV-vis spectroscopy, further conformation of incorporated M2+ in the porphyrin. Metals analysis verifies the Cd:M ratio, confirming a different metal center at both structural and functional metal site. Finally gas sorption of H2 and N2 for the structures was looked at to look for any improvement over existing structures.

354 3:45 pm

Synthesis of New Allyl Palladium Chloride Phosphine Complexes and their Application in Aryl Amination Reactions

Reji Nair, Chemistry (D)
Douglas Grotjahn, Chemisty and Biochemistry

Introduction: Allyl palladium complexes are valuable synthetic intermediates in organic chemistry, especially in nucleophilc allylic substitution reactions. It is thought that, η3-allyl-Pd-L2 complexes are formed as intermediates, where L = monodentate phosphines or L2 = bisphosphine. These complexes are known to catalyze aryl amination reactions to form carbon-nitrogen bonds in the presence of an inorganic base. However, there is

not much literature available, to the best of our knowledge, using imidazole and pyridyl phosphines complexes. Hypothesis: Grotjahn group's research focuses on the use of bifunctional phosphines as catalysts for various organic transformations1. These bifunctional phosphines possess a pendant base in the form of imidazole or pyridyl nitrogen which could be useful for proton abstraction during an aryl-amination reaction. Methods: Our approach was to react imidazole and pyridyl phosphines with allyl palladium chloride dimer and synthesize complexes which can have two labile positions. a) the allyl group, prone to nucleophilic attack and b) the chloride atom, prone to ionization. Once the complexes are synthesized, we can ionize the halide and use the ionic complex as catalyst for aryl amination reactions: an aryl halide, amine and the phosphine complex can be mixed together in vial containing toluene solvent and allowed to react for 24 h at room temperature or subsequent heating. The reactions were to be monitored via injections on a GCMS. Conclusion: So far we have synthesized 12 different imidazole and pyridyl phosphine palladium complexes. These complexes differ in the alkyl groups attached to the heterocycles and were subjected to halide ionization resulting in ionic complexes and were applied to catalyze aryl amination reactions. Our studies have shown that two novel phosphines complexes result in the formation of C-N bonds significantly better than the rest. In this presentation, synthesis of these novel complexes, their characteristic structure and catalytic activity towards aryl amination reactions will be discussed.

Session B-21
Oral Presentation: Cardiac Cell Biology
Friday, March 4, 2011, 3:00 pm
Location: Council Chambers

355 3:15 pm

Hematopoietic Stem Cell Specific Gene Modulation

Jeff Bernitz, Biology (U)
Christa Muller-Sieburg, Biology

A healthy hematopoietic system depends on the ability of hematopoietic stem cells (HSC) to both differentiate and self-renew. However, the cellular and molecular elements that regulate the balance between self-renewal and differentiation are not completely understood. To a large part, this derives from the lack of a valid system to study the role of regulatory genes in HSC. Current systems that over-express or ablate genes in HSC invariably alter the expression of the corresponding gene in the differentiated progeny. Thus, it remains difficult to discern how, when, and where a given gene plays its regulatory role. We wished to design a system that would modulate gene expression specifically in HSC. In agreement with published data, we show that Hoxa5 is a gene that is expressed in HSC-enriched bone marrow populations but not in mature cells of the hematopoietic lineage. This suggests that the Hoxa5 promoter will be HSC-specific. The Hoxa5 promoter was identified by bioinformatics and cloned by PCR from mouse genomic DNA. The fragment was then sequenced and inserted into an expression vector upstream of a GFP reporter gene. To test the specificity of the construct, we will take advantage of two adherent cells lines that differ in Hoxa5 expression. Preliminary data show correct GFP expression in the Hoxa5-expressing cell line following transfection with our construct. This suggests that this construct can successfully drive reporter gene expression in the correct molecular environment. We plan to optimize the system, create a retrovirus, and test the Hoxa5 driven expression in sorted HSC. We believe that such a system will be a valuable tool in interrogating HSC gene regulation.

356 3:15 pm

Preconditioning Involves Selective Mitophagy Mediated by Parkin and p62

Genaro Hernandez, Biology (U)
Roberta Gottlieb, Biology

In the heart, selective clearance of damaged mitochondria helps maintain cellular homeostasis. It has been demonstrated that autophagy, a process involving degradation and recycling of large proteins and organelles, facilitates mitochondrial turnover. Previous studies have shown that Parkin, an E3 ubiquitin ligase, and SQSTM1/p62 play a role in the autophagic mechanism targeting damaged mitochondria. Thus, we hypothesized that Parkin and SQSTM1/p62 are essential for mediating mitochondrial autophagy (mitophagy) during ischemic preconditioning (IPC), a condition known to damage mitochondria. In order to examine this hypothesis, cardiac HL-1 cells and neonatal cardiomyocytes were subjected to simulated ischemia (sI). Moreover, Laggendorf-perfused rat hearts as well as mouse hearts *in vivo* were subjected to IPC. Parkin was found to translocate to the mitochondria under ischemic stress as determined by western blot analysis and fluorescent microscopy. Similarly, SQSTM1/p62 was also shown to translocate to mitochondria under the same ischemic stress. Interestingly, the translocation of SQSTM1/p62 to the mitochondria appears to be dependent on Parkin, as Parkin KO mice were unable to induce SQSTM1/p62 translocation following IPC. Furthermore, downregulation of Parkin using siRNA in HL-1 cells subjected to sI decreased mitochondrial loss. In contrast, HL-1 cells over expressing mCherry-Parkin showed more pronounced mitochondrial depletion. We observed that mitochondrial loss was attenuated during sI in autophagy deficient Atg5 KO mouse embryonic fibroblasts (MEFs), suggesting autophagy-dependent mitochondrial turnover. Ablation of Parkin in HL-1 cells undergoing ischemia/reperfusion (sI/R) increased cell death as assessed by LDH release. Finally, cardioprotection in Parkin KO mice subject to IPC was reduced by 40% as determined by infarct size. Together,

these findings indicate that Parkin and SQSTM1/p62 are essential for mediating clearance of damaged mitochondria through autophagy during ischemic stress. Moreover, we conclude that Parkin plays a critical role in IPC-induced cardioprotection; therefore, supporting survival of the myocardium.

357 3:30 pm

Induction of Autophagy in the Heart by Simvastatin

Pam Lee, Cell and Molecular Biology (M)
Roberta Gottlieb, Biology

HMG-CoA reductase inhibitors, or statins, have long been heralded as the drugs of choice for treatment of hypercholesteremia. By inhibiting the rate-limiting step in cholesterol biosynthesis, as well as upregulating expression of the low-density lipoprotein receptor in the liver, statins substantially decrease plasma cholesterol levels in hypercholesterolemic individuals. Interestingly, several studies have shown that statins may exert beneficial effects independent of the liver. In particular, statins have been shown to reduce mortality in patients with coronary heart disease. However, the mechanism for this protection has yet to be identified. Recent studies by our lab demonstrate that autophagy plays an essential role in cardioprotection. Autophagy, or “”self-eating””, is the process of recycling components of damaged organelles. During autophagy, structures known as autophagosomes form, engulf dysfunctional proteins and organelles, then fuse with lysosomes. Enhanced autophagy is commonly described by increased conversion of cytosolic microtubule-associated protein light-chain 3 (LC3-I) to its membrane-bound form (LC3-II), which is recruited to autophagosome membranes during their formation. Autophagic pathways allow turnover of key components and maintenance of intracellular homeostasis, and their impairment may result in accumulation of defective organelles. Accordingly, reduced autophagic efficiency has been suggested as an underlying mechanism for a variety of diseases. In contrast, upregulated autophagy is seen during times of stress and may function as a survival pathway by generating amino acids during nutrient limitation. Therefore we sought to determine if the cardioprotective effects of statins can be attributed, at least partially, to autophagy. For our studies, we chose to use simvastatin because 1) it is one of the most commonly prescribed hyperlipidemic drugs and 2) it has been shown to have a cardioprotective capacity in some mouse models. Our initial studies in neonatal rat cardiomyocytes demonstrate that simvastatin enhances autophagy (as determined by an increase in the number of autophagic vesicles, and LC3-II protein levels). Given these preliminary results, we examined the effects of simvastatin *in vivo*. Administration of simvastatin to mice similarly increased LC3-II protein levels in heart tissue. Combined, these results demonstrate that simvastatin is a potent inducer of autophagy in the heart, which may contribute to the cardioprotection afforded by simvastatin.

358 3:45 pm

Non-random DNA segregation in Cardiac Stem Cells

Balaji Sundararaman, Molecular Biology (M)
Mark Sussman, Biology

Rationale: A cell has DNA strands of different replication ages because DNA replication is semi-conservative. Double-stranded DNA molecules possess one DNA strand (synthesized in the previous S phase) that is one generation older than the other. Non-sister chromatids containing newly synthesized DNA and ‘old’ DNA strands are non-randomly partitioned between mother and daughter cells during anaphase. Stem cells are presumed to non-randomly segregate chromatids to determine cell fate of daughter cells, although experimental evidence is lacking. Resident cardiac stem cells (CSC) present in the adult heart have been used for cell-based treatment of myocardial damage but the factors determining the stemness and lineage commitment of these cells are poorly understood. Objective: Establish occurrence of non-random chromatid segregation and correlate with daughter cell fate determination in cardiac stem cells. Methods and Results: Non-random segregation was tracked by incorporation of bromodeoxyuridine (BrdU), a thymidine analogue labeling newly synthesized DNA strands. Cell body containing one daughter nuclei positive and other negative for BrdU was revealed in label release assay where cells were labeled only one generation, chased in BrdU free media and blocked in the successive cytokinesis. For label retention assay, cells were labeled for many generations (18 days) before chasing in BrdU free media. 23-47% of label retaining cells after 9 days of chase indicate CSCs non-randomly segregate chromatids to a subpopulation of cells. Proliferation tracking dye was used to exclude BrdU retaining senescence cells. Cells grown at high density had higher BrdU retention indicating cell density might modulate the frequency of non-random segregation. Conclusions: CSCs non-randomly segregate chromatids as demonstrated by both flow cytometry as well as selective segregation of BrdU labeled chromatids as shown by confocal microscopy. Future Directions: The relationship of non-random chromatid segregation to identity of stem cells fate remains to be determined.

Session B-22

Oral Presentation: Music and Dance in Media

Friday, March 4, 2011, 3:00 pm
Location: Quetzalcoatl A

359 3:00 pm

Effective Warm-Up Techniques for Musical Theatre Dance

Roger Ellis, Musical Theatre (M)
Rick Simas, Theatre, Television and Film

Despite extensive research in the areas of dance technique and injury prevention, the existing body of research specifically addresses ballet and modern dancers, while little is known about unique strategies for injury prevention in musical theatre performers. This study investigates potential causes for the occurrence of injury in musical theatre performers and explores the role of warm-up and conditioning in fortifying the body against the inherently dangerous occupational conditions of the profession. An analysis of stretching and strengthening techniques yields effective strategies for promoting muscular balance and neuromuscular coordination. The role of core stabilization exercises in training the core to work autonomously from lung ventilation is also explored. This study reveals that musical theatre performers may benefit from approaches to injury prevention similar to those established for ballet and modern dancers.

360 3:15 pm

The Language of War: Cultural Interaction Presented in Documentary Film

Pat Clark, Theater, Television and Film (M)
Mark Freeman, Theatre, Television and Film

This project represents a convergence of research in three disciplines: cultural studies, documentary film, and historical analysis. The central focus of this research culminates with the utilization of the moving image as a method of presentation. Its purpose will be to serve as a representation of the interdisciplinary relationship between cultural interaction, specifically that of combat translators, and the visual depiction associated with documentary film. This film will provide an intimate look at the dangers faced by combat translators and the role language plays in war. This project investigates specific instances of combat translation and the relationship among translators, military personnel, and the civilian population, in an effort to highlight the implication and application of translation in combat. Collecting first hand accounts and conducting secondary research in the areas of language and cultural interaction proved to be essential to this project. This research required an intense study of the processes of collecting, arranging and distributing this information throughout many versions of the film. This resulted in a number of variations and revisions, each of which required that the key findings remain intact within the film. The culmination of this research resulted in the visual representation of events that embody a complex cultural study and a distinct method of presentation. This aural and visual unification symbolizes an arrangement of cultural and historical elements by utilizing techniques exclusive to the film medium. This project has a strong connection to social interaction, and as it developed this relationship became the film's principal narrative.

361 3:30 pm

The "Second Banana": A Critical View of Secondary Characters in Musical Theatre

Timothy Allen, Musical Theatre (M)

It has often been said that art imitates life. Perhaps it is this verisimilitude, as well as the presentational style of singing and dancing that keeps audiences returning to enjoy musical theatre. An audience member is the "leading" character in his or her own life; congruently, he or she interacts with multiple "supporting" characters who enter, exit, and ultimately affect his or her life's ambitions or objectives. Musical theatre composers, lyricists, and librettists create supporting characters that reflect those people in an audience member's life who advise, thwart, or mentor. They construct secondary roles based on his or her purpose within a musical more so than by his or her type. Originally, musical theatre was seen as a commercial art form whose main attractions were snappy tunes, high-kicking dance routines, and pretty girls in tights. Over time, musical theatre began to tackle more weighty subjects, like those of Richard Rodgers and Oscar Hammerstein II's *Oklahoma!*, Joe Masteroff, John Kander, and Fred Ebb's *Cabaret*, and Stephen Sondheim and Hugh Wheeler's *Sweeney Todd*. My research considers select supporting characters in these three musicals. One will see how they reflect and, in the most unthreatening manner possible, familiarize the audience with the more weighty objectives of the leading characters: One goes looking for something other than totalizing systems of omniscience, something related to the strange business of watching people pretend to be other people and engage in made-up stories for hours at a time. That odd desire lies behind all theatre, the desire to see actors take on new characters…." (McMillin, Scott. The Musical as Drama: A Study of the Principles and Conventions Behind Musical Shows from Kern to Sondheim. New Jersey: Princeton University Press, 2006.) It is the interaction of both leading and supporting characters that conveys to the audience the overall action, theme(s), and structure of the librettist, lyricist, and composer of a musical. Simply stated, the audience identifies with the leading character's objectives by his or her interaction with a supporting character who acts as an advisor, foil, and/or commentator.

362 3:45 pm

Emotion Through Tap: The Expressive Qualities of Rhythm, Sound, and Style in an American Dance Form

Cassie Abate, Musical Theatre (M)
Rick Simas, Theatre, Television and Film

Tap dance is an American art form rich in history that has a unique vernacular of steps and styles and contains a vast capability for emotional expression. Unfortunately, the significance of tap in musical theatre is often trivialized in comparison to ballet and

jazz. Many theatre creators, critics and audiences have claimed that tap has no value beyond simple entertainment. However, this research demonstrates how tap dance has the potential to reach audiences on a deep emotional level. It examines scientific evidence on the affects of syncopation and tempo fluctuation on emotion responses and looks at the history of a shift in tap dancing from an entertainment medium to a means of emotional expression. It studies the influence of performers such as Gene Kelly and Gregory Hines and the importance of shows such as *Bring in 'Da Noise, Bring in 'Da Funk*. Videos of famous tap dances of stage and screen are analyzed to show how rhythm, sound and style affect audiences in a visual and auditory way. A pedagogical method is then presented to teach performers how to express the emotions of a story or musical composition through the medium of tap dance. It becomes clear that tap is a largely untapped means of conveying emotion through rhythm and movement, and should be recognized and utilized for the role it can play in the fully integrated musical.

Session B-23
Oral Presentation: Physics
Friday, March 4, 2011, 3:00 pm
Location: Quetzalcoatl B

363 3:00 pm

Exploring Uses of Ferromagnetic Material through Electron Spin

Katherine Beauvais, Physics (U)
Antonio Palacios, Mathematics and Statistics

The field of spintronics, the manipulation of the spin and magnetic momentum of an electron rather than its charge in electrical devices, was first started in 1980 after Albert Fert and Peter Grünberg's discovery of the giant magnetoresistance effect. Using this, effects of ferromagnetic material pertaining a trilayer of a thick fixed magnetic layer, an insulator, and a thin free magnetic layer contained in an oscillator can be exploited by controlling the spin of electrons. As the oscillators are coupled, their frequencies synchronize together causing an increase in power output. The Landau-Lifshitz-Gilbert equation is used to create a model of this electrical device to obtain numerical results proving the theory of increased power output for synchronized oscillators. By the most common application of this is the spin nano-valve device, which has already lead to new read-and-write heads, MRAM memories, magnetic sensors, and reprogrammable logic devices.

364 3:15 pm

The Hyperpolarizabilities of Atomic Eigenstates

Brandon Rigsbee, Physics (U)
Michael Bromley, Physics

The properties of atoms with one valence electron are calculated numerically using configuration interaction. The main focus was to determine the dipole polarizabilities and second hyperpolarizabilities of the ground-state and lowest-energy excited states. Determining these values for different frequencies of an applied electric field is of particular interest towards a number of applications in non-linear optics as well as for the manipulation and control of atoms and molecules. Future work on the effect of electric fields on key transitions in atoms will help in the development of the next generation of atomic clocks that rely on atoms in optical lattices.

365 3:30 pm

Creation of the Devil's Vortex Lens

Danielle Doughty, Physics (U)
Mathew Anderson, Physics

What if you were able to create an optical trap that contained multiple focal points and was completely programmable? It's all possible with a new vortex beam proposed recently, called the "Devil's Vortex Lens". It is based on a fractal pattern known as the Cantor function, or the "Devil's Staircase", in which a fractal phase pattern is imposed on a laser beam. One unique aspect of this laser beam's propagation is its multiple focal spots: a vortex is formed, it disappears, and then it forms again! So far, though, this vortex has only been discussed theoretically. In the Ultrafast Laser Lab, I am currently working on generating this fractal phase pattern by using FORTRAN and LabView codes, and using our programmable spatial light modulator to recreate it in the lab. I will be looking at higher order steps of the Devil's Vortex Lens that were not previously explored and we are expecting them to have unique and interesting beam propagation characteristics. In this talk, I will present a brief overview of the Devil's Vortex Lens, the approach for modeling it numerically, and our latest experimental results.

512 3:45 pm

Polymer Gel and Magnetic Resonance Relaxometry Based 3D Dose Monitoring

Ranjit Hira, Physics (M)
Usha Sinha, Physics

Recent advances in Radiation Therapy allow accurate shaping of the dose volume so that normal tissue and critical regions can be spared. However, it is important to monitor the 3D dose distribution of these complex treatment plans to verify the delivered dose

distribution. Our aim was to optimize Magnetic Resonance imaging to map the 3D dose distribution of a novel radiation therapy system, TrueBeam sn1018(Varian) using a polymer gel. Procedures-The polymer gel (BANG KIT, MGS Research) was prepared under normoxic conditions and stored in glass vials. A calibration was performed in the dose range of 3-18 Gy with irradiation using the True Beam. Several imaging sequences (Fast Spin Echo, Multi (8) Spin Echo, Single Spin Echo) were evaluated for spin-spin relaxometry (T2) at 1.5 T (GE Medical Systems) with focus on accuracy, high spatial resolution, SNR while minimizing acquisition time. Treatment plan based irradiations (simulating different volumes and shapes) were performed at a dose rate of 3128 mu/min for verification of the dose maps. Result: The calibration curve (1/T2 vs Dose) was linear in the range of irradiation. The three imaging sequences were consistent in 1/T2 values in the low dose range with the FSE sequence showing some saturation at high dose values. The treatment plan dose mapping is currently underway and will be aligned with the treatment plan simulation to evaluate the degree of match between the plan and actual irradiation. Conclusion: The polymer gel and MR monitoring can enable generation of 3D dose maps with high accuracy and spatial resolution to verify treatment plans of small volumes and steep dose gradients.

513 4:00 pm

Localization of White Matter Changes in Normal Subjects with APOE e2 and e4 Genotypes

Shawn Newlander, Physics (M)
Usha Sinha, Physics

Voxel Based Analysis of DTI has been utilized to study microstructure changes in the white matter regions associated with neurological disorders, such as Alzheimer's disease (AD). We utilize the DTI derived indices of apparent diffusion coefficient (ADC) and fractional anisotropy (FA) to investigate 14 normal subjects with specific genes that increase (APOE e2) and that decrease (APOE e4) the age of onset of AD. DTI data was denoised with a total variation regularization algorithm, and followed by affine and nonlinear registration to generate a common reference frame. Region of interest (ROI), Voxel-based analysis (VBA) and tract based spatial statistics (TBSS) were performed on the aligned ADC and FA maps to identify differences in the cohorts segregated by these alleles. The effect of isotropic and anisotropic smoothing and tensor denoising on the outcomes of the VBA analysis was evaluated and compared to the TBSS method. VBA on the denoised tensor data identified regions of reduced FA (primarily in the genu) in the APOE e4 cohort compared with the APOE e2 cohort. The most consistent results were obtained for VBA using the denoised tensors and anisotropic smoothing prior to statistical testing. The same regions of reduced FA were identified with all filter sizes for the anisotropic smoothing. In contrast, isotropic smoothing identified regional differences for small filter sizes alone, emphasizing that this method introduces bias in the FA values. TBSS did not identify any regional differences in the white matter tracts which may be related to the small area of change.

Session C-1
Poster: Health Behaviors
Friday, March 4, 2011, 1:00 – 3:00 pm
Location: Montezuma Hall

366 Poster #1 1:00–3:00 pm

Cognitive Responses to rTMS Treatment in a Pilot Test of Bipolar Depression

Christopher Johansen, Public Health (M)
John Elder, Public Health

Research has been conducted showing antidepressant effects of repetitive Transcranial Magnetic Stimulation (rTMS) in treatment-resistant depression (TRD). However, few studies have been conducted regarding rTMS treatment in bipolar disorders. Studies have shown that 20Hz rTMS on the left dorsal prefrontal cortex (LDLPFC) may benefit bipolar depression with few side-effects. There are few studies that have examined mood of rTMS immediately following treatment; studies have not examined in-depth the changes in Hopkins Verbal Learning Test on this population. The present study hypothesized that mood immediately after treatment may improve. Furthermore it was, hypothesized that there would be significant changes in Hopkins Verbal Learning Test. In an open-labeled trial, adult candidates with treatment resistant (failed >2 medications) bipolar depression by DSM-IV were recruited after signing consent. Patients who met the enrollment criteria with Hamilton Depression Rating Scale (HAMD)>18 were treated with 3 weeks of 20 Hz rTMS at LDLPFC daily on weekdays. Participants kept the same doses of psychotropic medications from 4 or more weeks before enrollment and until the end of the study. Outcome and other variables were assessed by standard psychological scales. Preliminary results of first the 14 participants indicated significant changes in average mood ratings from pre-treatment to post treatment (paired 2-tail T-tests: $p<.005$). Additionally, there were significant changes in Hopkins Verbal Learning Test from Baseline to 5 weeks (paired 2-tail T-tests: $p<.05$). This may very likely be from bias due to the learning effect and thus requires a controlled study on a larger sample size. The data suggests that there is significant improvement in mood rating immediately following rTMS treatment. The data also suggests that there is a significant change in Hopkins Verbal Learning Test measurements after treatment. Due to the small sample size, placebo effect, and potential bias, randomized

sham-controlled studies with large samples are required for a conclusion. Repetitive serious vs Non-repetitive serious data comparison should also be done to rule out learning effects.

367 Poster #2 1:00–3:00 pm

Alcohol Dependence in the United States: A Study of Alcohol Dependence among Hispanics versus the Non-Hispanic Population

Claudia Llamas, Social Work (M)
Jong Min, Social Work

Purpose: Alcohol abuse and dependence has presented increasingly greater challenges to the United States population. Our research conducted a comparative analysis of alcohol consumption between the Hispanic adults in the United States and the non-Hispanic population by examining the number of days of drinking within 12 months and the number of drinks consumed per day among adults 18 years of age and older.Method/Design: This study is based on the secondary data from the 2008 National Survey on Drug Use and Health. Two sets of the Independent Sample t-test were conducted in SPSS program: i) on the variable with the total number of days that respondents reported used alcohol in the past 12 months, and ii) on the variable with the number of drinks consumed per day in the last 30 days. Results: Results show that a statistically significant difference was seen between two racial groups of the participants in terms of the total number of days of alcohol use in the past 12 months and number of drinks per day in the past 30 days. On average, the total number of days alcohol was consumed in the past 12 months was higher among non-Hispanics (83.80 days) than Hispanics (71.15 days). However, the mean of number of drinks per day in the past 30 days was higher among Hispanics (4.28) than non-Hispanics (3.78). This study suggests that Hispanics drink fewer days in a year, but on average, drink more when they do compared to the non-Hispanic population. Conclusion: More research is needed to discover factors contributing to higher drinking in fewer days by the Hispanic population compared to the non-Hispanic population such as individual and environmental factors. It would be also helpful to understand health consequences of such drinking behaviors by Hispanics and to develop an effective intervention plan designed to address the drinking behaviors.

368 Poster #3 1:00–3:00 pm

Father Influence on Children's Eating Behaviors and Health

Humberto Parada, Public Health (M)
Guadalupe Ayala, Public Health

Few studies have examined the roles that fathers play in the family eating environment. As such, this family-based study aims to expand the current knowledge on how paternal modeling of diet behaviors is associated with their children's eating behaviors, self-rated health, and body mass index. At baseline, father and child behaviors such as fruit and vegetable (F&V) intake and variety were assessed via staff-administered questionnaires. Daily F&V intake was computed using two items and variety was computed from combining a 30-item list of fruits and a 44-item list of vegetables that participants reported consuming during the past month. In addition, fathers' frequency of engaging in nine negative home eating behaviors (NHEBs) yielded a mean scale score and fathers' frequency of reinforcing their children's healthy diet using four items from the Parenting Eating Strategies Scale yielded a mean score. Children's anthropometric measurements were also measured by staff. To date 82 fathers with 40 sons and 42 daughters have been recruited. The mean age of fathers and children are 41.12 (SD=8.80) and 9.98 years (SD=2.00), respectively. In the preliminary bivariate analyses father's F&V variety was correlated with child's F&V variety ($r=0.42$, $p<0.001$) and father's reinforcement of the child's healthy eating was correlated with child's self-rated health ($r=0.26$, $p<0.05$). To further examine the relationships between paternal modeling and child behaviors and health, four multiple linear regression (MLR) analyses were conducted regressing the dependent variables: child daily F&V intake, F&V variety, self-rated health, and body mass index on the independent variables: father daily F&V, F&V variety, healthy diet reinforcement, and NHEBs. In the first MLR, reinforcement and father's F&V intake significantly related to child's F&V variety, adjusting for father's F&V variety ($p\leq0.05$). In the second and third regression analyses, there was no significant association between paternal diet behaviors and child's daily F&V intake or child's BMI ($p>0.05$); however, in the final MLR, reinforcement significantly related to child's self-rated health, adjusting for father's NHEBs and F&V variety ($p\leq0.05$). The results of this study indicate that fathers' behaviors are associated with their child's dietary behaviors and health and highlight the importance of reinforcing children's positive behaviors.

369 Poster #4 1:00–3:00 pm

Examination of a Self-monitoring Exercise on Fatigue and Depression Among African American Cancer Survivors

Maggie Syme, Public Health (M)
Vanessa Malcarne, Psychology

Purpose: Previous research has shown that increased cancer-related fatigue is associated with depression (Dodd, Cho, & Miaskowski, 2010), which complicate daily functioning. Due to the high percentage of cancer survivors that experience fatigue and depression, efforts have been made to study various ways to cope with their psychological and physical effects. The present study examined the effectiveness of an awareness and self-monitoring exercise on the fatigue and depression symptoms of African American cancer survivors. Methods: Participants were administered pre and post measures, which included the

ABSTRACTS

Multi-dimensional Fatigue Symptom Inventory-Short Form (MFSI), the Center for Epidemiological Studies-Depression Scale (CES-D), and various socio-demographic questions. Between pre and post measures (4-6 weeks), survivors were asked to monitor and rate daily fatigue levels and complete the MSFI at week's end. Results: Mean age of the sample (N = 57) was 58.8 years (SD = 12.66). The majority of the sample was female (59.6%), married (40.4%), and highly educated (47.4% with a college or graduate degree). Many were breast cancer survivors (47.4%) and the mean time since treatment was 36 months. Fatigue and depression ratings were not significantly different across medical variables (i.e., stage at diagnosis, treatment type), or socio-demographic variables, with the exception of age. Participant fatigue ratings decreased significantly across assessment sessions (Wilks $\lambda = .72$, $F(5, 47) = 3.78$, $p < .01$, multivariate $\eta^2 = .12$). Depression levels also significantly decreased across assessment sessions ($M = 20.39$ vs. $M = 17.9$, $t(48) = 2.78$, $p < .01$, $\eta^2 = .14$). Conclusions: The findings suggest that inquiring about an individuals' depression and fatigue levels in conjunction with participation in a self-monitoring exercise is effective in decreasing depression and fatigue levels, in the short term. Further examination of the sustainability of these decreases in symptoms is warranted. Research Implications If continued self-monitoring facilitates prolonged improvement, it may be useful to utilize in isolation, or as a sustainability tool in conjunction with a more comprehensive program. Clinical Implications: Promoting awareness of depression, as well as encouraging patients to self-monitor fatigue levels daily, may lead to improvements in both depression and fatigue in African American cancer survivors. Acknowledgment of Funding: NCI U56 Partnership Grant to SDSU/UCSD

370 Poster #5 1:00–3:00 pm

Comparative Study of Drinking among Community College and 4-year University Students: A Preliminary Investigation

Marc Emerson, Public Health (M)
James Lange, Psychology

Purpose: Heavy drinking among traditional 4-year universities has been well studied. However, not as much is known about the frequency and patterns of alcohol use among community colleges. This is unfortunate since community colleges comprise about 44% of all undergraduates in the U.S. This study examined alcohol use among community college students and compared this use to 4-year university students. Methods: Four-year college students and community college students were asked to complete a web-based survey about current and retrospective alcohol use. A sample of 904 college students (63.0% female; mean age = 27.29, SD = 10.09) over the age of 18 from a Southern California community college and 816 (67.6% female) college students enrolled in a major Southern California 4-year University were randomly selected to participate. Specific items used were past year drinking frequency, past month (usual and maximum) drinking quantities. Results: The majority of community college students (83.6%) reported drinking in the past year. For past month alcohol use, they reported a mean of 2.27 drinks (SD = 2.65, N = 420) for usual number of standard drinks and a mean of 4.47 (SD = 3.53, N = 451) for maximum number of standard drinks on one occasion. For the 4-year university students 84% reported drinking in the past year. For past month drinking they reported a mean of 2.22 (SD = 1.92, N = 489) for usual drinking and a mean of 3.25 maximum drinks on one occasion (SD = 4.80, N = 527). Conclusions: This study provides preliminary but much needed insight into a college demographic that is largely unaccounted for. This research also warrants further study, as it shows that community college students are similar in drinking patterns to that of their 4-year university counterparts. The implications are for intervention design with the specific community college student composition and campus environment which differs from that of a more traditional 4-year college. Additionally, with 72.9% community students planning on transferring to a 4-year university, early interventions in community college campuses could help change social norms in 4-year universities as well.

371 Poster #6 1:00–3:00 pm

Indoor Air Pollution and Traditional Cooking Methods: A Solomon Islands Case Study

Luke Campanella, Environmental Health (M)
Zohir Chowdhury, Public Health

Over half of the world's population is exposed to high concentrations of indoor air pollution (IAP) from the use of solid fuel to cook daily meals. It is estimated that over 1.9 million people die prematurely each year due to this exposure with most deaths occurring in the developing world. With the recent surge in efforts to address IAP in order to meet the millennium development goals (MDGs), it is of growing importance that we have proven methods for conducting accurate and precise exposure assessments. This presentation will draw on research conducted during a two week period in July 2010 on the island of Simbo, Solomon Islands to exhibit the characteristics of IAP in this lowland tropical nation. It will also include a description of our future research plan aimed at field validating new methods and instrumentation that have the potential to further our understanding of the relationship between open-fire cooking and the personal exposure to indoor air pollution (IAP). Studies in contexts such as the Solomon Islands are fundamental to our understanding of the determinants of exposure to IAP from solid fuel burning in the developing world. Using a multidisciplinary approach, we aim clarify the human and environmental dynamics of IAP exposure and inform effective and socially acceptable intervention strategies - strategies that may ultimately decrease exposure and reduce one of the most significant global disease burdens.

372 Poster #7 1:00–3:00 pm

Self-rated Health Status and Smoking

Nouran Mahmoud, Epidemiology (M)
Caroline Macera, Public Health

Smoking is the single most avoidable cause of disease, disability, and death affecting the world's population today. While research has shown that mortality is strongly related to smoking, and that mortality is strongly related to perceived general health, the association between perceived health status and smoking has not yet been well established. Using the California Health Interview Survey (CHIS) data for 2007, this cross-sectional study examined the association between smoking status and self-rated health in men and women in California's adult (18+ years) population. The CHIS is a population-based telephone survey using random digit dialing samples of landline and cellular telephone numbers, as well as list samples to augment the yield for certain racial and ethnic groups and an area sample to assess non-response bias. After stratifying by age group (< 55 years old and ≥ 55 years old), chi-square analysis found that current smokers in the < 55 years old age group were 1.29 times more likely to rate their health as poor when compared to those ≥ 55 years old, $p < 0.05$ (95% Confidence Interval: 1.30 – 1.28). Stratifying by gender, chi-square analysis found that male current smokers were 1.09 times more likely to rate their health as poor when compared to female current smokers, $p < 0.05$ (95% Confidence Interval: 1.08 – 1.10). Logistic regression analysis models found that the odds of rating one's health as poor was almost three times higher among current smokers as among non-current smokers, after adjusting for education, race, sex, age, diabetes, heart disease, and high blood pressure (Odds Ratio= 2.66, 95% Confidence Interval: 2.63 – 2.69). The current findings add to the large literature base regarding the adverse effects of smoking and suggest that these effects are apparent when measuring self-rated health. These findings support continued funding for smoking cessation programs.

373 Poster #8 1:00–3:00 pm

Hookah at Home Project

Reem Daffa, Global Health (D)
Nada Kassem, Public Health

Secondhand smoke is considered a source of indoor air contaminants associated with illnesses in adult nonsmokers and children. The health effects of secondhand smoke from hookah use have not been evaluated comprehensively. Hookah smoking is a tobacco use method in which smoke passes through a partially-filled water container. The adverse health effects are likely to include those that result from exposure to cigarette smoke. This is alarming since hookah smoking is on the rise in the United States, and studies have shown that hookah smokers are smoking inside their homes. The purpose of this study is to (1) measure the secondhand smoke contamination in homes of hookah smokers who smoke inside their homes versus their counterparts who smoke outside their homes; and to (2) measure secondhand smoke exposure among children living in homes of hookah smokers. We will compare secondhand smoke contamination in homes of five types of households with children 4 years or younger: (1) frequent smokers of only hookah who smoke inside their homes, (2) frequent smokers of only hookah who smoke outside their homes, (3) occasional smokers of only hookah who smoke inside their homes, (4) occasional smokers of only hookah who smoke outside their homes, and (5) non-smokers. A total of 25 households with a child 4 years or younger will be recruited from the community, five households per type. Two research assistants will visit each home on three occasions over a 7-day period to collect data. During the 7-day period, the research assistants will interview the hookah smokers on hookah smoking behavior, and collect three environmental samples per home in living rooms and bedrooms to measure nicotine contamination of indoor air and household surfaces. Research assistants will also collect three urine samples per child. Urine levels of cotinine and two carcinogens, namely: NNAL and 3-HPMA will be measured to determine levels of hookah smoke exposure in children. The results of this study will inform estimates on health risks for children living in homes of hookah smokers and identify points of intervention to design tailored health promotion programs for hookah smokers.

Session C-2
Poster: Organic Chemistry
Friday, March 4, 2011, 1:00 – 3:00 pm
Location: Montezuma Hall

374 Poster #9 1:00–3:00 pm

Tagging of Sansalvamide A Derivatives

Mark Petersen, Blochemistry (U)
Shelli McAlpine, Chemistry and Biochemistry

Sansalvamide A (San A) is a macrocyclic depsipeptide that is derived from a marine fungus (Fusarium ssp.) and is derived from 4 amino acids and a hydroxyacid. San A has an IC50 of 1.67 μM against HCT-116, a drug resistant strain of colon cancer. In order to get a better understanding of how this molecule affects cancer cells we attached individual tags at various positions around several San A derivatives and then used these molecules in pull-down assays with cytosol from cancer cells. These derivatives were made using both solid and solution phase synthesis methods. These pull-down assays allowed us to find the protein

that binds to the San A derivative, which suggests it is involved in San A's mechanism of action. Further tests using the protein discovered from the pull-down assays and the San A derivatives will validate the mechanism of action.

375 Poster #10 1:00–3:00 pm

Complexation of Trialkylboranes for Rapid Determination of Regioselectivity in Hydroboration Reactions

Yaqian Liu, Biology (U)
Thomas Cole, Chemistry

Organoboranes are one of the most valuable reagents for organic chemistry. These intermediates can be converted into a variety of valuable products. The purity of the product is generally determined by the regioselectivity of the hydroboration reaction. Regioselectivity effects are controlled by both steric and electronic factors as well as the hydroborating agent used. The ratio of products was originally determined by oxidizing the organoborane and using chromatographic technique to separate the alcohol products to determine the molar ratios. This process required a great amount of time and effort. We have been exploring the application of alkylmethylboranes for the reductive alkylation of quinones and the 1,4-additions to α,β-unsaturated aldehydes and ketones. The synthesis of these alkylmethylboranes forms a mixture of products. We discovered that the small methyl groups increased the Lewis acidity of the boranes, resulting in a complexation with ligands such as THF or methanol. From the complexation we were able to observe an upfield shift of the boron signal in a B11 NMR scan. This quick technique allowed us to develop methods to cleanly prepare alkyldimethyl- and dialkylmethylboranes free of redistribution products. The effect of complexing trialkylboranes with simple alcohols has received little attention in literature. Through our research, we have discovered that the complexation of symmetrical trialkylboranes with simple alcohols, such as methanol, shifts the boron NMR signal upfield. We were also able to observe that the trialkylboranes formed by the hydroboration of 1-alkene and borane-dimethyl sulfide showed three peaks decreasing in area. We believe each signal corresponds to the regioisomeric alkylboranes. Thus, by complexing the trialkylboranes, one can rapidly determine both the regioselectivity of hydroborations and ratios of regioisomeric products by a simple B11 NMR experiment. This method can be applied to other hydroborating agents such as 9-BBN, dicyclohexylborane and other alkenes. Our findings have suggested that the complexation of trialkylboranes to ligands may potentially lead to a faster and more efficient method of determining the regioselectivity of hydroborations. The successful development of this technique will further facilitate applications of organoborane chemistry for organic synthesis."

376 Poster #11 1:00–3:00 pm

Synthesis of Small Molecules Targeting Bacterial DNA Repair Mechanisms

David Jones, Chemistry (M)
Mike Bergdahl, Chemistry

Identification of new antibiotics is being outpaced by the rate at which bacterial pathogens become resistant to the currently available drugs. Thus, we must identify drugs against new targets along with developing modifications of existing drugs. Our labs have isolated and characterized peptide inhibitors of DNA repair in bacteria, a novel drug target. We are currently working on analogs of this peptide inhibitor, as it holds great promise for future antibiotic synthesis.

377 Poster #12 1:00–3:00 pm

Synthesis of Extremely Hindered Imidazolylphosphine Ligands for Catalysis

Farhana Barmare, Chemistry (M)
Douglas Grotjahn, Chemistry

Introduction: Bifunctional catalysts for anti-Markovnikov alkyne hydration and alkene isomerisation reported by Grotjahn et al. showed improved reactivity and selectivity of the catalyst when heteroarylphosphines were used leading to rate accelerations of 1000 to 10000 fold.1 The role of heteroarylphosphines with the larger R group (tert-butyl) near the coordinating pendant base nitrogen atom resulted in the best catalysts. The work here describes the design and synthesis of a new class of even more hindered pendant bases, and preliminary studies on their use in catalysis. Methods: Our group research focuses on creating and developing highly active bifunctional catalysts which can help control proton transfer and hydrogen bonding. The challenge is to avoid making a stable chelate, by using a large substituent next to the nitrogen and change the rate or proportion of chelate opening. From our previous work, it is clear that increasing the steric hindrance results in catalyst thousand times faster than the ones with less hindrance. Therefore, our idea was to synthesize heteroarylphosphine ligands with an extremely bulky group attached to an added ring which would increase the steric shielding of the pendant base. This incorporation could certainly result in large changes in alkene isomerisation reactions. These phosphines can then be complexed with transition metals as well as non- transition metal precursors creating effective catalysts. Conclusion: From our ongoing studies, it shows that the bulky heteroarylphosphine ligand binds to the metal precursor but does not form a chelate which is the result of the extreme steric hindrance near the nitrogen atom. However, it makes it clear that the control of the steric environment around the heterocyclic nitrogen can be essential for achieving desired bifunctional reactivity in which the nitrogen center is supposed to accept a proton or hydrogen bond,

but not bind to a metal center. Acknowledgements: Financial support from NSF (CHE-0719575) Grotjahn research group

378 Poster #13 1:00–3:00 pm

Synthesis, Optical Properties and Surface Modification of Magic-size Semiconductor Nanomaterials

Ke Gong, Chemistry (M)
Gregory Kalyuzhny, Chemistry

Here we report a new method of synthesis of ZnSe and ZnTe nanomaterialsis such as ultrasmall nanocrystals, nanowires and nanoplatelets using zinc salts of sterically bulky aliphatic carboxylate precursors, moderate reaction temperatures (100-150°C), and prolonged reaction times (days). This synthetic approach is highly general and enables the synthesis of other kinds of binary nanomaterials such as indium selenide nanoscrolls and zinc phosphide footprint-like nanoplatelets. The resulting materials were characterized with optical spectroscopy, transmission electron microscopy, and electron diffraction.

379 Poster #14 1:00–3:00 pm

Synthesis of Sansalvamide A Peptidomimetics

Joseph Kunicki, Chemistry (U)
Shelli McAlpine, Chemistry

Sansalvamide A is a macrocyclic depsipeptide that is derived from a marine fungus (Fusarium ssp.) and is derived from 4 amino acids and a hydroxyacid. Sansalvamide A has an IC50 of 16.7 μM against HCT-116, a drug resistant strain of colon cancer. In order to get a better understanding of how this molecule affects cancer cells, our lab created a library of Sansalvamide A peptidomimetics, compounds that mimic Sansalvamide A, but are not derived from amino acids, rather they contain building blocks that mimic amino acid structures, but are significantly more stable in cells. We synthesize these molecules using both solution phase and solid phase chemistry, and then test their toxicity against cancer cell lines, comparing their cytotoxicity to the peptide versions of these derivatives."

380 Poster #15 1:00–3:00 pm

Bismuth Halide Salts: Precursors to High Nuclearity Molecules

Robert Gilley, Chemistry (U)
Miriam Bennett, Chemistry

Our hypothesis is that high nuclearity bismuth-tin nitride clusters should be accessible through the chemical reaction of tris(trimethyltin)amine and anionic bismuth (III) chloride salts. To test our hypothesis, we synthesized several bismuth (III) chloride anions with counterions appropriate for this chemistry. The reactivity of these salts with basic nitrogen donor compounds is being tested and thus far we have isolated an octanuclear bismuth-tin nitride cluster. This work will provide insight as to how even higher nuclearity hetero-nuclear bismuth clusters can be isolated, and provide information on intramolecular bismuth-bismuth bonding.

Session C-3
Poster: Biology/Heart Disease
Friday, March 4, 2011, 1:00 – 3:00 pm
Location: Montezuma Hall

381 Poster #16 1:00–3:00 pm

Telomere Length Preservation by Pim-1 Manipulation of the Shelterin Complex

Lauren Neidig, Cell and Molecular Biology (U)
Mark Sussman, Biology

Background: Shortening of telomeres, the nucleotide repeats that cap chromosome ends, is associated with myocardial aging and cell senescence. Telomeres are regulated by shelterin, a multimolecular complex, and elongated by telomerase (TERT) enzyme. Telomere length is preserved by overexpression of Pim-1, a cardioprotective and pro-regenerative kinase. Preserving telomere length extends cellular replicative lifespan and prevents senescence resulting from critical telomeric shortening. Objective: Demonstrate that telomere length is preserved through shelterin modifications and enhanced TERT activity in Pim-1 overexpressing cardiomyocytes (Pim-wt). Results: Several shelterin molecular constituents are influenced by Pim-1 overexpression in transgenic mouse hearts, including increased TFR2 that inhibits telomere shortening. PINX, a shelterin component that inhibits telomerase, shows decreased expression at birth transitioning to elevated levels at one month of age in Pim-1 overexpressing transgenic hearts relative to nontransgenic controls. TERT activity is significantly increased by Pim-1 overexpression correlating with 28% longer telomeres in cultured cardiomyocytes relative to control cells expressing green fluorescent protein (GFP; ($p < 0.05$) by fluorescent *in situ* hybridization (FISH). Consistent TERT activity over the first month after birth is presumably down-regulated by increased PINX expression in Pim-1 overexpressing hearts, leading to normalized telomere maintenance in adulthood. These results indicate that Pim-1 modulates the nuanced interplay between TERT activity and telomere maintenance by the shelterin complex, leading to preservation of a youthful phenotype and blunting the deleterious effects of aging. Conclusion: Pim-1 influences TERT activity and access to telomeres through modification of the shelterin complex to preserve telomere length.

382 Poster #17 1:00–3:00 pm

Genetic Deletion of Pim-1 Causes Premature Cardiac Senescence

Shabana Din, Cell and Molecular Biology (D)
Mark Sussman, Biology

Pim-1 is a cardioprotective kinase downstream of AKT, however the role of Pim-1 in cardiac aging and senescence has yet to be investigated. Pim Triple KnockOut (PTKO) mice, in which all three isoforms of Pim are genetically deleted, develop premature phenotypic hallmarks of myocardial senescence including characteristic molecular changes together with impaired hemodynamic function. Elevated levels of the tumor suppressor p53 and senescence marker p16 are present in hearts of PTKO mice at two months of age. Increased p16 expression is consistent with observed induction of Ets-1, a transcription factor that activates p16 transcription in PTKO cardiac samples. Levels of Id1 and Id2, positive transcriptional regulators of the cell cycle, are decreased in hearts of PTKO mice. Hemodynamic analyses reveal impairedcardiac function in PTKO mice at two months of age. Conversely, cardiac specific overexpression of Pim1-kinase attenuates the senescent phenotype. Hypoxia treatment of neonatal rat cardiomyocytes infected with Pim-1 encoding adenovirus results in reduction of p16 accumulation. Pim-1 overexpression increases expression of c-myc, thereby upregulating Id2 and inhibiting p16 induced senescence. Cardiac Pim-1 transgenic mice show a delay in the onset of senescence as evidenced by decreased frequency of p16 positive cells in the myocardium.Collectively, these findings indicate Pim-1-mediated antagonism ofcardiac senescence should be pursued as a therapeutic target to promote and extend myocardial cellular lifespan and function.

383 Poster #18 1:00–3:00 pm

Using Drosophila as a Model System to Study Restrictive Cardiomyopathy

Madhulika Achal, Microbiology (M)
Sanford Bernstein, Biology

Myosin, a motor protein, is composed of two heavy chains and four light chains. It hydrolyzes ATP to generate force that produces actin-based motility and generates the contractile force in muscles. A mutation in human cardiac beta myosin heavy chain that changes amino acid residue 838 from proline to leucine (P838L) results in pediatric restrictive cardiomyopathy (Karam et al., 2008). Restrictive cardiomyopathy (RCM) leads to rigidity of the ventricular wall and the heart is restricted from stretching and properly filling with blood. Therefore, blood flow is reduced and blood that would normally enter the heart is backed up in the circulatory system. Gradually, the patient loses the ability to pump blood efficiently, leading to heart failure. *Drosophila* has a rhythmically beating heart and serves as a powerful tool to study the genetic basis of heart development and disease in humans. Approximately 75% of its genes are homologous to those in Homo sapiens. We are testing the hypothesis that the P838L mutation causes RCM in *Drosophila*. We constructed a gene encoding myosin with the P838L mutation and expressed it in place of wild-type myosin heavy chain by P-element transformation. Reduced flight ability determined by flight testing shows impairment in the indirect flight muscle expressing this mutant myosin. ATPase assays and *in vitro* motility assays will help us determine the effect of the mutation at the molecular level. Electron microscopy and video microscopy will allow us to analyze the sarcomeric structure and heart physiology respectively. Preliminary data suggest that the transgenic flies show increased myosin ATPase rate and that their heart displays a restrictive phenotype. The P838L mutation affects an “invariant proline” located at the junction of the myosin S1 head and the S2 rod and might affect the movement of the myosin heads during the force generation step. This could lead to the observed increase in the ATPase rate. Also, the P838L mutation is located near to where the regulatory light chain (RLC) binds to the heavy chain. RLC has an important role in the ATPase cycle and the P838L mutation might alter the RLC conformation leading to the increased ATPase rate. The increased ATPase rate seen in this and another *Drosophila* myosin that causes a restrictive phenotype (Cammarato et al., 2008) may initiate a cascade of events that result in the observed cardiac defects.

384 Poster #19 1:00–3:00 pm

Gene Silencing in Cardiac Myocytes

Clarissa Damasco, Biology (U)
Paul Paolini, Biology

Although defective calcium regulation has been determined as the primary cause of heart failure and many of the key genes involved in failure at the cellular level have been studied, research on the interplay of these genes has not yet been fully investigated. The advance of new therapeutic strategies to treat heart failure requires an understanding of how these calcium signaling genes work relative to each other and their effect on cell function. The three primary genes involved are the ryanodine receptor (RyR2), which release calcium from the sarcoplasmic reticulum (SR), the SR calcium ATPase (SERCA) and the sarcolemmal sodium-calcium exchanger (NCX), the last two of which function to resequester calcium from the cytosol. By down-regulating RyR2, its role in affecting SERCA and NCX expression as well as in controlling calcium release can be determined. siRNA is being used to bind

to RyR2 and interfere with its expression. When RyR2 is silenced, cell contractility and calcium transients can be measured. Contractility is assessed by a method that uses shape representation by Fourier descriptors with a polar grid to track internal cardiomyocyte changes during contraction. In addition, calcium transient magnitudes and times courses were also recorded. We hypothesize that inhibiting the expression of RyR2 will decrease the amount of calcium released by the SR, consequently reducing cell contractility by down-regulating both SERCA and NCX expression due to a decrease in cytosolic calcium. In preparation for measuring gene expression levels by qPCR to test our hypothesis, we have successfully optimized the siRNA transfection procedure using reporter siRNA TransMessenger™ transfection reagent for 4, 5 and 6 hour periods; fluorescent micrographs 48 hours after transfection showed that transfection efficiency was best at 1.6 µl siRNA concentration and 6 to 8 µl transfection reagent. Standard deviation of contractility vs. time curves measured in initial trials was less than 4%. We will now proceed to measure expression levels of RyR2, SERCA and NCX by qPCR and by Western blot during RyR2 partial silencing.

385 Poster #20 1:00–3:00 pm

Statistical Analysis of a Novel Method to Measure Mammalian Neonatal Cardiocyte Contractility

Esteban Vazquez-Hidalgo, Biology (U)
Paul Paolini, Biology

There is a need to study neonatal cardiocyte contractility in order to compare functional responses of cells relative to a wide variety of results from various pharmacological, physiological and molecular genetic assays. Current methods used to assess cardiocyte functionality include calcium transient signals, gene and protein expression, and contractility. Adult cardiocyte contractility measurements are more easily achieved since there is a measurable change in the cell's boundary along the longitudinal axis, but there is no apparent shortening in the neonatal cell with its irregular shape. There is a need to develop a simple and practical tool to measure neonatal cell contractility. We have developed an image-based analysis method employing a Matlab-guided user interface (GUI). The GUI provides quick, quantitative analysis of neonatal cardiocyte contractility. I hypothesized that this new analysis method will provide a high degree of statistical reliability. Video images are acquired using an inverted phase microscope and a digital camera. We then extract a contractile signal from successive video frames using signal masking, total variation-based image smoothing, segmentation of the smoothed images, contour extraction from the segmented images, shape representation by polar Fourier descriptors, and assessment of the resulting 'contractility' signal. When the beat-to-beat signal was normalized from 0 to 1, 0 being the peak of contraction and 1 being the relaxed state, the standard deviation was found to be 0.04. We have also implemented a series of mathematical steps to identify the onset of contraction, average the contractile signal, and detect the variability that exists in the contractile data. Using these methods we have been able to record variations that exist from beat to beat within the same cardiocyte as well as among a population of cardiocytes. We are currently developing faster and more automated software to handle the acquired contractile data. Supported by the NIH/NIGMS SDSU MARC Program 5T34GM008303 -21A1

386 Poster #21 1:00–3:00 pm

Gene Expression Dependence of the Calcium Transient Signal Accompanying Neonatal Cardiocyte Contraction

Samantha Anderson, Biology (U)
Paul Paolini, Biology

The cardiac neonatal myocyte from rat exhibits a rapid onset and subsequent decay of the signal corresponding to intracellular free calcium. The signal is recorded from low level fluorescence of fluo-3-treated cells. Calcium transient recording reveals the release of calcium ions from the sarcoplasmic reticulum (SR) of the cell following electrical stimulation, as the calcium passes into the cytosol; the calcium activates contraction upon binding to myofilaments, but is rapidly removed from the cytosol primarily by two transport processes—the SERCA pump in SR membranes rapidly returns much of the calcium into the SR space while a lesser amount of free calcium is exchanged with sodium by the sodium-calcium exchanger (NCX) in the cell's plasma membrane. The return of cytosolic calcium to resting levels is exponential, and corresponds to the two transport systems acting simultaneously. We wished to characterize the rate of these two transport processes, because they reflect the kinetics of the SERCA pump and the NCX. The magnitudes of transport can be related to the expression of the major genes that code for production of the proteins constituting SERCA and NCX. A number of experiments in progress in our laboratory involve studying these gene expression levels (measured by DNA microarray technology) and their products (measured by Western blot) and manipulating their levels using gene silencing techniques (using siRNAs). We hypothesized that it should be possible to separate the calcium transient decay curve into the contributions from the two transport processes. We have developed software for the rapid automated analysis of these overlapping exponential decays to yield values for amplitudes and time constants. The software parses the decay curve into 'fast' and 'slow' segments and uses an iterative evaluation algorithm to produce consistent values with 4% or less standard error.

ABSTRACTS

387 Poster #22 1:00–3:00 pm

Contractility Assessment in Neonatal Cardiocytes

Delnita Moore, Biology and Africana Studies (U)
Paul Paolini, Biology

The contractile behavior of an isolated adult mammalian cardiac cell is commonly recorded as a shortening of the cell following excitation. Neonatal cardiocytes are preferred because they survive longer than adult cardiocytes. Our laboratory has developed a neonatal cell contraction measurement based on a computational approach: digital video recording, variation-based image smoothing, segmentation, contour extraction, and shape representation of the cell by Fourier descriptors. Resultant contraction measurements are validated by applying the technique to adult myocytes and comparing responses to cell boundary movement (shortening) records. An independent measure of the contractile potential of both adult and neonatal cells is the calcium transient that can be detected fluorescently by incubating cells in a calcium ion-sensitive dye such as Fura-2 or Fluo-3. Such dyes show a shift in their emission spectra in response to changes in free calcium ion concentration in the cytosol following excitation. Transients reveal the magnitude of the release of Ca2+ from the SR through ryanodine channels (RyR) and the subsequent resequestration of cytosolic Ca2+ by the SERCA pump and by Ca2+ exchange via the sarcolemmal Na+-Ca2+ exchanger (NCX). We addressed three questions. (1) How consistent are calcium transient responses in a single neonatal cell, do they provide a statistically valid measurement of contractility? (2) How variable are transients from cell to cell within the same population of isolated neonatal cells? (3) How well does this measurement of contractility agree with our new computational assay of contractility? Transients were measured on a PTI fluorescence microscopy system running Felix acquisition software. We automated the analysis of the transients, and used Excel to validate the results. Signals are averaged to improve S:N ratios. Parameters measured include the baseline (normalized to 0), amplitude (normalized to 1), intensity (signal integral), rapid (SERCA) and slow (NCX) resequestration rates, calcium release rate (Ryr), peak time, onset time, and decay time. The normalized transient records showed the SERCA resequestration rate was 2.37 ± 0.30 %/sec, while the NCX cytosolic Ca decrease rate was 0.154 ± 0.063 %/sec. Calcium release was estimated to be 73 mM/sec, fast resequestration was 42 mM/sec and slow recovery was 0.52 mM/sec.

388 Poster #23 1:00–3:00 pm

Pim-1 Engineered Bone Marrow Cells Improve Cardiac Function after Delivery into the Infarcted Myocardium.

Pearl Quijada, Cell and Molecular Biology (D)
Mark Sussman, Biology

Adoptive transfer of bone marrow stem cells (BMCs) for treatment of myocardial infarction improves cardiac function, but precise mechanisms of cardiac repair remain obscure. Studies of BMC-based therapy demonstrate significant improvements in cardiac structure and function, but poor survival of injected cells is a significant problem. Survival and persistence of c-kit+ stem cells derived from myocardium is enhanced by genetic engineering to over-express the cardioprotective kinase Pim-1, so this study examines the ability of Pim-1 modified BMCs (BMCeP) to mediate similar cardioprotective actions. BMCeP were compared to unmodified BMCs (BMCe) for phenotypic properties and regenerative potential. Increased proliferation and viability are present in BMCeP corresponding to enhanced resistance to apoptotic stimulation coupled with up-regulation of the anti-apoptotic protein Bcl-2α. Beneficial effects upon cardiac structure and function mediated by adoptive transfer of BMCe or BMCeP were assessed up to 18 weeks by echocardiography after intramyocardial injection. Significant improvements in cardiac ejection fraction (EF%) compared to PBS control groups are present in hearts of mice receiving BMCe or BMCeP that was maintained for up to ten weeks post delivery. However, only BMCeP maintained improvement of EF%, fractional shortening (FS%) and anterior wall thickness (AWD;mm) at 12 weeks compared to PBS and BMCe groups. Furthermore, BMCeP treatment provided significant decreases in left ventricle volume (LVV) by echocardiographic measurement during diastole and systole ten weeks after delivery. Hemodynamic assessment of LVV and pressure confirmed salutary effects of BMCe and BMCeP therapy. The fate of adoptively transferred BMCe or BMCeP as well as their ability to stimulate endogenous mediated myocardial regeneration is currently being determined by immunohistochemical analysis. These results demonstrate enhanced ability of BMCeP to mediate damage after myocardial infarction compared to unmodified BMCs.

Session C-4
Poster: Engineering III
Friday, March 4, 2011, 1:00 – 3:00 pm
Location: Montezuma Hall

389 Poster #24 1:00–3:00 pm

Simulation of Fluid Flow in a Small Particle Solar Receiver

Adam Crocker, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

A new design for a solar receiver based on small particles is being developed for use in concentrating solar thermal power production. Carbon particles are suspended in air as it flows through the receiver cavity. Solar radiation enters the receiver through

a window and is absorbed by the carbon particles, heating the particle-gas mixture. This high temperature gas can be used to drive a Brayton cycle to produce electricity, providing an efficiency improvement over existing solar receiver designs which produce less extreme temperatures and thus rely on the Rankine cycle. Previous work has been done at SDSU to simulate the absorption of solar radiation within the receiver volume using the Monte Carlo statistical method in a FORTRAN code, along with a simplified flow model. The ANSYS Fluent software package was used in this new research to simulate the gas flow within the receiver. This allows for a more sophisticated model of the fluid flow in the receiver, as well as a more accurate geometry. With sufficient grid resolution, stable results for the velocity field have been computed, with a turbulent outlet velocity profile in agreement with theory. The results predict a pressure drop of 1 kPa over the receiver, which is within the expected tolerance for the system. This FLUENT simulation will be coupled to the FORTRAN radiation code to model the combined convection and radiation heat transfer in the receiver. The coupling process presents additional challenges, including limitations on the receiver and grid geometry. The ultimate project goal is to use the results of this model along with work by other students in the research group, to determine the feasibility of constructing a prototype receiver for experiment and testing.

390 Poster #25 1:00–3:00 pm

Numerical Modeling of a High Temperature Hydrocarbon Reactor

Mugdha Dokhale, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

In recent history, the world has depended on non-renewable, highly polluting and fast depleting fuels as a source of energy. As the consciousness for clean energy resources gains momentum, the most extensive source of energy comes from the sun. Solar energy is the most abundant form of renewable energy source. The main challenge in utilization of solar energy is low efficiency. One way to increase efficiency and to get more heating power from concentrated solar rays, is to circulate small carbon particles through the high temperature solar receiver instead of water or any other fluid. The small carbon particles are generated in a Hydrocarbon Reactor. The work here deals with thermal analysis of the Hydrocarbon Reactor, in order to have an idea about the reactions and the temperatures achieved by the reacting gases. This work is necessary to determine the rate and the quality of the carbon particles generated. It will lead to good control of the mass flow rates of the reactants and the maximum wall and flow temperatures achieved. The computational analysis is done using Fluent, a commercial computational fluid dynamics(CFD) software. To begin with, I have built a basic 3-D model of the inlet tube, analyzed the fluid flow and temperatures in it using air as a fluid with and without the effect of gravity, at 0.1 m/s inlet velocity. I also modified the initial design to include two concentric tubes as inlet for two different reacting gases. The further analysis will be done using Acetylene and Nitrogen at different flow rates and thus by varying the inlet velocities. These results will eventually be subjected to experimental verification as well in the Combustion and Solar Energy Laboratory.

391 Poster #26 1:00–3:00 pm

An Age-Sensitive Binary Star Near the Turnoff of the Open Cluster M11

Ernest Bavarsad, Astronomy (M)
Eric Sandquist, Astronomy

We present extensive BVR photometry and radial velocities for the detached eclipsing binary KV29 in the intermediate-age open cluster M11. Spectroscopy shows that the system is double-lined and is a member of the cluster. We will present the results of binary star modeling to measure the characteristics of the components. In particular, we focus in particular on the masses and radii of the components because the binary resides near the cluster turnoff in a color-magnitude diagram, and the size evolution of the brighter component leads to a strong constraint on the cluster age. We gratefully acknowledge funding from the National Science Foundation under grant AST-0908536.

392 Poster #27 1:00–3:00 pm

Numerical Validation of Fire Spread and Burn Rates in NIST's Wildland-Urban Interface Fire Dynamics Simulator

Drew Castle, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

Wildfire research in Southern California has come into the spotlight in the last decade due to multiple cases of extreme property damage totaling billions of dollars lost. The search for more comprehensive and accurate models to understand fire spread at the wildland-urban interface to prevent such disasters has been the driving force for the National Institute of Standards and Technology (NIST) to develop and refine their Wildland Fire Dynamic Simulator (WFDS) software. Analysis and measurement of actual crown fire initiation and spread under controlled experimental conditions was done by researchers in the University of California, Riverside Department of Mechanical Engineering in collaboration with the Forest Fire Laboratory at the Pacific Southwest Research Station. Building on their research, the physical data and fire initiation were numerically modeled in WFDS to determine the accuracy of the flow and combustion algorithms of the program, which work by solving mass, momentum, and energy balance equations to determine final results. Conditions of crown fuel bulk density, fuel moisture content, wind velocity, and base crown fuel height were modeled within the software and then ignited. The results of these numerical analyses were successively compared to the experimental results of temperature, fire spread rate, internal hot

gas velocity, and crown fire initiation. The close correlation between numerical and physical experimentation show that current WFDS algorithms are very good predictive models of actual fire spread.

393 Poster #28 1:00–3:00 pm

Quantifying the Effect of Santa Ana Winds on Wildland Urban-Interface Fires in San Diego County

Ethel Santos, Mechanical Engineering (U)
Fletcher Miller, Mechanical Engineering

The history of the western United States provides evidence of massive destruction brought about by wildfires. In 2003 and again in 2007 the San Diego region was struck by these catastrophic events. Hundreds of thousands of acres of wild lands were burned, thousands of homes destroyed, and over half a million people went through mandatory evacuation. In response to this threat, the National Institute of Standards and Technology developed a computer program called Wildland Urban Interface Fire Dynamics Simulator (WFDS). WFDS is a physics-based numerical modeling approach which includes all modes of heat transfer (convection, conduction, and radiation). This concept will aid the authorities, especially the firefighters, to monitor the fire which will assist in the immediate plan for response. The Santa Ana wind played a dominant influence on how fast the fires spread in various locations. Although it is understood that high gusts of wind have a strong effect on wildfires, they are often unpredictable. The research will provide measured wind speeds and directions so it can be predicted via computer calculations where and how fast a fire will spread. The research will directly support the development of the WFDS by gathering detailed wind measurements under different weather patterns in various terrains such as flat grounds, hills, and more complex areas with trees and building structures. Wind data acquisition sensors used are CR1000 and CR200X data loggers, anemometers, wind vanes, barometric pressure transducers, vertical anemometers, and thermistors. These instruments are currently in use on the San Diego State University Engineering rooftop. Data loggers are programmed to record sensor readings (wind speed, direction, pressure, and temperature) at 1, 10, and 60 second intervals. The measured data will then be compared to the predictions from WFDS to verify that the computer model is accurately resolving the flow field. Future studies will include deployment of these instruments in Rancho Bernardo Trails.

394 Poster #29 1:00–3:00 pm

Relation Between Marine Microbiomes and Pollution Levels

Rosa Lemus, Mathematics (U)
Imre Tuba, Mathematics and Statistics (VC)

Metagenomic analysis helps us determine important biological processes of microbial communities. These biological processes may vary between environments. Previous research shows that one may predict the conditions of an environment by its dominant metabolisms. These findings allowed researchers to then detect changes in environments by the changes in its characteristic processes. In this research, by the use of statistical techniques, we intend to show a relation between the characteristic processes of marine microbiomes and pollution levels. We do this by categorizing microbiomes by their major metabolisms to later compare to the pollution levels in which these were present.

Session C-5
Poster: Health Studies
Friday, March 4, 2011, 1:00 – 3:00 pm
Location: Montezuma Hall

395 Poster #30 1:00–3:00 pm

Effectiveness of a Peer Educator-based Self-management Intervention among Latinos with Type 2 Diabetes: the Pivotal Role of "Dosage"

Johanna Euyoque, Psychology (M)
Linda Gallo, Psychology

Active diabetes self-management is required to achieve glycemic control and prevent serious health complications, however, many individuals with type 2 diabetes fail to adhere to self-care recommendations, resulting in poor health outcomes, especially among Latinos. Research shows, however, that individuals receiving greater social support in relation to their illness manage their diabetes more effectively than those with less support. The current study examined the effects of a psychoeducational intervention ("Project Dulce") on support for disease management (SDM) and diabetes self-care (DSC) behaviors in a sample of 125 Latinos with type 2 diabetes. Psychosocial assessments were collected at baseline, post-treatment (M4), and again six months later (M10); age and gender were included as covariates in analyses. Of the participants in the sample (21 to 75 years of age; $M = 50.38$, $SD = 11.67$); 76% were female and 87% were born in Mexico. Significant time-by-group interaction effects indicated that, relative to control participants ($n = 71$), the Project Dulce group ($n = 54$) exhibited significantly greater increases in DSC behaviors ($p < .05$) and SDM ($p < .01$) from baseline to M4. At M4, Project Dulce group means in SDM (3.40 vs. 3.13, $p = .06$) and DSC (4.60 vs. 3.95, $p < .01$) were significantly higher; however, these differences were attenuated to marginal significance for DSC (4.18 vs. 3.82, $p = .09$) and non-significance for SDM (3.33 vs. 3.18, $p = .28$) by M10. Secondary analyses revealed that only participants who attended at least 6 of the 8 Project Dulce classes ($n = 37$) showed significant gains in both SDM and DSC at M10, relative to the control group. Results suggest that the Project Dulce intervention is an avenue by which SDM and DSC can be improved in the

Latino population. SDM may be a particularly important influence on health behaviors and outcomes in this population due to the high value Latinos place on the family and close relationships. These findings also indicate that attendance ("dosage") plays a pivotal role in the maintenance of intervention effects, which highlights the importance of understanding and addressing barriers to participation for this population.

396 Poster #31 1:00–3:00 pm

Action, Interrupted: Sensitivity to Event Structure Extends to Novel Complex Events

Iris Broce, Psychology (U)
Margaret Friend, Psychology

When watching others perform everyday, goal-directed activities, such as washing the dishes, observers separate what is happening now from what has just happened. This process, known as event segmentation, has been observed in both infants and adults. Recent research suggests that infants and adults detect disruptions of simple, familiar events (Baldwin, Baird, Saylor, & Clark, 2001) and are sensitive to unexpected event outcomes (Reid et al., 2009). The present research investigates whether this sensitivity to the disruption of simple, familiar events extends to the disruption of complex, novel events in both children and adults. To test our hypothesis, we asked 24-month-olds and adults to watch completing and interrupting videos of a relatively novel event comprised of 3 coarsely-defined actions in a preferential looking paradigm. Twenty-eight 24-month-olds and 36 adults participated. Completing videos were created by inserting a 1.5s pause at each coarsely-defined action boundary. Interrupting videos were created by inserting a 1.5s pause in the middle of each action. Participants viewed 3 blocks of trials in which a completing video played on one screen while an interrupting video played on the other. Order of actions within the event (1st, 2nd, 3rd) were counterbalanced creating 3 within-participant event configurations. The order in which configurations were viewed and the side of presentation for the completing and interrupting videos were counterbalanced across participants. Both 24-month-olds and adults looked longer when actions were interrupted (Ms = 8.96 and 7.18s, respectively) than when pauses occurred at action boundaries (Ms = 6.36 and 6.56s, respectively). When corrections for baseline looking preferences were applied, both 24-month-old and adult preferences were significant at $p < .05$. There were no effects of side of presentation or order of actions within the event. These findings extend recent work on action processing to complex, relatively novel events. Further, they suggest that the mechanisms that guide event segmentation and action processing are robust. Events, simple and complex, familiar and novel, are perceived as having a coherent structure from early in life.

397 Poster #32 1:00–3:00 pm

Associations between Impulsivity and Alcohol Ratings

Ariana Stickel, Psychology (U)
Claire Murphy, Psychology

Impulsivity has been linked to decreased activity in the orbitofrontal cortex and increased activity in paralimbic structures (Horn, Dolan, Elliott, Deakin, & Woodruff, 2003). Activation of paralimbic structures have also been associated with alcohol craving (Pelchat, Johnson, Chan, Valdez, & Ragland, 2004). Both traits—impulsivity and excessive alcohol consumption—are shown to have different prevalence rates for males and females (Nolen-Hoeksema & Hilt 2006; Waldeck & Miller, 1997; Chapple & Johnson, 2007); the current study aimed to analyze these differences further. Participants in this study were given a questionnaire with demographic questions followed by the Barratt Impulsiveness self-report scale. After subjects completed these, they were asked to rate (on the gLMS scale) 15 visual stimuli for each of four categories (liking, wanting, pleasantness, and craving) for a total of 60 visual stimuli rated. Stimuli consisted of both non-food and food items, including beverages (e.g. alcohol). Correlations between alcohol rating and impulsivity score were supported: the relationship always showed higher impulsivity correlating with higher ratings of alcohol stimuli. Differences in correlations for impulsivity score and ratings of alcohol stimuli also differed from males to females. Associations between alcohol and impulsivity warrant further investigation, in particular in relationship to gender, so that impulsiveness may be inhibited in certain situations.

398 Poster #33 1:00–3:00 pm

HIV-Associated Deficits in Visuospatial Temporal Order Memory

Calhuei Hoebel, Psychology (U)
Paul Gilbert, Psychology

The frontal lobes have been shown to be important for accurate temporal order memory. Since frontal-striatal loop dysfunction and episodic memory deficits are characteristic of HIV infection, temporal order memory may be sensitive to neuropathological changes in individuals living with HIV. Disruption of temporal order memory may impair cognitive processes that are critical to the execution of daily living skills. In the present study, 18 individuals with HIV and 18 demographically similar seronegative persons were administered a visuospatial temporal order memory task on a computerized radial 8-arm maze. On the study phase of each trial, the participant was shown a random sequence of circles presented one at a time at the end of each of the eight arms. On the choice phase, the participant was presented with a circle at the end of two of the study phase arms and was asked to choose

the circle that came earlier in the sequence. Manipulations of temporal interference were carried out by systematically changing the temporal separation lag between the two choice phase circles across trials. The performance of both groups increased as a function of increased temporal separation lag. However, individuals with HIV demonstrated significant impairments relative to seronegative persons across lags. These results suggest that temporal order memory may be impaired in individuals with HIV. Research examining the cognitive and neural mechanisms of HIV-associated impairment in temporal order memory may elucidate a fundamental deficit that could potentially inform behavioral interventions that structure daily living tasks to mitigate temporal interference.

399 Poster #34 1:00–3:00 pm

Negative Emotions and Health Behaviors among Mexican-American Women: Does Language Matter?

M. Alicia Nunez, Psychology (U)
Linda C. Gallo, Psychology

Unhealthy lifestyle behaviors pose a serious public health concern, particularly among minority populations. Few studies have examined the associations of negative emotions and acculturation with health behaviors in Mexican-American women. The objective of this study was to examine the role of acculturation, and negative emotions (i.e., depression, anxiety) on health behaviors (i.e., physical activity, dietary and sleep patterns) among middle-aged Mexican-American women. Data from Nuestra Salud, an observational epidemiological study were utilized. Participants included 321 Mexican-American women 40–65 years of age who completed a questionnaire assessing negative emotions and health behavior practices. Both depression and anxiety were found to negatively influence dietary choices, such that higher scores were related to poorer diet. Depression was found to be associated with physical inactivity. Results suggest that depression and anxiety contribute to adverse behavioral health risk profiles and highlight the need to address negative emotions in relation to adherence to healthy lifestyle recommendations.

400 Poster #35 1:00–3:00 pm

Socio-cultural Variables in Youth Access to Tobacco: Changes over the Past 10 Years

Alejandra Morlett, Psychology (U)
Elizabeth Klonoff, Psychology

The sale of tobacco products to minors has been a crucial problem in public health since it was first recognized that smoking habits become prevalent during adolescence. The present study explored various socio-cultural factors as predictors of youth access to tobacco. Specific factors explored included minor's characteristics (age, gender, and ethnicity), clerk's characteristics (approximate age, gender, and ethnicity), and year of purchase (including years 2000 to 2010). A total of 7,980 adolescents between ages 15 and 16 years were included in this study from various ethnic backgrounds. Approximately 800 small grocery, liquor, and convenience stores in California participated in this study per year. Stepwise logistic regression was used to identify predictors of tobacco purchases by youth. Younger clerks were more likely to sell tobacco to youths than older clerks, and 16 year-olds were more likely to successfully obtain cigarettes than 15 year-olds. The present study identified age as an important characteristic that may facilitate youth access to tobacco. Results from this study may be useful to inform legislative action, as well as the development of prevention interventions aimed at targeting specific at-risk. Discussion will consider findings in terms of research implications, limitations of the study, and directions for future research. Supported by the NIH/NIGMS SDSU MARC Program 2T34GM008303-21A1

401 Poster #36 1:00–3:00 pm

Parental Influence on Health Locus of Control Beliefs in Children

Anna-Michelle McSorley, Psychology (U)
Vanessa Malcarne, Psychology

Prevention and treatment of illness are significantly impacted by an individual's health locus of control. The relationship between health locus of control and health behaviors has been extensively studied in adults; however, this association has not received comparable attention among children. The relationship between a parent's health locus of control and that of their child has been addressed to an even lesser extent. Prior research notes that as children mature through Piaget's Cognitive Stages of Development their locus of control shifts from external to internal; however, little has been mentioned on how parents influence a child's beliefs. The present study seeks to address the relationship between parents' health locus of control and that of their children. It was hypothesized that parents' health locus of control would be positively correlated with their children's health locus of control, and that the parents' education level would moderate this relationship. As part of a larger investigation, adults (N=176) and their children (N=195) completed written questionnaires. The Multidimensional Health Locus of Control (MHLC) scales were used to measure health locus of control in adults, and a child's version was used as a measure for children (C-MHLC). These scales each incorporate three independent subscales: internal, chance, and powerful others; which measure how much internal/external control over health is perceived. The higher the score on

each independent subscale the higher the perceived belief of each type, respectively. Pearson Product-Moment Correlations demonstrated no significant relationships between parent and child scores on parallel scales. The only significant relationship found was between the parents' education level and their own internal locus of control scores, with more education relating to greater internal belief, as is consistent with current research. These findings indicate that children's scores do not directly reflect their parents' health loci of control and that the more education an adult has, the greater their internal health locus of control will be. The knowledge that parents' health control beliefs are not directly reflected by those of their children indicates that health control beliefs modeled in the home will not necessarily lead to the same beliefs in children.

402 Poster #37 1:00–3:00 pm

Medical Healthcare Use among Latinos Differing in Legal Status

Luz Garcini, Clinical Psychology (D)
Elizabeth Klonoff, Psychology

Latinos are a large and rapidly growing segment of the U.S. population (Passel & Taylor, 2010). Of the foreign-born Latinos in California, approximately 825,000 are naturalized citizens and nearly three million are non-citizens. Unfortunately, research examining the use of medical care among Latinos differing in legal status is scant. The present study explored differences in the use of recent medical care, as well as differences in perceived health among Latinos differing in legal status. Data from the 2007 California Health Interview Survey (CHIS, 2007), including responses from 5922 Latinos, were used in the analyses. Results showed that overall, 77.2% of adult Latinos (M=42.4 yrs, SD=15.9) reported having visited a doctor within the past year, including 83.8% of women and 67.5% of men. In terms of healthcare use by legal status, results showed that US-born Latinos and naturalized citizens differed from non-citizen Latinos in recent use of general ($\chi^2(2,n=5922)=210.86,p<.001$, phi=.19) and emergency medical care ($\chi^2(2,n=5922)=46.45,p<.001,p$ hi=.09), with non-citizens reporting lower use of health services. Also, differences were found in the use of preventive health services (flu vaccination) ($\chi^2(2, n=5922)=126.84$, $p<.001$, phi=.15), as well as in perceived health ($\chi^2(8,n=5922)=296.18$, $p<.001$, phi=.22) among Latinos varying in legal status. No significant differences were found in obesity rates by legal status categories ($\chi^2(2,n=5922)=1.193$, $p=.55$), with approximately 70% of Latinos meeting criteria for obesity regardless of legal status. The aforementioned results suggest that despite a need for health services, non-citizen Latinos reported significantly lower use of preventive and curative medical services than Latino citizens. Further discussion of results will include consideration of findings in terms of implications for development of community interventions and relevance to public policy. Limitations of the study and directions for future research will also be discussed.

403 Poster #38 1:00–3:00 pm

Environmental Influences on Cardiovascular Disease Risk: Objective versus Subjective Neighborhood Characteristics in Relation to Metabolic Syndrome Factors in Mexican-American Women

Smriti Shivpuri, Clinical Psychology (D)
Linda Gallo, Psychology

Study Purpose. Social contexts may contribute to health disparities beyond individual-level influences. The current study investigated how objective (census-tract socioeconomic status; SES) and subjective features of neighborhood environments related to blood pressure (BP; systolic and diastolic), lipid (HDL cholesterol, triglycerides), and metabolic (waist circumference, plasma glucose) components of the Metabolic Syndrome (MetSyn) in Mexican-American women. Sample and Methods. A randomly-selected community sample of 304 Mexican-American women (mean age = 49.8, SD = 6.58) completed questionnaires assessing demographics and perceptions of neighborhood social (e.g., crime, loitering) and physical (e.g., vandalism, noise) disorder. SES was indicated by a composite of income and education at both individual (self-reported) and census tract (area) levels. Trained assessors measured BP and waist circumference. Blood plasma levels of lipids and glucose were collected through a fasting venous blood draw. Structural equation modeling of MetSyn revealed a 3-factor solution comprised of BP, lipid, and metabolic components. Hierarchical linear modeling was used to address clustering in analyses of neighborhood disorder on MetSyn factors and multi-level effects of area SES on MetSyn factors. All analyses were adjusted for age and individual SES. Summary of Results. Analyses revealed positive associations of neighborhood social disorder with lipid ($p=.02$) and metabolic factors (marginal; $p<.10$), but no association with the BP factor ($p>.05$). Physical disorder did not relate to any factors (all ps>.05). Area SES was negatively associated with all MetSyn factors (all ps<.001). When entered simultaneously, area SES associations remained significant, but social disorder effects became nonsignificant. Findings underscore the importance of macro-level influences on CVD risk, and the utility of subjective and objective neighborhood characteristics in relation to MetSyn.

Session C-6
Poster: Physical Chemistry
Friday, March 4, 2011, 1:00 – 3:00 pm
Location: Montezuma Hall

404 Poster #39 1:00–3:00 pm

The Mechanisms of Proton-Coupled Electron Transfer with the Addition of 1,4-Dimethylpiperazine-2,3-dione in the Non-Aqueous Electrochemistry of p-Phenylenediamines

Laurie Clare, Chemistry (M)
Diane Smith, Chemistry

Redox active amines have been shown to change reduction potential in the presence of hydrogen bonding partners, a feature which can be used as a chemical or biological sensor. Cyclic Voltammograms (CV's) of 2,3,5,6-tetramethyl-p-phenylenediamine (H_2PD) in non-aqueous solutions show two reversible, 1-electron oxidation/reduction waves which have not been exploited as a chemical sensor because the mechanics of the system is not well known. With additions of the weak base 1,4-dimethylpiperazine-2,3-dione (PZD), two mechanisms for shifting the H_2PD oxidation potential were discovered. CV's at the lower concentrations show small negative shifts in potential for the second oxidation wave as PZD concentrations increase. CV's at the higher concentrations show the second oxidation wave decreasing in current height while the first oxidation wave increases in current height. A similar response to the lower concentrations was previously observed with the addition of dimethylformamide (DMF). UVVis spectroscopy studies with DMF indicated hydrogen bonding between DMF and the second oxidation product of H_2PD. Our hypothesis for the low concentration mechanism is that hydrogen bonding occurs between the fully oxidized H_2PD and PZD. Our hypothesis for the high concentration mechanism is proton-coupled electron transfer between the second oxidation product of H_2PD and the PZD. The high concentration current response is similar to that seen with the stronger base pyridine, for which there is also UV-Vis evidence of deprotonation. Simulations were undertaken which supported the hypothesis for the low concentration mechanism but not for the mechanism at higher concentrations. The simulations suggested that at higher concentrations of PZD, proton transfer occurs at the singly oxidized H_2PD, not the fully oxidized product and that proton transfer is driven by a favorable formation of a hydrogen bond complex between the proton and multiple PZD's. Our hypothesis for the high concentration mechanism has changed to reflect that found in simulations, and will be confirmed in the future with more spectroelectrochemistry.

405 Poster #40 1:00–3:00 pm

Comparison of Proton-coupled Electron Transfer with Quinones in the Presence of Acids to Phenylenediames in the Presence of Bases

Christina Newell, Chemistry (U)
Diane Smith, Chemistry

Developing and understanding the mechanism for how hydrogen bonding and protonation work together in redox reactions is essential; given the major energy transduction processes, such as the production of mitochondrial ATP and photosynthesis, in living organisms are centered around these reactions. Quinones are prime examples of organic redox systems. In this study the effect of hydrogen bonding and proton transfer the redox chemistry of 2,3,5,6-tetramethylbenzoquinone(duroquinone) is examined by looking at the cyclic voltammetry of duroquinone, in acetonitrile, with and without the presence of added weak acids such as methanol, trifluoroethanol, and benzoic acid. As the quinone is reduced, first to the radical anion and then to the dianion, it becomes more basic and interacts more strongly with the added acids. When the concentration of the additive increases, both peaks shift to a more positive potential. Evntually, the reaction becomes irreversible. This system is compared to 2,3,5,6-tetramethylphenylenediamine, which has a quinoidal structure much like the quinones, but undergoes two reversible oxidations and becomes more acidic as it is oxidized. Addition of bases to the phenylenediamine produces similar effects as adding acids to the quinones, indicating that similar mechanistic pathways exist for both systems.

406 Poster #41 1:00–3:00 pm

The Effects of Amide Hydrogen Bonds on the Aprotic Electrochemistry of 2,3,5,6-Tetramethylphenylene-Diamine

Shawn Pavlovsky, Chemistry (U)
Diane Smith, Chemistry

One route to understanding the electrochemistry of 2 e–, 2 H+ redox couples, such as the biologically important quinones, is to study the effect of added hydrogen donors and acceptors on their voltammetry. For this reason, cyclic voltammetry (CV) and UV-vis spectroelectrochemical studies of 2,3,5,6-tetramethyl-phenylenediamine (H2PD) in the presence of amides varying in basicity have been carried out in acetonitrile. This work complements similar CV studies with quinones in the presence of alcohol guests. With quinones, the starting oxidation state is neutral then becomes

increasingly basic as the compound is reduced to the radical anion and then dianion in aprotic solvents. Weak hydrogen donors such as alcohols will therefore hydrogen bond more strongly to the dianion than the radical anion, thus stabilizing the dianion, and resulting in a positive shift in the $E_{1/2}$ of the second reduction with little change in the CV wave shape. By contrast, with H_2PD, the starting oxidation state is weakly basic and becomes increasingly acidic as the compound is oxidized. Therefore, the addition of weak hydrogen acceptors would be expected to interact most strongly with the doubly oxidized, H2PD2+, resulting in a negative shift in the $E_{1/2}$ of the second oxidation. Amides were chosen as the hydrogen acceptors for this study because based on aqueous pKa's they should not be strong enough bases (pKa of conjugate acid ~ –2) to deprotonate H2PD2+ (pKa ~ –1.5) so any effects are likely due to hydrogen bonding alone. In order to confirm this, UV-vis spectroelectrochemistry is used. Digital simulation of cyclic voltammetry are employed in order to further probe the mechanism and determine the equilibrium constants for hydrogen bonding. In conclusion, CV studies of H_2PD in acetonitrile by itself and in the presence of various basic amides show that hydrogen bonding has an extremely strong effect on the observed redox reactions of phenylenediamines, providing a nice complement to previous work done with quinones in the presence of hydrogen donors.

407 Poster #42 1:00–3:00 pm

Very Strong Redox-Dependent Hydrogen Bonding between a bis-Dimethylaminophenylurea and a Cyclic Diamide

Karina Kangas, Chemistry (U)
Diane K. Smith, Chemistry and Biochemistry

It has been shown that it is possible to selectively and significantly perturb the strength of hydrogen bonding between organic molecules with electrochemistry. Using cyclic voltammetry, we have studied the electroactive urea bis-dimethylaminophenyl derivative, U, which can undergo two reversible oxidations. Addition of a cyclic diamide guest to U shifts the oxidations negative. The maximum shift of the second oxidation is reached with 1 equivalent of the non-ionic guest and points to very strong hydrogen bonding. Taking the negative shift into account, we can quantitatively estimate the increase in binding strength upon oxidation of U. This calculation shows that the hydrogen bonding between the guest and U2+ is more than 1 x 105 times greater than with the neutral U. We are attempting to simulate the CV's as well as perform NMR titrations to gain a better estimate of the magnitude of binding constants. Also, computational methods are used to better understand the hydrogen bonding using a combination of density functional theory (DFT) with a correlation consistent polarized valence double zeta (cc-pvdz) basis set.

408 Poster #43 1:00–3:00 pm

Computational Study of Oxygen Atom Transfer Reactivity in Cis and Trans Dioxo-Mo(VI) Complexes

Amy Arita, Chemistry (U)
Andrew Cooksy, Chemistry

The oxygen atom transfer from cis and trans [(L10O)MoO2Cl] complexes to trimethylphosphine in the presence of pyridine was investigated by density functional theory, where L10O is a twofold-symmetric scorpionate ligand. Two pathways were studied for the trans complex, corresponding to reaction at each of the non-equivalent oxygens. Our results correctly predict the dominant pathway to involve the trans structure with reaction at the oxygen cis to the L10O. Furthermore, we find that the displacement of oxotrimethylphosphine by the pyridine occurs by a single-step interchange mechanism. Free energies were determined for the stationary points in each pathway, using the B3LYP DFT method and a mixed cc-pVDZ/CEP-121G basis set. The symmetry of the bonding at the metal center and the O-Mo-O-P dihedral angle, may each play a role in the kinetics, with reaction favoring the more symmetric structure. The results agree with the experimentally observed pathway where comparison to experimental results was possible.

Session C-7
Poster: Stem Cells
Friday, March 4, 2011, 1:00 – 3:00 pm
Location: Montezuma Hall

409 Poster #44 1:00–3:00 pm

Differentiation of Adipose Progenitor Cells through Beta-Catenin Activation

Myrna Martinez, Microbiology (U)
Jon Graff, Biology

Adipose tissue is composed of cells that specialize in storing energy as fat. An increase in fat storage relative to energy expenditure can result in many complications to the body's health such as coronary heart disease, type 2 diabetes, hypertension and many others. Mature adipocytes are believed to arise from stem cells, and understanding the differentiation of these cells can create a better understanding of how fat cells work and how they can be altered to treat complications of obesity. Beta-Catenin is a protein that binds to TCF transcription factors to promote specific gene expression, especially during development. The goal of this study is to examine the effects of Beta-Catenin activation cell-autonomously on adipose progenitor cells.

410 Poster #45 1:00–3:00 pm

Characterization of SET Domain Proteins in Planarians

Jessica Torres, Cell and Molecular Biology (U)
Ricardo M. Zayas, Biology

Freshwater planarians have the ability to regenerate a complete body from a small fragment due to a population of adult pluripotent stem cells known as neoblasts. Differentiation of these cells may be influenced by epigenetic changes in their chromatin state. SET domain protein methyltransferases are known to alter chromatin states by methylating various lysine residues on histones, regulating gene expression. The planarian Schmidtea mediterranea provides several advantages as a model organism for studying epigenetic stem cell regulation because of a large collection of EST sequences available and the use of RNA interference (RNAi). We identified ten homologs of human SET domain proteins annotated in the planarian EST database. *In situ* hybridization, which allows for visualization of mRNA transcripts, showed varied expression patterns of planarian SET domain proteins along the ventral nerve cords and within the mesenchyme, where neoblasts are found. Here, we investigated the role of one planarian SET domain containing protein, Smed-Set1B, in planarian neoblasts. Irradiation of planarians, which disrupts the neoblasts, resulted in a reduction in Smed-Set1B expression, suggesting that Smed-Set1B is expressed in the stem cells. Through the use of RNA interference (RNAi), we demonstrated that silencing of Smed-Set1B dramatically reduces the number of neoblasts and their progeny, which leads to incomplete regeneration and lysis. Our results suggest that Smed-Set1B may function in stem cell regulation and maintenance. Future studies will be aimed at identifying the targets of Smed-SET1B, which should provide insight to its role in regulating stem cell differentiation and lineage specification.

411 Poster #46 1:00–3:00 pm

A Mouse Model to Track Cardiac Progenitor Cell Fate In-vivo

Roberto Alvarez Jr, Biology (D)
Mark Sussman, Biology

The heart possesses an intrinsic ability to regenerate myocardium after pathological challenge, mediated in part by resident cardiac progenitor cells (CPCs) that differentiate into the major cardiac lineages of myocytes, endothelial, and smooth muscle cells. Adoptive transfer studies using CPCs to facilitate cardiac regeneration have resulted in promising data but questions remain concerning CPC fate and plasticity. Specifically, it's unclear whether beneficial outcomes are a result of engraftment and differentiation or paracrine mechanisms supporting regeneration. To address this, a genetically modified mouse model was constructed to fluorescently label the three cardiogenic cell lineages to track CPC fate: cardiomyocytes with the αMHC promoter overexpressing yellow fluorescent protein fused to a hemagglutin epitope tag (αMHC-YFP-HA), smooth muscle cells with sm22α-Tomato-Flag, and endothelial cells with VE-Cad-TFPmyc. The three experimental plasmids were transfected into neonatal rat ventricular myocytes, rat ventricular aorta smooth muscle cells, and cow pulmonary artery endothelial cells to confirm cell specific expression. YFP-HA specifically expressed in myocytes, Tomato-Flag expressed in smooth muscle cells, and TFP-myc was observed in endothelial cells as evidenced by fluorescence immunocytochemistry. Having confirmed lineage-appropriate expression in-vitro, we transfected each construct into murine CPCs. Upon dexamethazone induced differentiation, fluorescence of the promoter-driven reporters were visualized using confocal microscopy. *In vitro* confirmation prompted creation of a reporter mouse to track CPC fate. Transgene fragments were microinjected into 0.5dpc embryos to generate triple transgenic mice. Pups were PCR screened to verify DNA integration. Positive mice were bred to the F1 generation and subsequent offspring were analyzed via western blot and immunohistochemistry to verify protein expression. Thus far, analyses verified expression of two of the three constructs injected. Our work is the first to describe a transgenic line that allows identification of cardiac myocytes and vascular smooth muscle cells by fluorescent labels and epitope tags. The use of distinct fluorophores will allow us to qualitatively and quantitatively track CPC fate after adoptive transfer experiments. Our model is a useful tool to study CPC lineage differentiation when stimulated by various methods in-vitro. Ongoing studies are underway to complete the triple transgenic reporter mouse line incorporating the endothelial reporter tag.

412 Poster #47 1:00–3:00 pm

The Impact of Coxsackieviral Infections on Cardiac Stem Cells and Heart Development

Jon Sin, Cell and Molecular Biology (D
Roberta Gottlieb, Biology

Coxsackievirus B (CVB) is an enterovirus known to cause many human diseases including meningo-encephalitis and myocarditis. Infants infected with CVB may suffer from a severe form of acute myocarditis which may be fatal. Though the lasting consequences of infection in infants surviving acute myocarditis are unknown, long term alterations in heart development and function might be expected given the cytolytic nature of the virus. Previous studies have suggested that in the central nervous system, CVB targets actively proliferating neural stem cells, inducing cell death and ultimately depleting the stem cell population. This same principle could hold true in cardiac tissue, whereby c-Kit+ cardiac stem cells (CSCs) may be susceptible to CVB infection; thus during

myocarditis, CSC populations may be depleted. A reduction in cardiac-resident stem cells may impact organ development resulting in a heart with limited capacity to respond to physiological stress during adulthood, potentially predisposing the host to heart failure. We inoculated neonatal BALB/c mice with a recombinant CVB expressing eGFP and assessed the effects of viral infection on CSCs. We observed infected CSCs in cardiac tissue as well as a decrease in the number of c-Kit+ cells. Cultured CSCs isolated from neonatal mouse hearts also exhibited susceptibility to cytolytic CVB infection. Our observations indicate that CVB can target CSCs in the neonatal heart, infecting them and triggering their destruction. This loss of CSCs during early childhood may result in a predisposition to late-onset heart failure. Further work is needed to demonstrate the functional consequences of CSC infection and depletion after neonatal CVB infection of the heart.

413 Poster #48 1:00–3:00 pm

Pim-1 Kinase Antagonizes Cardiac Stem Cell Senescence

Michael McGregor, Molecular Biology (M)
Mark Sussman, Biology

Pim-1 kinase exhibits protective and proliferative effects in the myocardial context whereas studies with mice engineered with genetic deletion of Pim-1 show a premature aging phenotype. However, the role of Pim-1 in cardiac aging remains unexplored. Aging is the primary cause of impaired cardiac performance, contributes to the declined capacity of the heart to recover following ischemic injury, and is characterized by the accumulation of senescent cells within the populations of cardiomyocytes and cardiac stem cells (CSC). Accretion of senescent myocytes and CPCs leads to decreased cellular survival signaling, displacement of healthy tissue by malfunctioning cardiomyocytes, and impairment of cellular replacement by CSC. As such, identification and selective elimination of senescent cells from the myocardium population may improve performance of the aged heart. This study demonstrates Pim-1-mediated antagonism of the senescent phenotype in cultured CSC as marked by diminished expression of the cyclin-dependent kinase inhibitor p16. CSCs were subjected to between 8 and 48 hours of hypoxia followed by reperfusion to induce p16 expression. Pim-1 expression was manipulated through use of CPC engineered to express Pim-1 wild type or Pim-1 dominant negative kinase constructs as well RNA interference for transient knockdown of Pim-1. CSCs showed a marked increase in p16 expression following 24 hours of hypoxic treatment, and p16 expression was elevated by knockdown of Pim-1 or decreased by Pim-1 overexpression. These results indicate that Pim-1 plays a protective role to blunt CSC senescence through antagonism of p16 expression and sets the stage for future studies to define the relationship of Pim-1 to p16 and the senescent phenotype.

414 Poster #49 1:00–3:00 pm

Culture Methods Can Influence the Genetic Stability an Phenotypic Properties of Human Embryonic Stem Cells

Shannon Waltz, Biology (U)
Christopher Glembotski, Biology

The self-renewal and differentiation potential of stem cells make them ideal sources for many uses ranging from cell therapy to drug development. Transitioning such techniques into clinical applications requires the cells to be genetically stable. In this study, the genetic stability of Hues9 embryonic stem cells will be assessed as they are cultured in 4 different conditions. These conditions are commonly used methods for maintaining stem cells. The different conditions will be compared using many assays, such as SNP genotyping, immunocytochemistry, and microarrays. All conditions will be kept for over 80 passages and assessed for genetic stability.

415 Poster #50 1:00–3:00 pm

Reprogramming of Monocytes into Induced Pluripotent Stem Cells from Diverse Populations

Seema Patel, Biology (U)
Chris Glembotski, Biology

The use of induced pluripotent stem cells for therapeutic purposes has been shown to be promising in a clinical setting. Although iPSC technology has advanced immensely recently, there are still two major issues that need to be addressed and resolved in order to make this type of therapy beneficial for patients. One of the major obstacles associated with stem cell therapy currently is the lack of ethnic diversity in established lines. It has been shown that ethnicity is a strong determinant in levels of drug toxicity and adverse reactions to pharmaceuticals. The possibility of creating an ethnically diverse bank of stem cells with an array of ethnicities allows for the development of new pharmaceuticals based on ethnicity which would decrease the frequency and possibility of a patient experiencing an adverse reaction. The other major obstacle in using iPSC technology is actually obtaining somatic cells for transduction. Although current protocols involve using either fibroblasts or keratinocytes and then inducing pluripotency are efficient, there are multiple cons associated with both of these sources. Reprogramming of blood as a potential source for iPSCs has been previously published but has overall had a very low success rate and has only been done with T cells and peripheral blood mononuclear cells. It has been shown that T cells undergo DNA rearrangement which could be potentially harmful if used in a clinical setting. In this study we chose to isolate and reprogram monocytes from human peripheral blood into induced pluripotent stem cells.

416 Poster #51 1:00–3:00 pm

The Role of Protein Glycosylation Involved in Regulating Pluripotency in HPSCs

Kelley Fracchia, Biology (U)
Yu-Chieh Wang, Biology

Protein glycosylation is a type of post-translational modification that usually occurs on residing surface of the cell and often times results in the change of the protein function. Protein glycosylation is known to affect tumorigenesis, cell differentiation, cell signaling, and interactions between host and pathogen. Pluripotency is often times analyzed through the use of antibodies interacting with antigens on the surface of the cell and sometimes these antigens are glycoproteins. Given that there appears to be a relationship between pluripotency and glycosylation, we have used lectin-based glycomic profiling in the attempt to identify this signature. Glycoproteins serve themselves nicely to analysis, given their interactions with lectins. Lectins are glycan binding proteins that preferentially bind to particular glycans, but they can also act promiscuously. These lectins serve nicely as probes, thus allowing the relative amount of a particular glycan marker to be determined through the use of a lectin based microarray. We have found that 15 lectins are actually enough to correctly differentiate between pluripotent and non-pluripotent lines. We are specifically interested in carrying out the identification and functional analysis of proteins with pluripotency-related glycosylation on the surface of human embryonic stem cells and induced pluripotent stem cells. Our hypothesis is that if protein glycosylation is correlated to pluripotency then we will be able to detect it through the use of glycomic profiling because of the relationship between lectins and their correlating glycan.

Sessions: Saturday, March 6

Session D-1
Oral Presentation: Marine Ecology
Saturday, March 5, 2011, 8:00 am
Location: Backdoor

417 8:00 am

Developing a New Tool to Examine Physiological Stress in Cetaceans: Measuring Glucocorticoids in the Blubber of Arctic Bowhead Whales to Assess Population Health.

Jennifer Keliher-Venegas, Marine Biology (U)
Nicholas Kellar, NOAA Southwest Fisheries Science Center

The objective of this study is to develop and validate a new method for quantifying stress hormones in harvested bowhead blubber that could be applied to wild cetacean populations by providing initial baseline concentrations and assessing the utility of the method to aid further conservation/management efforts. Glucocorticoid hormones such as cortisol are commonly known as stress hormones and are widely used indicators of physiological stress in mammalian systems to assess individual and population health. However, prior to this project glucocorticoid hormones had never been measured in cetacean blubber. By modifying a method developed at the Southwest Fisheries laboratory to assess pregnancy status based on blubber progesterone concentration, we were able to successfully measure cortisol within blubber tissue. This favorable outcome allowed us to consider broader conservation applications and thus enabled us to attempt to answer important questions such as whether blubber cortisol concentrations are relatively uniform throughout the body, whether concentrations differ between geographic sampling sites, if changes in environmental conditions be observed in mean cortisol concentrations over the years, and how comparable our values are to previous studies that have used serum samples. We intend that the resulting protocol derived from this project, when coupled with projectile biopsy sampling of blubber tissue, will form a useful tool to evaluate reproduction and health in free-ranging bowhead whales relative to anthropogenic disturbance such as activities associated with oil exploration and climate change on individual and population health. Research was funded by the NIGMS, NIH Grant 2R25GM058906-09A2.

418 8:15 am

Seagrass Nursery Habitat Function: Relative Effects of Habitat Structure and Prey Density on Mesopredator Foraging Efficiency

Alexandria Warneke, Biology (U)
Kevin Hovel, Biology

Seagrass structural complexity may strongly influence prey survival and predator foraging success. Laboratory experiments and field tethering experiments suggest that increasing structural complexity limits the ability of predators to find and capture their prey. However, these experiments typically hold prey density levels constant as habitat structure increases, or prevent prey from fleeing from predators, which are not realistic conditions in seagrass habitat. We conducted laboratory-based mesocosm experiments to determine the relative effects of artificial seagrass shoot density and prey (grass shrimp Hippolyte californiensis) density on juvenile giant kelpfish (Heterostichus rostratus) foraging behavior and anti-predator behavior by prey. We found that kelpfish activity levels were influenced by structural complexity, but not by prey density; kelpfish turned to sit-and-wait predation as structural complexity increased. Kelpfish strike attempts did not vary with structural complexity, but kelpfish attempted more strikes at high vs. low prey density. Proportional strike success was higher in low and high structural complexity treatments than at intermediate structural complexity when prey density was low,

but there was no effect of structural complexity on proportional strike success when prey density was high. Lastly, shrimp escape attempts did not vary with structural complexity or prey density. Our results suggest that it is important to evaluate the interactive effects of seagrass habitat structure and prey density on the behavior of predator and prey organisms.

419 8:30 am

Distribution of Algal Photosynthates as Seen Using Planar Optodes

Allison Gregg, Biology (U)
Forest Rohwer, Biology

Over the last 50 years there has been a worldwide phase shift from coral-dominated reefs to algal. Despite extensive research, the causes of this change are still strongly debated. Coral health is reduced when in close proximity to many types of algae. We tested the hypothesis that reef algae produce hypoxic zones that suffocate corals. A new method of oxygen measurement was applied to visualize the two-dimensional distribution of oxygen released and consumed by a coral reef associated algae of the genus Bryopsis. Preliminary data suggest that macroalgae generate distinctive oxygen gradients in their proximate surrounding. Images were captured that showed a discrete range in which dissolved oxygen was released directly down current from the algae during photosynthesis. When left to respire the algae produced an inverse gradient of oxygen concentration. These images present the first two-dimensional visualization of oxygen gradients generated by benthic algae in its immediate surrounding. The distinct gradients produced from Bryopsis sp. suggest that the position of coral to algae relative to direction of flow could play a part in hypoxia along the interface.

420 8:45 am

Copper Tolerance in Bacteria Associated with Macrocystis pyrifera

Julia Busch, Cell and Molecular Biology (M)
Elizabeth Dinsdale, Biology

Kelp forests are one of the most widespread and productive of all ecosystems. They are the basis of entire ecosystems, providing habitat and nutrition to a multitude of species from invertebrates to sea otters. In addition to the macrofauna, kelp forests also support a diverse community of microorganisms. Many kelp forests are dominated by *Macrocystis pyrifera*, a species of large brown algae. One of the characteristics of brown algae is that they produce negatively charged polysaccharides on their cell surfaces, which accumulate heavy metals such as copper. Brown algae in environments with higher levels of heavy metals, such as those near human activity, produce larger amounts of these polysaccharides. Copper is an essential element involved in cellular pathways, but in large amounts, like those accumulated by kelp, it becomes toxic to organisms. We hypothesize that microbial populations living in close contact with the kelp must tolerate higher levels of copper than normally found in cells. To date, 11 full genomes of algae-associated bacteria have been sequenced using 454 Life Sciences technology. Preliminary findings suggest that the bacteria associated with kelp have copper tolerance genes such as the suppression of copper sensitivity (scs) locus that is absent in bacteria from other environments. By testing the minimal inhibitory concentration (MIC) of copper in microbes from kelp, the open ocean, and terrestrial environments, the functional role of the scs genes in copper tolerance will be tested. The bacteria living in close association with kelp are exposed to high levels of heavy metals resulting from the accumulation on the surface of the algae. Preliminary studies suggest that kelp-associated microbes have genetic mechanisms that microbes from other environments lack enabling them to tolerate copper.

421 9:00 am

Spatial Patterns of Invertebrate Settlement in Giant Kelp Forests

Dana Morton, Biology (M)
Todd Anderson, Biology

Giant kelp (*Macrocystis pyrifera*) increases drag and can greatly alter current velocity and flow around and through a kelp forest. Due to modified currents, delivery and settlement of kelp-associated organisms may differ depending on location in or around kelp forests. My research objective was to determine whether patterns of invertebrate settlement differ spatially within giant kelp forests. Eighteen sites, distributed across six random transects perpendicular to shore, were established in kelp forests off Point Loma near San Diego, California. At each site, invertebrate settlement was quantified using Tuffy® dish-scrubbers. Two Tuffys were placed at 6-7 m depth on separate buoyed lines at each site and sampled biweekly from July–October in 2009 and 2010. In 2010, an additional Tuffy was placed 2 m above the bottom on one randomly selected line at each site. Samples were sorted to the lowest taxonomic level possible. To date, samples have been sorted to at least the following groups, given in order of decreasing abundance: Crustacea, Gastropoda, Polychaeta, Bivalvia, Anthozoa, Acari (mites), Nematoda, Platyhelminthes, and Echinodermata. With all taxa combined, there was no difference in the number of individuals settling in different areas of the kelp forest, but there were more individuals settling in the southern region of the forest than the northern region. When lower level taxonomic groups were examined individually, however, differential settlement by location became evident. Taxon-specific patterns may indicate modified larval delivery, variation in planktonic larval duration, or other life-history characteristics, with potential implications for population dynamics.

Session D-2
Oral Presentation: Public Health II
Saturday, March 5, 2011, 8:00 am
Location: Calmecac

422 8:00 am

Using a Community Based Participatory Research (CBRP) Approach to Identify and Address Environmental Health Concerns in Indigenous Communities of Baja California Mexico

Paula Stigler, Global Health (D)
Jenny Quintana, Public Health

Historically, public and environmental health scientific research conducted in indigenous communities often did not include traditional and cultural knowledge as factors. The collection and application of non-scientific information to issues like environmental health concerns requires communication frameworks that create awareness of social and cultural factors that many researchers are unfamiliar with in their work. Community Based Participatory Research (CBPR) is research that is conducted in partnership with the community. It provides an opportunity for researchers and community members to work side by side at every phase of the study and seeks to engage the community from conceptualization of the research problem to the dissemination of results. By engaging with the community at every level and building trust amongst its members, information can flow more readily between the researchers and local community members. This process facilitates a more accurate understanding by everyone involved of the complexities of the information being collected and can possibly serve as community empowerment tool to advocate for better solutions and interventions. While working with indigenous communities in Baja California Mexico, a CBPR model was used to address environmental health concerns with drinking water. Engaging with community leaders and grassroots organizations with close ties to the community, this research used local knowledge systems to provide more accurate data interpretation and interventions that were more acceptable and culturally competent. This presentation will discuss the challenges and successes of conducting CBPR in these indigenous communities as well as identify unique findings that may not have been discovered if traditional research methods had been used.

423 8:15 am

A Faith-based Program to Increase Physical Activity among Pre-adolescent Latinas and their Mothers and Improve the Mother-daughter Relationship

Nancy Espinoza, Public Health (D)
Elva Arredondo, Public Health

Over the last decade, the increase in overweight and obesity among Latino children was larger than any other ethnic group. The 2009 Youth Risk Behavior Surveillance estimates the prevalence of obesity and overweight among Latino students at 15.1% and 19.6%, respectively. Data also shows that female students are less physically active than male students and that Latinas have the lowest physical activity rate compared to African American and Caucasian students. Adolescence is an important period in physical activity promotion because it is a period marked by a decrease in physical activity. This period is characterized by changes in individual development and can be a stressful time in a child's life, marked by frustration with parents, body changes, and body image. For mothers, this is a period where they struggle with parenting issues and communication with their daughters. While there have been numerous physical activity interventions, only a limited number of physical intervention studies have focused on the impact of a physical activity intervention on the mother-daughter relationship. Even fewer have focused on Latina mother-daughter interventions. Therefore, we conducted two focus groups with pre-adolescent Latinas and their mothers to examine the correlates of young Latinas' physical activity. We also sought to explore the feasibility of developing a faith-based program to increase physical activity among pre-adolescent Latinas and their mothers, while improving communication and strengthening the mother-daughter relationship.

424 8:30 am

The Role of Psychosocial Resources and Risk Factors in the Association between Socioeconomic Status and Cardiometabolic Risk in Mexican-American Women

Addie Fortmann, Clinical Psychology (D)
Linda Gallo, Psychology

The metabolic syndrome (MetSyn) may represent an intermediate stage of cardiometabolic risk that links low socioeconomic status (SES) with cardiovascular disease and type 2 diabetes. A variety of psychosocial resources and risk factors may contribute to the association between SES and MetSyn risk. The current study tested this hypothesis in 304 middle-aged (40-65 years old) Mexican-American women. Participants underwent a clinical exam and completed a battery of self-report measures, including demographic and psychosocial resource (i.e., self-esteem, optimism, life-engagement, social support) and risk (i.e., depression, anxiety, hopelessness, hostility, loneliness) variables. Confirmatory factor analysis (CFA) and structural equation models (SEMs) were performed in the total sample and in more and less US-acculturated women (defined by language usage) separately. CFAs revealed single latent constructs for SES (i.e., income, education) and psychosocial resources/risk. For the MetSyn, a 3-factor solution was identified, with blood pressure (systolic and diastolic), lipids (high-density lipoprotein cholesterol and triglycerides), and metabolic variables (glucose and waist circumference)

forming separate factors. SEMs showed that an indirect effects model with SES relating to MetSyn factors through psychosocial resources/risk provided a reasonable descriptive and statistical fit in the full and more acculturated sample (RMSEA and SRMR < .08); fit in the less acculturated sample was marginal according to RMSEA =.09. A significant mediated path from low SES to higher waist circumference/fasting glucose via lower psychosocial resources/higher psychosocial risk was identified in the overall and more acculturated samples only ($p < .05$). In this sample of healthy, middle-aged Mexican-American women, contributions of psychosocial factors to SES-MetSyn associations were limited to the core metabolic mechanisms underlying the syndrome, and to more US-acculturated women.

425 8:45 am

Parent-mediated Behaviors are Associated with Children's Sugar-sweetened Beverage Consumption

Nanette Lee, Health Behavior (D)
John Elder, Public Health

Background: Consumption of sugar-sweetened beverages (SSB) has been identified as a key contributor to childhood obesity. Studies have identified the importance of specific parenting practices to children's SSB consumption; however, no study has examined multiple operationaliztions of parenting to better understand where to focus future intervention research. Objective: The present study examined the relationship between children's SSB consumption and a comprehensive parenting model which included household rules, parent modeling of rules, parent-mediated behaviors, and parent support. Design: Data were used from baseline measures of Project MOVE/me Muevo, a recreation center-based obesity prevention and control intervention for children who reside in San Diego County. Participants included 541 children, aged five to eight years old, and their families. Parents completed a 45-minute self-administered survey in either Spanish or English, providing information about their child's dietary intake, as well as their parenting practices. Children's beverage intake was assessed by five sugar-sweetened beverage categories, including regular soda, non-carbonated sugary drinks, sports drinks, yogurt or flavored milk drinks, and 100% fruit juices. Household rules and parent modeling of rules were assessed with seven items each. Parent-mediated behaviors consisted of four behaviors. Parent support was assessed with five items. Results: Parent-mediated behaviors, including total screen time and eating at sit down restaurants at least weekly, were associated with greater consumption of SSB in children. No other parenting variables were significant. Conclusions: Providing caregivers strategies to limit children's television and computer use, along with reducing away-from-home food consumption, may contribute to reductions in SSB consumption among children. Reducing SSB consumption may ultimately result in lower obesity rates among children.

Session D-3
Oral Presentation: Literacy, Bilingualism, Language Processing and Disorders
Saturday, March 5, 2011, 8:00 am
Location: Casa Real

426 8:00 am

Acoustic Properties of /l/ as Produced by English Monolingual, Spanish Monolingual, and Spanish-English Bilingual Children: A Retrospective Study

Paige Branson, Speech, Language, & Hearing Sciences (U)
Jessica Barlow, Speech, Language and Hearing Science

The goal of the present study was to determine whether there is an acoustic difference between /l/s produced by Spanish-English bilingual children as compared to Spanish-monolingual and English-monolingual children. The /l/ phoneme was of particular interest due to the differences in a) the acquisition timelines for the three populations and b) the phonetic variants that occur for each language. The data were drawn from a larger study conducted by the Phonological Typologies Laboratory (PTL) at San Diego State University. A total of 57 monolingual and bilingual English- and Spanish-speaking children, ages 1;7 to 8;4 (years;months), were recruited from the Southern California area. Ten were English monolinguals, 20 were Spanish monolinguals, and 27 were Spanish-English bilinguals. Speech samples from the children were collected using the Assessment of English Phonology and/or the Assessment of Spanish Phonology, in which each sound of the target language was attempted 5 times in every word position. For the current study, those productions containing /l/ were spliced out of the original audio files to be analyzed separately. Each child produced /l/ between 15 to 30 times in different word positions. To empirically determine the differences between productions of /l/ by the different groups of children, the F1 and F2 formants (an acoustic measure of sound energy) of the /l/ were measured using Praat, an acoustic analysis program. The results should show F1 and F2 value clusters for the English monolinguals and Spanish monolinguals, with the bilinguals clustered in between the two. These results will lead to greater knowledge about bilingual and monolingual Spanish and English language development, although further research will be needed to fully understand the processes involved.

427 8:15 am

Research Findings on Families of English Language Learners

Rosella Rivera, Teaching Credential (M)
Fernando Rodriguez-Valls, Education (IVC)

English Language Learners (ELLs) account for more than forty-two percent of the total student population in the Imperial County –thirty-six thousand two hundred and sixty-eight (www.ed-data.k112.ca.us). Nearly ninety percent of these students are enrolled in English Only (EO) programs; and, the majority of this population utilizes Spanish as a primary language. Within this scenario the challenge for educators is to find instructional strategies to better accommodate the needs of these students. Research shows, (Purcell-Gates, 1997; Vasquez, 2004; Allen, 2007) that one of the key components to ensuring ELL's academic performance is parental involvement in literacy activities. Our research focused on seventy-five families whose children are ELL students enrolled in elementary schools within the Imperial County. The main purpose of our research was to obtain data in order to create an appropriate action plan for parent involvement in their children's classroom practices. Parents were interviewed in regards to the degree of involvement they had in their children's literary curriculum. Our findings suggest that in order to increase literacy rates, parents need to interact in a meaningful manner with their children. Furthermore, to improve reading comprehension parents need to read bilingual books to and with their children. When reading, parents have to ask questions that require children to think critically about the books they are reading. Furthermore, in order for parents to receive support, a professional learning community needs to be developed that includes students, parents, teachers, and community members. In conclusion, ELL students in the Imperial Valley need a multifaceted approach to literacy that promotes critical thinking and creativity across languages and cultures.

428 8:30 am

Patterns of Lexical Activation and Decay During Sentence Processing

Michelle Ferrill, Language and Communicative Disorders (D)
Tracy Love, Speech, Language and Hearing Science

This presentation describes an investigation of lexical access during sentence comprehension in healthy participants as well as those who have survived stroke and have aphasia. Unlike most studies of lexical access, we examine the time-course of activation throughout the temporal unfolding of the sentence. Our intent is to examine when the meaning of a lexical item decays, and if that decay is linear. We use an on-line cross-modal picture priming task, where sentences are presented to listeners over headphones. The test items consisted of sentences like the following: The guide carried the student1 during 2the ut3terly ex4hausting hike to the summit. A visual probe was presented at one of four positions during the ongoing auditory sentence (indicated approximately by superscript numerals). Priming was measured by comparing response times to the related and control probes – faster response times to the related probes indicate a priming effect, thus activation of the lexical item. Data from 58 unimpaired listeners and 7 aphasics have been collected. Apriori paired one tailed t-test results for our healthy listeners demonstrated priming at the offset of the noun ($t30=2.87$, $p=.0035$), which slowly tapered off throughout the rest of the probe positions ($p>.05$ for all 3 test points). Results for our participants with aphasia demonstrated no evidence of priming at probe point one (PP1, $p>.05$); however, priming was observed 400ms later at PP2 ($t6=2.11$, $p=.04$). Following this activation, a much more accelerated decay through PPs 3 and 4 ($p>.05$ for both test points) was observed. The patterns of priming demonstrated for our healthy participants suggest initial activation of the direct object noun, and then a relatively linear and gradual decay across the next 1200ms. Our participants with aphasia evinced a different pattern, with late initial activation and almost immediate decay. This protracted time-course for lexical access in aphasia corroborates what has been established in the literature. However, the immediate decay suggests that the word's meaning might not be available to be integrated within the ongoing context and hence lead to the difficulties we see with sentence comprehension in aphasia.

429 8:45 am

Language and Affective Expression in Children with Perinatal Stroke

Philip Lai, Language and Communicative Disorders (D)
Judy Reilly, Psychology

Perinatal stroke (PS) is a cerebrovascular event that occurs between the last trimester of gestation until the first month after birth. Children with PS offer an opportunity to investigate how an insult early in life impacts brain-behavior relations and their development. Previous research has focused on neuroplasticity in different cognitive domains. Investigations in the same children have found greater development in the domain of language in contrast to visual-spatial cognition where deficits are subtle, but persistent. One understudied communicative domain is affect. Previous research in infants and adults with strokes found that those with right hemisphere injury (RHI) showed flattened affect and increased negativity compared to those with left hemisphere injury (LHI) and typically developing (TD) individuals. What is the developmental course of affective expression? Will affect follow a similar developmental pattern to language or to visual-spatial cognition? This study investigates the temporal and semantic integration of language and facial expression in six-year-olds during a biographical interview. Participants included 10 individuals with PS (5 LHI; 5 RHI) and 10 age-matched TD individuals.

Two independent raters identified narratives and coded them for emotional valence (positive and negative). Then ELAN, a software platform, was used to code these linguistic segments for facial expression. Results indicate that the RHI group produces more negative narratives than LHI and TD groups. Similarly, for facial expression, children with RHI were less expressive and more negative than LHI and TD groups. In addition, when comparing the degree to which the production of facial expression matches the language content in valence, for positive tone segments, both the TD and PS groups were similar, rarely producing negative facial expression. In contrast, for negatively toned segments, the TD group produced more mismatches in facial expression than the PS group, potentially signaling a cognitive shift where the TD group has attained the ability to mask their true emotions. Within the PS group, the majority of such mismatches came from the LHI group, suggesting a more pronounced and persistent deficit in children with RHI. Overall, our results are consistent with previous literature, suggesting varying degrees of developmental plasticity across communicative systems.

430 9:00 am

Influence of Speaker Intent on Speech Movement Variability

Dorothy Yang, Speech, Hearing, and Language Sciences (D)
Ignatius Nip, Speech, Language and Hearing Science

Speech movement characteristics change with increasing linguistic complexity, most notably in phonology and syntax. In phonology, weak syllables have more variable speech movement patterns than strong syllables. Regarding syntax, the movement patterns of simple sentences become more variable when they are produced within a more complex sentence. It has also been suggested that complex linguistic productions are associated with faster movement speeds, longer durations, and greater articulator displacements. While phonology and syntax have been shown to affect speech movement characteristics, it is unclear whether other areas of language such as speaker intent, similarly affect speech motor control. This study investigates the effects of speaker intent on speech motor control through the use of ambiguous idioms (phrases that have both a literal and figurative interpretation) in order to manipulate meaning without changing any aspects of phonology and syntax. This study presented ambiguous idioms placed in neutral sentence contexts to twelve unimpaired young adults. Two contextual bias conditions (literal and figurative) were created. Four sentence triads (sets of three sentences) were created for each idiom in each biasing condition. The first two sentences of a triad established a context to elicit either the literal or the figurative interpretation of the target idiom. All sentence triads were embedded within a larger list of 298 filler sentences for each condition. Participants were instructed to read each sentence aloud as it appeared on a projector screen while a motion capture system recorded their lip and jaw movements. At the end of the session, information was collected from participants about their familiarity with each idiom. Lower lip movement traces for each idiom were analyzed. Spatiotemporal index (STI) values were obtained to determine how similar the movement traces of each repetition were to the other repetitions in the same condition. Data regarding movement duration, displacement, and peak speed were also obtained. Preliminary results suggest that ambiguous idioms are being produced differently across the two conditions, although the direction of the effect appears to vary among individuals. Potentially, familiarity with each idiom may account for these mixed findings, and this will be discussed in the following presentation.

431 9:15 am

Plausibility, Grammaticality and Pupillometry

Roberto Gutierrez, Language & Communicative Disorders (D)
Lewis Shapiro, Speech, Language and Hearing Sciences

In the current study, we use pupillometry as an index of mental effort while participants listen to sentences for meaning. Our purpose is to examine if different types of linguistic information elicit unique time-courses. By time-locking pupil dilations to stimulus presentation, it is possible to collect a moment-by-moment measure of processing loads (Beatty, 1982). In previous studies, we (Gutierrez & Shapiro, 2010) measured pupil dilations every 17ms and found unique time-courses for different grammaticality violations. In this study we examine a quartet of conditions crossing grammaticality and plausibility. In a within-subjects design, participants were asked to "focus on the cross in the middle of the screen and listen to the sentences for content. We analyzed our data by identifying the point in each sentence where either grammaticality or plausibility diverged ("divergence point"). We averaged the pupil diameters from a 1500ms time window, creating a local processing load baseline for each sentence for each participant. We then divided the raw data by the baseline, yielding a normalized pupillary response. We focused our initial analysis on the 1500ms following the divergence points. Results and Discussion. (N=7; data will continue to be collected). For the sentence pairs that differed only in grammaticality, we found that pupil diameter increased in the ungrammatical condition, approximately 700ms after the divergence point- prior to that divergence point, only the grammatical condition yielded larger pupil dilations. For the sentence pairs that differed only in plausibility, we observed that pupil diameter increased in the implausible condition, approximately 900ms after the divergence point. Similar to the previous analysis, the plausible condition yielded larger pupil dilations prior to the divergence point. Thus, we have found that pupillometry is sensitive to both types of information, adding to our previous findings and suggesting that pupil dilations can be reliably added to the arsenal of psycholinguistic measurements. Furthermore, our preliminary evidence shows that pupil diameter increases

approximately 200ms earlier for a morphosyntactic violation than for a plausibility manipulation, suggesting some support for a syntactic (re)analysis that has an earlier appearing time-course.

Session D-4
Oral Presentation: Latino Identity and Community
Saturday, March 5, 2011, 8:00 am
Location: Chantico

432 8:00 am

Socialism, Muralism and Politicism: Art and Socio-Political Movements in Latin America with Emphasis on Mexico and Chile

Brian Mohler, ISCOR, Political Science and American Indian Studies (U)
Emily Hicks, Chicana and Chicano Studies/English and Comp Lit

This comparative case study analyzes the effect of art on socio-political movements in Latin America and political intuitions or regime effect on art. This study looks into artistic movements in Latin America, focusing on muralism in Mexico and Chile. There are a number of variables that effect the socio-political movements; I am examining arts effect. I will look at which variable elements helped art movements succeed and which negatively impacted arts growth. Questions I seek to answer are: How does Chilean socio-political muralism compare to Mexican muralism? What effect does socialistic, communistic or democratic ideals have on artistic socio-political movements? What effect did external countries have in shaping and influence art movements is Latin America? How does the case in Mexico and Chile compare to other Latin American countries? What effect or emphasis does art place on indigenous and women's rights verse class struggles? What effect do state institutions have on the development of art? Art is ever changing, adapting and retooling itself to the way we perceive the world. It is still useful for religion, morality or social ideology, but as countries become more stable, artists are able to look at art for advancing ideas, creativity and future possibilities. Art in Latin America has been able to engage social, moral and ideological criticism. Art has been more than politicized; the aesthetics of art has challenged the way we look at political and economic systems. Art also explores our past, giving voice to post-colonialism, post-totalitarianism, and multiculturalism. Like Latin American literature, muralism and other art has began to take on a surreal or magical-real nature and emphasis. Mexico and Chile are both stable today and democracy has taken deeper root allowing for more advanced art, while other Latin American countries are still struggling to find a cultural, political and artistic identity. A countries cultural understanding and identity emerges through its art and literature. Art transforms culture.

433 8:15 am

Working-class Latin@ Drag Shows in Southern California: A Place for Healing

Alejandra Gonzalez, Chicana/o Studies (U)
Victoria Gonzalez-Rivera, Chicana and Chicano Studies

Abstract: This paper presents the results of a qualitative ethnographic research project that explores the lived experiences of Latin@ drag queens in Southern California. Specifically, the study addresses the complexities of working-class Mexican immigrant sexuality on the U.S./Mexico border. The data for the study was collected in 2009 and 2010 through in-depth oral interviews and through participant observation in clubs, bars, and restaurants that host Latin@ drag shows in San Diego. Our research reveals that Latin@ drag shows for heterosexual working-class Mexican-origin audiences might be a place where healing processes commence. The shows, we argue, challenge pre-existing stereotypes about Mexican sexuality and can become healing ceremonies for the performers, as well as for the audience.

434 8:30 am

Latino Parent Participation in Student Education and Critical Pedagogies that Acknowledge Culture in Teaching and Learning

Vanessa Lara, Chicana and Chicano Studies (U)
Adelaida Del Castillo, Chicana and Chicano Studies

Through a review of the literature this research paper will examine the importance of Latino parent participation in the grade school education of their children and addresses factors that may impede or discourage such participation. Furthermore, this research will explore cultural approaches in critical pedagogy found to be successful in teaching Latino students by enhancing their learning skills, two of which will be discussed: engaged pedagogy and critical bicultural pedagogy. The former helps Latino students bridge the divide between the application of theory and practice by making use of student lived experiences in the comprehension of abstract concepts. The latter enhances the cultural competence of Latino students encouraging them to keep their culture in the process of learning other cultures including that of the dominant society.

435 8:45 am

Microcredit in the Valley of Oaxaca: An Anthropological Study of Development and Women's Narratives at the Local Level

Jessica Bates, Anthropology (M)
Ramona Pérez, Latin American Studies/Anthropology

In recent history, microcredit has become a potential solution for alleviating poverty in areas where the implementation of

microfinance could prove beneficial for local communities. Since microcredit targets women, its use in the developing world has caught the world's attention in its ability to confront gendered injustices, as well as its ability to benefit groups beyond just women: namely their children, families, and community. Literature on the topic generally supports the claim that small loans assist in breaking cycles of poverty when they are grounded in established economic systems and local definitions of reciprocity and obligation. Poor women who might otherwise lack the initial capital needed to create small enterprises have found microloans generally helpful in becoming entrepreneurs in local markets. More recently, however, studies have shown that microcredit does not exist as a flawless system that incorporates the world's poor into profitable economic systems. This research aims to supplement that literature by examining qualitative data from a women's microcredit group in Oaxaca, Mexico. In Oaxaca, microcredit programs employed by a local non-governmental organization fit well into existing social and economic structures but are missing the intended population. Narratives of omniscient poverty obscure the client base, allowing loans to be given to middle-class women. Marginalized and poor women who receive loans struggle to repay their debt, exacerbating their economic instability. Such research is important when considering the global context of development initiatives such as microcredit, especially when their effectiveness may well be compromised by factors yet unanticipated by the development community.

Session D-5
Oral Presentation: Family Studies
Saturday, March 5, 2011, 8:00 am
Location: Council Chambers

436 8:00 am

Continuity of Care, Cortisol, and Stressed Out Children

Matt Jakstis, Psychology (U)
Shulamit Ritblatt, Child and Family Development

The positive correlation between chronically elevated salivary cortisol levels and social, emotional, and intellectual impairment has been often supported by meta-analysis. Quality of daycare seems to be a prime determinant of child cortisol levels, with higher global quality as well as caregiver sensitivity being negatively correlated to cortisol levels (Watamura et al., 2010) (Groeneveld et al., 2010). If continuity of care—keeping a child with the same primary caregiver throughout their stay in daycare—can be identified as a method for reducing cortisol levels, it may be strongly inferred that continuity of care (COC) is associated with lower levels of social, emotional, and intellectual impairment. Cortisol levels in children from programs not practicing continuity of care could be elevated at a critical window of development, causing impared hippocampal functioning, including reduced size and anomalous morphology, which would be behaviorally exhibited through cognitive deficiencies such as memory, social and emotional impairments (Tessner et al., 2007). Furthermore, smaller and anomalously shaped hippocampi are implicated in deregulation of the negative feedback loop of the hypothalamic-pituitary-adrenal axis, adding additional support to a potential link between cortisol levels and emotional imbalance (Knoops et al., 2010). As part of a larger study on continuity of care, various measures of attachment, daycare quality, sensitivity of caregivers, and salivary cortisol are presently being conducted and might render the necessary information to link COC programs with increased cognitive functioning. Even so, greater research will be needed to confirm that differences in levels of cortisol produced in non-COC children is sufficient to account for differences in cognitive functioning.

437 8:15 am

Preliminary Results and Challenges on the Implementation of an Evidence-based Group Intervention (Triple P- Positive Parenting Program) in a Head Start Community Setting

Nancy Calderon, Psychology & Spanish (U)
Ann Garland, CASRC

Several parenting interventions have been developed to modify problematic parenting styles with the goal of reducing children's behavior problems (Pearl, 2009). A large study examined the effectiveness of the Triple P - Positive Parenting Program in reducing emotional and behavior problems in children ages 4 to 10, suggesting that the multi-level intervention is effective in reducing child emotional and behavior problems as well as coercive parenting (Sanders et al., 2008). The study conducted by Sanders et al., (2008) consisted mainly of Caucasian, middle-upper class, well-educated, married mothers thus the findings of the study cannot be generalized to diverse low-income families. The purpose of the present study is to examine the relationship between parenting styles and child emotional/behavioral problems in low-income families before and after mothers participate in the evidence-based Triple P group level intervention (Sanders, 1999). It was hypothesized that higher scores on scales of dysfunctional parenting styles (i.e., lax, over-reactive, and hostile parenting) would predict higher emotional and behavior problems in children. Families included in this study (N = 177 mothers; 90% Latina/Hispanic) completed an 8-week Triple P group intervention and had at least one child between the ages of 3 and 5 years of age in the Head Start program. Parenting styles were assessed by using the lax, over-reactive, and hostile parenting subscales of the Parenting Scale (PS; Arnold, O'Leary, Wolff, & Acker, 1993), while child maladaptive behaviors were assessed by using the emotional, conduct, hyperactivity and peer problem subscales

of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). Measures of parenting style and child behavior problems were assessed before the intervention and will be reassessed after the intervention. Preliminary correlations suggest that over-reactive parenting is significantly associated with higher levels of child emotional problems ($r = .160$, $p<.05$), conduct problems ($r =.199$, $p<.05$), and peer problems ($r =.196$, $p<.05$) before the intervention. These preliminary findings support our hypothesis that dysfunctional parenting is related to maladaptive behavior in children. Additional regression analyses examining how changes in parenting style predict changes in child behavior problems will be presented and implications of these findings will be discussed.

438 8:30 am

The Role of Goodness of Fit on the Social Emotional Development of Children in Centers that Practice Continuity of Care

Rachel Crain, Child and Family Development (U)
Sascha Mitchell, Child and Family Development

This study is part of a larger study examining the effects of continuity of care on children's overall development. In this study, continuity of care refers to the policy of assigning a primary infant care teacher to an infant at the time of enrollment in a child care program and continuing this relationship until the child is three (or five) years old or leaves the program. (Lally & Signer, 2003, p.1). The purpose of this study is to determine whether or not goodness of fit between a child and caregiver affects the child's social emotional development for children in centers that practice continuity of care. There is a goodness of fit when the person's temperament and other characteristics such as motivation and levels of intellectual and other abilities, are adequate to master the successive demands, expectations, and opportunities of the environment. (Chess & Thomas, 1991, p. 16). This research can help child care centers determine whether or not screening or placement tests, based on child temperament and teaching styles, would promote optimal development in the children. The Arnett Caregiver Interaction Scale will be used in direct observation of the quality of the interaction between the child and caregiver. Goodness of fit will be measured using the Child Temperament Profiler.

439 8:45 am

Relationship between Quality of Childcare and Problem Behavior in Children

Katelyn Yarnold, Psychology (U)
Sascha Mitchell, Child and Family Development

The purpose of the study is to extend the research on high quality childcare and problem behavior in center-based childcare centers where continuity of care is practiced. By examining this relationship, more information can be provided regarding the importance that high quality childcare has on children's various behavioral problems, and may also further explain the benefits of center-based childcare. Prior research describes high quality care as "more responsive, stimulating, and well-structured," and found that children in these settings during preschool years showed fewer externalizing problem behaviors by mid-elementary school than their peers (Votruba-Drzal, Coley, Maldonado-Carreno, Li-Grining, & Chase-Lansdale, 2010). This study is part of a larger research project examining the long-term outcomes of Continuity of Care, the practice of examining the developmental outcomes of children who stay with the same caregiver for the first three years. 150 young children, their parents, and professional caregivers are participating in this study. The testing instruments used to show the relationship between high quality childcare and problem behavior are the Achenbach, the Ages & Stages Questionnaires-Social-Emotional, the Infant/Toddler Environment Rating Scale, and the Early Childhood Environment Rating Scale. It is hypothesized that children in continuity of care settings, receiving high quality childcare, will have fewer behavioral problems than those not participating in continuity of care. The results will further provide information on the link, if any, between the quality of center-based childcare and its effect on behavioral problems. This link will also shed light on the long-term effects that childcare has on children.

440 9:00 am

Relationship between Family Violence and Substance Use in College Students

Julia Vasquez, Psychology (U)
Elizabeth Cordero, Psychology (IVC)

On average, college students experience one traumatic event in their lives, with most traumas occurring between the ages of 16 and 20 years old (Frazier, 2009.) Lifetime exposure to family violence in particular has been associated with higher distress in college students (Frazier, 2009). Some college students cope with the aftermath of family violence by engaging in alcohol and marijuana use due to the availability of these substances. Use of alcohol and marijuana might result in further negative consequences for students exposed to family violence, such as academic and legal problems. The purpose of this study is to examine the frequency of alcohol and marijuana use between college students who are and are not exposed to family violence. It is hypothesized that college students who report exposure to family violence will also indicate engaging in more alcohol and marijuana use than will college students who report that they have not been exposed to family violence. This project will analyze a subset of data from a larger investigation of college students' mental health in Imperial Valley. The Imperial Valley is located in southeastern California along the Mexico and Arizona borders. Data collection is completed and data analyses will be completed

by February 2011. Participants are 410 college students from Imperial Valley College or the Imperial Valley campus of San Diego State University. Participants were given the Traumatic Life Events Questionnaire (Kubany et al., 2000) to assess their exposure and reaction to a list of traumas, including family violence. Participants also completed the Texas Christian University Drug Screen II (Knight, Simpson & Hiller, 2002) to assess frequency of alcohol and marijuana use. Multivariate analysis of variance (MANOVA) will be used to compare frequency of alcohol and marijuana use between participants who have or have not been exposed to family violence. Implications of this study pertain to informing prevention and intervention efforts related to college students' substance use. Limitations include correlational design (thus no causal inferences can be made) and problems associated with self-report of substance use and exposure to family violence. Future directions will be discussed.

Session D-6

Oral Presentation:

Communication Devices and Antennas
Saturday, March 5, 2011, 8:00 am
Location: Presidential Suite

441 8:00 am

Radio Frequency Identification (RFID) Reader Antenna for Ultra High Frequency (UHF) Worldwide Applications

Elias Mireles, Electrical Engineering (M)
Satish Sharma, Electrical and Computer Engineering

This work presents the investigations and design of a circularly polarized reader antenna for Radio Frequency Identification (RFID) applications in the entire Ultra High Frequency (UHF) (860-960 MHz) band designated for this technology. The proposed model consists of a microstrip patch with truncated corners and a cross slot which is suspended over a ground plane and fed by a quadrature 3 dB branchline coupler placed below the ground surface. Right as well as left handed circular polarizations can be achieved when feeding through alternate ports. Simulated and experimental results were conducted at the Antenna and Microwave Laboratory where a measured matching band of 840 to 1150 MHz (31.2%) was obtained as well as good circularly polarized radiation patterns showing wide 3 dB axial ratio beamwidth and fairly good (15dB) front-to-back ratio across the entire target band. Overall antenna dimensions are 225 x 250 x 12.8mm^3.

442 8:15 am

Design of a Balun-free UWB Modified Archimedean Spiral Antenna

Balamurugan Shanmugam, Electrical and Computer Engineering (M)
Satish Sharma, Electrical and Computer Engineering

A conventional planar two-arm balanced-mode Archimedean spiral antenna has impedance close to 170 (theoretically 188) and needs a balun to be fed with a 50 line. Baluns increase the feed complexity and also limits the operating bandwidth of the spiral antennas which are well known for their frequency independent characteristics and circular polarization. The proposed novel Archimedean spiral antenna achieves a simple feed without balun by maintaining the antenna input impedance close to 50 over 10:1 frequency band. It shows excellent impedance matching, higher peak gain and acceptable Axial Ratio (AR) over the operating frequencies compared to the conventional Archimedean spiral with the same aperture area. Resources in 'Antenna and Microwave Lab' (AML) are utilized for this research. Ansoft HFSS is used for simulations. The optimized design is fabricated using the LPKF milling machine, and scattering parameter is measured by the Anritsu 37269D Vector Network Analyzer (VNA). The circular polarized far-field radiation patterns are measured in anechoic chamber following the rotating linear technique. The optimized design has a simulated impedance bandwidth of 3-20 GHz (6.6:1 frequency band), AR bandwidth of 2-20 GHz (10:1 frequency band) and peak gain varying between 5-9.5 dBi in the 3-20 GHz band. A prototype antenna was fabricated on Rogers 5880 substrate and has dimensions of a 77 x 77 x 1.6 mm3. It has an impedance bandwidth of 1.75-13.6 GHz (7.7:1 frequency band), AR bandwidth of 2.2-16 GHz (7.27:1 frequency band) and Right Hand Circular Polarization (RHCP) at broadside. The usable bandwidth in which there is overlap between the impedance and axial ratio bandwidth is 2.2-13.6 GHz (6:1 frequency band). The measured peak gain varies between 4-8.5 dBi in this frequency range. The realized antenna is suited for UWB applications and 2D radio interferometry.

443 8:30 am

Robust MPEG-4 AAC Encoded Audio Transmission over Wireless Channels

Deepak Rawat, Electrical Engineering (M)
Sunil Kumar, Electrical and Computer Engineering

In the context of evolving multimedia applications – like digital broadcasting, storage, real time communication, Internet, or games – new demands for efficient and flexible representation of audiovisual content arise. High coding efficiency algorithms

are required to cope with the limited bandwidth of the Internet or in mobile communication. The rising demand for high definition multimedia is further augmented by the exponential growth of powerful Mobile devices such as Smartphone and Tablets thus the demand for Multimedia data over wireless is enormous. Also the online multimedia content is also growing in volumes every day and end user wants it to be accessible from every device whether it is HDTV at home or on a mobile device. In recent years, rapid advances in multimedia and wireless communication technology have resulted in a significant growth in the field of wireless multimedia communications but there are some challenges to provide High quality Multimedia (Audio /Video) content over error prone wireless channels. The physical bandwidth is limited and is considered as the most precious resource for a wireless carrier. Multimedia content is always transmitted using state of the art compression algorithms such as MPEG-4 Audio in case of audio data transmission. These techniques significantly lowers the transmitted data rate by adding more information in every bit thus error in a single bit sometimes results in significant degradation of perceived audio quality and sometimes complete crash of the decoder. In this work, a robust transmission technique is developed with available error protection schemes which are used to protect compressed audio data against channel errors along with adaptive modulation technique to meet the bandwidth constraint. Error correction codes adds redundant bits thus lowering the actual information bits, which results in lower perceived audio quality at fixed transmission bitrate with single modulation. It is demonstrated that as compared to single or non-adaptive modulation high quality audio can be transmitted the help of adaptive modulation techniques along with well established error protection schemes such as Forward Error Correcting codes (FEC) .The adaptive modulation scheme is selected and FEC codes are applied after classifying audio data into error sensitivity categories, while satisfying the bandwidth requirement.

444 8:45 am

Very Compact Multiband Antenna System for 4G LTE USB Devices with MIMO Implementation

Anup Kulkarni, Electrical and Computer Engineering (M)
Satish Sharma, Electrical Engineering

With the development in high speed wireless network there is huge demand for higher bandwidth using the same frequency allocation for different wireless standards. A significant size reduction in the mobile handheld devices asks for antenna which can fit internally and have better performance. To meet this need, a very compact multiband internal antenna system is proposed for future 4G Long term evolution (LTE) USB size devices. LTE band 3 (1710-1880 MHz) and LTE band (2500 – 2700 MHz) are covered based on the S11 = -6dB matching criterion. The printed inverted F- antenna (PIFA) type antenna is used because of it low profile nature. As the antenna structureis on a 1.6mm thick FR4 substrate, it is low cost. An omni directional radiation pattern with radiation efficiency better than 65 % in lower band and 80% in the upper band is observed. To achieve higher data rates and to take advantage of the multipath fading wireless environment, a Multiple-Input-Multiple-Output (MIMO) configuration of this antenna is also investigated. The MIMO configuration has an envelope correlation (χ) value of less than 0.5 which meets the required industry standards. The proposed antenna is fabricated and tested at Antenna and Microwave Lab (AML) and good agreement in measured and simulated results is observed. Thus an antenna candidate is developed which can fulfill the 4G next generation wireless industry demands.

445 9:00 am

A Wideband Aperture-Coupled Pentagon Shape Dielectric Resonator Antenna

Manveer Brar, Electrical and Computer Engineering (M)
Satish Sharma, Electrical and Computer Engineering

A wideband aperture-coupled pentagon shape dielectric resonator antenna (DRA) is studied on a finite size ground plane of 55mmX75mm. The ceramic material (χ=9.2, tan χ= 0.0022) for DRA and Rogers R04003 (χ=3.55) material for feed substrate has been used. The pentagon shape DRA has height of 10mm and an edge length of 27.8mm. The antenna shows wideband impedance matching of 42% from 2.55 GHz to 3.9GHz which includes communication bands like WiMAX (2.5GHz to 2.7GHz, and 3.3GHz to 3.8GHz). It offers acceptable directional patterns with an average gain of 3dBi over the band. A parametric study has been performed with different dimensions of the DRA geometry, ground plane, slot length and width, stub length and width and also the DRA position to arrive at the final design parameters. A final optimized design has been fabricated and measured. The purposed antenna is fabricated and tested in Antenna and Microwave lab (AML). Ansoft HFSS version 12 is used for the full wave simulations. The optimized design is fabricated using the LPKF milling machine, and the scattering parameter is measured by the Anritsu 37269D Vector Network Analyzer (VNA). The far-field radiation patterns are measured in the anechoic chamber. The measured and simulated impedance match and radiation pattern results show good agreement.

446 9:15 am

Two Channel TI-ADC for Communication Signals

Xiaofei Chen, Electrical Engineering (D)
Fredric Harris, Electrical Engineering

Time-interleaved analog-to-digital converters (TI-ADCs) offer a significant increase in the available sample rate of ADCs. Their performance is degraded by timing and gain mismatches. Most of the literature on mismatch estimation and correction in TI-ADCs

is concentrated on low-pass converting baseband signals. This paper provides a semi-blind solution, for both timing and gain mismatches correction, in the digital data section of a two-channel TI-ADC for band-pass input signals. This is a realistic communications system scenario. Modern system designs lean towards having the ADC interface with intermediate frequency (IF) signal in the analog section of a digital receiver rather than the DC centered, analog down converted, in-phase and quadrature pair.

447 9:30 am

Investigations on a Novel Folded Ring Resonator Antenna with Multiband Characteristics

Nathan Labadie, Electrical Engineering (D)
Satish Sharma, Electrical and Computer Engineering

A novel loop antenna based on the volumetric folded ring resonator (FRR) structure is proposed. It is shown that the FRR antenna can be represented by an equivalent circuit model for approximate analysis with sufficient accuracy. Two practical implementations are presented: The first version is a single FRR antenna embedded in a dielectric substrate and excited by a 50 coaxial feed line. Parametric studies of the structural parameters are presented showing three resonances that can be impedance matched. In the second implementation, the FRR is embedded in a slotted ground plane for improved matching and radiation performance. Two bands, one at 3.6 GHz and another between 4.75 GHz to 5.8 GHz, are matched to better than -10 dB and maintain a constant 2.5 dBi gain with > 90% radiation efficiency. The simulated reflection coefficient and gain radiation patterns agree well with measurements. We envision that such a compact multiband antenna could be used in a mobile device application or MIMO antenna array. Some initial multi-antenna simulated results will also be presented.

Session D-7
Oral Presentation:
Body Movement, Health, and Fitness
Saturday, March 5, 2011, 8:00 am
Location: Quetzalcoatl A

448 8:00 am

The Complex Movement of Tahitian Dance: Part 1 Hip Motion and Associated Leg Muscle Involvement

Tracy Bach, Biology (U)
Robert Pozos, Biology

Electromyography system (EMG) and video recordings measured the electrical signals of the leg muscles and tracked the motion of the hips of Tahitian dancers. Electrodes were placed on the Femoris Rectus Muscle (FRM), Soleus Muscle (SM), Semitendinosus Muscle (STM), and Tibialis Anterior Muscle (TAM), along with markers placed on the hips. Three experienced Tahitian dancers and two controls performed in ten seconds of slow and fast speed intervals. The results indicate the following: 1) Anterior posterior movement of the Tahitian dancers, is 0.7 Hz and 4Hz, and in the control 1 Hz and 3 Hz 2) EMG amplitude of STM on the dominant side of a dancer and a control is larger than the contralateral side in both conditions 3) EMGs of FRM, SM, STM, and TAM in dancers were consisting firing where as in the control it was more sporadic. The Tahitian dancers utilize their leg muscles more than the controls as they move their hips at one and four hertz and use their dominate STM.

449 8:15 am

Effects of Foot Position during Squatting on the Quadriceps Femoris: An Electromyographic Study

Nicholas Murray, Kinesiology (M)
Fred Kolkhorst, Exercise and Nutritional Sciences

Weightlifters have commonly believed that changing joint position can alter specific muscle activation. Changing joint position has been shown in previous literature to alter the line of pull of the muscles and thus manipulate the natural length tension relationship. Length tension relationship is the ability of a certain muscle to develop tension in relation to its length. The magnitude of force produced by a muscle is highly dependent upon the length of the muscle. The purpose of this study to determine the effect of foot positioning on muscle activation of the superficial quadriceps as measured by electromyography (EMG) during a functional squatting movement in asymptomatic healthy male and female adults. It is hypothesized that changing the foot position during a functional weight bearing squat motion will influence specific muscle activation of the superficial quadriceps per foot condition, resulting in: Internally rotated position will demonstrate higher muscle activation in the VLO, externally rotated position will demonstrate higher muscle activation in the VMO, and a staggered foot position will demonstrate higher muscle activation in the RF. Additionally, the staggered foot position will demonstrate the highest muscle activation overall. Twenty physically active asymptomatic adults (7 females and 13 males; Mean ± SD, 23.45±2.94 years; range = 20-33 years) were included in the study while four different foot positions (Neutral, internally rotated, externally rotated, staggered) were assessed and three different muscles (RF, VMO, VLO) were measured via surface EMG. Six one-way RM ANOVAs were conducted to examine the peak and average electrical activity in each muscle across each condition with an alpha level of 0.05 set a priori. Across all foot positions only the staggered foot position determined statistical significance when compared to all other foot positions for each muscle group. From the results, it can be suggested that altering the foot position during a partial

weight squat on a Power Tower has little to no effect on the EMG amplitudes of the quadriceps. However, more research is needed to examine the concentric and eccentric phases of the squatting motion separately with the addition of full weight bearing squats.

450 8:30 am

Influence of Infra-patellar and Supra-patellar Straps on Quadriceps EMG Activity and Onset Timing during the Body-weight Squat

Rachel Straub, Exercise Physiology and Nutrition (M)
Denise O'Rand, Exercise and Nutritional Sciences

The use of knee braces for the treatment of patellofemoral pain syndrome (PFPS) is widely documented. Simplified braces include only single straps. The effectiveness of single straps, namely an infra-patellar strap or a supra-patellar strap, on PFPS has not yet been proven. It was hypothesized that strapping above the patella would alter the muscle mechanics during a squat activity, and that strapping below the patella would alter the timing of the muscle activity. Quadriceps muscle activity and onset timing parameters were measured with surface electromyography (EMG) during a functional task (body- weight squat) in 19 healthy subjects during four different knee-strapping conditions (infra-patellar, supra-patellar, infra-patellar and supra-patellar, none). No differences in normalized mean EMG activity or peak EMG activity in any part of the quadriceps were found. Significant differences in the vastus lateralis (VL) onset timing among the strapping conditions were found ($p<0.03$). The onset timing of the VL was significantly delayed when using an infra-patellar strap ($p<0.02$) or both straps ($p<0.02$), and marginally delayed when using a supra-patellar strap ($p<0.09$). No differences in the vastus medialis obique (VMO) onset timing or VMO-VL onset timing difference were found among the strapping conditions, although a possible trend was noted with the supra-patellar strap condition. This study provides the first insight into the use of individual and combined knee straps to alter quadriceps muscle activity and onset timing for potential management of PFPS, by evaluating their impact using EMG. In regards to muscle action, our findings were insufficient to support the use of straps to alter muscle activity. In regards to muscle onset timing, our results provide novel evidence that the use of an infra-patellar strap, either alone or in combination with a supra-patellar strap, may improve quadriceps onset timing imbalances by delaying VL onset. Using only a supra-patellar strap, although only marginally delaying VL onset, may have an impact on the VMO-VL onset timing difference. The combined application of both straps may be ideal, but further research is needed, particularly in symptomatic subjects.

451 8:45 am

A System for Observing Fitness Instruction Time in Group-Exercise Classes (SOFIT-X)

Megan Duesterhaus, Exercise and Nutritional Sciences (M)
Simon Marshall, Exercise and Nutritional Sciences

The System for Observing Fitness Instruction Time (SOFIT; McKenzie, Sallis, & Nader, 1992) is a direct observation tool that was developed to assess class context and instructor behavior variables associated with physical activity levels during physical education classes. The purpose of this study is to modify the tool for use in adult group-exercise classes (SOFIT-X) and provide evidence of score validity and reliability. Methods. Three sequential studies were conducted to modify, validate and assess the reliability of the SOFIT-X. Study 1 employed a nominal group technique with subject-matter experts to modify and validate the content of the SOFIT-X. Study 2 used an iterative cycle of pilot testing/measure revision using behavioral assessment experts to establish criterion validity across seven types of group-exercise classes. In Study 3, two trained observers collected SOFIT-X data on 15 live group-exercise classes to assess ecological validity and inter-rater reliability. Results. Seven subject-matter experts established the content validity of four coding categories, 22 sub codes and definitions, and 23 instructor behavior criteria to create a pilot version of the SOFIT-X. Three trained observers then established criterion-validated codes for two video segments (109 min; 31 min) of group-exercise classes; interobserver agreement was 97%, 100%, 99%, and 100% on posture, intensity, class context, and instructor behavior among any two observers. Lastly, data collected on live group-exercise classes with the SOFIT-X indicate that posture, intensity level, class context, and instructor behavior can all be feasibly coded in real-time. Reliability data collected on nine of these classes revealed interobserver agreement of 91%, 76%, 92%, and 86% on posture, intensity, class context, and instructor behavior, respectively. Conclusions. Results of this study support the SOFIT-X as a content- and criterion-valid measure that can be used to reliably code participant posture, class context and instructor behavior in adult group-exercise classes. Further validation evidence is recommended for coding exercise intensity. Data from a small sample of classes also indicate the SOFIT-X has high face validity, and potential trends in posture, intensity, context, and instructor behavior across group-exercise format categories may exist.

452 9:00 am

Heavy Exercise Does Not Alter Specific Ventilation Heterogeneity In Trained Athletes

Vincent Tedjasaputra, Exercise Physiology (M)
Michael Buono, Exercise and Nutritional Sciences

Introduction: Ventilation-perfusion (VA/Q) inequality increases with exercise, and is suggested to result from interstitial edema compressing small airways and blood vessels. Forty-five min of heavy exercise increases the spatial heterogeneity of pulmonary perfusion in athletes. We hypothesized that specific ventilation (SV, ratio of volume fresh air entering lung region to regional end-expiratory volume) heterogeneity would similarly increase, consistent with airway compression secondary to the development of exercise-induced interstitial pulmonary edema. Methods: Trained subjects (4 men, 2 women VO_{2max}=58±3mL/kg/min) cycled 45min at ventilatory threshold (270±48W). Arterial blood gases were measured at rest (R), exercise (E), and recovery (REC) to calculate alveolar-arterial O_2 Difference (A-aDO_2). O_2 enhanced Magnetic Resonance Imaging was used to quantify SV before and after exercise (40 and 90min post) in a sagittal slice of the supine right lung (resolution: 1.6x1.6x15mm). SV heterogeneity was assessed by relative dispersion (RD=Standard Deviation/mean). Results: Partial pressure of O2 decreased from 107±3torr R, to 89±8torr, p<0.001 during E, returning to 100±7torr at REC. A-aDO2 increased from 6.0±3.6torr to 23.6±5.9torr during E , p<0.001 and was 7.3±4.3torr at REC. No significant changes in mean SV were seen with exercise: before (0.343±0.07), post 40 min (0.325±0.03), post 90 min (0.308±0.05),p=0.108. Similarly there was no change in RD: before (0.80±0.17), post 40 (0.85±0.15), post 90 min (0.80±0.09) p=0.404. Conclusion: Combined with the previously documented increase in perfusion heterogeneity, the unchanged mean SV or RD of SV post-exercise suggests that increased VA/Q inequality with exercise is due to changes in the distribution of perfusion not matched by ventilation. Possibly, airways are more resistant than blood vessels to the development of changes, or resolve them more quickly. Alternately, exercise-induced bronchodilation may mitigate the effect of peribronchial cuffing and compression caused by fluid efflux.
Funding provided by NIH HL081171, PI Hopkins

453 9:15 am

Coefficient of Variation of Various Thermoregulatory Responses to Exercise in the Heat

Laura Palombo, Exercise Physiology (M)
Michael Buono, Exercise and Nutritional Sciences

Thermoregulation is an area of heightened interest, as more individuals succumb to heat related injuries. The physiological mechanism of what causes an individual to be more prone to a heat injury on any given day is still unknown, as is the variability of the individual responses to a heat stress. The purpose of this study was to determine the day to day intra-individual variability in thermoregulatory responses to exercise in the heat. 10 subjects (5 women; 24.6 ± 3.4 years, 61.8± 7.5 kg, 1.69 ±0.04 m, 46.4± 5.35 mL·kg-1·min-1 and 5 men; 25.4 ±2.7 years, 74.5 ±6.02 kg, 1.73±0.04 m, 51.56±5.26 mL·kg-1·min-1) completed 4 exercise heat (35°C, 50% rh) trials, 100 minutes of walking at 40% VO_{2max} separated by at least 30 days. Thermoregulatory variables such as heart rate, core temperature, whole body sweat rate, forearm skin blood flow, and mean skin temperature were recorded pre and post exercise as well as every 10 minutes during exercise. There were no significant differences between trials for any of the thermoregulatory variables (p >0.05), however the coefficient of variation for whole body sweat rate as well as skin blood flow were high, CV= 34.64, 41.88 respectively. These findings implicate a need for a more sensitive, non-invasive measurement of skin blood flow as well as whole body sweat rate, or a mechanistic study to determine what causes these physiological variations.

454 9:30 am

Alteration of Gait Cycle Parameters in Overweight and Obese Teenagers

Yelizaveta Manuel, Bioengineering (M)
Karen May-Newman, Mechanical Engineering

Previous studies have shown that in adults, increased body mass is strongly correlated with alteration in biomechanical movement parameters during the gait cycle. We hypothesize that obesity in teenagers (age 13-19) produces changes in force (such as ground reaction forces, weight acceptance rate, push-off rate), center of pressure (such as angle of progression, stride length), and temporal (such as cadence, single/double stance/support time) parameters during the gait cycle. Altered movement parameters are associated with increased joint inflammation, altered joint anatomy and loading, increased risk of fractures, and altered bone metabolism as a result of increased bone stress. These conditions, if allowed to persist, can ultimately lead to destabilization of other organ systems and (partial) immobilization. The purpose of the study is to investigate the effects of body weight on biomechanical movement parameters mentioned above. The subjects of the study are teenagers from 13-19 years old. The planned analysis is a comparison of running and walking measurements (such as gait, cadence, etc) on three groups of teenagers: normal weight, obese, and severely obese (as determined by their BMI indices). BMI ranges for three groups are: normal weight: 18.5-24.9; overweight: 25-29.9; and obese: 30+. Kistler Gaitway treadmill (model 9810A) with two embedded force plates under the belt is used to record gait data and transmit it to the linked software on a computer Results of this study thus far are reported for 10 normal weight, 5 overweight, and 9 obese teenagers

(males and females). The data show that force parameters are significantly higher in obese teenagers: (weight acceptance rate by mean +48.6% from normal, peak force by +45.7%, push off rate by + 40.1%). Center of pressure location distribution does not seem to be different between normal and overweight/obese individuals. However, base of support (plantar contact) is significantly higher in obese teenagers as well (+23.5%). Overall, overweight and obese teenagers seem to display greater absolute ground reaction force, stance phase joint moments, and stride length. Since alteration of these parameters is strongly correlated with joint pathology, overweight/obese teenagers might be at higher risk of joint disease as well.

Session D-8
Oral Presentation: Terrestrial Ecology
Saturday, March 5, 2011, 8:00 am
Location: Quetzalcoatl B

455 8:00 am

Search for Ultrathin Undescribed Archaea

Harmony Saunders, Biology (U)
Richard Bizzoco , Biology

Organisms obtained from a sulphur steam cave and an iron vent at Lassen Volcanic National Park, previously identified as Archaea through flourescence *in situ* hybridization (FISH), have been cultured at 85°C in an attempt to corroborate the proposition that they are ultrathin archaea and new undescribed organisms. These extremophiles have successfully been cultured, but not in isolated colonies due to the difficulties associated with duplicating the steam-based environmental growth conditions, and development of a suitable culturing technique; there is no previous work from steam fumarolic sites of this nature.

456 8:15 am

Embryological Correlates of Dormancy in the Fairy Shrimp Branchinecta lindahli

Joseph Ochaba, Biology (U)
Andrew Bohonak, Biology

Temporary wetlands are highly variable and unpredictable environments in terms of the onset and length of alternating wet and dry periods. A considerable body of theory has addressed the evolution of “bet hedging” strategies for hatching and development in these environments. However, the specific developmental mechanisms that underlie these strategies are for the most part unknown. Freshwater crustaceans in temporary wetlands have evolved encysted embryos that can persist through unfavorable environmental phases (such as dry periods) in an arrested developmental state. Previous work on the fairy shrimp Branchinecta lindahli and similar species has shown that a late-blastula stage is reached 24-48 hours after exiting the maternal brood chamber, and may remain in that stage until favorable hatching conditions are met (Drewes 2005, Weeks 2002). After inundation, the pools that this species are found in frequently dry out before cysts can complete a life cycle (ca. 7-14 days). Thus, the ability to again arrest development after inundation would be adaptive. We simulated brief ponding periods by wetting B. lindahli cysts, isolating them from environmental sediment samples, and drying them within two hours. After eight weeks, cysts were reinundated, and their developmental stage was assayed daily for nine days using DAPI (4’,6-diamidino-2-phenylindole) fluorescent staining techniques. We found that embryos had moved from the late-blastula to the late-gastrula stage during the imposed eight-week dormancy period. Cell differentiation progressed through the nine-day trial. This study verifies that early embryological development in fairy shrimp allows for dormancy at multiple developmental checkpoints, should environmental conditions become unsuitable. Because this takes place inside a cyst shell, the embryo remains protected from desiccation and (to some extent) physical damage. We also found evidence that the protective tertiary membrane inside the cyst ruptures after day five, affecting 75% of embryos by day nine. Breaks in the tertiary membrane prior to the opening of the outer cyst shell suggest that some of the variance surrounding estimates of cyst viability may be due to experimental artifacts.

457 8:30 am

The Rattlesnake Strike

Sean Tangco, Biology (U)
Rulon Clark, Biology

Venomous snakes rely on an extremely quick and kinematically complex strike to subdue and kill their prey. Although this strike has been studied in great detail in the laboratory, with captive snakes, there have been no systematic recordings of strike behavior from free ranging snakes attacking their natural prey. We used modified surveillance equipment to record strike behaviors of several free-ranging rattlesnakes, including *Crotalus horridus*, *Crotalus oreganus*, *Crotalus ruber*, and *Crotalus scutulatus*. We analyzed digital recordings and quantified a series of variables associated with both successful and unsuccessful strikes. Successful strikes were associated with more proximal prey, and with prey that had already moved past the anteroposterior axis of the snake as it waited in ambush. Prey that were more distal upon the initiation of a strike were often able to move out of the way of the snake, resulting in unsuccessful strike attempts. Unsuccessful strike attempts also relate to prey vigilance enabling prey to

dodge occurring strikes. Several factors show that strike attempts under field conditions are more complex and variable in comparison with observations from captive animals in the laboratory.

458 8:45 am

Phylogenetic Relationships, Species Limits, and Historical Biogeography of the Emoia cyanura Species Group (Squamata: Scincidae)

Elaine Klein, Evolutionary Biology (M)
Tod Reeder, Biology

The geographic distribution of terrestrial fauna on oceanic islands has long intrigued evolutionary biologists, and remains a salient topic in the field, especially for the understudied islands of the Pacific region. These landmasses are geologically young as well as geographically isolated from mainland sources of biota, yet contain an incredible array of biological diversity. A predominant hypothesis for how Pacific island organisms have obtained their current distribution is that of a stepping stone model, in which flora and fauna originated from Papua New Guinea in the western Pacific and gradually dispersed eastward. Under this mainland-to-island colonization hypothesis, biodiversity results from *in-situ* diversification or multiple colonization events. This study utilizes DNA sequence data from lizards within the *Emoia cyanura* species group of skinks, two species of which have a widespread distribution throughout the Pacific, to elucidate patterns of relatedness, test the stepping stone hypothesis of dispersal, and revise the current taxonomy of the group. A preliminary dataset was derived from eighteen individuals (both collected by the author and loaned from museum collections) representing four species using the following methods: DNA was extracted from tissue samples, four gene regions (BZW1, SELT, PRLR, and ND2) were amplified from the DNA using standard PCR techniques, and the gene regions were then sequenced in both forward and reverse directions to obtain the maximum amount of clean sequence data. These sequences were subsequently analyzed using traditional (Maximum Likelihood, Bayesian Inference) as well as innovative (Coalescent Species Tree) phylogenetic methods to estimate relationships within the *E. cyanura* species group. The estimated phylogeny generally supports previous work on the group, but with some intraspecific discordance for the species with widespread distributions. The phylogenetic tree topology lends initial support for the pattern expected from the stepping stone hypothesis, and also points towards the existence of new, undefined species within the group. Future work will include expanding the sample size to 100 individuals, using biogeographic software to reconstruct historical routes of dispersal from DNA sequence data, and employing population genetics methods to explicitly test species limits hypotheses.

459 9:00 am

Measuring the Behavioral Effects of Artificial Hibernation in a Captive Population of Endangered Southern Mountain Yellow-Legged Frog (Rana muscosa).

Frank Santana, Ecology (M)
Rulon Clark, Biology

The southern California mountain yellow-legged frog (*Rana muscosa*) is a critically endangered species whose adult population in the wild is estimated to be less than 150 individuals. The San Diego Zoo Institute for Conservation Research has housed a captive population of Rana muscosa since 2006 in collaboration with our partners at the USGS, California Department of Fish and Game, US Forest Service, and US Fish and Wildlife Service. One of the goals of the southern California mountain yellow-legged frog conservation program is to develop captive a captive breeding protocol for the species. During the first breeding season in 2009 only a single clutch of eggs was produced. Because *Rana muscosa* is a high elevation species that undergoes a winter hibernation, we decided to test the effect of an artificial hibernation on captive reproductive success during the 2010 breeding season. We used an experimental approach to determine the benefit of hibernation on reproduction. Half of our captive frogs were hibernated at 4 degrees Celsius for a period of 60 days. All other frogs were maintained at 13 degrees Celsius during the same period. Following the hibernation period frogs were paired together for breeding according to their hibernation treatment with a total of 4 treatments. These treatments included: both frogs hibernated, neither frog hibernated, only male hibernated, and only female hibernated. Reproductive interest was measured by recording three different breeding behaviors for males and four behaviors for females. Reproductive behavior was compared using a Kruskal-Wallis test and our results demonstrate that hibernation had a significant effect on both male and female reproductive behaviors among the treatments.

460 9:15 am

Rodent Seed Preference in Coastal Sage Scrub Communities: New Technologies, New Insights

Alissa Brown, Ecology (M)
Douglas Deutschman, Biology

Many common rodents in southern California shrublands are granivores (seed eaters) and can affect the distribution of seeds after seed dispersal through selective seed predation. Rodent seed preferences are hypothesized to affect plant community composition, as rodents tend to prefer exotic grass seeds over native shrub seeds. Braswell (2008) conducted an experiment at Rancho Jamul Ecological Reserve (RJER; San Diego County, California) to assess selective seed predation by the granivores in a coastal

sage scrub community. Braswell presented native and non-native seed mixtures in partitioned petri dishes at four stations across sixteen sites at RJER. In conjunction with the seed choice experiment, she live trapped small mammals in order to estimate the densities of small mammals at each site. In Braswell's analysis, seed predation was correlated with small mammal densities. This analysis assumes that all members of the small mammal community remove seeds equally. I am re-testing the hypothesis that small mammals are selective seed predators using direct observation. I present native and non-native seed mixtures following Braswell's protocols. I record all seed removal using a custom built, battery powered, infrared digital camera and digital video recorder system. The objectives of this study are: (1) Can direct observation of granivory provide new insight into the role granivores play in this system? (2) Are granivores selective in seed choice (native vs. exotic)? and (3) if so, does selectivity vary with animal guild (species, genus)? Preliminary results show that direct observation provides much more detailed and nuanced information on seed tray visitation and preferential seed predation. My field cameras also allow me to quantify which species are removing seeds, allowing me to correctly understand causality. As technology improves, it is important to consider new and/or alternative methods that can improve our understanding of ecological interactions through direct, detailed observation.

Session D-9
Oral Presentation: Biology
Saturday, March 5, 2011, 10:00 am
Location: Backdoor

461 10:00 am

Sca-1 Knockout Impairs Myocardial and Cardiac Progenitor Cell Function

Brandi Bailey, Biology (D)
Mark Sussman, Biology

Objective: The impact of Sca-1 deletion upon functional properties of cardiac progenitor cells and myocardial performance are determined using a Sca-1 knock-out/Green Fluorescent Protein (GFP) knock-in reporter mouse (ScaKI). Rationale: To investigate the functional importance of the stem-cell marker, stem cell antigen 1 (Sca-1) in cardiac development and repair. Methods and Results: GFP expressed by the endogenous Sca-1 promoter is present primarily on progenitor cells and in vascular structures in mature mice. Genetic deletion of Sca-1 results in early-onset cardiac contractile deficiency as determined by echocardiography and hemodynamics. Hearts of ScaKI mice are hypertrohic and exhibit increased myocyte cross-sectional area. ScaKI mice show compromised capacity to survive myocardial infarction relative to normal control subjects. Resident cardiac progenitor cells in ScaKI mice do not respond to pathological damage *in vivo*, consistent with observations of impaired growth and survival of ScaKI CPCs *in vitro*. The molecular basis of the defect in ScaKI CPCs may be due to diminished canonical Wnt signaling pathway activated gene expression. Conclusions: Genetic deletion of Sca-1 causes primary cardiac defects in myocardial contractility and repair. These defects are likely due to impairment of resident cardiac progenitor cells possibly through altered canonical Wnt signaling.

462 10:15 am

Shelterin Complex Influenced by Pim-1 Preserves Telomere Length in Cardiac Progenitor Cells

Travis Cottage, Biology (D)
Mark Sussman, Biology

Age-associated cardiac progenitor cell (CPC) senescence stems form oxidative stress and repeated cellular divisions. Telomeres located at the distal ends of chromosomes consist of nucleotide repeats that function to protect functional DNA from instability. Telomere shortening has been implicated in the pathogenesis of heart disease associated with myocardial aging. Telomeres are protected by the shelterin complex consisting of several telomere-associated proteins (TRF1, TRF2, POT1, TIN2, and PTOP1) that collectively regulate telomerase (TERT) access to the telomere. Here we find telomere preservation consistent with a young phenotype in CPCs results from activation of the cardioprotective kinase known as Pim-1. CPCs lentivirally engineered to stably overexpress Pim-1 (CPCeP) have significantly longer telomeres compared to GFP engineered CPCs (1.59 fold, $p<0.05$) when analyzed by QFISH. Analysis of telomere related proteins reveal an increase in TRF1, TRF2, POT1, Tankyrase ½, and Ku86 (1.4, 2.6, 3.11, 1.82. 1.41, and 2.52 fold, respectively), while PTOP, PARP, and TERT levels are reduced dramatically (3.32, 5.52, and 2.75 fold respectively). Nuclear TRF1, TRF2, PTOP, PINX1, and Tankyrase 1/2 are diminished (2.03, 2.4, 2.42, 7.14, 1.74, and 1.86 fold, respectively) while proteins associated with protecting the telomere from attrition Ku86 and DNApK are significantly up-regulated in the nucleus (2.3 and 2.9 fold) upon subcellular fractionation and immunocytochemistry analysis. Cytoplasmic TRF1, TRF2, and Fbx4 a TRF1 specific ubiquitin ligase were significantly upregulated (1.8, 1.24, and 2.67 fold, respectively), suggesting proteins known to antagonize telomere lengthening are exiting the nucleus. Interestingly, nuclear TERT protein is more abundant in CPCeP fractions (1.73 fold), and was found to have enhanced activity (1.46 fold). Additionally, CPCePs maintained telomere length (2.03 fold, $p<0.01$), possessed increased TERT activity (1.36 fold), and were resistant to caspase 8 cleavage in the presence

of anthracycline induced oxidative stress. Pim-1 was found to directly interact with TERT enhancing its activation and preventing telomere attrition. These findings demonstrate the unique ability of Pim-1 kinase to modify the shelterin complex in order to preserve telomere length and represent a novel mechanism to antagonize age-associated senescence and extend the replicative lifespan of CPCs.

463 10:30 am

Molecular Analysis of Recombinant Coxsackievirus Instability Over Time Suggests Chronic/Sporadic Viral Replication During Persistent Infection in the Heart

Scott Robinson, Biology (D)
Ralph Feuer, Biology

Coxsackievirus B3 (CVB3) infection in the human host may lead to acute and chronic myocarditis. Patients suffering from chronic myocarditis and an ongoing persistent CVB3 infection may eventually develop dilated cardiomyopathy, a condition underlying nearly half of all heart transplants. It remains unclear whether CVB3 persistence in the host is distinguished by chronic / sporadic viral replication or viral latency, an important consideration in predicting the effectiveness of antiviral therapy. We utilized the inherent instability of our recombinant coxsackievirus expressing the enhanced green fluorescent protein (eGFP-CVB3) to determine whether virus persists in the heart through chronic / sporadic viral replication, or through viral latency. eGFP-CVB3 expresses eGFP up to passage five in HeLa cells at MOI = 0.1, and up to passage fourteen at MOI = 10, during which the foreign insert is gradually deleted from the viral population in a reproducible manner. The stability of the eGFP insert within our recombinant virus was evaluated over time by RT-PCR, or by plaque assay expression, using two contrasting mouse models: BALB/c mice which harbor viral RNA in the heart in the absence of infectious virus; and B cell knockout (BcKO) mice which support a chronic infection due to the lack of a neutralizing antibody response. In mice given a low viral inoculum (105 pfu; intra-peritoneally - ip), molecular analysis of the eGFP-CVB3 genome revealed a stepwise deletion pattern of the eGFP insert over time in both the pancreas and heart, although accelerated deletions occurred in BALB/c mice. The accelerated loss of the eGFP insert in BALB/c mice may reflect the requirement of B cells for efficient virus spread during acute infection. In mice given a high viral inoculum (107 pfu; ip), the deletion kinetics of the eGFP insert was delayed in BALB/c mice, reflecting the results observed in high MOI HeLa cell infections. Intriguingly, the eventual loss of the eGFP insert was observed in the heart of BALB/c mice at day 90 post-infection, suggesting chronic / sporadic viral replication during CVB3 persistence. These studies suggest that antiviral treatment may be productive in patients suffering from chronic myocarditis associated with CVB3 persistence.

464 10:45 am

Natural Selection for Attenuated Coxsackievirus B3 Variants in Persistently Infected Neural Progenitor and Stem Cell (NPSC) Cultures

Ross Rhoades, Biology (D)
Ralph Feuer, Biology

Coxsackievirus B3 (CVB3) infection frequently targets the central nervous system (CNS) in newborn infants causing serious disease, such as meningitis and encephalitis. We previously described the ability of CVB3 to target neural stem cells, persist in the murine CNS, and cause chronic immunopathology in our neonatal mouse model. Utilizing a recombinant coxsackievirus expressing eGFP (eGFP-CVB3), we demonstrated that murine neural progenitor and stem cell (NPSC) cultures were highly susceptible to infection and eventually established a carrier-state infection. These results suggest that neural stem cells within the CNS might support a persistent CVB3 infection. We examined viral protein levels and viral titers over time in NPSCs infected with eGFP-CVB3. Infected NPSCs induced interferon-χ supported robust cycles of cell proliferation and death, and expressed detectable levels of viral protein for over 50 days. Viral titers and viral plaque sizes initially increased and then decreased over time, suggesting that strong selection pressures in these dynamic stem cell cultures contributed initially to the generation of a highly virulent strain identified at day 6 post-infection (PI), followed eventually by attenuated viral variants observed at day 14 PI and beyond. Complete viral genomes isolated from infected NPSC cultures at day 6, 27, and 48 PI were sequenced in order to identify potential nucleotide mutations contributing to eGFP-CVB3 virulence or attenuation. Numerous nucleotide mutations were identified in the viral genome within the non-coding and coding regions for all time points analyzed, as compared to the sequence of our original viral stock. Also, unique nucleotide mutations were identified for the day 6 viral isolate, suggesting these mutations may be responsible for the increase in virulence observed at this early time point. Also, fixed nucleotide mutations were observed over time for all viral isolates, and some mutations identified specifically

in day 27 and day 48 viral isolates may be responsible for viral attenuation. We expect that more detailed investigation of these nucleotide mutations resulting from passage of eGFP-CVB3 in NPSCs may reveal critical changes in the viral genome contributing to viral persistence and eventual chronic disease in the CNS.

465 11:00 am

Differential Neural Stem Cell Tropism and Host Gene Expression Identified for Two Contrasting Neurotropic RNA Viruses Following Infection of the Neonatal CNS

Jenna Tabor-Godwin, Cell and Molecular Biology (D)
Ralph Feuer, Biology

Lymphocytic choriomeningitis virus (LCMV) and coxsackievirus B3 (CVB3) both may cause meningitis and encephalitis in the neonatal host. While cellular targets of infection and the subsequent immune response have been extensively studied for LCMV, less is known about CVB3 and its effects on the neonatal CNS. We hypothesize that CVB3 and LCMV might differentially activate the immune response and the host gene expression profile following infection. Utilizing our neonatal mouse model of infection for LCMV and CVB3, we observed high levels of viral protein expression localized within the subventricular zone (SVZ), a region of neurogenesis, for both viruses. In comparison to CVB3, LCMV infected a greater number of cells in the SVZ and exhibited broader stem cell tropism. In contrast, CVB3 preferentially targeted nestin+ neural stem cells. Microarray analysis indicated differential host gene expression changes between the two viruses. In particular, CVB3 induced high expression levels of the chemokine CCL12 at 12 hours post-infection (pi). In contrast, LCMV induced high levels of the chemokine CXCL10 at 24 hours pi. Additionally, transthyretin, a protein secreted in the cerebral spinal fluid (CSF) by the choroid plexus, was specifically downregulated following CVB3 infection. Whereas LCMV preferentially infected epithelial cells of the choroid plexus, CVB3 induced the infiltration of unique myeloid cells which became infected during their extravasation through the choroid plexus. We identified severe pathology specifically in the choroid plexus of CVB3 infected animals at 48 hours pi. Choroid plexus pathology was accompanied by a decrease in the level of carbonic anhydrase II, a critical enzyme responsible for the secretion of CSF. In contrast, no damage to the choroid plexus was observed for LCMV. These results demonstrate that CVB3 induced greater acute damage in the neonatal CNS, which may be expected given the cytolytic nature of the virus. Comparing these differing neurotropic RNA viruses may aid in understanding pathogen-specific immune responses and long-term effects of viral infection on CNS function.

466 11:15 am

A Planarian Ortholog of LIS1 is Required for Stem Cell Maintenance

Martis Cowles, Cell and Molecular Biology (D)
Ricardo Zayas, Biology

Planarians are free-living flatworms that are well known for their remarkable ability to replace all tissue types after injury or amputation, an ability that is conferred by a population of pluripotent stem cells (called neoblasts) that these animals maintain throughout their lives. Following amputation or injury, the neoblasts proliferate and migrate to the wound site where they form a structure known as the regeneration blastema. Within this structure, the stem cells stop dividing and differentiate to replace the missing tissues. Thus, planarians provide an excellent model to examine gene function in stem cell regulation and regeneration. As part of a screen to identify genes important for neural regeneration, we have characterized an ortholog of Lissencephally 1 (LIS1) in the planarian Schmidtea mediterranea (Smed-lis1). LIS1 is a highly conserved dynein-regulating protein that is required for cytoskeletal rearrangements and has been implicated in various critical processes such as mitotic spindle orientation and neuronal migration. In uninjured planarians, Smed-lis1 is primarily expressed in neoblasts and neurons. Following injury, strong Smed-lis1 expression can be detected in tissues near the wound site and within the blastema as early as one day post amputation. Knockdown of Smed-lis1 expression in intact or regenerating animals caused a rapid loss of neoblasts and resulted in death by lysis, suggesting Smed-lis1 is essential for stem cell self-renewal. We investigated this possibility by labeling cycling and mitotic cells in Smed-lis1 knockdown animals prior to the onset of neoblast depletion. Compared to control animals, we found that the number of cycling cells remained relatively constant, but there was a dramatic increase in mitotic cells. Our results suggest Smed-lis1 is likely playing a role in positioning the mitotic spindle or signaling that drives cell cycle progression, and provide additional evidence that the function of LIS1 in cell division is highly conserved in metazoans.

467 11:30 am

Computational Tools for the Analysis of Cardiocyte Functional Data

David Torres Barba, Computational Science (D)
Paul Paolini, Biology

We present the development of computational tools for handling and analyzing functional data of neonatal and adult cardiocytes. The motivation for our development is the need for simple and practical tools to study cardiocyte functional activities. Our methods can assist in the assessment and analysis of such data. We recently developed and published two computational frameworks

to comprehensively assess contractile responses of isolated neonatal and adult cardiocytes. These recent developments and our capability to acquire calcium transients, allow us to obtain functional data from the same cardiocyte almost simultaneously. This functional data can be collected and analyzed to characterize the effects of inotropic factors in neonatal and adult cardiocytes. The developed computational tools are capable of analyzing functional responses obtained from both contractility and calcium transient measurements. We have implemented a series of mathematical methods for the specific purpose of analyzing cardiocyte functional data and extracting important functional parameters. From contractility measurements, we detect the time of onset of contraction, time to peak, contraction duration, and fast and slow recovery times. From calcium transient recording employing Fluo-3 fluorescent dye, we measure onset time, peak amplitude, fast (SERCA) and slow (NCX) exponential recovery rates, and calcium signal intensity (the integral). Averaging is used to improve signal-to-noise ratios for 10 msec sample rates. Statistical analysis of contractility and calcium transient signals show standard deviations of less than 3% in these measures. Most importantly our developments provide a way to effectively analyze functional data and extract functional parameters that before could only be retrieved manually with a considerable investment of effort and time.

Session D-10
Oral Presentation: Critical Studies of Community
Saturday, March 5, 2011, 10:00 am
Location: Calmecac

468 10:00 am

Communal Ties Among the Residentially Challenged

Samira Rostami, Communication (U)
Kurt Lindemann, Communication

Homelessness is a pervasive and demeaning condition that plagues millions of people worldwide. While research continues to move toward understanding the social lives of this highly stigmatized population, relatively little is known about this group. When a population is merely stigmatized rather than understood, misconceptions perpetuate public policies that inevitably lead to further estrangement. With dwindling help from local and state governments, homeless individuals often turn to one another for strength, comfort, and survival. The researcher examines this phenomenon and attempts to fill the gap in the current body of research by asking: How do homeless people create and maintain a sense of community? In examining homelessness, the researcher also seeks to further understanding of the notion of "home," as it is a concept that is burdened by ambiguity and contributes to misconceptions society maintains of homeless persons. Through an ethnographic approach, including field notes and interviews, this study examines the communicative aspects of the social lives of a homeless population in Pacific Beach. Three patterns emerged throughout the study – memberships in cliques, occurrences of friendship and teamwork, and performances of roles and functions. Homeless individuals distinguish themselves from the wider homeless population by memberships in particular cliques, which helps maintain their senses of identity and allows them to associate with similar others. Friendship and teamwork provide the homeless with a sense of fellow camaraderie and intimacy, and are a vital component of the homeless community. And finally, by executing various roles and functions, the homeless are able to provide an environment in which all of their members have a wider access to goods, services, and information. This study also concludes that the term "homeless" may not adequately describe those who live life on the streets, as most homeless individuals contain an emotional feeling of a home, such as love and warmth, whether they live on the street by choice or need. A reframing of our existing attitudes and ideologies regarding impoverished and alienated persons is crucial to our progress as a society.

469 10:15 am

The Manifold Voices of Public Art: Perspectives from the Chula Vista Community

Abril Ibarra, Art History (U)
Kimberly Feilen, Child and Family Development

This research captures part of the community of Chula Vista's voice regarding its public art. Although there are various sources that state the benefits and controversies of public art, there is an inadequate amount of research that concentrates on community perceptions. With the city's plans to implement additional public art in Chula Vista, it is imperative to understand the relationship between the existing art in the city and community members. This issue was approached with mixed-methods that included observations, site artifacts, one-on-one interviews, and public surveys near the public art with community members in the South Bay Area of San Diego County. Results of this study point to further research needed on civic engagement and discourse for public art.

470 10:30 am

No One Walks Alone: An Investigation of the Veteran and the Community in Rodgers and Hammerstein's Carousel

Kati Donovan, Musical Theatre (M)
Rick Simas, Theatre, Television and Film

As theatre historian Gerald Mast states in his book *Can't Help Singin'*, "If *Oklahoma!* developed the moral argument for sending American boys overseas, *Carousel* offered consolation to those wives and mothers whose boys would only return in spirit." *Carousel*, the favorite of Richard Rodgers and Oscar Hammerstein II's

creations, both utilizes and breaks from the established norms of the musical theatre structure to tell the tragic and uplifting story of its ill-fated anti-hero Billy Bigelow. Opening in April 1945, the very year that saw the conclusion of the Second World War, the musical became a voice for the shell-shocked and guilt-ridden soldiers coming home to a society in which they no longer knew how to integrate or participate. This analysis deconstructs *Carousel*, and specifically its leading man, Billy Bigelow, within the historical context of the musical's original production and in light of its relationship to its source material, Ferenc Molnar's 1921 play, *Liliom*. Within this framing, the analysis utilizes the diagnostic for Complex Post Traumatic Stress Disorder as described by Judith Herman in Trauma and Recovery: *The Aftermath of Violence—from Domestic Abuse to Political Terror*, and the lens of Pain Theory, as espoused by Elaine Scarry. In her book, *The Body in Pain: The Making and Unmaking of the World*, Scarry asserts that, "physical pain leads to destruction and the unmaking of the human world, whereas human creation at the opposite end of the spectrum leads to the making of the world." By investigating Rogers and Hammerstein's musical in this light, this deconstruction proposes a richer understanding of the musical as a cultural response to World War II with continued relevancy in the aftermath of the Iraq war.

471 10:45

Stakeholder Perceptions of Family and Community Involvement in Schools

Laura Kikuchi, Critical Literacy & Social Justice (M)
Christina Alfaro, Teacher Education

The purpose of this study is to investigate how parents, teachers, staff, and community members perceive family and community involvement in a local elementary school in order to improve school to home and community relationships. Previous research has shown positive correlations between parent and community involvement and the degree to which schools perform. Research on parental involvement suggests that higher levels of involvement produce better school outcomes. This study looks to further research on how parents can inform practices surrounding parent and community involvement and to further demystify parental perceptions of the school to family and community relationship. A qualitative approach is used in this study. Surveys of teachers and parents are used to generate themes regarding family and community engagement. Interviews and focus groups with parents, staff, teachers and community members are further used to collect data. Field notes are used to collect formative data. The findings of this study will help to better inform ways in which parent and community engagement can be more effectively implemented to meet the needs and expectations of the stakeholders.

472 11:00 am

Leftover Borscht

Marisa Scheinfeld, Art (M)
Kim Stringfellow, Art Design and Art History

I grew up in 'the mountains' or as others called it 'the country,' almost as if no other mountain or country existed any place else. I suppose though, for a time and for a large number of people, this declaration had a certain truth. These mountains, known as the Catskills, located about ninety miles northwest of New York City, were once a haven for millions of American Jews, from the 1920s–1970s. Often referred to by its colloquial name, the Borscht Belt, the region, now defunct, was internationally known for its entertainment, food and recreation. At its peak more than 600 year-round resorts and hotels thrived in the area offering largely, the American Dream and an overall sense of 'glitz' that became synonymous with the region. In the decades following the county encountered a decline from which it has never fully recovered. It could be said that people began to vacation elsewhere, or that the world had expanded, or, the booming airline industry which offered new, exotic locales to travel to. Or simply that its time, like all things, had passed. To this day I have not arrived at one specific answer about the end of the Borscht Belt, however I suspect its demise to be a conglomeration of the above effects. When I began the series I was mainly drawn to the region's history and sought to document the underlying sense of what had once been. While largely rooted in history the project is a contemporary documentary of the Borscht Belt's existence. Many of its former sites which did not 'burn down' were been sold and re-established, however, a handful of its hotels have been lying in neglect; having morphed into a new site of sorts, one that is very much alive and lies enveloped with an imminent sense of cyclical, seasonal life. I find myself infatuated with the era's remains and the process itself of Time, which arrives with an imminent persistence, its effects continually modifying and transforming the landscape. It is with reflective feelings of the past that I progress into the future, aware of what has been before, about what Sullivan County once was, yet anticipatory and anxious about its and my own future, and ultimately, what both will eventually become.

473 11:15 am

Local Perspectives on Environmental Degradation and Community Infrastructure in Los Laureles Canyon, Tijuana, Mexico

Rebecca Grover, Geography (M)
Kate Swanson, Geography

The infrastructure in many parts of Tijuana, Mexico has suffered as a result of recent explosive population growth, leading to disparities such as unpaved roads, lack of drainage, bare soil, unlined channels, and unfinished housing structures (Biggs et al.

2010). Los Laureles Canyon, located in western Tijuana, is an example of such an area. Here, seasonal rains lead to environmental hazards such as landslides and flooding; in addition, exposed soil and debris are being washed into streams and channels, further leading to degraded sediment quality in the Tijuana watershed (Biggs et al. 2010). This degraded sediment and community-produced waste, in addition to numerous infrastructural disparities, impact the well-being of local residents and have larger ecological and socioeconomic effects on the region (Biggs et al. 2010). Studying the infrastructural and environmental issues of the communities upstream from the Tijuana Estuary is important because of their link to its degradation; however, the focus of the research is on improving the livelihoods of these communities and empowering local residents. The study will consist of two components, one being hand-distributed questionnaires to Los Laureles Canyon residents on the Mexican side of the border, the other being interviews with experts familiar with these communities on the U.S. side. Working within a political ecology framework, I aim to identify local perspectives concerning infrastructural and environmental disparities in Los Laureles Canyon, gather information about the role of local communities in understanding and addressing these issues, and increase awareness of environmental and social injustice in the area.

474 11:30 am

Linking Neighborhoods to Health in Accra, Ghana: Comparing Perceptions of Health to Census and Women's Health Survey Data

Marta Jankowska, Geography (D)
John Weeks, Geography

A growing number of researchers are utilizing the neighborhood as an appropriate scale of study for examining the association between place and health outcomes. Yet 'neighborhood' is often defined as a set of arbitrary or administrative boundaries that are not linked to interactions between health and place. As part of the larger Health, Poverty, and Place in Accra, Ghana project, the Women's Health Study of Accra (WHSA) interviewed more than 3,000 women in 2003 and 2009. The survey sought to explore how place matters for women's health in Accra, with a focus on the neighborhood. But what is place, particularly as defined by Accra's residents? The scarcity of studies concerning neighborhoods and health in third world urban areas prompted the research team to explore on-the-ground perceptions of neighborhood-level health and risk factors, with the hope of better informing data driven methodologies within the larger project. Eleven focus groups were conducted in the summer of 2010 in a socio-economically stratified selection of neighborhoods within the Accra Metropolitan Area. Groups had between 10 and 20 participants with a variety of ages, gender, and occupations. Topics covered included housing, access to jobs, availability of city services, health, political empowerment, and feelings of social cohesion. Multiple themes emerged from the focus groups, including the perception among all groups of the large impact of Malaria on participants' health, the stress of owning versus renting housing in the city, the effect of personal agency and hygiene on health, and attitudes on the scale of what constitutes a neighborhood. The paper focuses on elaborating on these themes, and comparing group perceptions to WHSA and Census data. I find that perceptions and data do not always align, and resident perceptions of neighborhoods may be an important factor when defining place for health studies in Accra.

Session D-11
Oral Presentation: Clinical and Social Psychology
Saturday, March 5, 2011, 10:00 am
Location: Casa Real

475 10:00 am

Cross-National Differences and Cultural Dimensions of Work and Personal Life Integration

Renee Payne, Psychology (U)
Kate Hattrup, Psychology

Previous research regarding the intersection of work and personal life tends to focus on the positive and negative consequences that stem from work-life balance. Instead, this research investigates whether culture functions as a predictor of the degree to which individuals perceive work and life as integrated domains. In this study, it is hypothesized that variation of work-life integration are influenced by a nation's level of individualism, collectivism, and work centrality. More collectivistic cultures are predicted to have higher levels of work-life integration compared to individualistic cultures. Work centrality is predicted to positively correlate with work-life integration. Cross-cultural bivariate regression analyses of these variables will be conducted using archival data from the International Social Survey Program (ISSP). The results of this research will emphasize the role that culture plays in facilitating a more harmonious integration of work and personal life for employees. Further, this study will provide organizations with insights about the importance of developing culturally-sensitive tools by which work-life integration policies can be implemented.

476 10:15 am

Borderline Racist: Ethnic Minority Reactions to Arizona's Immigration Law

Bradley Weisz, Psychology (U)
David Marx, Psychology

Arizona's new immigration law, known as the "toughest" immigration law in American history, has sparked controversy throughout the country since its inception in April 2010. The current study was conducted to assess whether exposure to this potentially racist law has a negative influence on racial minorities directly targeted by the law (e.g., Latino Americans), compared to racial minorities not directly targeted (i.e., Asian and Black Americans). Moreover, the current study examined whether the way in which the law is framed (i.e., as a purely legal issue, or as a political vehicle) differentially affects racial minorities' feelings of patriotism and motivations to engage in American civic duties. Results indicate that, compared to a control (no law) condition, Latinos' feelings of patriotism lessened when exposed to the Arizona immigration law, regardless of how it is framed, while Blacks (again, regardless of how the law is framed) experienced a boost in their patriotism. Results also indicate that relative to a control condition Blacks were motivated to engage in American civic duties (e.g., voting in elections) after exposure to the immigration law and this did not depend on how the law was framed. Interestingly, for Latinos, how the law was framed did impact their motivation to engage in American civic duties. Specifically, motivation was highest when exposed to the legal definition of the law and dropped when exposed to the political manifestations of the law. These findings attest that the politically charged rhetoric surrounding controversial social issues, commonly found in the national media, may influence the motivations for ethnic minorities to engage in "American" behaviors (e.g., not voting in elections). Thus, potentially contributing to the maintenance of social disparities between racial groups in America.

477 10:30 am

Systematic Stereotyping of Severe Mental Illness: Extending the Stereotype Content Model to Mental Illness Subgroups

Liz Meagor, Psychology (U)
Melody Sadler, Psychology

Roughly 26% of Americans suffer from a mental illness. Those with mental illness experience intense stigma that pervades all aspects of life, such as jobs, housing and relationships,. To address this negative stigma, it is necessary that we first understand how the stereotypes are formed and acted upon. The Stereotype Content Model (SCM; Fiske et. al., 2002) is an empirically supported pathway to these answers.The SCM predicts that stereotypes are formed on ratings of competence and warmth. These ratings stem from perceived status and competition of the target. While this model has been applied to many social groups and subgroups, it has yet to be expanded to people with mental illness. Utilizing the same format as earlier research, the group "people with mental illness" will be added to the previously established social groups in order to determine where it falls on the two dimensional space of warmth and competence. It is predicted that this social group will be rated low in competence because of the perceived low status associated with mental illness. Warmth ratings are anticipated to be more ambiguous due to the variety of stereotypes surrounding this social group. In order to further investigate the stigma suffered by the mentally ill, specific disorders (schizophrenia, depression, substasnce abuse etc.) will also be explored in the same format. These subgroups are expected to receive a range of warmth ratings. Predictions are being made based on the belief that the more familiar the mental illness, the higher the warmth ratings. Schizophrenia, which is less familiar than depression for most people, will be rated low in warmth. Further research will be conducted in order to explore the emotional and behavioral reactions within the SCM framework

478 10:45 am

Impact of 7.2 Easter Earthquake on Imperial Valley Undergraduates

Mariel Pina, Psychology (U)
Elizabeth Cordero, Psychology (IVC)

On April 4, 2010 (Easter Sunday), a 7.2 magnitude earthquake struck Imperial Valley, CA with an epicenter approximately 40 miles away. The damage caused by the earthquake was considered moderate, with several buildings evacuated and local schools closed for several weeks. This study will examine rates of depression, anxiety, and stress in a sample of predominantly Latino undergraduates after the Easter earthquake. It is imperative to understand the mental needs in undergraduates so natural disasters do not interfere with their educational success. It is hypothesized that women will report higher rates of depression, anxiety, and stress than men after the Easter earthquake. Additionally, it was hypothesized that Imperial Valley undergraduates who participated in this study after the earthquake will report significantly higher levels of depression, anxiety, and stress than undergraduates who participated before the earthquake. Data from a larger investigation of college students' mental health in Imperial Valley will be analyzed for this study. Data were collected from 240 students enrolled at the Imperial Valley campus of San Diego State University (SDSU-IV) and 166 students enrolled in Imperial Valley College (IVC). SDSU-IV and IVC are approximately eleven miles apart and are the only institutions of higher education in Imperial County. SDSU-IV admits a small class of freshmen every year; thus most upperclassmen at SDSU-IV are former IVC students. Data were collected from SDSU-IV students before the Easter earthquake whereas data were collected from IVC students within two weeks after the Easter earthquake. Participants completed a

demographic questionnaire as well as the 21-item version of the Depression, Anxiety, and Stress Scales (Lovibond & Lovibond, 1995). Data analyses are underway and will be completed in February 2011. Multivariate analysis of variance (MANOVA) will be utilized to compare the depression, anxiety, and stress scores of female and male participants from IVC. Additionally, MANOVA will be conducted with the dependent variables to determine differences between IVC participants and SDSU-IV participants (SDSU-IV participants will serve as a proxy for pre-earthquake levels of depression, anxiety, and stress in Imperial Valley college students). Implications, limitations, and future directions will be discussed.

479 11:00 am

Effect of Gender Violations on Prosocial Behavior among Mexican Americans

Jesus Quintero, Psychology (U)
Donna Castañeda, Psychology (IVC)

Mexican Americans are thought to value traditional gender roles more strongly than non-Mexican Americans, thus, their responses to those who violate gender role expectations may be quite negative. However, almost no research is available that investigates the helping responses of Mexican Americans to those who violate gender role expectations. This study will examine the responses of Mexican American women and men exposed to female and male targets that violate gender role expectations. Acculturation is also examined. Participants were 50 women and 16 men students at a four-year university in Southern California. All identified themselves as Mexican American. Each received a questionnaire with one of four vignettes. Two of the vignettes described a woman or man in a clothing store asking for help to select the clothes of the other sex that look the best on her/him. The other two vignettes were the same, except the target requested help selecting clothing that was consistent with her/his gender. Vignettes were followed by a question which asked how much participants would agree to help the target choose clothes and three others which asked participants for their willingness to help the target in different situations. A measure of acculturation was also included. Results showed significant main effects of vignette type and gender on willingness to help the target choose clothes, in that participants were least likely to help targets who violated gender expectations and male participants were least likely to help, regardless of vignette type. A significant effect of gender of participant on willingness to lend the target money was found. Women were more willing to lend money to the targets than men, regardless of vignette type. No other significant main or interaction effects on willingness to help the target were found. This study demonstrates that Mexican American women and men are least likely to help individuals who violate gender expectations and women are more likely to help than men. No effect of acculturation was found, but results point to the importance of gender and gender expectations in willingness to help among Mexican Americans.

480 11:15 am

Protective Effects of Digital Manipulation Warning Labels On Body Image

Anne Julian, Psychology (M)
Elizabeth Cordero, Psychology

Body image is a crucial aspect of self-concept that is subject to societal influence. Women suffer negative body image through social comparison with media images of thin, idealized women (Grogan, Williams & Conner, 1996), a process which is moderated by variables such as internalization of societal ideals of beauty. Because most media depictions of women are digitally altered to idealize the model, this avenue of thin-ideal exposure presents a logical starting point for reducing the negative health and psychological effects associated with exposure. The current study is a double-blind experiment that assesses if a statement that details the digital manipulation of women's bodies will protect against negative effects of viewing thin-ideal images. Participants are female undergraduates recruited at San Diego State University. Experimental conditions are exposure to images containing a small, white digital manipulation disclosure statement, exposure to images containing a large, colored statement, and one control condition without the statement. Internalization of the thin-ideal is measured prior to participation with the Internalization scale of the SATAQ-3 (Thompson, 2004). Need for cognition, and self esteem are measured prior to image exposure, while state body image and the effect of the disclosure statement on the advertisement are measured post-exposure. Measures are the Need for Cognition Scale (Cacioppo, 1984), the State Self Esteem Scale (Heatherton & Polivy, 2001), the Body Image States Scale (Cash et. al., 2002), and a set of three questions assessing participant reaction to the advertisements. It is hypothesized that participants exposed to a large, colored presentation of the statement will display less negative state body image than participants exposed to the statement in a small white box. It is also hypothesized that state body image among participants viewing the small white version of the statement will not differ significantly from control participants. Data is currently under collection and will be analyzed in February 2011. Results of this study will inform future body image research and illuminate potential avenues for reduction of negative effects of media.

Session D-12
Oral Presentation:
Information Graphics and Visualization
Saturday, March 5, 2011, 10:00 am
Location: Council Chambers

481 10:00 am

Infographics: Bringing Visual Clarity to Complex Information

Elizabeth Rossi, Graphic Design (M)
Susan Merritt, Art Design and Art History

Historically, information graphics, also known as infographics or information visualizations, have been used primarily as analytical tools to make sense of complex data. Used originally in presentations and annual reports, information graphics have found their way into a wide array of visual experiences, providing the viewer the opportunity to explore, learn and discover. As daily consumers of complex information, we look towards infographics to help clarify, collect and integrate what we see and strive to understand. The primary focus of infographics is to succinctly communicate information through visual representations of the raw content – data. Through two projects, "How Much" and "Cookiegraphics," I have utilized standard models of infographics as well as created new ones to bridge the gap between the viewer and the information in an accessible and visually stimulating way. In "How Much" I sourced data from the Statistical Abstract of the United States, identifying the annual consumption of four food product categories by dollars relative to geographic regions of the United States. By using color, illustrations and symbols, I transformed mundane spreadsheet data into appealing infographics. In addition to being visually compelling, they also successfully illustrate the clarity that infographics can provide to dense data. It is through this clarification that the complex data becomes accessible and meaningful. My experimental project "Cookiegraphics" transforms age-old recipe style data into colorful infographics. These graphics build upon an intrinsic understanding of shape, color and proportion to guide the viewer through the process at a glance. Designed as circular infographics this series elevates the standard format of recipe information into a visual encounter, transforming text-based recipes into easy-to-understand graphical instructions. My research into infographics has allowed me to give shape to and breathe life into intricate data and to create visually impactful experiences by identifying facts and revealing hidden patterns.

482 10:15 am

Information Graphics: Visually Interpreting Scientific Data

Jill Hollingsworth, Art Design (M)
Scott Wyss, Art Design and Art History

I am studying current research that is being conducted by various institutions on the threatened and endangered biodiversity in Southern California because I want to better understand why so many animal and plant species are dying out. My graduate study focuses on information design, an area of graphic design that uses visual representation to present complex data in a clear and meaningful manner. Based on the scientific data I have collected, I developed graphic models to more effectively and efficiently inform audiences. Over the last forty years, I have witnessed San Diego county grow from a quaint seaside community to a congested city crisscrossed with highways, housing developments, malls, and businesses. San Diego county once supported many species of plants and animals with some unique only to this area. Many species thrived because of their natural habitats in which natural water sources and vegetation were used for food and shelter. Today, due primarily to population growth many of these areas have been swallowed up by human developments. I often wondered where did the animals go and did they survive. These questions led me to several lecture series conducted by The San Diego Natural History Museum on the critical condition of our biodiversity in San Diego. Although full of facts, figures, and statistics, these lectures lacked understandable information graphics as an important visual tool for public education. Through these lectures I found a need for my area of expertise. By working with researchers and scientists from The San Diego Natural History Museum and The San Diego Foundation, I discovered that species loss is a symptom of several much larger environmental issues including global climate change, pollution, drought, catastrophic fires and over population, which we as a community need to address. In my presentation I will discuss the urgency of this situation as well as demonstrate the significance of information design through graphic models that I created for a system of interpretive panels that I designed for The San Diego Foundation, Environment Analysis and Strategy Department, and The San Diego Natural History Museum, Biodiversity Research Center of California.

483 10:30am

Materializing the Body through Performative Frames of Sexual Pathology and Assimilation: An Analysis of Direct-to-Consumer Pharmaceutical Ads on Erectile Dysfunction

Maria Visperas, Media Studies (M)
Amy Schmitz Weiss, Journalism and Media Studies

Frame theory, an interdisciplinary model studying the ways individuals and institutions communicate, organize, and emphasize

visual and discursive messages, has been and continues to be extensively deployed in studies concerning political rhetoric, social movements, and media culture. Within the scope of the latter field, however, one observes a dearth of advertisement scholarship critically addressing frames or utilizing frame theory, a curious development given the pervasiveness of marketing campaigns in developed nations and their roles in engendering and reproducing consumer and pop culture. The current project attempts to redress this epistemological shortfall in advertisement research by adapting Judith Butler's post-structuralist conceptualization of frames to ideological constructions of the "medical consumer" in direct-to-consumer (DTC) pharmaceutical advertisements. Butler's insights on frame theory are especially significant to the current project, for it demonstrates the extent to which frames as reiterative and citational operations of power materialize their subjects, a critique certainly applicable to the "making" of medicalized bodies. In particular, this project inquires into the (re) production of pathologized sexualities in DTC ads for drugs on erectile dysfunction (DEDs). Through a critical interpretive approach identifying and analyzing rhetorical figures in print DTC ads of FDA-approved DEDs Viagra, Cialis, and Levitra, this project aims to link DED ad rhetoric to the co-extensive frames of sexual pathology and equivalence, with the latter frame reinforcing sexual norms across differentiated bodies and the former presenting the body as always already dysfunctional according to those norms. These frames were deduced following a literature review on the political economy, historical context, and cultural impact of the emergence of the DED consumer – the "Viagra cyborg." By studying the textual and visual rhetoric of DED ads, then, this project seeks to demonstrate how the aforementioned frames operate in ad content and in doing so calls for critical engagements between frame theory and advertisement research.

484 10:45 am

Subvertising

Wendy Shapiro, Graphic Design (M)
Susan Merritt, Art Design and Art History

We are immersed in a world full of mobile gadgets that fit into our pockets, purses and fill our homes. They allow us to connect to the rest of the world and have the capacity to assist us in completing tasks with ease and efficiency. Technology is pervasive and constantly evolving, which forces us to either adapt to the changes it initiates or to resist the temptation. I am pulled in two directions—I appreciate the value of technology and embrace the devices I use, yet I question when and how I interact with them and resist becoming totally immersed. The media sells technology and shapes our behavior by portraying certain beliefs and values thus creating an illusion of reality that we are beckoned to follow. Advertising focuses on persuading the audience to take action in regards to products, ideas and services. This media onslaught and the ubiquity of tech crazy fanatics tethered to their phones or mesmerized by a glaring screen have caused me to become anxious and frustrated. I examine these feelings in Subvertising a series of posters that reinterpret the hype and behaviors surrounding technology that the advertising media communicates to the masses. With this series I deconstruct visual and verbal messages from the media and reinterpret them. As a designer and artist, my usual working methodology follows a typical linear process: strategy, concept, design and execution. Because this series deals with my emotional reaction to technology, I challenged myself to explore a more intuitive procedure based on feeling.

485 11:00 am

Measure Your Choices

Kizzy Ezirio, Graphic Design (M)
Patricia Cue, Art Design and Art History

The Measure Your Choices project is designed to raise consumer awareness for two current, major environmental issues associated with food production—the world's water crisis and global warming. The ultimate goal is to create a positive impact on the world's water resources and climate change by encouraging and assisting consumers to shift their consumption habits. Graphic design, with its ability to reach massive audiences, is used to reveal to consumers the environmental impact of food production while drawing attention to a problem that is currently invisible to most consumers. Within the graphic design discipline, information design, an interdisciplinary approach that communicates clearly and effectively to massive audiences, is used in order to transform a complex concept into information that is easily accessible and comprehensible to a broad audience. Measure Your Choices is composed of a graphic system designed to reveal to consumers, at point-of-purchase, the amount of water used and carbon emitted in the production of a select range of food products (fruits, vegetables, grains, dairy and meat). The graphic system is applied to grocery store labels and grocery receipts, allowing consumers not only to compare the environmental impact of one product over another, but also to evaluate the total impact linked to each of their shopping experiences. In addition to a graphic system, Measure Your Choices includes other supporting materials, such as an awareness campaign, and exhibit, intended to bring awareness to the environmental problems associated with food production while encouraging consumers to get involved and learn more about the issue.

Session D-13
Oral Presentation: Engineering III
Saturday, March 5, 2011, 10:00 am
Location: Quetzalcoatl A

486 10:00 am

Ciprofloxacin Contamination of Natural Waters: Developing Pollution Limits to Minimize Environmental Reservoirs of New Antibiotic Resistance

Rory Klinger, Environmental Engineering (M)
Temesgen Garoma, Civil, Construction and Environmental Engineering

Alarming numbers of studies have recently detected residual pharmaceuticals and their byproducts in natural waterways. One group of pharmaceuticals of particular concern is antibiotics. This is due largely to the devastating effects of bacterial infections in cases of antibiotic resistance. In order to treat such resistant bacterial infections, several wide spectrum antibiotics, including ciprofloxacin, are used. The hastened development of resistance to these drugs would have wide reaching and significantly negative medical and economic effects in human medicine and plant and livestock agriculture. In order to protect public health, maximum contaminant levels for antibiotics need to be developed in consideration of this risk. To date, published literature does not provide sufficient information to support the development of such limits. It is the aim of this research to determine threshold contaminant levels for the inception of antibiotic resistance in initially non-resistant populations of bacteria. Concentrations of antibiotics detected thus far in the environment fall into the range of nanogram-microgram/liter, well below the minimum inhibitory concentrations (MIC) for most bacteria/drug combinations. In order to determine the effects of these low concentrations on levels of antibiotic resistance, non-pathogenic E. coli was cultured with serial trace concentrations of Ciprofloxacin. This provided an inhibition gradient that revealed distinct threshold concentrations for different inhibition behaviors. These thresholds were used as upper limits to guide the next stage of tests. Exposure scenarios were then repeated in larger batch evolutionary reactors in order to create correlations between MIC and time. Experimental results to date indicate that exposure concentrations as low as 0.25 mg/L (1/8 the listed MIC) is sufficient to cause a measurable increase in observed MIC.

487 10:15 am

Application of Lean Concepts to Office Related Activities in Construction

Ana Catarina Pestana, Civil Engineering (M)
Thais Alves, Civil, Construction, and Environmental Engineering

Construction is moving away from the traditional management approach focused on transformation activities and project outcome control to embrace Lean Production concepts focused on achieving flow and value generation. The use of Lean Production concepts to manage office activities is termed Lean Office. In the Architecture, Construction and Engineering industry, office activities link the information flows from project teams and the production processes on the field. Despite their importance to the project, office activities have been overlooked and several authors point out that they are often mismanaged, lack proper planning, or are buffered to account for the great amount of variability within these activities, eventually resulting on site inefficiencies and cost overruns. This research, developed as part of a master's thesis, studied an office activity, i.e., the submittal process, and its information flows. Submittals are documents that carry information about products and processes used to deliver a project, and are exchanged between contractors, designers, and consultants that verify their conformance with the project's specifications. The submittal process was studied using Lean Thinking concepts, principles, and tools to make its attributes visible so that wasteful activities could be identified and recommendations to improve the process performance could be made. The research method included two preliminary case studies, and an in-depth case study. The data was collected through a mixed-methods approach and included the analysis of reports, documents, and semi-structured interviews. The study revealed that the submittal process lacked transparency, had low workflow predictability and reliability, and was based on standards that were not similar across the industry and might not be clear to project participants. The subcontractors are often assisted by the contractor to prepare the submittals to avoid delays. To manage the flow of submittals contractors rely on software that often is not properly updated, resulting in reports that do not help managers to keep track of the submittals and their due dates. The study shows that the submittal process can be streamlined by enhancing communication and information sharing amongst stakeholders, through the understanding of the causes of variation in lead times and the understanding of participants' needs.

488 10:30 am

The Application of Thermography in Determination of Sampling Points in GreenWaste Composting

Saeideh Abolghasemi Riseh, Environmental Engineering (M)
Fatih Buyuksonmez, Civil, Construction and Environmental Engineering

The study was conducted for ninety days on four different windrows of green waste composting, Control, Pesudo-Biofilter, Interactive, and Reduced size pile. A Thermal camera was used to determine the temperature profile and to show the hottest and coldest spots of each pile. At the same time, samples were taken from the determined hot and cold places. Four different emissions of CO_2, CH_4, VOC, and N_2O were analyzed from the samples. Control, Pseudo-Biofilter, and Interactive piles in 93 percent of times had the highest CH4 emission from the hottest spots and lowest CH4 emission from the coldest spots. Reduced size pile only 50 percents followed the hypothesis. Control pile also Followed the hypothesis (Hottest point of composting piles emits the highest gas emission rate, and coldest point of the pile emits the least gas emission rate) 100, 71, and 79 percents for CO_2, VOC, and N2O emissions respectively. Pseudo-Biofilter had the result of 93, 71, and 92 percents for CO_2, VOC, and N_2O emissions respectively. Interactive Pile followed the hypothesis 79 percent for CO_2 emissions, 71 percent for VOC emissions, and 79 percent for N_2O emissions. Among all of study composting piles, Reduced size pile had the least compatibility to the hypothesis with 64, 50, and 36 percent for CO_2, VOC, and N_2O emissions respectively. The usage of Thermal camera in determination of sampling places for emission measurement from composting piles are suggested based on the results. Yet, there was not a perfect quantitative correlation between the temperature and gas emission rates found. 1-Ti45FT Thermal Imaging camera manufactured by Fluke Company

489 10:45 am

Advanced Models for Fluid-Structure Interaction Engineering Problems

Marco Petrolo, Aerospace Engineering (D)
Luciano Demasi, Aerospace Engineering and Engineering Mechanics

The design of structures for aerospace applications represents one of the most challenging tasks for structural analysts. Typical examples are aircraft wings, helicopter rotor blades, wind turbines, and rockets. These structures are required to fulfill stringent and opposing constraints in terms of light weights and high strengths. Further analysis challenges raise when the so-called fluid-structure interactions, FSI, must be taken into account to model the mechanical behavior of structures under severe fluid fields. In addition to the aforementioned aerospace cases, other engineering disciplines are interested by FSI, e.g. civil engineering (slender bridges) and biomedical engineering (vascular systems). Different structural approaches are available to model this kind of structures. Depending on how the approximations are carried out, we can adopt either 1D, 2D, or 3D models. These models have increasing accuracy and computational costs, that is, 1D models are usually less accurate than 2D and 3D but they require significantly smaller computational efforts. A significant research activity is focused on the aim of providing to 1D models the same accuracy of 2D and 3D models preserving their computational advantages. Our research activity represents a contribute towards the development of refined 1D structural models being able to provide results usually detectable by 2D or 3D models only. 1D refined structural models are herein developed in the framework of the Carrera Unified Formulation, CUF, that allows us to choose arbitrary accurate 1D models in a unified fashion. CUF 1D models are able to detect 2D- and 3D-like results with a considerable reduction of the computational cost if compared with more cumbersome models like shell (2D) and solid (3D) finite elements. These features make the proposed 1D formulation particularly adequate for aeroelastic applications where highly accurate static deformations and modal shapes of thin-walled structures are often mandatory. CUF structural models are coupled to a refined finite element aerodynamic tool named Doublet Lattice Method to perform steady and unsteady aeroelastic analyses of wings made of metals and composite materials.

490 11:00 am

Multi-variable Newton-Based Extremum Seeking

Azad Ghaffari, Electrical and Computer Engineering (D)
Sridhar Seshagiri, Electrical and Computer Engineering

This is a report to present an approach based on Newton method to design Extremum Seeking algorithm for multi-variable cases. The gradient based method has been developed for multi-variable optimization problems, and it is well known. But Newton method has not been well explained for multi-variable cases. The main issue is to find a way to estimate the Hessian matrix. Here, care has been taken to derive an algorithm which estimates the extremum considering non-singularity of the Hessian matrix. Simulation results show the effectiveness of this approach.

491 11:15 am

Non Linear Aeroelastic Analysis of Joined Wing Configurations

Rauno Cavallaro, Aerospace Engineering and Engineering Mechanics (D)
Luciano Demasi, Aerospace Engineering and Engineering Mechanics

The main objective of this research is the study of the aeroelastic behavior of unconventional configurations, with a major focus on joined wing vehicles. Civil transport aircraft of the future are requested to improve their performances and to achieve a

significant reduction of Direct Operating Costs, noxious emissions and noise. The problem of reducing Direct Operative Costs will not be solved without a significant improvement of aircraft efficiency, which can be hardly obtained by an optimization of conventional aircraft. Hence, new non-conventional aircraft layouts configurations provide an attractive alternative. As pointed out by different leading aeronautical industries (such as Boeing, Lockheed Martin, Airbus, etc), one of these configurations is the joined wing. The main potential benefits range from a reduced induced drag to a more efficient structural design. Other interesting advantages are expected for the flight mechanics/dynamics behavior and capabilities, for engine integration possibilities, and for the operational impact. One of the most advanced and relatively unexplored fields is the aeroelasticity of joined wings airplanes. Nowadays, the aeroelastic response has not yet been well understood and, therefore, represents an interesting phenomenon to be further explored. The particular wing layout of joined wings is responsible for strong structural geometric non linearities, which are relevant even for small angles of attack and attached flows. More in detail, this research aims to analyze the static (divergence) and dynamic (flutter) aeroelastic instabilities and investigate the post-critical behavior with particular emphasis on the so called limit cycle oscillation (post-flutter analysis). The analysis will be conducted for realistic wing box configurations, represented with high fidelity structural models. Aeroelastic tailoring by means of composite materials will be also investigated.

Session D-14
Oral Presentation: Geography and Conservation
Saturday, March 5, 2011, 10:00 am
Location: Presidential Suite

492 10:00 am

Analysis of Sea Turtle Nest Temperatures and Future Global Warming Effects on Two Coasts of Mexico

Allison Baxter, International Business and Environmental Science (U)
Katherine Comer Santos, Geography

Sea turtles are endangered species that are of high ecological and cultural importance to Mexico and other countries that share their highly migratory populations. They are threatened by poaching, fishing, and habitat degradation including climate change. Already there are reports worldwide of sea turtle nests on beaches reaching lethal limits around 34°C, and the Intergovernmental Panel on Climate Change (IPCC) predicts an increase of 1.4-5.7 °C in earth's air temperatures by 2100. Our principal research question was: are sea turtle nests in Mexico in danger of "baking" in the sand due to global warming? To answer this, two interns enrolled in The Science Exchange program at San Diego State University measured sand temperatures at nesting beaches in Baja California Sur and Quintana Roo, Mexico. Our hypothesis was that sand temperatures were significantly correlated to weather data and we could use the relationships to predict future global warming effects. Temperature data loggers were placed in the sand at nest depth (~60 cm). Weather variables were measured from thermometer/hygrometers on the beaches and from nearby weather stations (www.wunderground.com). Results from both sites indicate that the sand did not reach lethal temperatures during the study period (28.87°C ±0.55 for Quintana Roo; 28.3 °C, ±1.8 for BCS). Using a Pearsons correlation matrix, both interns found that minimum air temperature was consistently correlated with maximum sand temperature ($R=0.68$ for Quintana Roo; $R=0.64$ for BCS; $p<.05$). We conclude that our hypothesis was support by our results. Similar results were found in two previous studies from The Science Exchange internships in Baja California Sur. Cool nights may be important for regulating intense daytime temperatures at nest depth. However, other factors such as sand moisture, grain size, and color need to be analyzed. Following other studies, we extrapolated with IPCC modeled air temperatures and the R relationships in this study to the year 2100, and found that sand temperatures at both sites could reach lethal limits. Conservation recommendations include vigilant monitoring of nest temperatures when night-time air temperatures remain high for several days and some sea turtle resource managers recommend cooling nests with shade structures or sprinklers.

493 10:15 am

Environmental Perceptions and Social Attitudes Regarding the Multiple Species Conservation Program in San Diego County

Jaime Speed Rossiter, Geography (M)
Kathleen Farley, Geography

The effectiveness of conservation policy is often evaluated simply based on its biological effectiveness: is the policy protecting the species or habitat it was designed to? Such analyses often fall short, however, as they ignore the human dimension to conservation. Perspectives that account for human needs are increasingly necessary, as more and more policy is being implemented in highly populated areas rather than remote wilderness. This research aims to fill that gap by evaluating the social implications of a specific conservation policy, the Multiple Species Conservation Program (MSCP) in San Diego County. MSCP is a countywide program, finalized in 1998, that aims to protect over 85 species through a system of continuous preserves connected by corridors, the land for which is to be acquired through the direct acquisition of conservation easements (County of San Diego Department Planning and Land Use 1998). Until now this program has only been evaluated from a biological perspective. Since this program has the potential to affect the lives of over 2.9 million residents, a social analysis is strongly needed. Although much research

has been done regarding the effects of conservation policy on residents, this study differs in that it examines the social attitudes and environmental perceptions of residents and the environmental professionals who are involved with the implementation and continued monitoring of the program. The goal of this research is to ascertain how increased insight into environmental perceptions and social attitudes can lead to increased communication and more effective conservation policy implementation.

494 10:30 am

Effects of Riparian Restoration and Associated Changing Flows on Summer Stream Temperatures

Cleo Neculae, Geography (M)
Kathleen Farley, Geography

In the Pacific Northwest, where streams have been impaired by high thermal loads, riparian afforestation has been initiated in the hope that the increased tree canopy will protect streams from solar radiation, leading to reduced instream temperatures. Research supporting these decisions has shown the direct relationship between riparian canopy density and stream temperature. Other studies, though, have found that stream temperature is a function of both energy input and stream flows. Riparian afforestation can impact the stream energy balance through shading but also can affect stream flows through evapotranspiration, introducing uncertainty about the ultimate impacts of the plantation of riparian vegetation on stream temperature and necessitating an approach that accounts for both processes. This study added stream flow responses to the traditional framework and explored these uncertainties using a hydrologic model, WET-Temp, and a generalized likelihood uncertainty estimation (GLUE) methodology applied to a case study of a watershed in northwestern Oregon. Understanding the range of possible stream-temperature outcomes based on variations in the parameters related to riparian canopy density and stream flows as determined by the GLUE sensitivity analysis in this study is essential to effective riparian management.

495 10:45 am

What Statistical Model Can Better Detect Land-change Drivers? A Comparative Study of Survival Analysis, Logistic Regression and Multivariate Linear Regression

Ninghua Wang, Geography (D)
Li An, Geography

Land use and land cover change (short for land change) has important environmental (e.g. deforestation and CO2 emission) and socioeconomic (e.g. increased commute time) implications. One of the core objectives in land change science is to identify the drivers underlying land changes and the way these drivers interact. However, this problem remains very challenging because the drivers and their interactions vary greatly across space, time, and specific context. Despite the escalating abundance of space-time data and approaches to analyzing such data in the past several decades, it remains unclear what statistical model(s) may truthfully unveil land change drivers in various applications. Three analytical frameworks are compared in this study: survival analysis, logistic regression and multivariate linear regression. A pseudo land change dataset was generated from a land development agent-based model, which simulates individual land users' decisions in a virtual landscape based on several hypothetical drivers. Pseudo land change maps, generated by the agent-based model under varying weights of such drivers, were exposed to statistical analysis under each analytical framework. Depending on whether the frameworks can reveal the drivers used in the agent-based model, we evaluate the usefulness of these frameworks and the conditions under which they can better detect the underlying drivers. Our results suggest that survival analysis outperforms others in detecting these drivers, largely because it takes into account censoring data (i.e., imprecise time-stamp of land changes) and time-dependent variables. Also, this research suggests that properties of a geographic process (evolving speed, scale and uncertainty level) should be considered when selecting statistical models and/or sampling strategies for space-time analysis.

496 11:00 am

Modeling Human-Environment Interactions and their Ecological Implications in the Chitwan Valley, Nepal

Alex Zvoleff, Geography (D)
Li An, Geography

The complexity of interconnected human and natural systems can lead to surprising dynamics, with unexpected implications for long-term management. The Chitwan Valley, Nepal is home to the Chitwan National Park, an internationally recognized biodiversity hotspot, and habitat for endangered species including the Bengal tiger and One-horned rhinoceros. The valley also supports a rapidly growing rural population. Understanding the connection between population growth and change and forest change in Chitwan is critical to ensuring conservation and development goals are met. The 932 km2 Chitwan National Park, established in 1973, is now a UNESCO World Heritage Site internationally recognized for its rich biodiversity, and is one of the major tourist attractions in Nepal. In 1996, a community managed buffer zone of 750 km2 was established surrounding the park to ease the pressure on the park from resource extraction (mainly firewood and fodder) and to alleviate human-wildlife conflict. Recent work has uncovered significant feedbacks between social and environmental change in the region. To better understand the implications of these feedbacks for habitat areas, and to develop a

ABSTRACTS

broader understanding of developing rural systems, we present an agent-based model of the Chitwan Valley coupled human-natural system. Drawing on a field survey conducted in fall 2009, and on an extensive existing survey dataset from the Chitwan Valley Family Study, we consider important feedbacks between demographic decision-making (including marriage timing and family size), resource use, and land-use and land-cover change. Our results reveal the role of these feedbacks in determining the evolution of human and environmental systems through time, and indicate the importance of the spatial context of human decision-making. This research is significant in explaining the role of connections between micro-level social and environmental change in influencing environmental outcomes. Just as population change can influence the environment, society is likewise affected by changing environmental conditions. Understanding these relationships is critically important in areas like the Chitwan Valley, where a rapidly growing human population borders a protected area of international significance.

497 11:15 am

Neighborhoods, Health, and Remote Sensing

Christopher Lippitt, Geography (D)
Douglas Stow, Geography

The objective was to test GEographic Object-based Image Analysis (GEOBIA) techniques for delineating neighborhoods of Accra, Ghana using QuickBird multispectral imagery. A novel method for the delineation of units of relatively homogenous socioeconomic status and health outcomes is presented and evaluated employing both census and health outcomes data. Results indicate that satellite-derived remote sensing data may prove useful for the delineation of areas of homogenous health outcomes for urban areas for which census data are unavailable.

498 11:30 am

Socio Páramo, Land-use Change, and Local Livelihoods: An Analysis of Payment for Ecosystem Services (PES) as a Strategy to Jointly Reach Conservation and Development Goals in Highland Andean Grasslands

Leah Bremer, Geography (D)
Kathleen Farley Wolf, Geography

Despite considerable debate surrounding the efficacy of joint conservation and development initiatives to simultaneously meet a range of biophysical and socio-economic goals, payment for ecosystem services (PES) initiatives are increasingly advocated as a way to enhance ecosystem services while also improving local livelihoods. Recently, the Ecuadorian government launched a national-scale PES program (Socio Páramo (SP)) that aims to protect biodiversity, carbon, and water in Andean páramo grasslands through conservation payments intended to also reduce poverty among landowners. To improve understanding of factors facilitating or constraining participation in SP and how participation influences land use and local livelihoods, I interviewed program participants as well as several neighboring non-participants. Although some landowners were required to reduce or eliminate grazing and increase monitoring of their land, overall, few land-use or management changes occurred as a result of SP. Rather, the majority of participants already made minimal use of their páramos for economic activities due to inaccessibility, existence of economic alternatives, and/or an existing desire to conserve their páramo for water production or biodiversity. Despite little immediate impact on land use, however, a number of participants indicated that SP would prevent future land-use change, including agricultural expansion. While SP payments are being used to fund a number of important community projects and also to meet basic household needs, at current levels, these payments are not sufficient to move land out of working landscapes into conservation landscapes and will likely exclude landowners (particularly small landowners) who rely on their páramo for subsistence.

Session D-15
Oral Presentation:
Policy, Protection, and Urban Landscape
Saturday, March 5, 2011, 10:00 am
Location: Quetzalcoatl B

499 10:00 am

Pamo Valley Sustainable Homes

Mark Corcoran, City Planning (M)
Maurizio Antoninetti, Public Affairs

Pamo Valley features one of San Diego County's most pristine and undisturbed habitats. Owned and managed by the city of San Diego since the early 20th century, the valley has remained undeveloped and unchanged because it was once determined that it would provide an excellent site for a reservoir. However, as time progressed, and the valley never came to be dammed, the valley became better known for its wilderness and natural beauty than as a site to warehouse water. This natural beauty and wilderness, which has been protected due to the City's one-time desire to flood the valley, is to this day still apparent and awe-inspiring. Today the City owns and manages the valley as an important source water protection zone of the San Dieguito Watershed. As part of its management of the valley, the City allows for the operation of a small on-site cattle ranch. The purpose for this allowance is to provide vigilance and security for the valley while allowing for a land use that is consistent with the City's desire to maintain the valley's high ecological value. In 2007 wildfire swept

through the valley destroying many of the homes of the ranch's laborers. In response to this loss, the City sought to obtain funding to rebuild the lost homes. This past year the Federal Emergency Management Agency stated that it would reimburse the City for the reconstruction of two of the destroyed homes. Following the FEMA decision, while serving as an intern for the City, I recruited Dr. Pablo LaRoach of the California Institute of Pomona to lead his university graduate students in designing the components of a low-impact rural village to replace the destroyed homes. As the project's coordinator I will be part of a team that ensures that these components, which will be designed to be more efficient, wildfire resistant and durable than their conventional counterparts, will also be designed to be constructed easily and inexpensively. Finally, as the Project's Coordinator, I will ensure that the implemented design of the project represents a global model of sustainable housing for rural residents or agricultural workers.

500 10:15 am

Scratching the Historical Record: Sampling Land Use in Barrio Logan

Jeannette Shindell, Art and Design (M)
Kim Stringfellow, Art Design and Art History

For the past four years, I have been photographing Barrio Logan's urban development and its changing environment. Developers have created affordable housing for its predominately Latino working class, as well as upscale condos and workspaces to serve the encroaching ballpark area. Recently, I questioned whether the city's intent was gentrification or revitalization. I attended city zoning meetings and met with community members to discuss the changes occurring. What I found disturbing was the way that a racialized space had been created through the city's history of land use. Researching the history of Barrio Logan's development and land use, I understood how both suburbanization and racialization contributed to the creation of a barrio. The term barrioization can be applied: alterations made to a neighborhood, imposed by city authorities and developers without the consultation or consideration of local residents. This practice resulted in careless mixed space zoning imposed by city land use laws. Since the first half of the twentieth century, Barrio Logan residents have been living alongside polluting industries. Unaware of their right to protest against unjustifiable rezoning, the people of Barrio Logan became resentful. This changed when an emerging Chicano voice began demanding land for community enrichment—the result was Chicano Park. Based on my preliminary research, my work has shifted from landscape urban photography, to capturing Barrio Logan's sonorous environment. Through my work, my aim to create an artistic representation by using the voices and sounds that created the shift from barrioization to barriology. Coined by social theorist Raúl Villa, barriology refers to the relationships within a space, and the collective consciousness of that place through cultural representations indicative of Chicano barrios. Since the Chicano Movement, Barrio Logan has found a voice to claim land not only for Chicano Park, but for beneficial change. With the use of turntables and sampling software, my new work focuses on the sounds created within Barrio Logan's collective space to reflect its current culture, its historical past, and to depict what is to come.

501 10:30 am

Effective Color Schemes for 3D Animations of Urban Landscapes with a Spatial and Temporal Dimension

Jennifer Smith, Geography (M)
Ming Tsou, Geography

This paper will compare different color schemes for 3D urban spatio-temporal dynamic maps and identify methods of map designs facilitating acquisition of spatio-temporal information by map users. The following questions guide this study: (1) How do different colors and schemes (i.e. red versus blue and sequential versus random) compare in affecting user abilities to acquire spatio-temporal information in 3D urban map animations? (2) What other factors (i.e. exaggeration and a generalized base map) affect user abilities in acquiring spatio-temporal information? (3) How can we use eye-tracking analysis to further explain and interpret results of specific color schemes? Altering the color scheme as well as the color itself is expected to affect abilities to acquire and understand spatio-temporal information. Animations have been created using ArcScene and Flash, each re-illustrating growth of San Diego State University campus buildings over six decades. Due to the limited availability of participants, the statistical portion of the study is restricted to three main animations to produce statistically significant results. Each of the main animations is presented through a different color scheme, where campus buildings vary in hue or value for each subsequent decade. As time moves forward, buildings rise to their actual height in scale. In completion, the main animations consist of a red sequential scheme, a blue sequential scheme and a random hue scheme. Additionally, participants will provide qualitative feedback regarding three further animations, one exaggerating building heights by two times their actual height in scale, another by four times, and lastly an animation utilizing a google base map footprint. Participants will be chosen to view a randomly assigned animation and take a survey testing their ability to recognize and comprehend spatio-temporal information. ANOVA, one-tailed and two-tailed T-tests will be computed, evaluating survey accuracy. Lastly, eye-tracking software will be used on participants, tracking areas of focus and further informing statistical results. While the research is under progress, preliminary analyses and results will be presented at the Student Research Symposium. With the emergence of dynamic 3D geovisualization, it is important to test whether past cartographic theories on effective map design hold true for 3D dynamic displays.

502 10:45 am

Exploring Policy and Perception in Complex Human-Environment Dynamics in Protected Areas: A Case Study from Guizhou, China

Sarah Wandersee, Geography (D)
Li An, Geography

In considering human-natural systems, incorporating an appreciation for the importance of environmental perceptions is vital for a more integrated understanding of complex processes. This study focuses on the human-nature dynamics of Fanjingshan National Nature Reserve (FNNR) in China, a biodiversity hotspot and the only habitat for the Guizhou golden monkey. One of only 5 species of snub-nosed monkey in the world, the Guizhou golden monkey is increasingly threatened by growing human activity and development within and around FNNR, which was established in 1978 for the monkey's protection. In addition to development, reforestation policies are rapidly changing forest use and composition, and thus the lives of local residents who extract forest resources. Using regression analysis, the results of a Spring 2010 survey were investigated to determine factors influencing environmental perceptions, ideas that are key elements in human-environmental interactions. Without understanding how local inhabitants perceive the environment around them, the formulation of protected area policy may have unintended consequences or limited efficacy. Comprising data from 263 households in 8 villages, the survey focused on demographics, Grain-to-Green reforestation program participation, land use, livelihood, and conservation perception. It was hypothesized that reforestation program participation would be related to environmental awareness due to the program focus on conservation. Preliminary results indicate that other factors are more influential. The model addresses statistical connections between understanding of the impacts of human activities, policy interactions with local livelihoods, and human decision factors. This investigation presents the usefulness of mixed methods surveys and modeling in elucidating the intricacies of human-nature systems towards an understanding of policy implications for addressing development, and conservation challenges.

503 11:00 am

When Urban Taps Run Dry: Drinking Water Patterns in Low Income Neighborhoods of Accra, Ghana

Justin Stoler, Geography (D)
John Weeks, Geography

Intraurban differentials in access to safe drinking water in developing cities have been exacerbated by population growth that exceeds expansion of municipal water infrastructure. In Accra, Ghana, municipal water is rationed to fulfill demand that far exceeds production, and water delivery is ultimately influenced by both geography and income. The gap in water services is increasingly being filled by entrepreneurial water vendors selling packaged, or "sachet" water. While the booming sachet industry effectively extends water coverage deeper into informal settlements and slums, higher unit prices may perpetuate poverty. Contrarily, sachets alleviate the need for safe storage of drinking water and may introduce an inadvertent health benefit over poorer-quality tap water. We explore factors associated with using sachets as the primary source of drinking water in 1,276 low-income households in Accra; we use data from a Housing and Welfare Study (HAWS) administered in 37 census areas classified as slums according to UN-HABITAT criteria. Using a multilevel framework, we find that neighborhood rationing exerts a strong effect on a household's likeliness to buy sachet water, even after adjusting for socioeconomic and demographic factors at the household and individual level, and that sachet customers tend to be the poorest of the poor. The relationship between sachet use and recent incidence of diarrhea in children is less clear, but remains an important research question given increasing dependence on sachets by low-income neighborhoods. We conclude with implications for sachet regulation in Accra and other rapidly developing sub-Saharan cities facing drinking water shortages.

511 11:15 am

Signature Separability of Native and Nonnative Herbaceous Vegetation in Coastal Sage Scrub Using Spectral Time Series and Broad and Narrowband Spectral Vegetation Indices

Caitlin Lippitt, Geography (D)
Douglas Stow, Geography

In the Mediterranean-climate zone of California, coastal sage scrub vegetation provides habitat for several rare, threatened, and endangered plant and animal species. Coastal sage scrub habitat is prioritized for conservation due to reductions in distribution from development, degraded conditions from frequent fire, and nonnative herbaceous invasions. Nonnative herbaceous invasion can reduce biodiversity, alter the timing and flow of water on the landscape, and increase the potential for slope erosion and stream sedimentation. Nonnative herbaceous cover in coastal sage scrub is often obscured by other natural vegetation making it difficult to monitor nonnative herbaceous invasion and spread. Phenological studies of herbaceous vegetation in southern California indicate that nonnative herbaceous vegetation germinates quickly following rainfall, while native herbaceous vegetation tends to germinate later in the rainy season, resulting in a temporal offset in germination and peak greenness. This study assesses the feasibility of exploiting this temporal offset in phenology for potential mapping and monitoring of native and nonnative herbaceous cover using remotely sensed imagery. Handheld hyperspectral data was used to assess the effectiveness of field spectrometric data for the detection of vegetation types in coastal sage scrub. Spectral reflectance measurements were collected

for native and nonnative herbaceous and sub-shrub vegetation in a coastal sage scrub community in the San Diego National Wildlife Refuge in San Diego County, California from January through June 2010. This time interval encompassed the entire growth period for both native and nonnative vegetation within coastal sage scrub habitat in 2010. Radiometric measurements were made at two-week intervals on the same native and nonnative herbaceous and sub-shrub vegetation plots. Both broad and narrowband red and near-infrared vegetation indices were computed using the reflectance values. Signature seperability tests were used to determine the optimal dates and spectral vegetation indices for native and nonnative herbaceous cover discrimination. Results indicate that narrowband vegetation indices and the timing of two image dates following the first substantial precipitation event allows for the best discrimination of herbaceous vegetation from surrounding vegetation types.

Session D-16
Oral Presentation: Philosophy II
Saturday, March 5, 2011, 10:00 am
Location: Chantico

504 10:00 am

The Endless Cartesian Circle

Renee Madison, Philosophy (U)
Steve Barbone, Philosophy

My idea is to re-examine the foundations of Cartesianism and to further explore the criticism of Rene' Descartes' philosophy known as the "Cartesian Circle". I explore this idea by reviewing and analyzing current peer reviewed articles that both defend and criticize Descartes' ontological argument and the Cartesian system as a whole. I think I will conclude that Cartesianism is built upon the existence of God and that the charge of circularity is a valid critique that reveals cracks in the building blocks of the Cartesian system. This is significant because the Cartesian system is the basis for a wide range of disciplines such as science, math, and philosophy. Research regarding this topic is also important because the debate over the "Cartesian Circle" has been an ongoing argument for over 350 years as it is still being studied, defended and disputed by modern day scholars and students alike.

505 10:15 am

Killing Time: Newton's Absolutes

Joshua Stutz, Philosophy (U)
Steve Barbone, Philosophy

Newtonian physics contain several metaphysical claims about the nature of universe as a whole. Newton implicitly introduces the notions of absolute time and space in his scientific masterpiece, the Principia. My project will focus on Newton's metaphysical claims and criticisms of it. My research will critically explore the philosophic aspect of Newton's theory, shading light on potential limitations of science in general. In addition to the Principia, I will explore Leibniz's correspondence with Samuel Clarke, a Newtonian, and other secondary sources as well as contemporary writings by Van Fraassen and Bridgman. I wish to demonstrate that Newton's concepts and Leibniz's criticisms are empirically unjustifiable and beyond the scope of experimental science. Although Newton's absolutes play an important role in his empirically adequate theory, it is a mistake to universally project these empirically unobservable qualities.

506 10:30 am

Encountering Speed Bumps on Descartes' Epistemological Road to a Metaphysical God

Ethan Howe, Philosophy (U)
Steven Barbone, Philosophy

My research initially explores the Cartesian Circle. The Circle has been an issue discussed in philosophy for centuries, and it refers to the fact that Descartes' proof for the existence of God seems to require the existence of God in order to be true. My research discovers that there is not, in fact, any circularity. I continue on, however, and attempt to discover where, if anywhere, Descartes has made a mistake. The Cartesian Circle has been a monolith in philosophy for centuries and so other areas of Cartesian logic seem to have been looked over. I argue that Descartes has made a mistake not at the outset (the Cartesian Circle) but rather in his final conclusion for why God must exist. The Cartesian God serves to guarantee demonstrable truth-claims (thus allowing science to be necessarily true, rather than merely inductive) even when we are not attending to the proof for the truth-claim. However, Descartes provides no reason for affording humans this leisure and so I am forced to conclude that he brought God into existence "ex pigritia"—out of laziness. (Laziness in that he decides to require God's existence rather than requiring human beings to constantly attend to proofs in mathematics and science to guarantee the truth of derived facts.)

507 10:45 am

The Theory Makes the World Go 'Round

Kevin Vasquez, Philosophy (U)
Steve Barbone, Philosophy

In her essay, "Experts, Practitioners, and Practical Judgments", Onora O'Neill analyzes Immanuel Kant's position in Theory and Practice that practitioners need to develop moral theories to guide actions. Since practitioners have no other point of reference to begin from, developing a theory is a necessary step in guiding actions. Individual particulars are not to be considered

when making moral theories. If one theory is insufficient in offering guidance, then more theories rather than less are needed to assist the practitioner. But O'Neill does not mention that the particulars are still important in determining when the guiding theories are insufficient. What we learn from this study is that theories of moral judgment require particulars to determine where those theories fail and whether those theories need amending or outright abandonment.

508 11:00 am

Questioning the Validity of Descartes' Cogito

Calvan Christ, Philosopy
Steven Barbone, Philosophy

According to Robert Stoothoff, a common interpretation of Descartes' Meditations makes the claim that Descartes' reasons for doubting everything derive from what Stoothoff calls the dilemmatic argument, which is the idea that Descartes owes his nature either to an omnipotent God or to some non-omnipotent agency and, in either case, he naturally always goes wrong. Furthermore, Stoothoff insists that Descartes' cogito statement ("I think therefore I am") disproves the dilemmatic argument since it provides Descartes with at least some knowledge. What Stoothoff did not consider, however, is Descartes' idea that if one can destroy the foundations, then one also destroys whatever has been built upon them. With this in mind, we can use the dilemmatic argument to doubt mathematical propositions (as Stoothoff suggests), which can then lead us to doubt space and time (since they are built upon mathematical propositions), which can finally lead us to doubt the cogito (since thinking is an experience and all experiences must take place within space and time). On this account, the cogito can no longer be a means to disprove the dilemmatic argument, which once again leaves Descartes' job of proving an all-perfect God a necessity. This study therefore explores both primary and secondary sources concerning Descartes' cogito in order to question its validity. This study promises to shed considerable light on a foundational problem in early modern and contemporary philosophy by offering a brand new objection to this fundamental position.

509 See page 60

510 See page 96

511 See page 183

512 See page 131

513 See page 132

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