33rd ANNUAL CENTRAL CALIFORNIA RESEARCH SYMPOSIUM

PROCEEDINGS OF THE 2012 SYMPOSIUM

Convened on

Friday, April 13, 2012

in the

University Business Center

California State University, Fresno

33nd ANNUAL
CENTRAL CALIFORNIA RESEARCH SYMPOSIUM

PROCEEDINGS

Sponsoring Institutions

California State University, Fresno

University of California, San Francisco
Fresno Medical Education Program

California School of Professional Psychology at Alliant International University

Fresno City College

American Chemical Society
San Joaquin Valley Section

Educational Employees Credit Union

Convened in the *University Business Center*
on the campus of

California State University, Fresno

Friday, April 13, 2012

PREFACE

Welcome to the *33rd Annual Central California Research Symposium*.

From its inception, the purpose of this symposium has been to bring together investigators, students, and faculty from a variety of disciplines to share the results of their scholarly work. The continuation of these activities in the Central Valley is encouraged by this opportunity for exchange. We hope that all participants will gain new insights from this experience and that learning about the interests of other scholars will enrich their academic journey.

Abstracts for this year's event were reviewed and selected for presentation by the Symposium Coordinating Committee. In this review, the committee looked for a well-written abstract on a topic of scholarly merit.

This year *UCSF Fresno* has provided two cash awards for the best symposium presentation by a student--one for an undergraduate student and one for a graduate student. *California School of Professional Psychology at Alliant International University* has provided two cash awards for the best poster presentations by a student. The *American Chemical Society, San Joaquin Valley Section* has sponsored a cash award for best science presentation. The *Office of the Provost* at *California State University, Fresno* has provided a cash award for best undergraduate poster and best undergraduate oral presentation. The *Craig School of Business* at *California State University, Fresno* has sponsored a cash award for best poster presentation. The *Central California Autism Center*, under the direction of Dr. Amanda Adams, has sponsored a cash award for best undergraduate presentation. The *Educational Employees Credit Union* has sponsored an award for best undergraduate presentation in Mathematical Sciences. The Davin Youngclarke Memorial Award, inaugurated in 2008 and sponsored by the *Office of Research and Sponsored Programs* at *California State University, Fresno*, is awarded to the presenter who best addresses a community issue with use of sophisticated and sound research methods. In addition to providing three cash awards, the *Office of Research and Sponsored Programs* at *California State University, Fresno* has planned and administered the symposium in cooperation with these institutions.

Presenters and guests are invited to a social hour following the concluding address and student awards ceremony, which will be held in the Alice Peters Auditorium in the University Business Center.

These proceedings are published as a permanent record of the work presented. We hope they will stimulate ideas for future work and subsequent symposia.

PLANNING COMMITTEE

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
FRESNO MEDICAL EDUCATION PROGRAM

Donna Hudson, Ph.D.
Symposium Co-Chairperson

Loren Alving, M.D.
Ronna Mallios, Ph.D.
Paul K. Mills, Ph.D.
Michael Peterson, M.D.
Joan Voris, M.D.
Kent Yamaguchi, M.D.

CALIFORNIA STATE UNIVERSITY, FRESNO

Thomas McClanahan, Ph.D.
Symposium Co-Chairperson

Saeed Attar, Ph.D
Roksana Badruddoja, Ph.D.
Sharon Benes, Ph.D.
Sharon Brown-Welty, Ph.D.
Jason Bush, Ph.D.
Daniel Cady, Ph.D.
Alejandro Calderon-Urrea, Ph.D.
Doug Carey
Tamas Forgacs, Ph.D.
Alam Hasson, Ph.D.
Ramakrishna Nunna, Ph.D.
Karl Oswald, Ph.D.
Brian Tsukimura, Ph.D.

ALLIANT INTERNATIONAL UNIVERSITY, FRESNO

Siobhan O'Toole, Ph.D.

FRESNO CITY COLLEGE

Carl Johansson
Rick Stewart

EVENT AND PROCEEDINGS COORDINATORS

Millie C. Byers & Maral Kismetian
California State University, Fresno

CALIFORNIA
STATE
UNIVERSITY,
FRESNO

April 13, 2012

MESSAGE TO ALL RESEARCH SYMPOSIUM PARTICIPANTS

California State University, Fresno is pleased to serve as the host campus for the 33rd Annual Central California Research Symposium.

This symposium continues to provide a unique forum for the presentation and discussion of scholarly activities of interest to researchers throughout the Fresno region. The program for the symposium reflects our commitment to promoting interdisciplinary research, encouraging scholarly exchange on theoretical and pragmatic topics, and providing an opportunity for both students and research scholars to share common interests. Cooperative efforts such as these benefit the individual institutions involved and ultimately the public that we all serve.

We appreciate your participation in this symposium, and it is my pleasure to extend my warmest welcome to our campus.

Sincerely,

John D. Welty
President

Office of the President
Harold H. Haak Administrative Center
Henry Madden Library, Suite 4104
5200 North Barton Ave. M/S ML48
Fresno, CA 93740-8014
559.278.2324
Fax 559.278.4715

University of California
San Francisco

UCSF

Fresno Medical Education Program

Office of the Associate Dean

Medical Education Building
155 N. Fresno St.
Fresno, CA 93701

phone: 559-499-6427
SF ph: 415-476-3882
fax: 559-499-6411

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dean@fresno.ucsf.edu

WELCOME

33rd Annual Central California Research Symposium
April 13, 2012

It is my pleasure to welcome each of you to the 33rd Annual Research Symposium. UCSF Fresno is very committed to conducting and supporting research, and this Symposium offers a wonderful venue to be able to review some exemplary local research projects. Every year I am impressed anew by the diversity and quality of the research that is ongoing in the Central Valley and it is exciting to witness the richness of academic activity that is evidenced here today. The studies represented here will lead to an improved quality of life for our communities, something we all care deeply about.

Whether you are attending today as a participant or a visitor, I believe you will feel challenged and energized as you explore the research projects on display.

Sincerely,

Joan Voris
Associate Dean, UCSF Fresno Medical Education Program
Assistant Clinical Professor of Pediatrics, UCSF

CSPP CALIFORNIA SCHOOL OF PROFESSIONAL PSYCHOLOGY
ALLIANT INTERNATIONAL UNIVERSITY

April 13, 2012

Dear Symposium Participants,

The California School of Professional Psychology (CSPP) at Alliant International University is proud to be a sponsor of the 33rd Annual Central California Student Research Symposium.

As the largest trainer of doctoral level psychologists in California with a focus on applied research in the behavioral sciences and a commitment to international and multicultural education, CSPP is pleased to support the next generation of researchers in Central California.

This annual symposium celebrates the contributions of a diverse range of disciplines, underscoring the value of research in improving professional services, influencing policy, and changing lives.

Students, we applaud your creativity and dedication, and we look forward to learning more about the research you are conducting.

Sincerely,

Morgan T. Sammons, PhD, ABPP
Dean

Fresno City College
1101 East University Avenue, Fresno, California 93741 Phone: 559-442-4600 FAX: 559-265-5777

Office of the President

February 9, 2012

Symposium Participants
Central California Research Symposium
University Grants and Research Office
California State University, Fresno
4910 North Chestnut Avenue
Fresno, CA 93726-1852

Dear Symposium Participants:

Fresno City College is pleased to be a sponsor of the 33nd Annual Central California Research Symposium. This cooperative venture not only advances the frontiers of knowledge but leverages the research resources of each participating institution. Fresno City College is proud to be a partner in hosting this program and extends best wishes to all participants.

I hope the Symposium will be both informative and enjoyable for you.

Sincerely,

Tony Cantú
Interim President

TC/kq

Concurrent Session A

University Business Center
Auditorium, Room 191

9:00 a.m. ***Function and Expression Dynamics of Rho, Rac and Cdc42 Genes in the Starlet Sea Anemone, Nematostella vectensis***
Setareh Khalili, Craig R. Magie, Ph.D.

9:15 a.m. ***The Effects of Chronic Cortisol on Growth in a Fish Model (Oreochromis mossambicus)***
Elizabeth Braschayko, Larry Riley, Ph.D.

9:30 a.m. ***Environmental Effects on Non-Native Copepod Distributions in Upper San Francisco Bay***
Steven Gong, Brian Tsukimura, Ph.D.

9:45 a.m. ***Prey Capture in Bladderwort, the Fastest Known Suction Feeder***
Matthew Brown, Roi Holzman, Otto Berg, Ulrike K. Müller, Ph.D.

10:00 a.m. ***Bacterial Endophytes of Conifers Buds***
Emily C. Wilson, Carolin Frank, Ph.D.

10:15 a.m. – 10:30 a.m. **Break- University Business Center, Gottschalks Gallery**

12:15 p.m. **Plenary Session**

Concurrent Session B — University Business Center Room 192

9:00 a.m. ***A Variable Power Supply for Process Automation Application: Analysis, Design, Testing and Validation***
Edward Araya, Nitaigour Mahalik, Ph.D.

9:15 a.m. ***The Role of Documentation Categories for the Integration of Complex Automated Processing Machines and Making It Operational: A Case Study***
Zack Flecher, Nitaigour Mahalik, Ph.D.

9:30 a.m. ***Development of Automated Concentrated Solar Thermal Power System for Air Conditioning Applications***
Robert Ceja, Nitaigour Mahalik, Daming Zhang, Ph.D.

9:45 a.m. ***Differentiation of Insulin-Producing Cell Clusters from Mouse Embryonic Stem Cells without Embryoid Body Formation***
Christa D. Caneda, Jesus Ciriza, Jennifer O. Manilay, Ph.D.

10:00 a.m. ***Conservation Genetics of the Red Hills Roach (Cyprinidae: Lavinia symmetricus ssp)***
` Morrell Chhay, Tim Heyne, Jennifer O'Brien, Andres Aguilar, Ph.D.

10:15 a.m. – 10:30 a.m. **Break- University Business Center, Gottschalks Gallery**

12:15 p.m. **Plenary Session**

Concurrent Session C

University Business Center
Room 286
Dean's Conference Room

9:00 a.m. ***On Legendre Multiplier Sequences***
Katherine Urabe, Emily Davis, Kelly Blakeman, Tamas Forgacs, Ph.D.

9:15 a.m. ***Well-Covered Dimension of Products of Graphs***
Megan Kuneli, Robyn McDonald, Katherine Urabe, Oscar Vega, Ph.D.

9:30 a.m. ***Grim: A Subtraction Game on Finite Graphs***
Jamie Peabody, Karen Willis, Oscar Vega, Ph.D.

9:45 a.m. ***Construction of an AC Magnetic Susceptometer***
Ryan Fukuda; Andres Felipe Vargas; Smitha Sunny, Pei-Chun Ho, Ph.D.

10:00 a.m. ***Role of Omega-3 fatty Acids in Biological Membranes: Possible Reasons for Beneficial Health Outcomes***
Stephanie Chen, Chai Lor, Linda S. Hirst, Ph.D.

10:15 a.m. – 10:30 a.m. **Break- University Business Center, Gottschalks Gallery**

12:15 p.m. **Plenary Session**

Concurrent Session D

University Business Center
Room 194

9:00 a.m. ***The Dandy in 'earnest': Oscar Wilde's Spiritual Aestheticism***
Kristin Baer, Ruth Jenkins, Ph.D.

9:15 a.m. ***"Developing Community: Storytelling in Laila Halaby's *West of the Jordan*"***
Lena Zaghmouri, Randa Jarrar, Ph.D.

9:30 a.m. ***Behind The Comedy Mask: The Serious Function of Humor in the Works Of Behn, Austen, and Gaskell***
Cheri Y. Halvorson, Ruth Jenkins, Ph.D.

9:45 a.m. ***Kenneth Burke's Pentad Position(ed) to Evaluate the Black Women in Tyler Perry's***
Aishah K. Cope

10:00 a.m. ***Domain-initial Articulatory Strengthening Revisited: The Case of Second Language Acquisition***
Mitchell Baroni, Keith Johnson, Ph.D.

10:15 a.m. – 10:30 a.m. **Break- University Business Center, Gottschalks Gallery**

12:15 p.m. **Plenary Session**

Concurrent Session E

University Business Center
Auditorium, Room 191

10:30 a.m. ***Some Studies on Waste Reduction Management Strategy for Irrigation Related Products: Methodology, Automation and Process Planning***
Varun Maradana, Nitaigour Mahalik, Ph.D., Tony Au, Ph.D.,Alam Hasson, Ph.D.

10:45 a.m. ***Air-Pollution Control Techniques in a Glass Manufacturing Process***
Gurjeet Sarao, Nitaigour Mahalik, Ph.D., Tony Au, Ph.D.

11:00 a.m. ***Concentrations of Selected Organics Downwind from a California Dairy***
Srikar Middala, Austen Scruggs, Kennedy Vu, Laxmi R. Addala, Lucien Nana, Catalina Olea, Julie Steele, Thomas C. Shelton, Brenda Osborne, James R. McHenry, Segun Ogunjemiyo, Ph.D., Shawn Ashkan, Ph.D., Alam Hasson, Ph.D.

11:15 a.m. ***Entropic Derivation of Newton's Second Law (F=ma) for Circular Motion***
Michael Duncan, Douglas Singleton, Ph.D.

11:30 a.m. ***Agni: Smartphone based Inventory Management System***
Tejasvi Chudasma, Ming Li, Ph.D.

12:15 p.m. **Plenary Session**

1:30 p.m. – 1:45 p.m. **Break- University Business Center, Gottschalks Gallery**

Concurrent Session F

University Business Center
Auditorium, Room 192

10:30 a.m. ***Generation and Characterization of M. smegmatis Mutants Disrupted in Mycothiol Metabolism***
Kathryn Barretto, Mamta Rawat, Ph.D.

10:45 a.m. ***Mycobacterium Smegmatis Mutants Sensitive to Thiol-Oxidizing Agent Diamide***
Ruzan Orkusyan, Mamta Rawat, Ph.D.

11:00 a.m. ***Development of a Nanodetection Assay for Heartworm using qPCR with SYBR Green***
Kristen Andreasen, Alejandro Calderon-Urrea, Ph.D., Paul Crosbie, Ph.D.

11:15 a.m. ***Effects of Se-enriched Meal on Growth Performance and Endocrine Control of Growth in Tilapia (Oreochromis mossambicus)***
Temperance R. Rowell, Gary Bañuelos, Larry G. Riley, Ph.D.

11:30 a.m. ***Bacillthiol-S-Transferase are Involved in the Detoxification of toxins***
Shayla Duran, Mamta Rawat, Ph.D.

12:15 p.m. **Plenary Session**

1:30 p.m. – 1:45 p.m. **Break- University Business Center, Gottschalks Gallery**

Concurrent Session G

University Business Center
Room 286
Dean's Conference Room

10:30 a.m. ***Does Endometrial Injury Enhance Embryo Implantation?***
Carolina Sueldo, Claudio Benadiva, John Nulsen

10:45 a.m. ***Penny Ingestion & Zinc Toxicity in the Pediatric Population: An Issue of Common Cents***
Quinton Young, John Kinnison, Ph.D., Michael Haight

11:00 a.m. ***Parental Health Literacy in the Neonatal Intensive Care Unit***
Philip Cheng, M.D.; Serena Yang M.D., MPH; Steven Zuniga, Ph.D., Stephen Elliott, M.D.

11:15 a.m. ***Factors Affecting the Hmong's Attitude towards Modern Medicines in Fresno City***
Mohammad A Rahman, Joe Cha

11:30 a.m. ***Exploring the Development of Dual Degree MSW/MBA Programs in the U.S. and It's Impact on Social Work Profession***
Martha Vungkhanching, Ph.D., Pajtshiab Vang

12:15 p.m. **Plenary Session**

1:30 p.m. – 1:45 p.m. **Break- University Business Center, Gottschalks Gallery**

Concurrent Session H

University Business Center
Auditorium, Room 194

10:30 a.m. ***To Whom it May Concern: Auditing and Recommending Uses of Email for an Organizational Unit at Kaiser Hospital***
David C. Horwitz, Marnel Niles Goins, Ph.D.

10:45 a.m. ***The Impact of the Implementation of Pre-Laboratory Quizzes in a General Chemistry Course***
Elizabeth Buchnoff, Eric Person, Ph.D.

11:00 a.m. ***Identifying And Exploring Factors That Influenced Successful Latino College Graduates***
Leticia Lasota, Albert Valenica, Ph.D.

11:15 a.m. ***Teacher Self-Efficacy In Working With Students On 504 Plans***
Abigail Arii, Virginia Rondero Hernandez, Ph.D.

11:30 a.m. ***Changes in Counselor Trainee General and Counseling Domain Self-Efficacy***
Victoria Kubal, Albert Valencia, Ph.D.

12:15 p.m. **Plenary Session**

1:30 p.m. – 1:45 p.m. **Break- University Business Center, Gottschalks Gallery**

Plenary Session — University Business Center Auditorium, Room 191

12:15 p.m. Opening Remarks and Welcome
Dr. Thomas McClanahan
California State University, Fresno

Dr. Donna Hudson
University of California, San Francisco
Fresno Medical Education Program

Dr. Joan Voris
University of California, San Francisco
Fresno Medical Education Program

12:25 p.m. ***Calcium Induced Differentiation of Mouse Embryonic Stem Cells into Cardiomyocytes***
Megha Kumar, Simarjot Chehal, Amandeep Singh, Kristin Herring, Jason Bush, Ph.D.

12:40 p.m. ***Comparison of Geologically-Averaged Paleomagnetic and "Instantaneous" GPS Rotation Data in the West-Central Walker Lane***
Michael J. Farner, Christopher, J. Pluhar, Ph.D. Chad W.Carlson

12:55 p.m. ***Yield and Forage Quality of Elephant Grass (Pennisetum sp.) and Sudan Grass (Sorghum bicolor) Irrigated with Dairy Effluent***
Prasad Yadavali, Dave Goorahoo, Ph.D., Florence Cassel Sharma, Ph.D.

1:10 p.m. ***Curando or Healing? Folk healing in the California Central Valley and in Guadalajara, Jalisco***
Martha Nuño Diaz, James Mullooly, Ph.D.

1:30 p.m. – 1:45 p.m. **Break- University Business Center, Gottschalks Gallery**

5:00 p.m. **Concluding Address – Alice Peters Auditorium, Room 191**
Fresno State and CSU's ATLAS program at LHC of CERN and ATLAS Muon Sub-detector Upgrade R&D
Emmanuel Angulo, Yongsheng Gao, Ph.D.

Proceed to Student Award Presentations and Social Hour

Concurrent Session I

University Business Center
Auditorium, Room 191

1:45 p.m. ***The Perceived Face of Criminals***
Alex Prather-Sellers, Karl Oswald, Ph.D.

2:00 p.m. ***The Role of the Intraparietal Sulcus in the Sample Size Bias***
Nicole M. Kimura, Paul C. Price, Ph.D.

2:15 p.m. ***Counterstories of Latinos: Examining the Campus Racial Climate in a Private High School***
Victoria Gomez, Marcos Pizarro, Ph.D.

2:30 p.m. ***Group Creativity: Cooperating across Disciplines***
ShayLynne Clark, Brett Cragun, Ph.D.

2:45 p.m. ***Determinants of Remittances to Recipient Countries: A Comparative Study of China, India, and Mexico***
Abdinasir Hersi, James Ahiakpor, Ph.D.

3:00 – 3:15 p.m. **Break- University Business Center, Gottschalks Gallery**

5:00 p.m. **Concluding Address – Alice Peters Auditorium, Room 191**
Fresno State and CSU's ATLAS program at LHC of CERN and ATLAS Muon Sub-detector Upgrade R&D
Emmanuel Angulo, Yongsheng Gao, Ph.D.

Proceed to Student Award Presentations and Social Hour

Concurrent Session J

University Business Center
Room 192

1:45 p.m. ***A Phosphoproteomic Analysis of a M. smegmatis Universal Stress Protein Mutant***
Andrew Norton, Mamta Rawat, Ph.D.

2:00 p.m. ***Establishment of a Microplate-based Fluorescence Polarization Method for DNA-protein Interaction***
Joseph Lin, Hwan Youn, Ph.D.

2:15 p.m. ***Understanding the Sequence Basis of Reversed Allostery in Xanthomonas axonopodis CRP-like protein (Clp)***
Whitney Menefee, Hwan Youn, Ph.D., Salvador Vazquez, Stevie Ramos

2:30 p.m. ***Staphylococcus aureus Mutants Disrupted in Bacillithiol Metabolism are Sensitive to Xenobiotics and Oxidants***
Judy Ikawa, Mamta Rawat, Ph.D.

2:45 p.m. ***Laboratory Investigation of the Atmospheric Chemistry of Isoprene Hydroxynitrate***
Laxmi Ramya Addala, Catalina Olea , Srikar Middala, Kennedy Vu, Lucien Nanal Austen Scruggs, Alvaro Sosa, Santanu Maitra, Max Stephenson, Michelle Boyce, Geoffrey Tyndall, John Orlando, Alam Hasson, Ph.D.

3:00 – 3:15 p.m. **Break- University Business Center, Gottschalks Gallery**

5:00 p.m. **Concluding Address – Alice Peters Auditorium, Room 191**
Fresno State and CSU's ATLAS program at LHC of CERN and ATLAS Muon Sub-detector Upgrade R&D
Emmanuel Angulo, Yongsheng Gao, Ph.D.

Proceed to Student Award Presentations and Social Hour

Concurrent Session K

University Business Center
Room 286
Dean's Conference Room

1:45 p.m. ***See what I mean? Modeling gaze behavior for virtual demonstrators***
Justin L. Matthews, Yazhou Huang, Teenie Matlock, Ph.D., Marcelo Kallmann

2:00 p.m. ***Obscured by the Tule Fog: Rural African Americans Fade into the San Joaquin Valley***
Michael Eissinger, Robin DeLugan, Ph.D.

2:15 p.m. ***How Low Temperature Fire Affect Soil Structure***
Ammar A. Albalasmeh, Markus Berli, David S. Shafer, Teamrat A. Ghezzehei, Ph.D.

2:30 p.m ***Effects of Fire on Ozone Production in Central California***
Segun Ogunjemiyo, Ph.D.

3:00 – 3:15 p.m. **Break- University Business Center, Gottschalks Gallery**

5:00 p.m. **Concluding Address – Alice Peters Auditorium, Room 191**
Fresno State and CSU's ATLAS program at LHC of CERN and ATLAS Muon Sub-detector Upgrade R&D
Emmanuel Angulo, Yongsheng Gao, Ph.D.

Proceed to Student Award Presentations and Social Hour

Concurrent Session L

University Business Center
Room 194

1:45 p.m. ***Cultural Connection through Cultural Training in Physician Organizations***
Bayo Fagbamila Jr., Stephen Shortell, Ph.D.

2:00 p.m. ***Hmong's Perceptions Toward Shaman and Herbal Medicines***
Joe Cha, Mohammad Rahman, Ph.D.

2:15 pm. ***Food Insecurity and Obesity in the Popular Media***
Hector Diazm, Marjorie Freedman, Ph.D.

2:30 p.m. ***What Motivates Employees to Participate in Wellness at Work Programs?***
Paul Zwama, Rudy Sanchez, Ph.D.

2:45 p.m. ***Developing Effective Websites for Content Managers and End Users: Flexibility, Scalability, and Configurability Issues***
Abhijit Suprem, Srini Konduru, Ph.D., Annette Levi, Ph.D.

3:00 – 3:15 p.m. **Break- University Business Center, Gottschalks Gallery**

5:00 p.m. **Concluding Address – Alice Peters Auditorium, Room 191**
Fresno State and CSU's ATLAS program at LHC of CERN and ATLAS Muon Sub-detector Upgrade R&D
Emmanuel Angulo, Yongsheng Gao, Ph.D.

Proceed to Student Award Presentations and Social Hour

Concurrent Session M

University Business Center
Auditorium, Room 191

3:15 p.m. ***Untangling the Web of Interaction: Indigenous Peoples and Missionaries at Mission Soledad***
Joshua Liggett, Charles Ettner, Ph.D.

3:30 p.m. ***Giving definition to the Liminal : Door-to Door Surveying in South Dos Palos California.***
Sheila Petersen, Robin DeLugan, Ph.D.

3:45 p.m. ***The Burden of "Empathty": Women Writers in Arab American Literature Post-9/11***
Neama Alamri, Randa Jarrar, Ph.D.

4:00 p.m. ***Federico Garcia Lorca's Rural Trilogy: Honor, Duty, Spanish Traditional Identity, and the Conflict with the Second Republic***
Ruth A Oropeza, Mary Pickering, Ph.D.

5:00 p.m. **Concluding Address – Alice Peters Auditorium, Room 191**
Fresno State and CSU's ATLAS program at LHC of CERN and ATLAS Muon Sub-detector Upgrade R&D
Emmanuel Angulo, Yongsheng Gao, Ph.D.

Proceed to Student Award Presentations and Social Hour

Concurrent Session N

University Business Center
Room 192

3:15 p.m. ***The Role of Glutamate in the Insect Locomotory: A Glutamate Agonist Causes Hyperactivity and Loss of Climbing Ability in Adult Fruit Flies***
Nalong Mekdara, Ulrike K. Müller, Ph.D.

3:30 pm. ***HPLC Analysis to Quantify the Neurotoxic Betamethylamino-l-alanine (BMAA) Levels in Fruit Fly***
Anjaneya K. Sinha, Joy Goto, Ph.D.

3:45 p.m. ***How Flies Stumble: The Effects of a Glutamate Agonist on Climbing Ability in Adult Fruit Flies***
Danial Husain, Ulrike K. Müller, Ph.D.

4:00 p.m. ***Direct Effects of Cortisol on Appetite Regulation in the Brain of Tilapia, Oreochromis mossambicus***
Christine A. Duncan and Larry G. Riley Jr., Ph.D.

4:15 p.m. ***Insecticide Resistance And The Efficacy Of Ground Ulv Applications In Fresno County, Ca***
Paul R. Crosbie, Jodi J. Holeman, Anthony J. Cornel

5:00 p.m. **Concluding Address – Alice Peters Auditorium, Room 191**
Fresno State and CSU's ATLAS program at LHC of CERN and ATLAS Muon Sub-detector Upgrade R&D
Emmanuel Angulo, Yongsheng Gao, Ph.D.

Proceed to Student Award Presentations and Social Hour

Concurrent Session O

University Business Center
Room 286
Dean's Conference Room

3:15 p.m. ***Incorporation of Choice into Self-Control Training Procedures***
Laura Barcelos Nomicos, Amanda Adams, Ph.D., Grecia Mendoza

3:30 p.m. ***The Physiological Correlates of Decision Making and Risk Taking on a Novel Gambling Task***
Patricia E. Sanders, Martin Shapiro, Ph.D.

3:45 p.m. ***Examining the Effects of Outcome-related Stimuli on Recycling Behavior in a University Setting***
Angelica Aguirre, Marianne Jackson, Ph.D, BCBA-D

4:00 p.m. ***Law Enforcement Officers' Theoretical Commitments and Their Effects on Attitudes Toward Punitiveness***
Caitlin Grace Lynch, Yoshiko Takahashi, Ph.D.

5:00 p.m. **Concluding Address – Alice Peters Auditorium, Room 191**
Fresno State and CSU's ATLAS program at LHC of CERN and ATLAS Muon Sub-detector Upgrade R&D
Emmanuel Angulo, Yongsheng Gao, Ph.D.

Proceed to Student Award Presentations and Social Hour

Concurrent Session P

University Business Center
Room 194

3:15 p.m. ***Emissions Measurements of Volatile Organic Compounds from Dairies in the San Joaquin Valley***
Catalina Olea, Kennedy Vu, Austen Scruggs, Lucien Nana, Ramya Addala, Srikar Middala, Jeff Cole, Alam Hasson, Ph.D.

3:30 pm. ***Chromatogram Distortion Caused by Passive Headspace Sampling of Ignitable Liquids***
Pahoua Xiong, Seth Yates, Spring Villarrial, Eric Person, Ph.D.

3:45 p.m. ***Impact of Instrument Variation on Chromatogram Comparison of Ignitable Liquids***
Spring Villarrial, Pahoua Xiong, Seth Yates, Eric Person, Ph.D.

4:00 p.m. ***The Effects of Manganese Toxicity on Motor Activity in Fruit Flies***
Bradley Kroeker, Lana R. McGinnis, Joy Goto, Ph.D.

4:15 p.m. ***Identification and Treatment of CHF and COPD in an Urban Pre-Hospital Setting***
Brett Sodini, Lori Weichenthal MD, Susanne Spano MD, Megann Young MD, Brandy Snowden

5:00 p.m. **Concluding Address – Alice Peters Auditorium, Room 191**
Fresno State and CSU's ATLAS program at LHC of CERN and ATLAS Muon Sub-detector Upgrade R&D
Emmanuel Angulo, Yongsheng Gao, Ph.D.

Proceed to Student Award Presentations and Social Hour

Poster Session I
9:00 a.m. until 10:30 a.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 9:00 a.m. until 10:30 a.m.

(1) ***21st Century Women in 19th Century Dress***
Heather Sisk, Shelby Art, Elizabeth Payne

(2) ***Working Memory Capacity is not reduced by Songs that are 'Stuck in Your Head'***
Brooke Okada, Antarpreet Kaur, Robbyn Wood, Karl M. Oswald, Ph.D.

(3) ***Cultural Differences in Perception of Self-Concept Consistency***
Ruth Lichtenstein Robert Levine

(4) ***The Effects of Distributed Learning and Dissimilar Intervening Material on Consistency of Recall***
Mary K. Varner, Danielle Escobar, Allyson McCaffrey, Karl Oswald, Ph.D.

(5) ***Evaluating Betting as a Tool for Improving Metacognitive Calibration***
Jesus Gonzalez, Celeste Pilegard, Karl Oswald, Ph.D.

(6) ***The Effects of Compliments on Helping Behavior***
Leigh Perreault, Honora Chapman, Ph.D.

(7) ***Vertical Ozone and Boundary Layer Profiles at a Dairy Facility in Central California***
Ryan McHenry, Segun Ogunjemiyo, Ph.D.

(8) ***Using Direct Reinforcers To Improve Reading Comprehension In Children With Autism***
Elizabeth Foley and Amanda Adams, Ph.D.

(9) ***Three-dimensional Escape Trajectories in Larval Fish***
Darius Khorshidchehr, David Ryan,Ulrike K. Müller, Ph.D., Otto Berg, Karla E. Feitl, Matthew J. McHenry

(10) ***Proteomic Evaluation of A Caveolae-Enriched Fraction from Different Integrin Backgrounds: Implications for Tumor Cell Motility***
Jinsha Liu, Lianji Jin, Jason Bush, Ph.D.

(11) ***cancelled***

Poster Session I continued
9:00 a.m. until 10:30 a.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 9:00 a.m. until 10:30 a.m.

(12) ***Association Mapping of Tolerance Genes in Populus Clones with the Use of Simple Sequence Repeat (SSR) Markers and Candidate Genes***
Nathan Follen, Kyan Salehi, Jim Prince, Ph.D.

(13) ***Identification and Relevance of Stem Cell Markers in Pancreatic Cancer Cell Lines***
Megha Kumar, Steven Miller, Kristin Herring, Joel Ramirez, Lulu Wong, Rowena Chu, Julie Jin, Jason Bush, Ph.D.

(14) ***Molecular Dynamics Simulations of Protein Enantiomers***
Cierra Coffman, V. V. Krishnan, Ph.D.

(15) ***Determination of Molecular Self-Diffusion Coefficients Using Pulsed-Field-Gradient NMR: An Experiment for Undergraduate Physical Chemistry Laboratory***
Jennifer Harmon, Cierra Coffman, Spring Villarrial, Steven Chabolla, Kurt Heisel, V.V. Krishnan, Ph.D.

(16) ***Physical Property Solutions Applied To Recycling Problems***
Gregory Harnden and Ryan Dougherty Melissa L. Golden, Ph.D.

(17) ***Green Catalytic Activation of Hydrogen Peroxide by Organochalcogenide Compounds***
Keilah Villines, Edwin Lozano, Michael Drake, Ph.D.

(18) ***Kinetics of the Gas-Phase Reaction of Hexanal with Chlorine Atoms***
Aroob Abdelhamid, Lucas Algrim, Austen Scruggs, Lucien Nana-Yobo, Alam Hasson , Ph.D.

(19) ***The Effects of Manganese Ion on Oxidative Stress in a Drosophila melanogaster Parkinson's-like Model***
Shereen Dimes, Joy Goto, Ph.D.

(20) ***Effects of β-N-oxalylamino-L-alanine (BOAA) on the Viability and Locomotory Behavior of Drosophila melanogaster***
Riann J. Egusquiza, Joy J. Goto, Ph.D.

Poster Session I continued
9:00 a.m. until 10:30 a.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 9:00 a.m. until 10:30 a.m.

(21) ***Groundwater Elevations in a Gold-Mined Merced River Floodplain***
Lynn Sullivan Martha Conklin, Ph.D., Teamrat Ghezzehei, Ph.D., Joseph Merz, PhD., Martha Conklin, Ph.D.

(22) ***Exploring Asynchronous Flight-Muscle Activation In Insects through a Bio-Mimetic Flapping Machine***
Songita Choudhury, Dinesh K. Manikkam, Otto Berg, Ulrike Müller, Ph.D.

(23) ***How Bladderwort Catch Prey: Hydrodynamic Models of a Suction-Feeding Carnivorous Plant***
Adrienne Olaivar, Otto Berg, Ulrike Müller, Ph.D.

(24) ***Optimization of Mixed Design For Permeable Concrete***
Daisy Manivong, Jameson Schwab, Jesus Larralde, Ph.D.

(25) ***Reusble and Heterogeneous Smart Phone Application Development***
Adam Cardenas, Shih-Hsi "Alex" Liu, Ph.D.

12:15 p.m. **Plenary Session**

Poster Session II
11:00 a.m. until 12:30 p.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 11:00 a.m. until 12:30 p.m.

(1) ***Optimizing in Vitro Propagation Of Douglas Fir (Pseudotsuga Menziesii) for use in Pacific Northwest Timber Industry Reforestation Efforts***
Kevin Flynn, Sheri Melkonian, David Moreno, John T. Bushoven, Ph.D.

(2) ***Potential of Using Vermicompost Tea to Optimize Growth and Yield of Bell Peppers***
TariLee Frigulti, Prasad Yadavali, Dave Goorahoo, Ph.D.

(3) ***Effect of Organic and UAN-32 Fertilization on Bok Choy Yield and Soil Properties***
Touyee Thao, Dave Goorahoo, Ph.D.

(4) ***Effect of Irrigation, Surfactant and Fertilizer Rates on Chlorophyll Content in Tomato Leaves***
Josue Samano- Monroy, Navreet K Mahal, Florence Cassel Sharma, Ph.D., Caio Cesardiaz, Dave Goorahoo, Ph.D.

(5) ***Determining the Habitat Preference of Sand Lance (Ammodytes hexapterus) using Multibeam Bathymetry in the San Juan Islands,Washington.***
Elizabeth Davidson, H. Gary Greene, Fraka Harmsen, Ph.D.

(6) ***KaiC CII-CI Ring Interaction Regulates KaiB Binding***
Ian Bravo, Robert Latham, Roger Tseng, Yong-Gang Chang, Andy Li Wang

(7) ***The Effects and Function of the Hypothalamic-pituitarythyroid Axis on Fasting Northern Elephant Seals***
Bridget Martinez, Jose Guadalupe Sonanez, Ruben Rodriguez, Jose Viscarra, Jose Pablo Vasquez-Medina, Rudy M Ortiz

(8) ***Understand the Timing Mechanism of Circadian Clock Proteins***
Abdullah Chaudhary, Roger Tseng, Claudia Lekhac, Yong-Gang Chang, Andy Li Wang

(9) ***Construction of an AC Magnetic Susceptometer***
Andres Felipe Vargas; Ryan Fukuda; Smitha Sunny, Pei-Chun Ho, Ph.D.

(10) ***Finite Pulse Relaxation Calorimetry and Specific Heat of NdOs4Sb12***
Pei-Chun Ho, Ph.D.

Poster Session II continued
11:00 a.m. until 12:30 p.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 11:00 a.m. until 12:30 p.m.

(11) ***The Outbursts of the Cataclysmic Variable V425 Cassiopeiae***
Dillon T. Trelawny, F. A. Ringwald, Ph.D.

(12) ***Improved Simulations to Search for New Physics at ATLAS***
Navid Rad, Yongsheng Gao, Ph.D.

(13) ***Jets in ATLAS Data from Fresno's Tier 3 Computing System***
Arya Afshari, Yongsheng Gao, Ph.D.

(14) ***Effect of Irrigation, Surfactant and Fertilizer Rates on Nitrate Levels in Tomato Leaves***
Navreet K Mahal, Dave Goorahoo, Ph.D. Florence Cassel Sharma, Ph.D.

(15) ***Yield, Fruit Quality and Plant Nutrition of Tomatoes Subjected to Elevated Carbon Dioxide***
Bardia Dehghanmanshadi, Florence Cassel Sharma, Ph.D., Dave Goorahoo, Ph.D., Shawn Ashkan, Ph.D.

(16) ***Modeling Hydroecological Effects of Tephra Layers in Sierra Nevada Meadows***
Chelsea L. Arnold, Teamrat Ghezzehei,Ph.D., Asmeret Asefaw Berhe

(17) ***The localization of Vitellogenin gene expression by RNA in situ Hybridization in Banana Shrimp (Fenneropenaeus merguiensis de Man)***
Peerapong Puengyam, Prapaporn Utarabhand, Brian Tsukimura, Ph.D.

(18) ***Evaluation of Pesticide Involvement in Breast Cancer Cell Lines***
Kathryn Patterson, Julie Hale, Fumiko Yamamoto, Jason Bush, Ph.D.

(19) ***Locating the Geographical Origin of Lobesia botrana (Lepidoptera:Tortricidae): A Recent Invasive Pest to the Americas***
Matthew C. Middleton, Paul R. Crosbie, Ph.D., Kent M. Daane

(20) ***Reactivating Inhibited, Is Derepression Possible?***
Monica L. Gonzalez, Joseph Oloo, Jason Bush, Ph.D.

(21) ***A New Behavioral Assay to Quantify Locomotor Competence of Drosophila: Lenticular Arena***
Athena Goodarzi, Ulrike Müller, Ph.D.

Poster Session II continued — University Business Center
11:00 a.m. until 12:30 p.m. — Gottschalks Gallery

Authors will be available for questions from 11:00 a.m. until 12:30 p.m.

(22) ***Anti-Angiogenic Effects of Zoledronic Acid on Osteotropic Breast Cancer***
Cynthia Contreras, Shaghayegh Morshedian, Walid Hamud, Jason Bush, Ph.D.

(23) ***Cross-Complementation of CRP and Vfr***
Sanjiva Gunasekara, Hwan Youn, Ph.D.

(24) ***Propargyl Bromide Degradation In Isolated Soil Bacteria***
M. DeWall, A. Johnson, Alice Wright, Ph.D.

(25) ***Epidemiology of Inmate Exposures to Poisons in California Penal Institutions***
Sumaira Arain, M.D., Richard Geller, M.D., MPH, Robert Kezirian, M.D., Serena Huntington, Terry Carlson, Diane Strong , Richard Geller, M.D., MPH

(26) ***Self-Reported Experiences of Prenatal HIV Testing In Fresno County***
Rebeca A. Lopez, M.P.H.,Roger B. Mortimer, M.D.

12:15 p.m. **Plenary Session**

1:30 p.m. – 1:45 p.m. **Break- University Business Center, Gottschalks Gallery**

Poster Session III
1:30 p.m. until 3:00 p.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 1:30 p.m. until 3:00 p.m.

(1) ***Effectiveness of Emotive Epoc's Ability to Create Movement Using Thought***
Jesus Gonzalez, Martin Shapiro, Ph.D.

(2) ***Examining the Views and Perceptions of Female Genital Circumcision among Somali and European American Women***
Nadira Jama, Sandra Trafalis, Ph.D.

(3) ***The Role of Social Capital in Latino High School Student's Academic Success: Teacher-Student Relationships***
Nancy Cardenas, Maria Alaniz, Ph.D.

(4) ***The Effects of Service-Learning on Diverse Students Attending an Urban Public University***
Albertina A. Lopez, Elena Klaw,Ph.D., Sean Laraway

(5) ***The Body Image Psychological Inflexibility Scale: Development and Psychometric Properties***
Timothy K. Feeney, Glenn Callaghan, Ph.D.

(6) ***Smooth Pursuit and Saccadic Eye Movement Mechanisms***
Angelica Godinez, Dorion Liston, Ph.D.

(7) ***Child Language Brokers: How Young and In What Situations?***
Sarah Sanders, Stergios Roussos, Ph.D

(8) ***Development Of An Adolescent Standardized Patient Visit Protocol: A Case Study With Adolescent Safer Sex Education In Community Clinics***
Marisol Chavez

(9) ***The Hidden Voices of Adolescents***
Marielisbet "Lisa" Perez, Claudio Vera Sanchez, Ph.D.

(10) ***The Face of Rape Culture at Fresno State***
Kayla Kersey, Janet Slagter, Ph.D.

(11) ***The Unspoken Voices of Immigrants***
Daniel Guzman, Claudio Vera Sanchez, Ph.D.

Poster Session III continued
1:30 p.m. until 3:00 p.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 1:30 p.m. until 3:00 p.m.

(12) ***Risk Perception, Pesticide-related Illnesses, and Risk Communication Strategies to Minimize Pesticide Exposure among Migrant Farm Workers in California***
Carmencita Navarro, Anne Fountain, Ph.D.

(13) ***A Look at Whether Particular Outreach Groups for Domestic Violence Victims Can Alleviate Psychological and Physical Symptoms Of Domestic Violence Abuse.***
Vilma Rizzo, Maria Ochoa, Ph.D.

(14) ***Nicolás Guillén: Afro-diasporic Commonalities Through the Lens of Translation***
Meaghan Estrabao, Anne Fountain, Ph.D.

(15) ***Bilingual Education: Destined or Doomed for English Language Learners***
Cynthia Salinas Garduno, Yoko Baba, Ph.D.

(16) ***Acculturation as a Predictor of Clinical Anxiety Disorders in Collegiate Mexican-American Populations***
Adriana Sanchez, Ryan Holliday, Christine Edmondson Ph.D.

(17) ***Plasmids with Genes for Pesticide Degradation***
Audra Iness, Christian Ramirez, Dave Deol, Alice Wright, Ph.D.

(18) ***Why Flies Stumble – Developing Ways to Quantify the Loss of Motor Control***
Kevin Maxkwee, Danial Husain, Jerry Mekdara, Ulrike Müller, Ph.D.

(19) ***Hispanic Farmworkers of the San Joaquin Valley with Polymorphisms in Specific Xenobiotic-Metabolizing Genes have Elevated Risk of Hormone-Dependent Cancer***
Yesenia Ibarra, Malika Sahni, Kathryn Patterson, Jessica Borba, Jason Bush,Ph.D., Paul Mills, Ph.D.

(20) ***A New Sunflower (Helianthus) Species from Central California***
Chris Winchell, John Stebbins, John V.H. Constable, Ph.D.

(21) ***Characteristics of Shiga toxin-producing E. coli including their Responses to Predation***
Regina Vigil, Carol Lauzon, Ph.D.

Poster Session III continued — University Business Center
1:30 p.m. until 3:00 p.m. — Gottschalks Gallery

Authors will be available for questions from 1:30 p.m. until 3:00 p.m.

(22) ***Elevated CO2 Has Minimal Effect On Vegetatively-Propagated Giant Reed (Arundo Donax) During The Establishment Phase***
Katrina Steinhauer, Anil Shrestha, Ph.D.

(23) ***Use of Recycled Paper Mulch for Weed Control during Establishment of Blackberries***
Sara J Alatorre, Sajeemas Pasakdee, Ph.D., Anil Shrestha, Ph.D.

(24) ***Application of Nanotechnology in Agriculture and Food: A Review***
Matt Horner, Minh Le, Saul Lopez, Nitaigour Mahalik, Ph.D.

(25) ***A Review on Recent Developments in Technology***
Steven Siqueiros, Sukhjit Singh, Angela Moua, Nitaigour Mahalik, Ph.D.

(26) ***Vegetable Oil as an Alternative Fuel to Diesel***
Ryan Chaney, Daming Zhang, Ph.D.

3:00 – 3:15 p.m. **Break- University Business Center, Gottschalks Gallery**

5:00 p.m. **Concluding Address – Alice Peters Auditorium, Room 191**
Fresno State and CSU's ATLAS program at LHC of CERN and ATLAS Muon Sub-detector Upgrade R&D
Emmanuel Angulo, Yongsheng Gao, Ph.D.

Proceed to Student Award Presentations and Social Hour

Poster Session IV
3:30 p.m. until 5:00 p.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 3:30 p.m. until 5:00 p.m.

(1) ***Traumatic Stressful Life Experiences and Metacognitive Rumination***
Ryan Holliday, Christine Edmondson, Ph.D.

(2) ***Altering Impressions Based on Attractiveness Through Delay Conditioning***
Leslie Flaming, Jean Ritter, Martin Shapiro, Ph.D.

(3) ***A Reliability Generalization of the Eating Attitudes Test (EAT) from 2008 to 2011***
Colleen E. Phillips, Chelsi King, Theresa Blakesley,Siobhan K. O'Toole, Ph.D.

(4) ***Maternal Incarceration and Childhood Development***
Susan Lynn Glass, Sue Kuba, Ph.D.

(5) ***A Standardization Study: Acculturation and Mental Health among Nigerian Immigrants in America***
Nenna Ndika, Manuel Figueroa, Ph.D.

(6) ***Number of Subtests Failed on the LANSE-A and LANSE-C as a Screen for Cognitive Deficit***
Megan Pollock, Jennifer L. Harrison, Amy Mouanoutoua, Ashley Brimager, Paul C. Lebby, Ph.D.

(7) ***Manipulating Public Policy Judgement Through Unconscious Priming***
William Kammerer, Peter English, Ph.D.

(8) ***Predicting Fall Risk using the 30 foot Walk Test in Low-Functioning Community Dwelling Older Adults***
Hannah Williams, PT, MPT, Peggy Trueblood, PT, Ph.D., Leslie Zarrinkhameh, PT, DPT, Cheryl Hickey, PT, Ed.D., Toni Tyner, PT, MHL

(9) ***A Computational Investigation of Visual Similarity Structure in the Spanish Lexicon***
Jessica Dao, Lorin Lachs, Ph.D.

(10) ***The Effects of Music and Gender on Emotional-Altruistic Behavior***
Melissa Spina, Troy Polnitz, Taylor Harris, Ph.D.

(11) ***Investigation on the Conformational Characteristics of The N-Terminal Region of Coat Protein of Brome Mosaic Virus***
Rohina Asifi, Chul Kim, Ph.D.

Poster Session IV continued
3:30 p.m. until 5:00 p.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 3:30 p.m. until 5:00 p.m.

(12) ***Analysis of Conformational Influences Within (2R,3R)-butanediol***
Zoila M. Estrada, Michael D. Drake, Ph.D.

(13) ***Fluorescence Lifetime Quenching of $Au_{25}(S(CH_2)_2Ph)_{18}$ and the Effect of the Carbon Chain on the Quenching Constant***
Nataly Santiago, Whalmany Ounkham, Jai-Pil Choi, Ph.D.

(14) ***Effects of Solvents and Supporting Electrolyte on Electroreduction of C60 and C70 Fullerenes in Aprotic Solvents***
Akiteru Ikeda, Jai-Pil Choi, Ph.D.

(15) ***Development of Chalcone-based ApoE Modulators through Structure-Activity Relationship (SAR) Study***
Martin A. Leon, Charles E. Mordaunt, Mandeep Singh, Jason T. Schott, Anthony J. Vargas, Nilay V. Patel, Santanu Maitra, Ph.D.

(16) ***Levels of Induced Oxidative Stress in Drosophila melanogaster Exposed to an Environmental Neurotoxin***
Kang Xiong-Hang, Joy J. Goto. Ph.D.

(17) ***NMR Analysis of the Neurotoxin L-β-Methylaminoalanine (BMAA) and the Physiological Interaction with Bicarbonate***
David Zimmerman,V.V Krishnan, Ph.D, Joy Goto, Ph.D.

(18) **The Effect Of *neurotoxin L-β-Methylaminoalanine (BMAA* On Proteolytic Processing Of Amyloid Precursor Protein (App)**
Swetha S. Reddi, Joy Goto, Ph.D.

(19) ***Understanding The Conformational Preference Of Intrinsically Disordered Proteins By NMR Based Solvent Perturbation: Application To The Small FG-Nucleoporin***
Kurt Heisel, V. V. Krishnan, Ph.D.

(20) ***Development of ApoE Inhibitors by Structure-activity Relationship (SAR) Study on Triarylmethyl Amine Compounds***
Mandeep Singh, Jason T. Schott, Martin A. Leon, Robert T. Granata, Charles E. Mordaunt, Anthony J. Vargas, Nilay V. Patel, Santanu Maitra, Ph.D.

Poster Session IV continued
3:30 p.m. until 5:00 p.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 3:30 p.m. until 5:00 p.m.

(21) ***A candidate Gene Srategy to Identify Resistance Genes in Pepper to Phytophthora capsici***
Deanna Arsala, Alyssa Bautista, Darshanpreet Gill, Davis Cheng, Ph.D., Jim Prince, Ph.D.

(22) ***Bacterial Growth on and Degradation of Methyl Bromide AlternativesChloropicrin and Methyl Iodide***
Javier Garcia, Spencer Holbrook, Christian Ramirez, AliceWright, Ph.D.

(23) ***A Reverse Genetics Study of Vlp, a Potential Virulence Factor, from Pseudomonas aeruginosa***
Joel Curiel, Nicholas Quitoriano, Yevgeniy Mordvinov, Joy Goto, Ph.D., Hwan Youn, Ph.D.

(24) ***Evaluation of the 5Cs Training Model for Consultations for Undergraduate Medical Education***
Jessica Weidenbach, Kenny Banh, M.D., FACEP, Brandy Snowden, MPH, CCRP, Chad Kessler, M.D.,MHPE

5:00 p.m. **Concluding Address – Alice Peters Auditorium, Room 191**
Fresno State and CSU's ATLAS Program at LHC of CERN and ATLAS Muon Sub-detector Upgrade R&D
Emmanuel Angulo, Yongsheng Gao, Ph.D.

Proceed to Student Award Presentations and Social Hour

Judges for Undergraduate and Graduate Student Presentations and Poster Presentations:

Dr. Belayneh Abejie	University of California, San Francisco
Dr. Loren Alving	University of California, San Francisco
Dr. Saeed Attar	California State University, Fresno
Ms. Ginna Bearden	Fresno City College
Dr. Sharon Benes	California State University, Fresno
Dr. John Bushoven	California State University, Fresno
Dr. John Farrell	California State University, Fresno
Ms. Marie Fisk	California State University, Fresno
Dr. Tamas Forgacs	California State University, Fresno
Dr. Alam Hasson	California State University, Fresno
Dr. Howard Hendrix	California State University, Fresno
Dr. Robert Hierholzer	University of California, San Francisco
Dr. Donna Hudson	University of California, San Francisco
Ms. Susan Hughes	University of California, San Francisco
Ms. Shannon Hunter	University of California, San Francisco
Mr. Carl Johannson	Fresno City College
Ms. Judy Kammerer	University of California, San Francisco
Dr. Khurram Khan	University of California, San Francisco
Dr. Thomas McClanahan	California State University, Fresno
Dr. Paul K. Mills	University of California, San Francisco
Dr. Karl Oswald	California State University, Fresno
Dr. Siobhan O'Toole	Alliant International University, Fresno
Dr. James Ozeran	Children's Hospital Central California
Dr. Glenda Polack	University of California, San Francisco
Dr. Adnan Sabuwala	California State University, Fresno
Dr. William Soto	California State University, Fresno
Mr. Rick Stewart	Fresno City College
Dr. Brian Tsukimura	California State University, Fresno
Dr. Oscar Vega	California State University, Fresno
Dr. Lynnette Zelezny	California State University, Fresno

Moderators for Oral Presentations:

Mr. Doug Carey	California State University, Fresno
Dr. Daniel Griffin	California State University, Fresno
Dr. Tom McClanahan	California State University, Fresno
Dr. Brian Tsukimura	California State University, Fresno

Presentations will be judged based on the following criteria and considerations:

- Merit, creativity, timeliness, and value to an audience of scholars not necessarily from the same discipline
- Authors are encouraged to present their work using terminology suitable for a multi-disciplinary audience
- Results of completed work, as well as work-in-progress, for which there is preliminary data

ORAL PRESENTATION ABSTRACTS

(IN ALPHABETICAL ORDER BY PRESENTING AUTHOR)

Laxmi Ramya Addala, Alam Hasson, Ph.D.
ramya8489@mail.fresnostate.edu
Laxmi Ramya Addala1, Catalina Olea1 , Srikar Middala1, Kennedy Vu1, Lucien Nana1, Austen Scruggs1, Alvaro Sosa1, Santanu Maitra1, Max Stephenson1, Michelle Boyce1, Geoffrey Tyndall2, John Orlando 2 , Alam Hasson1
1. California State University, Fresno 2. National Center for Atmospheric Research, Boulder,CO. 1 Department of Chemistry, California State University, Fresno. 2 Atmospheric Chemistry Division, National Center for Atmospheric Research, Boulder,CO.
1 Department of Chemistry 2. Atmospheric Chemistry Division.
Graduate Student

Laboratory Investigation of the Atmospheric Chemistry of Isoprene Hydroxynitrate

Isoprene is a volatile organic compound (VOC) emitted into the atmosphere in huge quantities by plants and trees. Because of its large flux, isoprene's atmospheric chemistry has a major impact on the chemical composition of the lower atmosphere. Hydroxynitrates are the intermediates generated in both the OH and NO3 initiated oxidation of isoprene. Laboratory measurements suggest that the subsequent reactions of these compounds may be responsible for a significant amount of secondary organic aerosol (SOA) generated in the NO3 + isoprene reaction. The goal of this study is to elucidate the mechanism of this reaction, and quantify the yields of the major reaction products. In this work, samples of isoprene hydroxynitrates were synthesized and their chemistry was studied in a photochemical reactor, with analysis by long path FTIR and GC-FID. The rate coefficients for the reactions of isoprene hydroxynitrates with OH, Cl, NO3 and ozone were investigated using relative rate technique. Yields of selected products from these reactions were also measured. The reaction with OH radicals is found to be significantly slower than previous indirect measurements and model predictions. Formaldehyde is observed as a major product (Yield = 90%), suggesting that NO2 is not released as a product of the reaction. The implications of these results will be discussed.

Angelica Aguirre, Marianne Jackson, Ph.D, BCBA-D
angelica04@mail.fresnostate.edu
California State University, Fresno
Department of Psychology
Graduate Student

Examining the Effects of Outcome-Related Stimuli on Recycling Behavior in A University Setting

Scientists are increasingly recognizing the effects of human behavior on the environment and the need for more pro-environmental behavior changes. Previous studies have increased pro-environmental behaviors in various settings, using a variety of procedures such as written instructions and direct reinforcement techniques to increase recycling behavior. The purpose of the current study was to examine the possibility of using a rule to produce a motivating effect on recycling behavior of paper materials. Seven staff members from two offices at a university setting participated in the study. Using an alternating treatments design, the participants were exposed to both simple written instructions and outcome-related statements. These statements were derived from the ratings of the importance of 14 paper recycling facts in a survey administered before the study. Behavior analytic research has suggested that words can serve a motivational function increasing responding toward the item or outcome specified by the words. The research question is: Will the use of outcome-related statements have a greater effect on recycling behavior than the use of simple written instructions?

Neama Alamri, Randa Jarrar, Ph.D.
nalamri@mail.fresnostate.edu
California State University, Fresno
Department of English
Undergraduate Student

The Burden of "Empathty": Women Writers in Arab American Literature Post-9/11

In this research paper, grounded in post-colonial theory and based on original content analysis- I focus on the politics of "empathy." Here, I operationalize empathy as the ability to understand the experiences of another. This definition represents a critique of the normative ways which empathy is understood in the field of American literature. My platform in exploring this alternative concept of empathy relies on two Arab American Muslim women poets who address issues of racism, sexism, Islamaphobia, and nationalism in post-9/11 America. I engage with Mohja Kahf's Emails from Scheherazade (2003) and Suheir Hammad's Zaatar Diva (2005).

Armed with a re-definition of empathy and the texts of Kahf and Hammad at hand, my research begins to help me uncover the dark secret of the false notion of a happy multicultural era. Following in Rajini Srikanth's Constructing the Enemy: Empathy and Antipathy in U.S. Literature and Law (2012) footsteps where the kind of empathy her book calls for "requires hard work-unflinching introspection, honest interrogation, complex analysis, and courageous risk-taking," I reveal the fine line the two poets walk between de-centering the center- the periphery- and the hegemonic center, as they attempt to become part of the American national ethos while also rupturing it as Arab American women (Srikanth 6).

In the end, I call for a revision of the tropes of empathy in order to bring attention to asymmetrical power dynamics in the context of American nationalism post-9/11. In other words, I underscore that writers like Kahf and Hammad are often forced to carry the burden of representing their entire communities, sharing narratives about Muslim Americans. While peripheral narratives about people of color must indeed be circulated, the problem lies in that such scholars are also required to "translate" these stories within a hegemonic paradigm in order to make the information accessible to mainstream Americans and sustain what I will call the "multi-cultural night" mindset. The purpose of my paper is to bring light to this double-edged sword and to ask for an understanding of empathy that will allow scholars like me, Kahf and Hammad to speak about our experiences without, first, representing our entire community, and second to be able to interpret our texts outside of the "white western canon."

Ammar Albalasmeh, Teamrat A. Ghezzehei, Ph.D.
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Ammar A. Albalasmeh1, Markus Berli2, David S. Shafer2 and Teamrat A. Ghezzehei1
1 University of California, Merced and 2 Desert Research Institute
School of Natural Science
Doctoral Student

How Low Temperature Fire Affect Soil Structure

Soil structure deterioration by fire is usually attributed to qualitative and quantitative change of organic and inorganic binding agents, especially in high severity burns (>300 °C) that last for prolonged periods (> 1 hour). In contrast, controlled burns are typically managed to be low in intensity and severity. Such burns are considered benign to soil structural stability because organic matter and inorganic binding agents (e.g., gypsum) are relatively stable at such low temperatures. Recent observations at a controlled burn site in the eastern Great Basin (Nevada) showed soil aggregate breakdown found in shrub canopies where soil temperatures briefly exceeded 300 °C as well as interspaces between shrubs, where the temperatures were likely lower than beneath shrubs because of less surface biomass. These alterations cannot be explained in terms of thermal alteration of binding agents. This study was designed to test whether pressure created by rapidly vaporized pore water can cause aggregate breakdown. We subjected three different sizes of aggregates (0.25-1, 1-2, and 2-4 mm) of soils derived from the eastern Great Basin burn site as well as from a forest and urban garden in California to rapid and slow (3 °C/min) heating rates. These treatments were conducted at 5 peak temperatures (75, 100, 125, 150, and 175 °C). Post-burn water stability of the aggregates showed that rapid heating rate caused more pronounced deterioration of aggregate stability than slow heating. Moreover, the heating-rate dependent structural deterioration increased with peak temperature. For the majority of the aggregates, the effect also increased with initial water content. In all the soils tested, there was no preferential loss of organic matter in the rapid-heating treatment that can explain the observed enhanced breakdown of aggregates. Our observations indicate that soil structural deterioration under low-intensity fire occurs as a result of mechanical stresses extorted by rapidly escaping steam from soil pores.

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Development of a Nanodetection Assay for Heartworm using qPCR with SYBR Green

The purpose of this study is to develop a reliable and sensitive nanodetection assay for Dirofilaria immitis in canine blood serum samples. Dirofilaria immitis, which causes heartworm disease in dogs, is transmitted by infected mosquito vectors. Once an infected mosquito has a blood meal on a canine host, heartworm larvae migrate to the heart where they mature into adults. At this stage, severe health effects and even death can occur. Current detection methods include an ELISA, but it has been reported that some ELISA results are false negatives due to immature heartworm development.

This assay uses qPCR and SYBR Green Supermix for real-time amplification of a specific gene sequence found only in heartworm DNA. The forward primer is 5' ATGATGATTGCTCAATT AAGTAGA 3' and the reverse primer is 5' GATAATCTGATCGATATTGACCCT 3'; they are designed to bind to the heartworm ribosomal RNA gene sequence, GenBank accession number AF217800. Unique forward and reverse primers were generated to bind to the DNA sequence and amplify the specific segment. This assay has been able to detect heartworm in both canine serum and positive control samples at 10-4 to 10-7ng dilutions. Thirty-six samples of extracted DNA from canine serum were obtained that were previously tested with the ELISA method for the detection of heartworm antigen. The ELISA test has been considered the most accurate identification of heartworm; however, the qPCR-SYBR Green assay indicates it has a higher sensitivity and precision than any other means of testing in the veterinary field. The protocol is currently being modified to increase the level of detection to 10-9ng. According to the ELISA method, half of the thirty-six samples were positive and the other half were negative. We are currently retesting all thirty-six samples to determine if our assay matches the ELISA results or if our assay can detect heartworm presence at low concentrations in the negative samples.

Our findings indicate that this assay is a method of higher sensitivity for detection of heartworm in canine blood samples than the currently accepted ELISA test.

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Experimental Analysis of Gaseous Chambers for the ATLAS Muon sub-detector Upgrade R&D

CERN, the world's largest particle accelerator facility, has begun its ambitious Large Hadron Collider (LHC) program which is and will remain as the world energy frontier until at least 2030. ATLAS, one of the LHC experiments designed to search for new physics, has been taking data for two years. ATLAS has been investigating the necessary changes to its sub-detectors to withstand much higher instantaneous luminosity and to operate after 3000 fb-1 of integrated data. The goal is to achieve the same or better performance (spatial resolution, etc.) despite the large increase in event rate and final integrated dose. The current ATLAS Muon sub-detector will not be able to handle the increased luminosity of a factor of ten. This makes it necessary to replace the current muon sub-detector by possible new gaseous chambers that push their performance to limits never tested before. This talk will focus on the different lab experiments performed at CERN, including a test beam run, and the exciting results on two of the latest chamber prototypes (R19M and R19G) developed by the ATLAS Muon detector upgrade R&D team. This is the research project the author did at CERN during summer 2011.

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A Variable Power Supply for Process Automation Application: Analysis, Design, Testing and Validation

Whether it is digital or analog, essentially the electronic circuits are designed using discrete components. Circuit designs based on discrete components inherit drawbacks such as large size, high power consumption, more time involvement, unreliability, increased material consumption, susceptibility to factory floor interference such as noise, vibration, dust, etc., and so on. As such there is a trend to build Integrated Circuits (IC). Several types of ICs such as Operational Amplifiers (OPAMP), Analog-to-Digital Converters (ADC), Digital-to-Analog Converters (DAC), and Input/Output (I/O) ports, etc. are available in the technology marketplace. Advances in technology have led to the development of sophisticated IC chips. Because of availability of such ICs the importance of electronic circuit designs seems to become obsolete for which there has been a depletion of offering of this hands-on activity (electronic circuit design) within the technology based program major. However way a sophisticated Application Specific IC (ASIC) arrives in the market place to solve a problem, there has always been a requirement of discrete components based circuit design in the factory floor. Bearing this in mind, this work reviews some of the commonly used electronics circuits which are essential to many kinds of interfacing designs and signal conditioning applications. As a learning process, we have provided a step-by-step procedure for designing the electronics circuit. We have designed a simple power supply by using available discrete components. We have explained detail procedure and analytical methods that are involved. Electronic circuit design principles are complex and can be easily understood once all the components are revealed and elaborated upon. In our design, there are two main functions of a power supply and they are to convert AC to DC voltage and it is a variable power supply that will be used for process automation applications. Problem solving, analytical study, testing, and validation were the part of our design.

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Teacher Self-Efficacy in Working with Students on 504 Plans

This study explored the perceived self-efficacy of general education teachers working with students on 504 plans. Section 504 requires educators to make appropriate accommodations for students with disabilities in order to provide an equitable education. The investigation aimed to learn which of theorist Albert Bandura's (1997) four sources of self-efficacy (mastery experiences, vicarious experiences, verbal persuasion, and physical affect) teachers utilize most to determine efficacy. The study also aimed to understand if teachers feel capable of meeting the needs of students on 504 plans and to determine teacher recommendations based on this investigation.

This qualitative study utilized a narrative methodology to describe the perceptions and experiences of teachers charged with the responsibility of making classroom accommodations. Interviews were conducted with five participants. After each interview was audio-recorded and transcribed, they were then subjected to a process of spiral analysis to extract themes.

The data showed that teachers utilize the four sources of self-efficacy when determining their abilities to work with students on 504 plans. The findings presented metaphors that emerged when the teachers were questioned regarding each source. An example of the metaphors include, "leveling the playing field", "independent application", and "student self-confidence" as commonalities shared between teachers when inquired regarding components that make up the first source of self-efficacy, mastery experiences. The data suggested that teachers rely on two sources, mastery experiences and vicarious experiences, most often when determining their ability to work with students on 504 plans.

In conclusion, the study indicates that the provision of thorough support for teachers, the resource of a site expert on Section 504, and training in specific evidence-based strategies for working with students with such disabilities are needed. The study suggested that the topic of Section 504 should be further researched to have a greater impact on the field of education.

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The Dandy in 'earnest': Oscar Wilde's Spiritual Aestheticism

The nature of Oscar Wilde's commitment to Catholicism has long been debated, and scholarly credence ranges from utter dismissiveness to tentative confidence, mainly on the biographical bases of a purported, but unregistered, childhood baptism, and an even more controversial deathbed conversion.

In my paper, I argue that close examination of Wilde's works, especially The Happy Prince, The Nightingale and the Rose, The Fisherman and His Soul, The Canterville Ghost, The Picture of Dorian Gray, and The Portrait of Mr. W.H., reveals unique adaptations of baptismal and Marian imagery, and grace, among other Roman Catholic elements. This pattern of engagement with Catholic symbology, I observe, not only establishes Wilde's enduring preoccupation with Catholicism, but it also sheds light on what some have interpreted as contradictions in Wilde's expressions of aesthetic philosophy.

Though Wilde's specific uses of Catholic imagery certainly suggest that Wilde appreciated Roman Catholicism largely as an intriguing aesthetic achievement, wedding religion and high art, what is perhaps less obvious is the manner in which this interest seems to have impacted Wilde's evolving aesthetic philosophy. I assert that, foremost, Wilde was attracted to the aesthetics of Roman Catholic worship and ceremony, which inspired and enabled him to forge a singular brand of aestheticism that amicably merges aesthetic traditions and sensibilities with spiritual, moral, and humanitarian concerns, and the figure of the autonomous artist. In the final analysis, I claim, Wilde used much of his writing to rehearse such compromises, considerably expanding the dimensions of aesthetic philosophy, and achieving a harmony between the individual, the social, and the spiritual that the Romantics sought, yet failed to attain.

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Incorporation of Choice into Self-Control Training Procedures

The concept of self-control is central to success in daily life yet many populations struggle in this area. Self-control is defined as the choosing of larger delayed reinforcer over a smaller immediate reinforcer (Dixon et al., 1998). Previous research has shown that various behavioral methods can increase self-control. Current research suggests that incorporating choice could improve on these methods. The current study examined three participants' preference for choice in a self-control training procedure. Baseline levels of self-control were assessed, and the participant underwent self-control training. The training included empirically validated methods of self-control training with an added condition that allowed the participant to choose their reinforcer. Overall self-control was improved for two of the three participants. Results indicated that one of the three participants had a clear preference for the choice condition. This indicates that the incorporation of choice could be a useful component for some individuals.

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Domain-Initial Articulatory Strengthening Revisited: The Case of Second Language Acquisition

The present study examines how people pronounce words in a second language. An earlier study (Keating et al. 1998) showed that native speakers produced sounds with a stronger articulation at the beginning of certain prosodic structures in the sentence in which the sounds occurred. For example, a given consonant is likely to be articulated with greater prominence at the beginning of an utterance than at the beginning of, say, a syllable in the middle of the word. This is known as "Domain-initial strengthening." While Keating et al. (1998) found this effect in native speakers of English, Taiwanese, French and Korean, the present study investigates (1) to see if the same effects found previously are found in Spanish, and (2) whether second language learners of Spanish demonstrate the same effect in their speech. It is important to see if the effect under study is linguistically universal to the point that it occurs regularly in non-native speech, even among those who often do not pronounce the sounds of their new language in a native-like manner.

Three adult subjects were recorded: one a low proficiency, beginning learner and the other an advanced learner. A native speaker was also recorded for comparison purposes and to ascertain if the effects under study are also found in natively spoken Spanish. Each informant produced sentences containing the sound /s/ in different positions, totaling ten recorded instances of /s/ for each level. Speech analysis software was used to measure acoustic properties of the test sound and to compare subjects' production.

All three subjects show patterns of domain-initial articulatory strengthening. The native speaker's speech demonstrated that domain-initial strengthening is operative in Spanish. Likewise both of the non-native speakers showed patterns of strengthening similar to that of the native speaker. This demonstrates a surprising, subconscious awareness of prosodic constituency in the second language even at early levels in the acquisition process. The results strongly suggest a universal awareness of prosodic constituency that encompasses both native and learned languages, extending this phenomenon to the sphere of second language acquisition.

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Generation and Characterization of M. smegmatis Mutants Disrupted in Mycothiol Metabolism

Antibiotic resistance has become an alarming public health crisis in recent years. Cases of highly resistant strains, such as extensively drug resistant (XDR)-tuberculosis in *Mycobacterium tuberculosis*, prove particularly difficult to treat. While glutathione is the major thiol in gram-negative bacteria and higher organisms – including humans – novel low molecular weight thiols fulfill this role in gram-positive bacteria. These thiols, such as mycothiol (MSH) in Mycobacteria and other high GC actinomyctes, are expected to be responsible for maintaining a reduced cellular environment and acting as cofactors in biochemical reactions. Thiol-dependent enzymes are involved in detoxification pathways and offer potential drug targets to ameliorate antibiotic resistance. We have already shown increased sensitivity in a mutant lacking mycoredoxin, an MSH-dependent thiol transferase, towards chlorodinitrobenzene, a cytotoxin that forms conjugates with the thiols, diamide, a thiol oxidizing agent, and copper, which induces cellular stress through thiol auto-oxidation. We have also shown similar sensitivity towards oxidizing and alkylating agents and metals in a mutant disrupted in *mshC*, an enzyme involved in mycothiol biosynthesis. We are now generating mutants disrupted in organic hydroperoxidase *ohr*, an enzyme that is elevated in mutants lacking MSH in the nonpathogenic *M. smegmatis;* the recently identified MSMEG_0887, a mycothiol *s*-transferase (*mst*); and *bcpA* and *bcpB*, two putative thiol peroxidases that may use MSH as a cofactor to donate reducing equivalents. We have made knockout constructs by cloning these genes and disrupting them with a hygromycin resistance cassette. We have electroporated the knockout construct into *M. smegmatis* and are now screening for double recombination events that would indicate mutagenesis of the gene. Once mutation is confirmed, we will characterize mutant sensitivity towards oxidative and metal stress with respect to the wild type through minimum inhibitory concentration and Kirby-Bauer disk assays, and growth curves. Determining the significance of these genes through mutant analysis and characterization may provide new drug targets.

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The Effects of Chronic Cortisol on Growth in a Fish Model (Oreochromis mossambicus)

As the world's population surpasses seven billion people, there is a growing need for alternate protein sources. Aquaculture has become an important protein source for humans as the world's oceans are overfished and unable to keep up with the growing protein demands. However, to meet this growing need for protein the aquaculture industry relies on intensive fish culture practices, which results in stressful conditions for the fish. Tilapia is the 2nd most cultured fish in the world. Tilapia can live in a variety of water conditions and are considered to be a "green" fish because of their omnivorous diet.

Stress in fish has been shown to impair growth, reproduction, immune function, and the overall health of the fish, thus subsequently lowering market value. In fish, stress is managed along the hypothalamo-pituitary-interrenal axis. This axis results in the release of cortisol. Catfish fed a cortisol-laden feed for four weeks grew significantly slower than controls. Additionally, the cortisol-fed group had decreased levels of growth axis gene expression (e.g. growth hormone (GH) and insulin-like growth factor (IGF1)) in the liver compared with the control group. In a similar goldfish study, high cortisol fed fish grew more slowly than the control and low cortisol groups. Understanding how stress (e.g. cortisol) affect tilapia will help improve aquaculture practices not only for tilapia but other widely cultured fish species and will provide insight into the evolution of the stress response in vertebrates.

The current study was designed to investigate the effect of a chronic cortisol treatment on growth and the endocrine regulators (GH receptor and IGF-1) of the growth axis in tilapia. Tilapia (Oreochromis mossambicus) were randomly assigned to the following treatments: 0 mg/kg (control), 50 mg/kg, and 500 mg/kg cortisol (12 fish/treatment). For 32 days fish were fed a known amount of excess feed twice a day, at 0900 and 1600h, and allowed to feed for 1h at which point the remaining feed was collected and counted to determine food consumption. After 32 days the fish were sacrificed and liver and muscle tissue and plasma were collected. The high cortisol dose significantly reduced growth compared to controls. Interestingly, both IGF1 and GHR2 mRNA expression in the liver and GHR2 expression in the muscle were up-regulated by the high cortisol treatment; whereas the low dose cortisol treatment up-regulated muscle IGF1 and liver GHR1 expression. These data suggest that cortisol elicits tissue specific actions and may cause these transcripts to regulate non-growth cellular pathways.

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Prey Capture in Bladderwort, the Fastest Known Suction Feeder

Bladderwort Utricularia gibba is a carnivorous plant that captures zooplankton in underwater bladders. These modified leaf structures are highly specialized for suction feeding. However, their small size (1-2 mm) and fast action (ca. 1 ms) have obscured the underlying functional kinematics and flows. We have used high-speed digital video and flow visualization (Particle Image Velocimetry) to study U. gibba at frame rates up to 10 000 per second. A total of 34 suction events have been analyzed. At a distance 1/2 diameter from the typical gape of 200 μm, bladderwort generate peak flow speeds of up to 1.2 m/s (mean 0.2 m/s), corresponding to a Reynolds number of 200 (mean 30). Prey are ingested within 1 ms of triggering the bladder, at speeds up to 0.8 m/s. Time to peak flow speed from the beginning of suction is 0.6 ms, causing accelerations in the aspired water of up to 1300 m/s2 (mean 400 m/s2). The time course of the suction event has a distinctively steep onset followed by a gentle deceleration. Adult fish, by contrast, accelerate water with a symmetric and smoothly varying time profile of longer duration. While the peak flow speeds generated by suction-feeding fish and bladderwort are similar, the accelerations observed in bladderwort are two orders of magnitude greater. This is a consequence of their smaller size, and the pre-stressed suction mechanism that minimizes time to peak flow speed. The spatial and temporal distribution of flow speed agrees with flow speed distributions observed with adult fish. An analytical model of flow speed distributions, when applied to suction feeding in bladderwort, is in satisfactory agreement with the observed flow fields.

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The Impact of the Implementation of Pre-Laboratory Quizzes in a General Chemistry Course

The purpose of this study is to determine if using a pre-laboratory quiz has a positive impact on student performance in Chem 1A relative to the current pre-laboratory worksheets. Currently in the laboratory component of Chem 1A, students are required to complete pre-laboratory worksheets containing questions based on the experiment they will be working on during the class period. The worksheets, which are collected at the beginning of the laboratory period, are worth only a small portion of the laboratory grade (5%). Pre-laboratory quizzes were developed for each experiment performed in the course, and contain questions regarding the procedure, safety, sample data type questions, new terms, and general concepts. The quiz had five questions with at least one being from each section, and were distributed using iClicker® software to allow immediate grading and student feedback. The data from the iClicker® quiz was recorded and coded according to each student's assigned code number, maintaining confidentiality. Other data collected included each student's experiment score, chemical unknown ID, and laboratory result. Preliminary analysis shows a positive impact on student performance can be expected when students take a pre-laboratory quiz rather than complete a pre-laboratory worksheet.

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Differentiation of Insulin-Producing Cell Clusters from Mouse Embryonic Stem Cells without Embryoid Body Formation

In Type 1 diabetes, insulin-producing pancreatic cells, or beta cells, are destroyed by an autoimmune response. Current clinical treatments are indefinite insulin replacement therapy or transplantation of the pancreas or beta islets. The latter two treatments are limited in available donors; a potential alternative is the use of insulin-producing cell clusters (IPCCs) differentiated from embryonic stem cells (ESCs). We hypothesize that IPCCs will reproduce the insulin-producing capacity of healthy beta cells of an adult mouse. Among several existing ESC-IPCC differentiation protocols, Blyszczuk et al. developed the most successful method in producing IPCCs that showed similarities to pancreatic beta cells. However, this method is time-intensive, requiring approximately 41 days. Through bypassing the formation of embryoid bodies by plating directly onto collagen I-coated dishes with specific differentiation media, the differentiation timeline is reduced to 27 days. At several time points during this protocol, IPCC cultures were analyzed by RT-PCR and immunofluorescence for genes and proteins expressed in pancreatic beta islet cells. The mRNA and protein expression of insulin was confirmed, as well as the expression of the genes Isl, Pax6, and Sox17. Furthermore, utilization of ELISA detected the increase of insulin release after challenging IPCCs with different glucose concentrations. These results support the conclusion that existing ESC-IPCC differentiation protocols can be streamlined, while reproducing the phenotype of healthy beta cells. This expedited strategy enables the implementation of a larger scale of IPCC production, which is necessary for obtaining the optimal amount of cells necessary for transplantation of IPCCs into diabetic mice. In order for this strategy to have therapeutic potential, these IPCCs need to be able to withstand the adult host's immune system. Experiments to analyze the immunogenicity of IPCC prior to transplantation in vivo are ongoing.

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Development of Automated Concentrated Solar Thermal Power System for Air Conditioning Applications

Every household uses an air conditioning unit to cool their homes in the hot days of the year. Sun shine can be used to heat the home in two ways – using semiconductor photovoltaic (PV) panels that converts photon energy to electric energy and then to heat energy, and specially designed arrays of mirrors by using the method of concentrated solar power (CSP). The former method has been popular these days because the PV cells are robust, easy to install and can be used for long time. However, there are drawbacks. The problem with PV panels is that they are expensive and inefficient. The cost for PV panels is about $3 per watt. PV panels can convert only 15% of the sun light into electrical energy. On the other hand, the CSP system is cheaper and efficient. CSP system is close to twice as efficient. Generally, in a system where the CSP creates electrical power, the process will go: sunlight-heat-steam-steam turbine-generator head-battery system-dc to ac converter-electrical energy to AC. Our project goal is that home owners use the intense sun shine to their advantage and use the proposed system to cool their home. The prototype CSP system build up thermal power and it maintains the sequence as follows: sunlight-heat-steam-steam turbine-AC compressor belt driven pulley. By using the CSP thermal power system to power an AC system there will be a greater efficiency because it skips the intermittent step of energy conversions. Although the CSP system is not a new idea, we have developed a prototype by the use of recyclable materials and tools. It is composed of an array of concave mirrors mounted on a large dish. We have used two-axis motor control systems that can automate the angle of concave dish so as to enable it to receive highest sun shine during the entire day. Although, we do not intend on creating electricity to run an AC unit, our objective was to turn the compressor on in the AC unit. We also manipulated other parts of the AC components to work in a mutual symbiotic relationship with a home system. The reason for choosing to power an AC unit with pulleys rather than electricity is that it will conserve more energy. It is observed that the CSP system is most effective way to cool a home or building.

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Hmong's Perceptions Toward Shaman and Herbal Medicines

After the Vietnam War, several Hmong people resettled their new lives in United States and many of them began their new journals in Fresno City. The Hmong population is a unique group because of their traditional believes and cultures in Western Medicines. The purpose of this study is to examine the Hmong's traditional belief in Western Medicines. Specifically, these study objectives are the following: (1) What are Hmong's perceptions toward herbal medicines (2) What demographics in the Hmong community (age, sex, income, place of birth, marital status, and education level) affect the belief of shaman. Total of 105 participated in this study and individuals were randomly selected from a phonebook. The survey instrument had 50 questionnaires regarding to healthcare utilization and herbal medicines. The data was analyzed by using chi-square for any significant relationship between demographics, herbal medicines and shaman. The study found that place of birth and different ages among participants tend to believe that herbal medicines are important to use for treating illness. It also found that gender, age, and education among individuals have different perceptions about shaman. The findings of this study help healthcare providers and educators to be aware of how Hmong's traditional beliefs impact their health in Western Medicines. The study also shows that there are some needs for developing new health and education programs to promote healthcare in the Hmong community.

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Role of Omega-3 fatty Acids in Biological Membranes: Possible Reasons for Beneficial Health Outcomes

Omega-3 fatty acids are polyunsaturated fatty acids that are often associated with health benefits and are considered essential fatty acids. Numerous clinical studies have shown that deficiencies of docosahexaenoic acid (DHA), an omega-3 fatty acid, are associated with disorders, such as cystic fibrosis, and unipolar depression. Consequently it is important to understand how omega-3 fatty acids contribute to the development of the central nervous system, but not much is known about how polyunsaturated fatty acids are transported to the cells of the nervous system and incorporate into the membrane. We are therefore interested in studying the link between intake of omega-3 lipids and their observed dietary health benefits.

This study uses fluorescence microscopy and atomic force microscopy (AFM) to observe phase separation phenomena (such as lipid rafts/domains) in membranes containing DHA and other lipids. Membranes are prepared by the electro-formation method to generate giant unilamellar vesicles, synthetic models for the cell membranes. Previous work has shown that saturated lipids in the membrane pack preferentially with cholesterol to form nano-scale domains with a variety of proposed important roles in trans-membrane protein function.

Our findings show that on at a nano-scaled level we see distinct domains using AFM, but on a micron level using fluorescence microscopy we do not see these domains.

This study shows that small increases in DHA content in model membranes have the ability to alter membrane structure and may play an important role in the regulation of membrane domains/lipid rafts in the living cell.

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Parental Health Literacy in the Neonatal Intensive Care Unit

There has been an increase in survival rates among premature infants. Consequently, there is a concurrent increase of high-risk neonates being discharged from the NICU. Studies show that high-risk neonates have higher re-hospitalization rates when compared to healthy term infants. To help reduce this risk, emphasis has focused on careful preparation for discharge and good follow up. Anecdotal experience in our NICU at Community Regional Medical Center show parental knowledge regarding infant medical care is variable. We note some parents have limited knowledge about the care of their baby at time of discharge. This limitation can lead to gaps in care during transition of care from the NICU to a primary care doctor. Certain aspects of patient care can become inadequately addressed such as the parents' follow-through of their infant's subspecialist appointments, chronic medication administration, or feeding and nutrition regimens.

As a result, we have developed a parental knowledge questionnaire based on review of the literature, input from NICU and General Pediatrics experts and clinical experience. This questionnaire asks parents 8 questions about services provided in the NICU and general baby care. Additional questions assess socioeconomic and demographic factors such as ethnicity, language preference, level of education attained and age. These self-administered questionnaires will be distributed to all parents at time of their infant's discharge from the NICU. The questionnaires will be anonymous and be available in English and Spanish. Answers from the questionnaires will undergo measurement quality analyses and group difference comparisons.

Overall, this questionnaire will be used to determine whether parental knowledge scores are identical or different between groups based on variables such as socio-economic status and language preference. Furthermore, it will help us understand the knowledge-based needs of our parents, which can be used to improve the current NICU parental education program.

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Conservation Genetics of the Red Hills Roach (Cyprinidae: Lavinia symmetricus ssp)

The Red Hills roach (Lavinia symmetricus ssp) is a narrow-range endemic sub-species of the more widespread California roach complex (L. symmetricus). It is found in a headwater streams in the Red Hills region, which is located in the Sierra Nevada foothills approximately 60 kilometers east of Modesto, California. Previous morphological and phylogenic studies on the Red Hills roach have determined that it is in fact a distinct lineage. The goals of this study are to determine levels of within-site genetic variation and fine-scale genetic structure among known 'populations' of Red Hills roach. We hypothesize that populations of the Red Hills roach should have a low amount of diversity in mitochondrial and nuclear DNA due to their small sizes and isolations. Samples were obtained from thirteen different populations, with two of the thirteen population sites sampled over two time periods (1998 and 2011). We targeted one mitochondrial gene (cytochrome B), two genes of the major histocompatability complex (MHC), and microsatellite loci for our analysis. A single MHC locus (DAB1) worked only in some individual samples and the cause behind successful amplification is unclear, but it appears there are multiple MHC loci in Lavinia as has been found in other cyprinids. The cytochrome B sequence data confirmed the uniqueness of the Red Hills roach. Analysis of population structure, based on mitochondrial DNA and microsatellites, indicated high levels of gene flow among sites that drain into Don Pedro Reservoir. We hypothesize that these high levels of gene flow are the result of a complex metapopulation structure for these populations. Future work will be aimed at understanding colonization and dispersal dynamics in this system.

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Agni: Smartphone based Inventory Management System

Inventory is one of the biggest financial commitments a business must make. A good inventory management that is capable of giving real time information about the inventory, field service, warehousing and customer need is therefore in demand for cost control, customer service and efficiency. Inventory system automation can reduce wastage of company critical resources on duplicate, error prone activities. The key to achieve cost effective savings in the supply chain is to exchange information accurately and instantly in a real time manner.

Smartphones are becoming faster and more powerful than ever. The biggest advantages of smartphone in business are its friendly user interface, less maintenance and hardware cost, and similar functionalities compared to that of handheld. This can be very beneficial for small businesses that cannot afford the handheld units yet want to run their business efficiently.

This project concentrates on building a state of art inventory management system that can provide consistent and real time data across the supply chain, generate and print on field/off field and online/offline reports, search items instantly using barcode scanner, and authorize and classify the data based on user, salesperson, route, inventory and customer.

The inventory management system can be easily integrated with existing accounting system with minimum or no change. It is scalable to handle any number of handhelds. Data consistency is maintained in case of error or failure during database synchronization. Substantial amount of time can be saved annually by errorless and paperless transaction.

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Group Creativity: Cooperating across Disciplines

Group creativity is multi-faceted; beginning with individual contributions combining to form a medium that is greater than the sum of its parts. The objectives of this study are to investigate the process of group creativity, looking for unifying themes that could potentially increase and expedite human innovation.

According to the sociocognitive model of creativity, the potential for creativity depends on how group processes take place; whether it be through discussion and voting, or improvisation. The composition of the groups as well as the organizational context is key to creating a cohesive and replicatable outcome, but it is mediated through the number of individual innovations as well as the quality of those innovations.

This experiment is a qualitative and quantitative journey to understand the unique interaction between distinctly different performing groups, with an in-depth case-study example investigation into Weber State University's Moving Company and Chamber Choral Ensemble and how they came together to create the 'Coil' performance. Participants will be administered a survey at the end of the performance run, and the responses will then be statistically analyzed with psychometrics as well as a multiple regression, examining not only questions about coil, but about creativity. Demographics will also be collected. Researchers will also be observing the group interaction, looking for patterns and attitudes that were both beneficial and detrimental to the creative process. These items will be coded and discussed in-depth. Participants will also take part in an improvisational performance exercise in a double blind quantitative experiment. This research is still ongoing, but preliminary results significantly correlate creative-output success (defined as the performer's self assessed score plus that of unaffiliated judges)to level of musical training, level of peer approval, and, interestingly, State-Trait Anxiety Inventory score.

Understanding how groups of individuals create together will give society and the arts a unique insight into the creative process and its innovation.

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Kenneth Burke's Pentad Position(ed) to Evaluate the Black Women in Tyler Perry's For Colored Girls Who Have Considered Suicide When the Rainbow is Enuf

Though Tyler Perry and his work has gained wide acceptance in popular media and black communities, the film director's black feminist position and his need to uplift voices of all women have largely gone unnoticed by the academic community. Perry's (2010) For Colored Girls Who Have Considered Suicide /When the Rainbow is Enuf demonstrates the need for more films, and producers, that encourages the empowerment of black women in conventional America.

Therefore, this research attempted to illustrate just that--through analysis and rhetorical critique of the film. This paper utilized Burke's (1945) Pentad to examine the women of the film, their struggles, and their relationship to sexuality, rape, abandonment, spirituality, trust, family, homosexuality, past male perfidy, and other life matters.

Through Burke's categorizations of act, scene, agent, agency, and purpose of the film, this paper produced multiple findings. In general these findings related to the complexities of black women relationships, stigmas surrounding the role of black women, as well as her self-identification process. This paper contributes to the importance of (1) inclusion of black women in more blockbuster films, (2) examination of black women's self –identification process, and (3) empowerment of women voices in general.

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Insecticide Resistance and the Efficacy of Ground Ulv Applications in Fresno County, Ca

During July – September 2009, ground ultra low volume (ULV) applications of various registered mosquito adulticide formulations were evaluated in a field assay against both wild populations and an insecticide-susceptible laboratory colony of Culex pipiens sensu lato. Initial applications with piperonyl butoxide (PBO) synergized formulations of natural pyrethrins and selected synthetic pyrethroids indicated that the wild populations in question had varying degrees of resistance to these products. Laboratory bottle-bioassay testing confirmed these observations.

Adult female surveillance using carbon dioxide baited CDC traps and Bermuda grass infusion gravid traps were also utilized to quantify population impacts of ground ULV applications. There was no significant difference in pre and post treatment collections made at sites throughout the treatment area. Surveillance collections further supported the assumption of resistance and a lack of measurable control.

A combination of malathion (Fyfanon®) and natural pyrethrins, synergized at 10:1 with PBO (Evergreen®), had significant resistance-breaking properties. This study demonstrates the existence of significant pesticide resistance in wild Cx. pipiens s. l. populations in Fresno County, as well as the impact of barriers in urban and rural environments on drift, effective swath and reduced efficacy of ground ULV applications.

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Food Insecurity and Obesity In the Popular Media

Background: The United States Department of Agriculture (USDA) is the leading agency tracking the incidence of food insecurity among U.S. households. The USDA found that 17.4 million households were food insecure during 2009. These results represent the largest growth of food insecurity among American households since 1995. Disease rates have also increased. Research suggests there may be a relationship between food insecurity and chronic health diseases.

Methods: This paper examined the media's coverage of the relationship between food insecurity and possible health outcomes. Searches were conducted in databases that provide citations to national and international news sources. Articles were queried using the following key terms; food insecurity, hunger, obesity, America, and food pantry. Articles were excluded based on the following key terms; Africa, FAO, UN, disaster, agriculture, global, and international. Additionally, the results were limited to publication dates between 2000 and 2011. Over 200 articles met the search criteria. Each article was subsequently formatted into a text file and input into ATLASti for coding and analyzing.

Results: Three themes covered by the media were found in the data analyzed. These themes were disagreement about the USDA's definitions, the increasing prevalence of food insecurity, and the increasing need for support to help meet the increasing demands on emergency food assistance programs.

Conclusion: The three themes identified dominated the discussions in most of the news articles. Possible health outcomes or their relationship to food insecurity was not representative of the overall discussion on food insecurity in the news articles analyzed.

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Curando or Healing? Folk healing in the California Central Valley and in Guadalajara, Jalisco

The purpose of this study is to explore the use and beliefs of folk healing methods within the Central Valley and in Guadalajara, Jalisco (Mexico) areas. Taking a closer look at different areas of folk healing practices, allow the larger population access to these different medicinal alternatives that are currently employed both within the United States and Mexico. This research is an extension of an earlier project that focused on folk healing in the Dallas and Fort Worth metropolitan area (Diaz, 2011). The previous work demonstrated that folk healing is still very present in today's American society. Furthermore, it shows that at its foundation these alternative healing practices are not necessarily native to the United States, but are rather foreign concepts. The project was expanded to include the Guadalajara, Jalisco area where their currently remains an overwhelming population of those who seek the services of folk healers rather than that of an established and board certified physician. The paper reports on current participant observation and interviews of folk healers in the California's Central Valley, and in the state of Guadalajara, Jalisco (Mexico). To conduct this research an ethnographic approach was used which included participant observation, semi-structured interviews and oral life histories these were applied in order that a concise and accurate understanding of a folk healer's perspective could be reached. The results concluded that in fact methods vary within the cultural context. Though, it is important to acknowledge that some facts remain the same. These being that patients continue to refer to these healers rather than to certified physicians for economical, cultural, supernatural illnesses and/or past success with these traditional folk healers. Likewise the folk healers showed that the patients that they serve tend to suffer from the same illnesses, be they supernatural, or physical illnesses.

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Entropic Derivation of Newton's Second Law (F=ma) for Circular Motion

We examine the entropic picture of Newton's second law for the case of circular motion. It is shown that one must make modifications to the entropic derivation of F = ma due to a change in the effective Unruh temperature for circular motion. These modifications present a challenge to the entropic derivation of Newton's second law, but also open up the possibility to experimentally test and constrain this model for large centripetal accelerations. Based on work published in the journal Physics Letters B Vol. 703 (2011) pages 516-518

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Direct Effects of Cortisol on Appetite Regulation in the Brain of Tilapia, Oreochromis Mossambicus

Food intake in vertebrates is under the regulation of appetite stimulating (e.g., neuropeptide Y (NPY), ghrelin) and appetite inhibiting (e.g., corticotropin-releasing hormone (CRH)) signals in the brain. The efficacy of these brain signals are influenced by environmental and social factors as well as the hormonal milieu within the animal. Previous work has established that stress as well as the stress hormone cortisol consistently decrease food intake in fish. However, the link between cortisol and appetite is not well understood in any fish. In aquaculture practices, fish are exposed to many stressors including crowding and handling. The response to acute stressors is likely adaptive, but when exposed to chronic stress, the adaptive value might be lost. A recent report from our laboratory has shown that a single injection of cortisol decreased food intake 24 h post injection. The observed reduction in food intake appears to be mediated by a reduction in the expression of the ghrelin signaling pathway via NPY in the telencephalon region of the brain. Based on these results in a whole animal model, the present study was designed to test the direct effects of cortisol on regions of the brain known to regulate appetite. The telencephalon and hypothalamic regions were individually dissected from male and female tilapia (19 – 95 g) and cultured separately in cortisol-containing media (0, 1, 10, 100, and 1,000 nM) for 24 h in 95% O2/5% CO2 at 28°C. Following treatment, mRNA levels of genes involved in appetite regulation were quantified from each brain region. In the telencephalon, cortisol decreased CRH mRNA levels (appetite inhibiting hormone and stress axis regulator); no effect was observed on the appetite stimulating hormones (ghrelin and NPY). These results are contrary to our in vivo findings where cortisol decreased NPY. On the other hand, in the hypothalamus, cortisol increased NPY and the ghrelin signaling pathway and was without effect on CRH expression. This study is novel because it is the first to report the direct effects of cortisol in fish. Furthermore, these data demonstrate that cortisol affects appetite regulation which has negative impacts on the aquaculture industry through suppression of growth, reproduction, and immune function in fish.

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Bacillthiol-S-Transferases are Involved in the Detoxification of Toxins

Low molecular weight thiols, such as glutathione, are important in the protection of the cell from oxidants and toxins as they create a reducing environment in the cell. They also serve as cofactors to thiol-S-transferases, such as glutathione-S-transferases, which facilitate the detoxification of harmful toxins by forming a conjugate with the toxins. The conjugates are then either further metabolized to mercapturic acid, or excreted out of the cell, thus preventing cellular damage. In higher organisms, glutathione is the major low-molecular weight thiol utilized; however, Gram-positive bacteria, such as the low GC Firmicutes, Bacillus subtilis and Staphylococcus aureus, utilize bacillithol instead.

Recently we have identified YfiT, a member of the Din B super family, a family of proteins involved in detoxification, as a bacillithol-S-transferase in Bacillus subtilis. To further study the role of this thiol-S-transferase, as well as other paralogs, Bacillus subtilis mutants disrupted in these genes were obtained and characterized through growth curves and sensitivity assays. Several of these mutants exhibit increased sensitivity to certain alkylating agents, oxidants, and metals suggesting S-transferases are involved in protection against these toxins.

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Obscured by the Tule Fog: Rural African Americans Fade into the San Joaquin Valley

Paul Connerton (Paul Connerton, 2008,How Societies Remember) has suggested that the study of the "social formation of memory is to study those acts of transfer that make remembering possible." In this paper I examine the process of remembering, recalling, and forgetting in relation to several historically African American settlements in the San Joaquin Valley and how memory is potentially used and abused.

Utilizing first-person interviews and oral histories; archival materials, including newspaper articles, and published secondary sources, this paper probes what Paul Ricoeur called the "intermediate level of reference between the poles of individual memory and collective memory, where concrete exchanges operate between the living memory of individual persons and the public memory of the communities to which they belong" (Paul Ricoeur, 2004, Memory, History, Forgetting). By examining how the existence of these settlements has been obscured, barred, or eliminated from the public memory and how they are remembered (or not remembered) both within these segregated communities and by the hegemonic valley society.

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Cultural Connection through Cultural Training in Physician Organizations

Introduction

Higher rates of racial disparities in the healthcare system persist despite widespread initiatives designed to increase awareness within the medical workplace, such as hospitals and physician organizations. Often times Limited English Proficiency patients have more difficulty informing their primary care physicians and specialists of the medical issue at hand because language and cultural barriers. In addition, the lack of necessary resources such as cultural competence training and translation services makes for an even greater divide. This often has a negative consequence of decreasing the number of LEP's who seek professional healthcare that can ultimately result in poorer health outcomes and increases in mortality rates as seen in this population. Moreover, physicians that have the resources and training to better understand their patients when language barriers are an issue should find better results with patient satisfaction. This research paper focuses on the quantitative analysis of the inequalities and differences experienced in the quality of healthcare received by LEP patients. The background and significance section defines the topic cultural competence and its connection to under-served.

Methods

A descriptive analysis consisting of univariate and bivariate descriptive statistics was conducted to analyze data from the lead physician or lead administrators of a national sample of physician practices. A forty-minute cross sectional survey was conducted. Results were analyzed using Microsoft Excel.

Results

A sample size of 1765 eligible physician organizations was obtained over a two year period. The size range of these practices was 1-19, focusing on small physical organizations with 20% LEP patients' population being considered high level. Survey respondents rated the level of cultural competence training from 1-3 with 3 representing a great deal of training. The physician organizations with low LEP populations reported that 15.7% organizations had a great deal of cultural competence training. The physician organizations with high LEP populations reported that 30.5% of physicians had a great deal of cultural competence training.

Conclusion

Results show that physician organizations with a high level of LEP patients report high level of formal training, respective to the organizations with fewer LEP patients. However, among high level LEP populations 24.4% report little to no formal training and 45% report only some formal training. Future studies may consider what might be barriers to training implementation amongst the practices with high-level LEP patients but report little to no physician training.

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Comparison of Geologically-Averaged Paleomagnetic and "Instantaneous" GPS Rotation Data in the West-Central Walker Lane

The Walker Lane belt is a highly active region of faulting in western North America situated between the Sierra Nevada mountains and Basin and Range extending northward from the Garlock Fault into Southern Oregon. Walker Lane is characterized by several main fault systems including the Furnace Creek, Owens Valley, Pyramid Lake, and Petrified Springs Faults. This study seeks to quantify the rate of fault-induced rotation in west-central Walker Lane by comparing GPS velocity data with rotational data in the geologic record. In addition, we also want to understand how fault-rotation rates have changed over the last 9.4 million years.

We used GPS and paleomagnetic data to address these questions. The software package SSPX by Cardozo and Allmendinger (2009) was used to examine previously published GPS velocity data and derive rotation rates in Walker Lane. In addition, paleomagnetic methods were employed to examine rotation in the geologic record as a comparison. This involved drilling rock cores and demagnetizing them in an alternating electromagnetic field in order to determine their original magnetic directions.

Rotation rates of 0.9228° ± 0.05° to 3.012° ± 0.008° per million years are determined for west-central Walker Lane based upon analysis of GPS velocity data in SSPX. These rates are consistent with paleomagnetically-determined rotation rates by Pluhar et al. 2009, and Carlson et al. 2010, indicating that deformation has been constant in west-central Walker Lane over the last 9.4 million years. However, GPS station spacing in many places does not provide spatial resolution comparable to the paleomagnetic dataset. The paleomagnetic data show rotation variations on the scale of <5 km and is thus a better tool for imaging small-scale rotational heterogeneity. Despite this spatial limitation the calculated rotational rates from GPS data provide an accurate view of modern faulting in west-central Walker Lane.

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The Role of Documentation Categories for the Integration of Complex Automated Processing Machines and Making It Operational: A Case Study

This work involves preparation of three categories of documentations for setting up a complex plasma CNC machine by the company workers. Technical document writing skill is not an art, rather a systematic approach to persuasive writing. Technical writing entails additional skills because it is written for people with different levels of skill-set. Writing of technical documentations such as a manual is complex. This study was directed to understand the underlying requirements while preparing the technical documents. Research has shown that many of business persons who own technology related companies are unaware of the very details of underlying scientific and technical theories and jargon. While purchasing new machines and systems for their company's expansion, they go over the manuals and documentations of the machine systems they intend to purchase prior to making a decision. Research has also shown that they purchase those machine systems whose documentations are understandable to them. Therefore, technical documentation is critical to business, whether you are a buyer or seller. As an example from our own experience, we invested a great deal of time to setup a CNC (Computerized Numerical Controlled) machine and its software. Although the documentation was perfect to a technologist, but much simplified version is also feasible. Note that machine installation is a complex process and sometimes it takes a month to make it operational. Bearing in mind that one version of manual of a complex machine will not meet the understanding requirement of all categories of people working in an industry, this work involves preparation of various versions of manuals, from its original volume, for different categories of workers such as technicians, engineers, managers, and supervisors such that they can integrate the components (hardware and software) to make it operational within a short period of time. The experiment was conducted with a complex CNC machine. The considered CNC machine came packaged in a "build-it-yourself" kit that required all of the parts to be assembled into a working unit. All of the hardware and software components are to be connected to the dedicated PC and power supplies. The machine will be capable of creating and cutting out designs, but there were many issues to resolve before this happens. Upon learning the features of the hardware and software, the involved operator will be able to create good quality code files, for instance. Other part of the setup that is time consuming is the configurability of the machine itself. Adjusting amperage settings, air pressure, tip size, and distance from tool to work piece have all played a role in costs. Our documents were meant for three groups of workers: technician, supervisor and factory owner – we prepared three categories of manuals. Using our manuals the workers successfully installed the machine in three days compared to a month's time.

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Construction of an AC Magnetic Susceptometer

An AC magnetic susceptometer has been created for the purpose of measuring the magnetic susceptibility of materials. It consists of two wounded coils, which are referred as the primary coil and the secondary coil, and a sample holder. The primary coil provides an applied AC magnetic field. The secondary coil is made up of two oppositely wounded solenoids; this is done in order to cancel the background signal. The sample lies in the center of one of the solenoids of the secondary coil. Due to the applied magnetic field, the sample will become polarized and will cause an induced voltage on the secondary coil. This induced voltage is proportional to the magnetic susceptibility of the sample. One useful feature of the susceptometer is determining the phase transition of a compound. The phase transition usually causes a sharp change in the magnetic susceptibility at a critical temperature. We used a Gadolinium (Gd) sample to test the susceptometer. The measured temperature dependence of susceptibility of the Gd sample qualitatively agrees with the literature data [1]. We will be using this susceptometer for future work on the characterization of the magnetic properties of the rare earth nano-particles.

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Counterstories of Latinos: Examining the Campus Racial Climate in a Private High School

Critical race theory serves as the framework used in this study to acknowledge the silenced narratives of people of color in traditional research. This qualitative study focuses on the experiences of Latinos who were former students of West Academy, a predominantly white and affluent private high school in the San Francisco Bay Area. Ten participants who graduated between 1980 and 2009 were interviewed about their high school experiences at West Academy. In this environment people of color represent a small minority of the student population. Their experiences are rarely highlighted to represent West Academy. This study examines the experiences through anecdotal data from these former students. Through their stories many racial microaggressions and effects of racial battle fatigue were presented. In this study, these ideas are further explored and defined. Three themes are identified from the findings including: the dichotomy of school environment and home environment, the entanglement of race and class and an overall lack of cultural competence at West Academy. Although all of these participants benefitted greatly from the academic excellence at West, their journey through high school presented many challenges regarding the racial climate at West Academy. This research may serve as evidence for a need to further investigate the campus racial climate at private high schools in order to best assess the change that needs to happen for a more positive environment.

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Environmental Effects on Non-Native Copepod Distributions in Upper San Francisco Bay

Plankton distribution patterns have the potential to influence food web dynamics as predator and prey contributors. Copepods, one of the most numerous planktonic organisms, and are critical to energy flow between trophic levels. Introduced species can potentially create additional competitive pressure to native species over resources and predation, which could translate into altered community assemblages. San Francisco Bay is among the most documented invaded habitats, making it ideal for studying the impacts of invasive species.

Plankton samples from fixed sites around San Francisco Bay from 1998 to 2010, taken at monthly intervals, were collected using nets. Copepods were sorted for two groups: Oithona davisae, the most abundant non-native species and Acartia, the most abundant native genera. These copepods were identified and their relative abundances determined by catch-per-unit-effort. Environmental readings for temperature, chlorophyll-a, salinity, and secchi depth were also recorded.

Principal components analysis showed that salinity was closely linked to the sampling sites and temperature with the months. Based on scatter plots and correlation analysis, the 13 year dataset showed that O. davisae and Acartia occupied the same marine sites ($r = -0.682$, $r = -0.792$) and high salinity waters ($r = 0.788$, $r = 0.834$) respectively. Regression trees showed that Acartia was influenced by salinity (≥ 10.6 parts per thousand) while O. davisae abundances were split based on salinity (≥ 6.79 parts per thousand). Yearly averages for native and non-native abundances also showed that since 2003, native numbers have been on the decline while non-native species abundances have steadily increased. By 2010, the yearly average ratio between non-natives to native copepods was 2.36 to 1.

The results showed that the invasive copepod taxon was flourishing in habitats that closely resembled their natural systems, which accounts for their successful invasion into the Bay. More research is planned to assess the copepod tolerances to temperature and how O. davisae and Acartia coexist while occupying the same waters. By studying the tolerances of the organisms with respect to the environmental factors, an assessment model can be developed to predict their potential distribution patterns in a novel habitat.

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Behind the Comedy Mask: The Serious Function of Humor in the Works of Behn, Austen, and Gaskell

The function and effects of humor in literary works have received limited scholarly attention, but within the genre of comedy, female authors are least often examined. During the Restoration, Regency, and Victorian Periods, cultural codes strongly discouraged "proper" females from enjoying comedy. Therefore, this thesis analyzes Aphra Behn's play The Rover, Jane Austen's Northanger Abbey, and Elizabeth Gaskell's Cranford and demonstrates, through the application of humor theory, that all of these authors flout the female conduct codes of the periods in which they write by using humor to promote their respective agendas.

Behn's comedy and the comedic-feminine language she employs within the play empower her to critique and challenge the idealized standards of female conduct and to argue for the similarity of humors and the compatibility of intellect between men and women. Austen's wit and humor act as guideposts that signal readers to dig for deeper meaning. Her humor is more than just diverting in the sense of amusement; it is also pedagogically diverting, for it redirects one's attention from obvious meanings to those subtly assertive. Gaskell uses humor as a metaphorical thread that unifies the narrative, the inhabitants of Cranford, as well as the author and reader to reveal the value of the contributions of the distaff line in the form of the marginalized spinster. All three authors reveal seriousness of purpose behind the comedy mask.

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Determinants of Remittances to Recipient Countries: A Comparative Study of China, India, and Mexico

As globalization has facilitated the movement of labor across countries, it has also introduced new channels of international capital flow. Remittance, as one of those channels, represents a medium through which expatriates transfer money to their families and relatives in their country of origin ("recipient countries"). Remittances, therefore, have a great economic impact on both recipient and sending economies. Given its significance; this research studies remittance in accordance with the emigration rate of recipient countries. Emigration rate, in the context of this study, is defined as the ratio of emigrant nationals -excluding internal migrants- of a country to the total population of that country. Generally, in economics research literature, there has been a great tendency towards a strong positive relationship between the amount of remittances to a recipient country and the emigration rate of that same country. However, this study posits that the total amount of remittance a country receives does not solely depend on the number of expatriates of that country, but rather on several other economic, institutional and cultural factors. This study uses comprehensive data compiled from international and governmental agencies. It also employs a comparative approach to analyze the underlying factors of remittance disparities among specific recipient countries, particularly, India, China and Mexico from the period of 2003 to 2010. Through this study, I hope to identify the primary reasons immigrants send varying amounts of remittances to their country of origin. This information may also be useful for analyzing future immigration and remittance policies to those countries.

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A Necessary Evil: Examining Email Use within an Organizational Unit at Kaiser Hospital

As organizations grow more complex due to advances in technology and changes in the global economy, so too does communication and interaction within them. Thus, it is vital to the health of organizations and their members to examine and improve communicative practices. Though this project is in its advanced stages of research, the study started from several objectives. First, this study attempted to examine the email use of nursing management within Clinical Adult Services (CAS) at Kaiser Foundation Hospital at Fresno (KF). Second, this study has utilized an organizational communication perspective in an attempt to better understand the current and possible uses of email within the organization. Third, the findings of this research will be used to create and submit recommendations for changing email protocols within CAS. The present research utilized an adapted communication audit first explicated by the International Communication Association in 1977. Changes were made to examine email usage according to recent research on perceptions of email importance and overload. Though the survey and interview data will not be analyzed in its entirety until the end of March, conclusions and recommendations will be submitted to KF around the same time as the Central California Research Symposium.

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How Flies Stumble: The Effects of a Glutamate Agonist on Climbing Ability in Adult Fruit Flies

Glutamate is the most important neurotransmitter controlling how insect walk. Previous studies have shown that BMAA, a glutamate agonist, affects the walking behavior of fruit flies: high doses cause loss of motor ability (flies are unable to walk up an incline and right themselves after a fall); low doses cause hyperactivity (fruit flies walk faster and longer). Flies treated with low doses also stumble more often: they are more likely to lose their footing and roll down the incline. In this study we explored whether treated flies lose their footing more often because they walk faster or because BMAA affects their motor control. Our Null hypothesis is that walking faster reduces the contact surface and duration of the stance phase, making the flies more likely to lose their footing during incline walking. If loss of motor control is caused by BMAA, then the geometries of the tripod gait would be significantly altered, showing loss of fine motor control. Adult fruit flies were fed BMAA at four doses (0, 12.5, 25 and 50 mM BMAA); their walking behavior was recorded for 30 minutes 24 hours after feeding started. We digitized the footfall pattern of flies to determine the effect of BMAA on the tripod gait, walking speed and number of stumbles. We found that in the control flies, stumble frequency does not increase monotonically with walking speed, but the highest stumble frequency occurs at 2 mm/s with two thirds of the stumbles at velocities of 4 mm/s and below. In treated flies, stumble frequency peaks between 3 and 6 mm/s. Our data on footfall pattern suggest that BMAA impairs motor ability, leading to an increase in stumble frequency due to impaired leg coordination.

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Staphylococcus aureus Mutants Disrupted in Bacillithiol Metabolism are Sensitive to Xenobiotics and Oxidants

Due to multidrug resistance of Staphylococcus aureus, infections by these bacteria have emerged as a health threat. Elucidating the biochemistry and functional role of bacillithiol (BSH), a compound involved in cellular defense mechanisms of S. aureus, may lead to novel drug targets. We investigated how BSH protects S. aureus from oxidative stress and other toxic compounds. We have characterized S. aureus mutants disrupted in genes involved in BSH metabolism (bshC, bst) or cell detoxification (bcp, ohr, gpx). BshC catalyzes the third step in BSH biosynthesis and Bst has BSH S-transferase activity, which is needed for detoxification of electrophilic toxins. Bcp, Ohr, and GPx are putative thiol peroxidases that are involved in protection against oxidative stress. We determined the sensitivity of these mutants to oxidants, antibiotics, and electrophiles using a disk diffusion assay. Experiments were performed in triplicate and at least three separate times to allow for statistical analysis.

Our results indicate that BSH-dependent detoxification plays an important role in S. aureus survival under stress. We show that bacillithiol is involved in the detoxification of antibiotics such as fosfomycin and cerulenin and may be involved in protection against organic peroxides. The other genes (bcp, ohr, gpx), which code for thiol peroxidases, may be involved in BSH-dependent reduction of peroxides, as suggested by overlap in sensitivity to similar compounds. Therefore, these genes can potentially serve as novel drug targets and show the promise of treatments that can disrupt BSH production in S. aureus, disabling the pathogen while not negatively impacting the host due to the unique biochemistry of the S. aureus cellular defense mechanism.

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Function and Expression Dynamics of Rho, Rac and Cdc42 Genes in the Starlet sea anemone, Nematostella vectensis

The objective of this study is to examine the patterns of gene expression and function of the Rho family of small GTPases (including Rho, Rac, and Cdc42) during development in the sea anemone Nematostella vectensis. Nematostella is a member of the phylum Cnidaria, which is the sister-group to the Bilateria, all animals exhibiting bilateral symmetry, such as humans and mice. Nematostella has recently become an important model organism for the study of cnidarian developmental biology due to the wealth of molecular tools being developed. Studying the function of genes in cnidarians and comparing them to those of bilaterians can give us insight into how these genes' functions have evolved over time.

Rho GTPases play a significant role in regulating the actin cytoskeleton, and therefore are involved in regulating the cellular behaviors required for development. Our initial studies have been aimed at determining the expression dynamics of these genes. We have used a number of different techniques such as PCR and Gel Electrophoresis to amplify and extract the Nematostella Rho, Rac and Cdc42 genes. Probes were constructed via transcription reactions, and the levels and patterns of gene expression were visualized in fixed embryos via in-situ hybridization reactions. We observed that Rho and Rac genes were ubiquitously expressed throughout the embryo at different stages of development including gastrula and planula stages, whereas Cdc42 was expressed mostly in the endoderm. Furthermore, we microinjected Nematostella embryos with morpholino antisense oligonucleotides to knock down gene expression and gain insight into the functions of these genes. We observed that the embryos injected with Rac morpholinos did not develop normally. The embryos were having difficulty entering gastrula stage, and most them remained in the morula stage of embryogenesis. These results further emphasize the importance of Rho GTPases during the early development of Nematostella vectensis.

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The Role of the Intraparietal Sulcus in the Sample Size Bias

People's judgments of averages exhibit a sample size bias. The larger the sample, the greater the judged average—even when the objective average is held constant. We have observed this with judgments of the average risk of a group of people (Price, 2001), the average height of a group of stick figures (Price et al., 2006), and the judgments of the average of a group of numbers (Smith & Price, 2010).

In the present studies, we extend this effect to judgments of the average area of a group of squares. Participants saw groups of 3, 6, 9, or 12 squares on a computer screen and judged the average area of the squares for each group. In Experiment 1, the squares in each group were presented simultaneously. In Experiment 2, they were presented sequentially. Both experiments produced a strong sample size bias. As the number of squares in the group increased, the judged average area increased as well.

We hypothesize that the sample size bias is akin to other effects in which one quantitative dimension interferes with judgments about another (e.g., the physical size of a numeral interferes with judgments of its magnitude; Pinel et al., 2004). Such effects are typically attributed to overlap in the brain areas that represent information about the two dimensions. We propose that the sample size bias occurs because information about numerosity is processed in a brain area (the horizontal segment of the intraparietal sulcus; hIPS) that is also responsible for processing information about space, time, and magnitude. To test this idea, we will soon be conducting additional studies in which the judgments are about dimensions such as color and shape that are processed in brain areas other than the hIPS. In these studies, we predict there will be no sample size bias.

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The Effects of Manganese Toxicity on Motor Activity in Fruit Flies

Manganese is known to play a contradictory role in oxidative cellular damage. Although high levels of intracellular manganese have been shown to offer protection against oxidative damage in several model organisms – including the nematode C. elegans and baker's yeast, S. cerevisiae – manganese has also been implicated as a cause of oxidative stress in the dopaminergic neurons of model organisms, in which manganese interacts with dopamine to form reactive-oxygen species. In humans, this stress leads to the death of dopamine-producing neurons in the substantia nigra, causing motor deficits like those commonly found in Parkinson's disease.

For this reason, an organism's ability to regulate manganese uptake and prevent it from accumulating in sensitive brain tissue is very important, and although manganese toxicity has been studied in humans and several model organisms, very little work has been done with fruit flies (Drosophila melanogaster), an organism which offers many exciting avenues for further research.

Flies were treated with concentrations of 5, 25 and 50mM of manganese for a period of 13 days, during which time their motor ability and viability were assessed. Manganese avoidance was tested by exposing flies to food treated with 1, 5, 50 and 100mM concentrations of manganese for 24 hours. Finally, flies exposed to manganese for 24 hours were placed in a lenticular arena and filmed to assess average walking speed.

In general, we found a dose-dependent reduction in motor activity and viability, and a tendency to avoid food treated with a 100mM concentration of manganese, as well as a preference for food treated with 5mM manganese. Using the lenticular arena set-up non-significant decline in walking speed in flies exposed to 25 and 50mM manganese was evident after 24 hours of exposure. Overall, the results seem to support the connection between manganese exposure and detrimental effects towards viability and motor activity in fruit flies.

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Changes in Counselor Trainee General and Counseling Domain Self-Efficacy

The purpose of this study was to examine variables related to the counseling-specific self-efficacy and general self-efficacy of counselor trainees enrolled in a practicum experience. The primary objective was to compare counselor trainees' general and counseling self-efficacy at the beginning and end of the semester.

The study population was comprised of graduate student counselor trainees who were enrolled in practicum-related classes through the Department of Counselor Education and Rehabilitation at California State University, Fresno. Pre-practicum and post-practicum surveys were administered during the Spring 2011 semester. The stability of the counseling-specific and general self-efficacy scores over time was measured using paired-samples t-tests and chi-square analyses. Relationships between counseling-specific and general self-efficacy scores were measured using nonparametric correlations.

Of 143 students who completed both pre-practicum and post-practicum surveys, 92 (64.3%) maintained high general self-efficacy; 34 (23.8%) changed from low to high general self-efficacy; 11 (7.7%) retained low general self-efficacy; and 6 (4.2%) changed from high to low general self-efficacy; $c^2(1, N=143)=9.88$, $p<0.01$. Students' pre-practicum general self-efficacy scores were positively correlated to the pre-practicum counseling skills self-efficacy scores (Spearman's rho=0.42, $p<0.001$), as were post-practicum general self-efficacy scores to post-practicum counseling skills self-efficacy scores (Spearman's rho=0.40, $p<0.001$). Post-practicum counseling skills self-efficacy scores ($M=84.7$, $SD=10.50$) were significantly higher than the pre-practicum counseling skills self-efficacy scores ($M=67.4$, $SD=17.24$), $t(142)=14.0$, $p<0.001$. Post-practicum general self-efficacy scores ($M=4.3$, $SD=0.40$) were significantly higher than the pre-practicum general self-efficacy scores ($M=4.1$, $SD=0.40$), $t(142)=6.0$, $p<0.001$.

Though often presented as a stable trait-like variable, the general self-efficacy scores of counselor trainees changed from the beginning to the end of the semester. As expected with opportunities for mastery learning experiences, the counseling-specific self-efficacy scores increased over the course of the semester.

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Calcium Induced Differentiation of Mouse Embryonic Stem Cells into Cardiomyocytes

Embryonic Stem Cells (ESCs) are capable of differentiating into any cell type such as cardiomyocytes (CMs). To induce differentiation of ESCs, they must be must be deprived of differentiation specific factors and allowed to form Embryoid Bodies (EBs). Formation of EBs by the Hanging Drop Culturing (HDC) method, forces them to differentiate into CMs. In our current study, we established in vitro differentiation of CMs. We show that EBs grown in bacteriological dishes form uniform circular EBs that differentiate within 7 days. These CMs are precursor cells that resemble the initial stages of embryonic development and this process is an essential component of primitive develop responsible for cardiac functions such as multi-nucleated fibers known as myotubes and excitation-contraction coupling. Coupling is generated by stimuli that produce an action potential allowing a calcium transient to fuel crossbridging in myotubes resulting in mechanical contraction. Multiple subpopulations of contractile foci or â€œbeating clumpsâ€ have been characterized in ESC-derived CMs. EBs generated through HDC were cultured in 0.001mM calcium-conditioned media for 72 hours after initial transfer from low attachment dishes to tissue culture dishes. The results indicate that exogenous calcium induces faster generation of CMs, myotubes, and longer and sustained contractile ability of the generated fibres. To verify the presence of cardiac precursor cells, we assessed the expression level of muscle-specific markers across four developmental stages using RT-PCR: mESCs, EBs, cardiomyocytes, and myocardial tubes. Preliminary results indicate that cardiac-specific markers were highly expressed in the late stages. To extend this project, we will compare RT-PCR results for cardiac markers between CMs generated with and without supplemental calcium to isolate and observe the change in beating pattern of beating clumps. This data will provide a better understanding of how calcium homeostasis is essential in sustaining excitation-contraction coupling in cardiac precursor cells and enhance our understanding of cardiac development.

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Untangling the Web of Interaction: Indigenous Peoples and Missionaries at Mission Soledad

Nuestra Senora de la Soledad, or Mission Soledad, was founded in 1791 and one of twenty-one Franciscan missions established in what was formerly known as “Alta California”. The many peoples who lived and died at the mission form the base of this research. What peoples were they, from which villages did they come, in what ways or patterns did these displaced peoples interact, and what do the surviving records of baptism, births, marriages, and deaths illuminate? More than mere statistical data, Soledad mission records contain information and evidence that make possible a better understanding of the local peoples at the point of contact with the Spanish missionaries, how such peoples interacted with each other and missionaries, and the relationships among the various groups and their descendants while part of the mission system. While these records speak directly to the lives of the people that they record, they tell myriad stories that make the history of the region more accessible. These studies contribute to the growing understanding of the ethnohistory that is particular to the indigenous peoples of the central coastal region of present-day California.

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Establishment of a Microplate-based Fluorescence Polarization Method for DNA-protein Interaction

A fluorescence polarization (FP) assay provides a non-disruptive means of measuring the association of a fluorescent DNA with a larger protein molecule. Our lab is interested in the study of a family of bacterial transcriptional factors, the CRP/FNR superfamily of transcriptional factors. This FP assay has been demonstrated to be useful for the measurement of the DNA-binding ability of the *Escherichia coli* CRP (cAMP receptor protein) or FNR (fumarate nitrate reductase regulator). Nonetheless, the applicability has not been successfully extended to the microplate format. Here we systematically evaluate the practicality of FP in a microplate format using the Biotek Synergy™ 2 Microplate Reader. Of particular issue is the reproducibility and consistency among the 96 wells in a microplate. For this, we have used a fluorescein-labeled 26-bp CRP DNA probe and have simulated DNA-protein interaction by using different concentrations of glycerol (up to 50%). Glycerol increases the viscosity of the solution and therefore slows down the tumbling rate of the probe, resulting in the increase of the fluorescence polarization. From this approach, it is critical to clean microplates rigorously with soap and water to get reproducible and consistent FP data from the Biotek Synergy™ 2 machine. Another important factor is to use appropriate volume of the binding reaction (> 100□l) per well. With these preliminary findings, we are now testing the applicability of the microplate machine to a transcription factor, a constitutively active CRP variant protein containing D53S, G141K, A144T and L148K substitutions (thus, termed SKKT CRP). The protein has an advantage over wild-type CRP because it does not require cAMP for attaining full DNA-binding activity. The result has shown that the 25-30% glycerol content in the reaction mixture would have a maximal polarization signal difference between free and protein-bound probes. When fully established, the method will be very effective in quickly evaluating not only DNA-binding capabilities of many of the CRP/FNR family of proteins (including unknown ones), but also their ligand dependency for the DNA-binding activity.

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Law Enforcement Officers' Theoretical Commitments and Their Effects on Attitudes Toward Punitiveness

This paper discusses how law enforcement officers' commitments to criminological theories impact their attitudes toward punitiveness. This paper assesses the level of agreement law enforcement officers have with elements of general strain theory, low self-control theory, rational choice theory, social learning theory, and an evolutionary/biological approach to crime, while accounting for the control variables age, gender, years of law enforcement experience, rank within the law enforcement agency, level of education, and law enforcement agency, and compares them with the law enforcement officer's level of punitiveness.

Findings indicate that age, gender, years of law enforcement experience, rank within the law enforcement agency, and level of education are insignificant predictors of punitiveness and law enforcement agency is only a nearly significant predictor of punitiveness with the addition of the independent measures. Findings further indicated that law enforcement officers who support elements of low self-control theory an evolutionary/biological approach to crime have more punitive attitudes than law enforcements officers who do not support these theories, and general strain theory, rational choice theory, and social learning theory are insignificant predictors of punitiveness among law enforcement officers.

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Some Studies on Waste Reduction Management Strategy for Irrigation Related Products: Methodology, Automation and Process Planning

If a production line is shut down due to any reason during an order and is started again that process of start-up is called a Line Initiation (LI) and Line Re-start (LR), respectively. LI scrap (LI scrap) as well as LR scrap (LR scrap) are produced on a production line from the moment the line re-started until it was put in production. A significant amount of nonconforming material is produced during the start-up process of all products. Due to its high impact on production cost, the process automation team is required to focus on this issue. This work is a case study where we have analyzed and measured the importance of LI and LR scrap in a real-world environment. In past, the total scrap accounts for 5% of the total production while LI scrap occupied an enormous 17% of the total scrap. The Thin Wall Dripline (TWD) lines produce 15% and Heavy Wall Dripline (HWD) lines produce 25% line initiation scrap, respectively. On performing a cost analysis, the loss due to LI scrap in the past year was about $600K. We considered Six Sigma methodology as one of the best approaches for process automation improvement and problem solving. We applied this approach to achieve qualitative results in regard to improvements. We used DMAIC principles and its corresponding tools. These tools work best in delivering outstanding profitable results. The objective of this study was therefore to understand the nature of LI and LR scrap and improve the process automation and procedure. Eventually, the approach reduced the production of scrap. By implementing appropriate procedure and methods as cited above we were able to reduce the LI scrap by 7% and saved dollars tuning to $250K per year.

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See what I mean? Modeling gaze behavior for virtual demonstrators

Achieving autonomous virtual humans with coherent and natural motions is key for being effective in many educational, training and therapeutic applications. Among several aspects to be considered, the gaze behavior is an important non-verbal communication channel that plays a vital role in the effectiveness of the obtained animations.

Here we analyze higher-level gaze behavior together with important gaze-related events such as body positioning, synchronization with pointing gestures in respect to multiple objects on both horizontal and vertical planes, and with the purpose of delivering information to a human observer at different locations. In order to investigate these issues we conducted several motion capture sessions of human-human demonstrative tasks. The collected data is full-body and reveals important correlations that can be directly integrated into gaze and body coordination models for virtual humans.

Our results show that when a viewer is positioned within a participant’s field-of-view participants tend to point at objects they are describing before they look at the viewer. In contrast, when the viewer is outside of the participant's field-of-view, due to the large gaze-shift required to visually engage with the viewer, participants tend to look at the viewer before they start to point at an object being described. In addition, the gaze duration of those who are describing objects increases immediately after the viewer moves to a new location, and persists for about 2 to 4 trials. This increase is shortly followed by gradual declines in gaze duration.

These results lead to several informative correlations for implementing animation models for controlling virtual humans in interactive training systems. In future work we will present a comprehensive analysis of the entire motion information collected, and we will present complete behavioral models for realistically animating full-body virtual trainers in demonstration scenarios.

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Well-Covered Dimension of Products of Graphs

A graph is a collection of vertices and edges connecting these vertices. Given a graph G, it is possible to construct a vector space of functions on the vertices of G. The dimension of this space is called the well-covered dimension of G. Our project focuses on the study of the well-covered dimension of (cartesian) products of graphs, specifically paths, cycles, and complete graphs.

We use two different methods to study the well-covered dimension of a graph: row reduction of the matrix associated to the system of equations that arises from studying the maximal independent sets of the graph, and finding bounds using maximal independent sets that share many vertices.

We have proved that, provided the component graphs are large paths/cycles, then the well-covered dimension of these products is zero. We have also found expressions for the well-covered dimension of the product of complete graphs and the products of complete graphs and paths/cycles.

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The Role of Glutamate in the Insect Locomotory: A Glutamate Agonist Causes Hyperactivity and Loss of Climbing Ability in Adult Fruit Flies

L-Glutamate controls insect locomotion both at the level of the peripheral and the central nervous system. We study the effects of excess glutamate on the walking behavior of adult Drosophila melanogaster. Feeding the flies high concentrations of glutamate or N-Betamethyl-amino-L-alanine L-BMAA, a glutamate agonist (concentrations: 0, 12.5, 25, 50 mM) and recording the flies' ability to climb for 10 minutes for three consecutive days. Overstimulation of glutamate receptors at the neuromuscular junctions should result in loss of climbing ability. Overstimulation of the central pattern generator should lead to hyperactivity (walking faster and longer). We used two behavioral assays (climbing up a vertical incline after the tap-down and spontaneous climbing up a gradual incline) to assess motor behavior. The spontaneous-climbing assay was developed by our team to detect subtle differences in climbing ability by assessing use of space in an arena with a lenticular floor. We quantified walking speed, walking bout duration, walking bout frequency, stumble frequency and climbing height. We observed that excess glutamate causes no significant loss of climbing ability and only causes a significant increase in walking speed at the highest dose. L-BMAA causes an increase in walking speed and walking activity even at the lowest dose. L-BMAA causes significant loss of climbing ability at all doses. We observe a clear dosage and progression effect in L-BMAA: higher doses and prolonged exposure cause an increase in the severity of the symptoms.

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Understanding the Sequence Basis of Reversed Allostery in Xanthomonas axonopodis CRP-like protein (Clp)

Clp (CRP-like protein) is the major virulence factor of the plant pathogen Xanthomonas axonopodis. Clp has a high sequence similarity (45% identity) to the Escherichia coli cAMP receptor protein (CRP), a prototype bacterial transcription factor. Crystal structures of the two proteins almost superimpose, revealing a high structural similarity. Each protein is composed of two functional domains: the N-terminal ligand-binding domain and the C-terminal DNA-binding domain. In each, the ligand binding at the ligand-binding domain allosterically affects the juxtaposition of the DNA-binding domain relative to DNA targets. However, the ligand action mechanism of Clp is completely the opposite of (or reversed to) that of CRP. Clp is highly active in the absence of any ligand and the ligand-free activity of the protein is inhibited by cyclic di-GMP. In this study, we aim to understand this reversed allostery of Clp.

In an effort to localize the domain of Clp responsible for the constitutive activity, we have constructed and characterized two chimeric proteins composed of Clp and CRP, and compared their properties with those of wild-type Clp and CRP through an in vivo transcriptional activity (LacZ) assay.

Based on the in vivo transcriptional activity (LacZ) assay, the CRP-Clp chimera showed similar properties to that of Clp in terms of constitutive activity. In contrast, the Clp-CRP chimera behaved like CRP. The results strongly suggest that the C-terminal DNA-binding domain of Clp is mainly responsible for the reversed allostery of Clp. Based on an amino acid sequence alignment of Clp and CRP, a total of 15 site-directed Clp mutants, each altered at one amino acid position (containing the CRP amino acid instead of Clp's) at the C-terminal DNA-binding domain were created. The in vivo transcriptional activity (LacZ) assay of the mutants was performed to reveal several mutants with diminished constitutive activity.

The data suggest that there are a few key residues responsible for the reversed allostery of Clp, which are located in the C-terminal portion of the protein. The current study is expected to increase our understanding of the structure/function relationship of Clp and provides insights into how Clp works inside a cell.

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Concentrations of Selected Organics Downwind from a California Dairy

Dairies are believed to be the largest source of ozone precursors in the San Joaquin Valley. Ozone levels in the San Joaquin Valley during summer are among the highest in the country. CARB estimates that dairies produce 60 tons of VOCs per day corresponding to estimates ranging from 5.6 to 38.2 lbs per cow per year. Most previous studies have used flux chambers to measure emissions. Extrapolation of these fluxes to ambient conditions requires a number of assumptions to be made and is not trivial. The goal of this work is to more accurately quantify these emissions, and to evaluate their impact on regional air quality. Samples were collected at the downwind edge of a commercial dairy during April, May and August 2011, and January 2012 and analyzed using Infra Red Photo acoustic Detection (IR-PAD) at 4 minute intervals. NOx and Ozone concentrations were also measured during August 2011 and January 2012 using commercial analyzers. N2O concentrations were constant over the study period. Concentrations of acetic acid, methane and ammonia peaked in the early evening (6-8 pm). A plume model (AERMOD) was used to better understand the temporal variation in the concentration of these species. The simulations indicate that the evening maxima in acetic acid, methane and ammonia can be explained by changes in the vertical temperature profile. Large fluxes of acetic acid from silage and TMR (> 0.25 g.m-2.h-1) are required to reproduce the observed acetic acid concentrations (up to 2 ppm). These large emissions are consistent with our recent flux chamber measurements.

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A Phosphoproteomic Analysis of a M. smegmatis Universal Stress Protein Mutant

Mycobacterium tuberculosis is a major healthcare threat, producing nearly 2.3 million new infections per year. As a facultative intracellular parasite, resistance to stress conditions, including hypoxic and oxidative stress, contribute to persistence in the human host.

Universal stress proteins (Usps) are a family of proteins expressed in E. coli and other organisms under oxidative stress, osmotic shock, and nutrient stresses. Mutants disrupted in usp genes display increased susceptibility to stress conditions, and usp genes have been found in a diverse set of taxa including bacteria, archea, and fungi. While the precise biochemical function of Usp is still unknown, the autophosphorlyation of the E. coli UspA has been observed in response to stress conditions. This suggests that Usp phosphorylation/dephosphorlyation may play a key role in the control of bacterial stress responses. A number of Usps have been identified in M. tuberculosis, and the M. tuberculosis Usp rv2623 is implicated in virulence in a mouse model of tuberculosis.

In previous work, the Mycobacterium smegmatis mutant VCusp2 was isolated through a screen of mutants sensitive to the thiol oxidizing agent diamide. This mutant is disrupted in the gene MSMEG_3940, with sequence similarity to Usp and is sensitive to a range of stress conditions, including oxidative and osmotic stresses. A phosphoproteomic approach was undertaken to determine (1) if the MSMEG_3940 Usp is phosphorylated under growth arrest, and (2) if there is a change in the expression profile of a mutant disrupted in MSMEG_3940 compared to the wild type under stress.

Analysis via two dimensional electrophoreses (2D-DIGE) and mass spectrometry has uncovered the up-regulation of 21 proteins and the down-regulation of 15 proteins by at least two-fold during stationary phase. These proteins include those involved in central carbon metabolism, amino acid biosynthesis, and tRNA synthesis, suggesting a role of MSMEG_3940 in the remodeling of the M. smegmatis metabolism in response to stress conditions.

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Effects of Fire on Ozone Production in Central California

Thousands of wildfires occur annually in the United States, burning millions of acres of land. In 2011 alone, about 63,000 wildfires were reported with 8.3 million acres of land burned. Some of the pollutants released by wildfires include ozone precursors, which in the presence of sunlight react to produce ozone, with greater photochemical reactions and O3 generation occurring in old compared to fresh plumes. Ozone in wildfire smoke can be advected over a long distance and impacting air quality at downwind locations. Understanding vertical transport mechanisms of smoke affected air mass is essential in the efforts to evaluate wildfires impact on air quality. This is particularly important for ozone non attainment area like the San Joaquin Valley in central California which, like other regions in the western states, is projected to experience increase frequency of wildfires under the influence of global warming. The primary objective of this study is to examine how wildfires affect ozone concentration level. The study involved vertical profile measurements of meteorological variables and ozone in Fresno and analysis of ground level ozone concentrations measured at various locations in the Central Valley. Results show large scale wildfires in fuel rich areas can significantly affect regional ozone distribution and cause ozone level to exceed the federal standards even in areas that may be hundreds of miles away from wildfire locations.

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Interpreting Tone of Voice: Musical Pitch Relationships Convey Emotion in Dyadic Conversation

In musical terms, the consonance or dissonance of a pair of notes refers to how pleasant or unpleasant the combined tones sound to the ear. Different intervals between notes can also elicit different emotions; previous research has found that the musical intervals found in the intonation contours of everyday speech are associated with various emotions. Because it is also known that people engaged in conversation tend to synchronize their actions rhythmically (e.g., head nods, pacing, and speech tempo), it may also be the case that speakers synchronize their pitches while speaking to each other. Exploratory investigations have indicated that, in an agreeable dyadic conversation, the pitches of the last word in an utterance and the first word of a conversant's utterance are consonantly related; in a disagreeable conversation, the two pitches are dissonantly related. The present results showed that the tonic of the utterances in a dyadic conversation showed pitch synchrony: agreeable conversation produced more consonant intervals while disagreeable conversation produced more dissonant ones.

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Emissions Measurements of Volatile Organic Compounds from Dairies in the San Joaquin Valley

California houses about 2 million dairy cows, the majority of which are in the San Joaquin Valley region. Dairies are a major source of Volatile Organic Compounds (VOCs). VOCs are pollutants that react with nitrogen oxides in the presence of sunlight to form ozone in the lower atmosphere. Ozone (or smog) is a pollutant that degrades air quality in the San Joaquin Valley during the summer. Published emissions of VOCs from dairies are estimated to be from 5.6 to 38.2 lbs per cow per year. Previous studies have used flux chambers to measure emissions but these required a number of assumptions. Accurate measurements from these facilities are important to determine its effect on the air quality.

Gas samples were collected using a combination of canisters and sorbent tubes. Samples were collected at different heights ranging from 15 to 50 meters. Up wind and down wind gas samples were also collected for profile measurements. The gas samples were analyzed using Gas Chromatography Mass Spectrometry (GC-MS) to identify the compounds and concentration.

Up to 70 individual VOCs were identified in the samples collected at concentrations as high as 10 parts per billion (ppb). Maximum concentrations of alkanes and aromatics were generally observed at heights of 20 m or less, suggesting a strong local source, Ground level maximum VOCs concentrations were often observed in the early evening (6-8 pm). A steady-state plume model (AERMOD) was used to simulate emissions from the dairy to determine the flux of the observed VOCs and the origin of the ground level peak in VOCs concentrations. Additional field measurements are underway at a commercial dairy, and will continue to evaluate seasonal changes in emissions.

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Mycobacterium Smegmatis Mutants Sensitive to Thiol-Oxidizing Agent Diamide

The oxidant, diamide, easily penetrates cells and causes disulfide stress by oxidizing intracellular thiols, a form of oxidative stress. For this reason, it has been used extensively as a chemical probe to study disulfide stress and how cells react to this stress.

The focus of the experiment is to isolate Mycobacterium smegmatis transposon mutants that are unable to survive on diamide in order to identify genes involved in the protection against disulfide stress. In previous research, over one hundred transposon mutants sensitive to diamide have been identified and the disrupted genes in these mutants have been identified. We have shown that disulfide stress caused by this agent affects cell processes involved in the breakdown of proteins, lipids, and nucleic acids and the de novo biosynthesis of these macromolecules among other things. We have shown that genes involved in protection against oxidative stress, such as KatN, a manganese catalase are also involved. To identify the disrupted gene in these mutants, genomic DNA is isolated followed by either Arbitrary PCR or Inverse PCR. Once the DNA flanking the transposon is amplified, it is excised, purified, ligated into a pGEM T vector, and transformed into E. coli cells. The plasmid DNA is isolated and sent for genomic sequencing.

We have screened additional mutants and are in the process of characterizing seventy-one of these mutants by performing sensitivity assays to diamide and other oxidants. We are also identifying the disrupted gene in these mutants. With the sequences in hand, we will be able to complete our analysis of genes essential for survival under disulfide stress in M. smegmatis.

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Federico Garcia Lorca's Rural Trilogy: Honor, Duty, Spanish Traditional Identity, and the Conflict with the Second Republic

a. This study analyzes Federico Garcia Lorca's Rural Trilogy: Bodas de Sangre, Yerma, and La Casa de Bernarba Alba. It demonstrates that Lorca's plays explores Spanish traditional society and challenges its oppressive values. Lorca focuses mainly on women and through them depicts issues within Spanish society. His characters and plots depict his ambivalence towards traditional Spain and reflect both the political conflict and his own internal struggles. His depictions of the benefits and structures of tradition directly reflect the failures of the Second Republic and offer insight into Spain's political and social conflicts. In addition, Lorca's connection to traditional culture and his exposure to the avant-garde. In brief, Lorca's literary interpretation of traditional and the Spanish people's unveil the social and political challenges La Segunda Republica raced. Although Lorca presents a strong criticism on Spanish traditional culture and effectively highlights the challenges new ideology produced in Spain, he fails to acknowledge the influence traditional culture would have on these new ideologies and thus cannot recognize the developing changes.

b. I analyze the three plays part of the trilogy "Bodas de Sangre," "Yerma," and "Casa de Bernarda Alba." I focus on the personification of several characters and focus on literary themes.

c. My results where that Lorca skillfully depicts the unique cultural and poltical issues that Spain was facing.

d. I conclude that Lorca through his simple plot settings and complex charcters depicts the inner turomoil of the Spanis people and Republic. His critic of the establishment of the Republic and how viable it is reflects the following turmoil.

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Grim: A Subtraction Game on Finite Graphs

Let a graph be a collection of vertices and the edges connecting the vertices. We researched a game called Grim, played on finite graphs. The game is played by players alternating removing a non-isolated vertex and the edges connected to that vertex. A player wins when they remove the last non-isolated vertex. Our objective has been to find winning strategies for when this game is played on certain graphs. Our method has been to take a certain graph and consider all possible moves to determine a strategy. We have strategies for certain players to win complete graphs, complete bipartite graphs, symmetric graphs, paths, cycles, wheels, and cross products of even paths.

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Giving Definition to the Liminal : Door-to Door Surveying in South Dos Palos California

South Dos Palos is a community that snuggles up against the gently folded foothills of the Coast Range of California and sits on the flat plain that makes up the “west side” of the San Joaquin Valley. Surrounded by large swaths of fields planted with seasonally rotating crops and abutting the incorporated small town of Dos Palos; it is a settlement that is defined by its lack of definition. Income disparity, lack of sidewalks, poorly paved roads and inadequate drainage are readily apparent here. The California Equity Initiative, a partnership between California Rural Legal Assistance and PolicyLink surveyed these kinds of settlements in 2010 and 2011in an effort to address the issues of poverty, marginalization and disinvestment. South Dos Palos is located on five square miles of land and had 496 households to be canvassed. To circumvent the problematic nature of the available information on South Dos Palos households a master address was created through a process called “blocklisting”. Furthermore, specific techniques and accounting procedures were developed to use in conjunction with the master address list to facilitate the door-to-door surveying. The summary of work completed is as follows: 193 completed surveys. 90 households declined to participate. In addition, there were 67 vacant houses, 49 homes that were inaccessible and 19 homes where people did not answer the door. 98.7% of all the houses in South Dos Palos were visited on 10 separate workdays. This article is an ethnographic account of a community-based participatory social justice research project. Though South Dos Palos was a demonstration project, the method contained in this article is highly replicable. Accurate door-to door surveying can be a first step toward solving long standing social inequity issues. Collecting relevant data from community members gives liminal places like South Dos Palos definition.

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The Perceived Face of Criminals

This study explored the faces of criminal and non-criminal mug shots to determine criminality of a person with attractiveness playing a role. A total of 26 participants were tested to determine what deems a person to be criminal using a police lineup method with criminal and non-criminal mug shots. Using three portions of the face whole, upper, or lower on both criminal and non-criminal photos the results suggest that portion of the face shows no significance on criminality rating. However, attractiveness does play a role in the decision making process. Non-criminal photos are perceived to be more attractive than criminal photos. These finding lead to the conclusion that face portion does not determine criminality but another factor such as gender, age, or ethnicity may deem a person to be criminal.

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Factors Affecting the Hmong's Attitude towards Modern Medicines in Fresno City

The purpose of the study was to examine the attitude of the Hmong population in Fresno City of California, toward modern medicine. Studies have shown that the Hmong usually have a negative attitude toward Western method of treatment; however, not much is known about their attitude towards medicines such as antibiotics, prescription drugs and over the counter drugs. A total of 105 Hmong respondents were chosen randomly using a phone directory and interviewed face-to-face based on a structured questionnaire. The data were analyzed using regression analysis (using SPSS) to identify relationships between their attitude towards modern medicines and some demographic and other variables. The results showed that the attitude of the Hmong toward modern medications varied based on some demographic variables such as place of birth and marital status. It was also found that income and health status were also important factors that were associated with their attitude towards western drugs. The findings from this study are likely to help health care professionals and policy makers understand the Hmong perspective on medicines which can be helpful in their effort to better educate the Hmong community regarding this issue.

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Effects of Se-enriched Meal on Growth Performance and Endocrine Control of Growth in Tilapia (Oreochromis mossambicus)

Selenium (Se) is a naturally occurring essential trace element required for normal nutrition and health in animals, including humans. It has been shown to aid in the function of a healthy immune system as well as an antioxidant during cellular stress in animal tissues. In humans, Se deficiencies specifically weaken the immune system; increase the risk of heart damage, bone and joint disorders, and liver cancer. The use of Se as a nutritional supplement has gained popularity due to its potential role as an antioxidant and in preventing cardiomyopathies. Organic Se (i.e. selenomethionine and selenocysteine) supplementation from plant or yeast sources have a higher bioavailability and lower toxicity to organisms than inorganic Se.

Our understanding of the effects of Se supplementation in fish is very limited. In the common carp, Se supplementation increased body weight. Similarly, cutthroat trout grew larger than controls and exhibited a reduction in mortality over an 80 day feeding experiment. However, the effects of Se supplementation on growth and metabolism in tilapia have yet to be investigated.

Tilapia are currently the 2nd most cultured fish worldwide. The incorporation of organic Se into an important food industry such as aquaculture might be used to counteract damage caused by culture stresses while producing a higher quality product. Moreover, it could provide an additional dietary source of Se for consumers. In turn, strengthening immune function and reducing the onset of certain cancers in humans.

Tilapia (Oreochromis mossambicus) were fed a control (trace Se levels), low dose (0.15 ppm), medium dose (0.3 ppm), or high dose (0.6 ppm) of organic Se-enriched diet for 12 weeks. Fish were fed twice daily (0900 and 1600 h) in fresh water tanks at 24 °C with artificial lighting of 14h:10h (light:dark). Liver tissue was collected at 12 weeks to investigate the effect of Se on the hormonal control of growth. The organic Se-enriched feed used in this study was produced as a by-product from a Se phytoremediation program being conducted on the west side of the San Joaquin Valley in California.

Tilapia fed the high and low Se-enriched diets exhibited decreased growth compared to the control animals after 12 weeks. However, there was no difference in liver mRNA levels of two important proteins of the growth axis across treatment groups. Interestingly, liver mRNA levels of the antioxidative enzyme (glutathione peroxidase) were significantly reduced in all treatments compared with the control. At this point it is not known if Se supplementation affected circulating levels of these proteins. Currently, these data suggest that the dose and/or length of Se supplementation used in this study inhibits growth and likely down-regulates the activity of an important antioxidative enzyme in tilapia.

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The Physiological Correlates of Decision Making and Risk Taking on a Novel Gambling Task

Laboratory studies examining psychophysiological response to cognitive tasks involving decision-making and risk have failed to agree upon the precise role and influence of physiological activity. The present study examined the electrodermal, cardiovascular, and electromyographic correlates of decision-making in healthy college students performing a novel, delayed-matching-to-sample gambling task. On each trial of the task, participants solved a short-term memory problem, reported their confidence and then were given an opportunity to risk or play it safe to maximize their points. Finally, participants received feedback on their accuracy and score. Skin conductance level (SCL), heart rate (HR), and facial electromyography (EMG) in anticipation of the gamble decision and SCL, HR, and EMG reaction to trial feedback were examined.

Our findings indicate that significantly greater anticipatory SCL, HR, and EMG proceeded risky rather than safe decision-making. Physiological reactions to feedback followed a similar pattern, indicating that all three biological potentials were significantly elevated in response to feedback for risky rather than safe decisions. While males chose to risk more often than females, there were no significant gender differences in anticipation of the gamble decision or while processing trial feedback.

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Air-Pollution Control Techniques in a Glass Manufacturing Process

Industrial pollution control has long been a research topic since long. The San Joaquin Valley Air Pollution Control District is serious in improving the health and quality of life for its residents through several programs. The sensitive Air Quality Index that affects our health is calculated based on four major air pollutants ground level ozone, particle pollution, carbon monoxide, and sulfur dioxide. Although the air pollution is due mainly to the food and agriculture sector and vehicles, but the contributions by other industries cannot be avoided. For example, there are thirteen glass manufacturing facilities in the state (3 flat glass, five containers, and five specialty fiberglass manufacturing facilities). Primarily, the container facilities manufacture products for packaging applications. The main environmental problem associated with glass manufacturing industry is that it is a high temperature energy intensive production process. This in turn results in the emission of high temperature oxidation of atmospheric nitrogen including sulphur and carbon dioxides and oxides of nitrogen. Moreover, furnace emission contains dust. Note that under Assembly Bill 32 (CA Global Warming Solutions Act 2006) the state air resources board entails adoption of regulations to achieve the technologically feasible and cost-effective reductions of greenhouse gas emissions. Further note that glass manufacturing plants are a source of greenhouse gas. These emissions are due to direct emissions from fuel combustion, raw material such as limestone and soda ash during combustion, and finally indirect emissions from electricity use. Bearing in mind that the global glass manufacturing market is more than $80B, the technical solutions to reducing the emissions during the manufacturing process should be given prior importance. This work is directed to study the glass manufacturing process with a vision to understand the origin of all types of emissions and try to assess their impacts through a real world manufacturing process. Besides studying the (i) combustion systems and technology, (ii) emission control techniques, (iii) raw materials use, (iv) production methods, and (v) process control systems, we understood the air–emission regulations, generation and control including (i) various types of emission generation, (ii) factors affecting emission generation, and (iii) cost factors and economic analysis. In this paper we will also present how operating conditions can be modified to achieve significant reductions in the rate of thermal NOx production. Various methods such as (a) low-excess firing, (b) off-stoichiometric combustion, (c) flue gas recirculation, (d) reduced air preheat, (e) reduced firing rates, and (f) water Injection are presented in proper order. Finally, the general methods for control of carbon dioxide and particulate emissions are presented.

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HPLC Analysis to Quantify the Neurotoxic Betamethylamino-L-Alanine (BMAA) Levels In Fruit Fly

Neurodegenerative diseases like Amyotrophic lateral sclerosis and Parkinson's are generally caused by the damage to motor neurons. Therefore patients having these diseases are observed to have spasticity, brisk reflexes, muscular atrophy and loss of memory. Beta-methylamino-l-alanine (BMAA) is a non-protein amino acid that is produced by all known taxa of cyanobacteria. BMAA is hypothesized to cause neuronal cell death. The damage to these neurons, possibly due to BMAA, may be the cause of Amyotrophic lateral Sclerosis Parkinson's dementia complex (ALS/PDC). ALS/PDC is a neurodegenerative disease which has been known to occur in large number of cases on the Island Guam, Rota Islands and the Kii Peninsula of Japan. The numbers of affected people are slowly increasing throughout the globe.

Drosophila Wild type (Canton S) flies were fed with different doses of BMAA along with the standard fly food to help observe the behavioral changes. Proteins from BMAA fed flies were extracted, then bound to a derivatizing reagent called Dabsyl chloride (DABSYL-Cl) and analyzed using a reverse phase High performance liquid chromatography (RP-HPLC). The resulting chromatograms were examined to identify individual amino acids and to observe any changes in other amino acid levels like glutamate, alanine, etc in the presence of BMAA.BCA assay was performed to compare the amount of free and bound form of amino acids. It is anticipated that in the presence of BMAA, glutamate accumulation in the extracellular region may be occurring. This extracellular glutamate may be causing excitotoxicity of glutamate receptors leading to neuronal cell death. Thus BMAA may be a possible cause of the neurodegenerative disease ALS/PDC.

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Identification and Treatment of CHF and COPD in an Urban Pre-Hospital Setting

Two to three percent of patients in the emergency department (ED) present with a chief complaint of respiratory distress (RD). Many patients are diagnosed with either Congestive Heart Failure (CHF) or Chronic Obstructive Pulmonary Disease (COPD). Studies show that paramedics fail to correctly identify these pulmonary processes in up to 42% of cases. Failure to make the correct diagnosis may lead to unsuccessful treatments or increase morbidity and mortality. The first objective of this study is to determine and report how often paramedics correctly identify CHF and COPD in the pre-hospital setting. The second is to use key variables to create a decision rule to help paramedics make a correct diagnosis.

This is a retrospective study of all patients transported with the complaint of RD from January 12, 2010 until January 12, 2011. All pre-hospital calls were reviewed using the NOMIS system. These calls were limited to calls where protocols 530.14 (COPD/Asthma) or 530.15 (CHF) were instituted, where patients were transported to Clovis Community Hospital or Community Regional Medical Center, and where patients involved were over forty years old. The pre-hospital NOMIS record and hospital record were linked to compare the pre-hospital impression with the in-hospital diagnosis.

There were 1377 patients transported during the study. The pre-hospital impression matched the final diagnosis in 67% (251/375) of the patients transported under protocol 530.15. Of the 1002 patients transported under protocol 530.14, 5 had a final diagnosis of COPD and 22% had a final diagnosis of CHF.

According to the raw data, the paramedics were more successful diagnosing CHF (67%) than COPD/Asthma (47%). For successful cases, a binary recursive partitioning analysis will help develop a decision rule for making a correct diagnosis. Key variables to be looked at include demographics, past medical history, medications, and physical exam.

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Does Endometrial Injury Enhance Embryo Implantation?

Hypothesis: An endometrial biopsy performed in the cycle preceding a Frozen Blastocyst Transfer enhances the implantation of frozen/ thawed blastocysts.

Objective: To assess if a recent endometrial injury prior to a frozen embryo transfer enhances implantation of high quality blastocysts in good prognosis patients who have failed to conceive after a fresh blastocyst transfer.

Implantation is a complex process and there are studies in the literature to support that endometrial injury prior to IVF-ET increases both implantation and live birth rates. A few of the postulated hypotheses as to why this is the case include: 1) Local injury to the proliferative phase endometrium might induce the decidualization of the endometrium, increasing implantation rate; 2)During healing of the provoked endometrial injury, several substances are secreted including cytokines and growth factors which may facilitate implantation;3)COH performed during IVF may negatively affect embryo implantation and by performing endometrial biopsy there is a delay in endometrial development making it more synchronous to the embryo's development.

There are still many unanswered questions regarding provoked endometrial injury prior to embryo transfer, such as patient selection, timing, technique, and number of biopsies. To the best of our knowledge, there have been no studies to date which evaluate an induced endometrial injury prior to frozen transfer of good quality embryos in good responder patients who have failed the previous fresh blastocyst transfer. This would exclude the possible variable impact of COH on endometrial receptivity, and unify endometrial conditions of the frozen cycle by preparation with hormone replacement (estrogen/progesterone). All treatment patients will undergo one endometrial biopsy (Pipelle) in the luteal phase of the preceding cycle to the frozen transfer. Based on the current literature, we consider that it may be sufficient to confine the endometrial sampling to one biopsy during the secretory phase of the cycle.

We will be studying approximately 176 patients, and are planning for a 1:1 randomization (86 patients in each group). Recruitment is to begin once IRB approval is obtained and we will be looking for a clinical difference of approximately 20%, based on an expected pregnancy rate of 40% for our frozen transfers. The plan is to use a one sided chi-square test at the 5% significance level. The results will be discussed once the information has been obtained and the study submitted for publication.

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Developing Effective Websites for Content Managers and End Users: Flexibility, Scalability, and Configurability Issues

The Internet has already become the primary advertising medium for any kind of business due to its explosive growth and usage. With such a surge, a need arises for designers, corporations, and content managers to develop management as well as user-friendly online sites so as to be able to distinctly communicate to the rest of the world in a time- and customer-centric scenario, respectively. There are two basic requirements for an effective site: a configurable backend layout (architecture) for designers and an easily navigable interface for the end users. The most important facets of an online site are configurability, interchangeability, interoperability, scalability, flexibility, codeability and intuitive interfaceability. A well-designed site should have a natural, implicit, and explicit interface with elements in appropriate hot-spots to attract end-users. From the designer and content manager's perspective, a site's content and design should be easily changeable for ease of editing. Further, it should have components that are universal, rather than localized in individual pages. On the other hand, content that users want to access should be available with only a few forays into the site. Thus, from the users' perspective, a website can have certain characteristic features to make it more effective.

Bearing the above attributes in mind, a full-fledged website was created for the Western Collegiate Food Marketing Competition sponsored by Department of Agricultural Business at California State University, Fresno. Without scalability features, website amendment and change often take significant amount of time. To augment the site's configurability, Cascading Style Sheets were used extensively. The color scheme also plays an important role in site aesthetics. An appropriate color scheme was chosen based upon recommendations by an expert on agricultural marketing. With a universal format for each page, interactive links, and an aesthetic layout, it was designed to be more attractive than its predecessor, which was described as a plain, generic site. The website was designed using HTML 4.01 Transitional coding in Adobe Dreamweaver¬ and contained Flash media developed with Adobe Flash Professional (both are de facto industry standards).

Due to its characteristics, the webmaster and the faculty members have been able to add new contents to the site without requiring help from the developer. Thus, it is scalable, configurable, and flexible. After the website was finished, a survey was conducted. The results of the survey indicate the site's user-friendly, intuitive interface that makes it possible for students and faculty to get to information quickly. Through this study, a guideline was created for designing effective and professional websites. Enjoy visiting: http://agbs.jcast.csufresno.edu/wcfmc/. (Note: This website was designed from scratch)

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On Legendre Multiplier Sequences

A multiplier sequence is a sequence of real numbers whose Hadamard prodcut with any polynomial with only real zeros is again a polynomial with only real zeros. Multiplier sequences for polynomials in the standard and Hermite bases have been completely classified, and those of the Laguerre basis have been partially classified. The objective of our research was to identify multiplier sequences for polynomials in the Legendre basis, as these polynomials share important properties with the previously studied ones. Furthermore, we sought to describe the relationship of Legendre multiplier sequences with the previously studied multiplier sequences. We used three essentially different methods of finding Legendre multiplier sequences: (i) by exhibiting instances of Borcea and Branden's meta-theorem on stability preserving opeartors, (ii) by analyzing discriminants and (iii) by numerical methods.

In this talk we give a complete description of linear, quadratic, and geometric Legendre multiplier sequences. We also prove that all Legendre multiplier sequences must be Hermite multiplier sequences, and describe the relationship between the Legendre and generalized Laguerre multiplier sequences. We conclude with a list of open questions for further research.

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Impact of Instrument Variation on Chromatogram Comparison of Ignitable Liquids

Comparison of sample and reference data is currently made on the same gas chromatograph-mass spectrometer instrument. This proves to be problematic in the comparison of chromatograms from different instruments. The method differentiation on various instruments limits the streamlining of comparison between them. An automated identification method was developed by Seth Yates; the algorithm being called ACCID. The algorithm is a GC-MS data pre-processing strategy that has been developed to allow for the comparison of highly evaporated accelerants' samples with a library of unevaporated source products. Other members of the research group have performed studies on the effectiveness of the algorithm to correct for passive headspace sampling distortion and the identification of evaporated samples. The algorithm was further challenged by observing whether the retention indexing and binning would also correctly identify samples after varying conditions on the instrument. Conditions were changed on a single instrument to simulate different instruments that would have different conditions and parameters. The varied conditions included the initial oven temperature, flow rate, oven ramp rate, and different size columns. These conditions were studied because they cause significant distortion to the chromatogram. When searched against a library of over 113 unique source products, the tested accelerant of gasoline and diesel showed some select matches to other samples in the same product class. The expected distortions from the varied conditions were observed in the chromatograms. With higher oven temperatures and ramp rates the data came out of the column quicker and thus condensed the retention times and the opposite being true for lower oven temperatures and ramp rates. The flow rate whether it was faster or slower also either condensed or expanded the retention times. Although some select matches were made no significant amount of correct identifications were seen. Future work includes evaporating the same gasoline and diesel samples and running them under the varied conditions to see how well the algorithm can account for both types of distortions.

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Exploring the Development of Dual Degree MSW/MBA Programs in the U.S. and It's Impact on Social Work Profession

The importance of social workers' preparedness for managerial and administrative positions has been raised. The importance of social entrepreneurship in social work profession has become a growing discussion as social entrepreneurship aims at meeting social needs, particularly in the human services sector with the use of business acumen (Farruggia, 2007; Germak & Singh, 2010; Gray, Healy & Crofts, 2003). This study explored the goals of the dual degree MSW/MBA programs and the impact it has on social work education and social work profession. We explored if social entrepreneurship was considered important in the dual degree MSW/MBA program. A non-random purposive sampling method was used and a sampling frame (17 universities/colleges) was obtained from the Council on Social Work Education. Two schools chose not to participate in the survey questionnaire due to low enrollment in the dual degree MSW/MBA program. Of the 15 Universities/Colleges, four Program Directors/Deans participated in the online survey questionnaire. The survey questionnaire consisted of 9 closed-ended and 13 open-ended questions. On average it takes 3.16 years to complete the dual degree MSW/MBA program and on average it requires 97 units to complete the dual degree program. Separate admission is required to the MSW/MBA program. Due to the competitive admission, the enrollment to the dual MSW/MBA degree program is low; on average two students amongst those who participated. The program expects that students will gain administrative and managerial skills necessary to effectively fill leadership positions in profit and non-profit sectors. Content on social entrepreneurship is covered in two of the three MSW/MBA programs. Participants reported that graduates of the dual MSW/MBA program are more marketable with higher salaries in mid-level managerial positions. Due to low response rate the findings are inconclusive as to the impact the dual degree MSW/MBA program have on the social work education and profession.

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Bacterial Endophytes of Conifers Buds

Understanding the factors that contribute to successful and productive plants is key to improving renewable approaches to agriculture and forestry. Symbionts such as endophytes—bacteria and fungi inside healthy plant tissue—can play a role in plant stress protection and growth promotion and warrant further research. Our goal is to isolate conifer endophytes found across different conifer species, which may indicate a long-term mutualistic association with the host. Such isolates are more likely to be beneficial to the host, and are therefore interesting targets for downstream studies. We use layered agar culturing method with several minimal media agar types to isolate colonies from pulverized conifer tissue. Individual colonies are identified using DNA extractions, PCRs and Sanger sequencing. In addition to sequencing identification we use a laser identification method called BARDOT (bacterial rapid identification using optical scattering technology) which generates the forward light scatter pattern of each colony. These scatter patterns are unique to bacterial species down to the strain and even serovar level and the construction of a scatter pattern library will aid in rapid identification of isolates. From conifer bud tissue sampled in two locations and needle tissue in a third location we cultured several common endophytes isolates across conifer species and sampling location. We isolated Bacillus sp. 2_A_57_CT2 from the bud tissue of Pinus nigra (sampled in Merced, CA) and Pinus ponderosa (sampled in Yosemite Valley, CA) as well as the needle tissue of Pinus contorta (sampled in Tuolumne Meadows, CA). Micrococcus luteus and Bacillus firmus were isolated from the bud tissue of P. nigra (Merced) and P. ponderosa (Yosemite Valley). Several other bacterial endophytes were isolated including Bacillus and Paenibacillus species which were not found in all conifer tissues. BARDOT scatter patterns of all isolates were collected and are being used to build a scatter pattern library for future use. Our results reveal that the same bacterial species can be isolated from conifer bud tissue sampled in different locations from different conifer species, suggesting that associations between bud endophytes and conifer hosts are conserved across different conifer species. Future work includes genome sequencing and the analysis of potential beneficial properties of each isolate.

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Chromatogram Distortion Caused by Passive Headspace Sampling of Ignitable Liquids

Evaporative weathering is a problematic environmental effect that causes chromatogram distortion and this was observed through the chromatographic profile generated by passive headspace sampling. The experimental data generated was used to challenge the ACCID chromatogram comparison and library search algorithms, developed by Seth Yates. The algorithm is a GC-MS data pre-processing strategy that has been developed to allow for the comparison of highly evaporated accelerants' samples with a library of unevaporated source products.

The effect of the sampling conditions on chromatogram profiles is being studied by varying the temperature and duration of the heating process of passive headspace concentration sampling (ASTM E1412). Test ignitable liquids are sampled using passive headspace concentration with different activated charcoal sizes at room temperature, 60°C, and 100°C. Samples are collected after heating for 24 or 72 hours of evaporation. Loss of light, volatile compounds is expected in the sample chromatogram at a high temperature; loss of heavy volatile compounds is expected at a low sampling temperature.

When searched against a library of over 113 unique source products, the tested accelerant of gasoline, kerosene, diesel, and SAM mixture showed correct matches to the exact sample and matches another sample in the same ASTM product class. The heavy range products show better identification than light range products. This illustrate that the ACCID algorithm was challenge and was successful with loss of early peak similar to evaporative distortion. The limitation to the algorithm is the samples of light range products. The result of the algorithm strongly demonstrates that the pre-processing strategy reduces the sensitivity of chromatogram distortions caused by passive headspace sampling for all range accelerants. Future work will require modifying the code of the ACCID algorithm for the light range products.

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Yield and Forage Quality of Elephant Grass (Pennisetum sp.) and Sudan Grass (Sorghum bicolor) Irrigated with Dairy Effluent

California is the number one dairy producing state in the United States. Dairy effluent (DE) with high nutrient contents can cause overloading of land with nutrients, especially nitrogen and phosphates, and thereby have the potential to contaminate surface and ground water resources. One of the nitrate remediation techniques is to grow nitrogen (N) scavenging crops, commonly known as “bio-filters”. In this study, yield and forage quality were evaluated for Elephant grass (EG) (Pennisetum sp.) and Sudan grass (SG) (Sorghum bicolor) in greenhouse experiments using 5 gallon pots. The grasses were irrigated at three rates (0, 50 and 100 % DE)) in a completely randomized design (CRD) and replicated four times. The forages were harvested at 8, 10 and 12 weeks and analyzed for biomass yield and feed characteristics. At any given harvest date N rates did not significantly affect the two grass yields, although relatively higher yields were obtained for the EG. The nitrate content of grasses increased with delayed harvests. Highest crude protein (CP) and total digestible nutrients (TDN) were detected in grasses harvested at 8 weeks, but there was no significant difference between the protein content of each grass. This is an important finding for the EG as growers are constantly seeking out alternative forages to SG which can be used to feed animals and also have the potential to take up nitrates. With the exception of the EG receiving 100% DE and harvested at eight weeks, other grasses should be safe for animal consumption. Grasses with higher nitrate content can safely fed if limited to 50% of the total dry matter ration. Findings from this current trial concur with those from previous studies, which identified elephant grass as a highly nutritious forage crop with the ability to readily take up N from soils subjected to high rates of N fertilization.

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Penny Ingestion & Zinc Toxicity in the Pediatric Population: An Issue of Common Cents

In 1982, due to increasing costs of copper, the United States Mint changed the composition of the United States Penny to be 97.5% Zinc and 2.5% Copper. In the pediatric population in the United States, the most commonly lodged foreign body requiring operative removal is the U.S. Penny.

A literature review of case reports of penny ingestions, radiographic evidence of penny ingestions and zinc related injuries was conducted. Zinc toxicity has been well established in the medical literature, including: local tissue corrosion and ulceration of the stomach, nausea, vomiting, abdominal pain and damage of esophageal mucosa. Conflicting evidence exists regarding the importance of earlier intervention of penny ingestion versus other coins. A cost analysis done in 2011 showed the average cost to manage U.S. penny related injuries due to ingestion was $7,164.78 per ingestion.

Next steps of our study include a 10 year-retrospective chart review of pediatric patients presenting to Children’s Hospital Central California (the only tertiary care pediatric hospital in the Central Valley) who had surgical intervention for foreign body removal of a U.S. penny. Operative notes will be utilized to compare the degree of injury sustained to the mucosa associated with the ingestion. We hypothesize mucosal damage will be greater in Post- 1982 U.S. pennies versus Pre-1982 U.S. pennies.

Since 1989, several attempts have been made to remove the U.S. penny from circulation due to the increasing costs of keeping it in circulation. The monetary cost and medical cost, with each subsequent ingestion of the penny, on the rise. With this next phase of study, we will seek medical evidence that may support the removal of the US penny from circulation and production from the perspective of protecting children nationwide.

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Developing Community: Storytelling in Laila Halaby's *West of the Jordan*

In Laila Halaby's *West of the Jordan*, four maternal cousins—Hala, Mawal, Soraya, and Khadija—narrate their adolescence in first person. However, two of the young women, Mawal and Soraya, often choose to tell others' stories in place of their own. I will argue that these two cousins use the stories to build a sense of community, one where they can show how they fit and break away from a group of people. All four young women have to find a place for themselves in a space between the United States and the Arab world, but Soraya and Mawal are especially out of place in their worlds. They appear to be opposites at first glance, Mawal living a mostly traditional life in Nawara, her fictional West Bank village, and Soraya being a "rebel" in Los Angeles, testing the sexual boundaries that have been placed upon her. Both feel that they are on the margins, though. Mawal thinks that the United States has taken away most of her family and excluded from the lives of the men around her; she also fears the increasing encroachment of settlements in her village. Soraya, on the other hand, does not believe she fits in with her immediate family or her cousins because of her sexual experience. During each story Mawal and Soraya show something about themselves and how they compare with the people they are speaking of. They have not become quite comfortable with their own stories, so they use others' as a way to reflect their personality and experience without directly giving it to the reader. They create a communal identity as they develop their individual identities.

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What Motivates Employees to Participate in Wellness at Work Programs?

The purpose of this study was to identify factors related to employee participation (N = 164) in a Worksite Wellness Program (WWP). The theory of planned behavior (TPB) provided the theoretical foundation for the study. The sample group, consisting of employees with physically demanding and not physically demanding jobs at a large food manufacturing plant in Central California, completed a questionnaire containing measures of subjective norm, perceived behavioral control, health attitudes, and intention to participate. It was hypothesized that we could predict WWP participation and provide relevant solutions to improve involvement, while using the TPB variables. The TPB suggests that all three variables predict behavioral intention, which then predicts actual behavior. Subjective norm was positively related to intention ($r = .54$; $p < .001$), so was PBC ($r = .72$; $p < .01$), and attitude ($r = .72$; $p < .01$). The combined TPB measures explained 64.8% of the variance of intention to participate in WWP, whereas intention was not related to WWP participation. The TPB posits that perceived behavioral control (PBC) predicts behavior, but PBC was not significantly related to WWP in this sample. PBC was, however, positively related to existing individual physical activity, intent to join group activities encouraging physical activity, and intention to engage in perceived healthy behavior. Results also indicated that physical job attributes were negatively related to WWP ($r = -.24$; $p < .01$). Overall research findings support the TPB in predicting behavioral intention, but not actual participation in WWP. The results supported the model in predicting actual physical activity. Whereas physical activity is supported, organizations should attempt to capture or encourage overall health habits (diet and exercise) regardless of actual participation in a formally organized WWP. Results suggest that organizations can improve WWP participation by concentrating on altering individual attitudes and increasing employee control.

POSTER PRESENTATION ABSTRACTS

(IN NUMERICAL ORDER BY POSTER BOARD NUMBER)

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Poster Session I
Poster Board No.1

21st Century Women in 19th Century Dress

Our study aims to compare the 2012 female form to that of females in the 1840s. We hope to dress modern female actresses in realistic Victorian garments to add to the authentic feel of Fresno State's upcoming production of Brontë.

Using historic literature, costume research texts, and online sources, we gained knowledge regarding accurate patterns and construction of clothing in the early Victorian period. We combined primary research conducted on the Brontë sisters' lives with the lives of other Victorian women. We then used costume design research on time period-appropriate dresses and undergarments. We analyzed the differences between generic Victorian costumes and the specifically early 1840's costumes necessary for this show.

With the help of our research and accumulated images, we were able to create patterns for characters' corsettes and dresses. We used these patterns to create drafts of the dresses that we were able to fit on the actress' bodies and adjust to look and feel more historically accurate.

The results of our research and tests helped us to create authentic 1840's corsettes as well as dresses draped in the specific Victorian style. We were able to pattern, create, stitch, and fit our garments to the young women cast in the production. We were able to aid in their character development by providing realistic clothing. We were also able to aid in the audience's suspension of disbelief, allowing them to immerse themselves into the play. Finally, we were able to see our research and study come to fruition in a real, tangible piece of historically accurate clothing.

We concluded that the modern female body is less accustomed to historically confining clothing and skirts of Victorian length and depth. Actresses adjusted to their costumes, combined this with the script and other design aspects and created an accurately Victorian biographical piece.

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Poster Board No.2

Working Memory Capacity is not reduced by Songs that are 'Stuck in Your Head'

Working memory capacity, as measured by a digit span task, decreases with articulatory suppression – the act of subvocal rehearsal of verbal information. The current experiment investigated whether a subvocally rehearsed song would have similar detrimental effects on working memory. We randomly assigned participants to one of three conditions: silence, song without reminders, and song with reminders. In both 'song' conditions, participants wrote down lyrics to a recent song that was 'stuck in their head' and were extensively encouraged to mentally go over the song. The 'song with reminders' condition included occasional prompts to keep the song active in their heads. All participants were given a standard digit span task in which their working memory capacity was measured. Initial results demonstrate that the predictions were not supported: the data show that having a so-called "earworm" does not seem to reduce working memory capacity. Implications on models of working memory that include a phonological loop for verbal processing are discussed.

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Cultural Differences in Perception of Self-Concept Consistency

The present study focuses on cultural differences in the self, its formulation, and how it is perceived by others. The self is constructed differently across cultures, previous studies have found that people in individualistic cultures prefer a stable self, while more interdependent, collectivistic cultures allow more flexibility in the self. We hypothesized that participants from collectivistic countries would be more likely to infer positive traits about individuals who adapt their behavior to fit the context of a situation. Subjects from individualistic countries would be less likely to agree with positive statements about individuals who do not maintain a consistent behavior and sense of self.

The study categorized five countries onto a scale of how collectivistic or individualistic their culture is. The countries were ranked based on previous research. In order of most collectivistic to least collectivistic (most individualistic), participating countries include Japan (n=116), Nepal (n=89), India (n=117), Brazil, (n=337) and the United States (n=140). The participants are from various universities, and there were approximately 797 participants in total.

Questionnaires were administered to the participants in each country in university introductory psychology courses. The questionnaires contained a scale of 1-7 in which subjects agreed or disagreed about traits inferred from descriptions of people who change their behavior to suit different people and different situations. There are ten inferred traits in total- nine are positive, such as “adaptable, mature, sincere”, and the negative trait is “inconsistent”.

Preliminary data analyses indicate partial support for the main hypothesis. Participants from India were significantly more likely than any other participants to agree with positive statements describing individuals who change their behavior due to the situation. Conversely, Brazilian participants were significantly more likely to disagree with positive traits inferred from changing of behavior. There appeared to be no significant differences between Nepal, Japan, or the United States.

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Poster Board No.4

The Effects of Distributed Learning and Dissimilar Intervening Material on Consistency of Recall

Although it is clear that spaced practice is often superior to massed practice, little is known about the effect of the activity between study episodes on the effect of spacing, and what influence it has on recall abilities. Given the rich body of literature on similarity in interference, the present study manipulated the similarity between to-be-learned information and activity between study episodes. Previous research has shown that the more similar material is to target learned material, the more negative the effect on retention and retrieval of the target material. The current study further examines the relationships between spaced learning periods, varied similarity of material, and the consistency of recall. Participants were presented with GRE vocabulary words to study, and then were initially tested three times on definitions of words learned. In the spaced condition, additional material is inserted between test trials, which is either similar (additional GRE vocabulary word-pairs) or dissimilar (2-digit number-pairs) to that of the to-be-remembered material. After the initial testing period is over, the participants will complete a 20-minute distracter task, and then will be retested on learned material. This is investigated in a 2 x 2 within-subjects factorial design, in which both spacing (spaced vs. massed) and similarity of intervening information (similar vs. dissimilar) is manipulated. Although data collection is underway, we expect to find that the dissimilar intervening material combined with distributed spacing condition will have the most positive effect on initial and final test reliability because of the role interference plays in the similarity of tasks effect. This research serves as an important guide to optimizing the effects of spaced practice.

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Evaluating Betting as a Tool for Improving Metacognitive Calibration

Research conducted by McGillivray and Castel show that metacognitive improvement takes place using their paradigm. McGillivray and Castel used six lists each containing twelve words with different point values assigned to each word. In the experiment participants were asked to bet immediately on they thought they would be able to recall the word during a recall portion after. Words differ in point value and participants are awarded points for every word the recall during the testing phase that they bet on, but are also deducted points for failing to recall words that they bet on. McGillivray and Castel failed to include a condition with a retention interval. Without the introduction of a retention interval the results may have little to do with improvement of metacognition and more to do with strategy within the task. The participants may have taken advantage of the recency effect in the later trials. The current study has added a condition with a retention interval in order to address this shortcoming. Participants (n=80) in the current experiment are assigned to one of two conditions. The first condition is a replication of McGillivray and Castel's previous experiment, and the second condition adds a retention interval after each list before the testing portion. Currently we are in process of extracting the data to analyze how subjects determined which words to bet on and if any other memory strategies were being used.

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The Effects of Compliments on Helping Behavior

Forty participants were approached in a study to observe the effects compliments have on helping behavior. All participants were asked the time, twenty by a male and twenty by a female. Each confederate complimented half of the people they approached. After this interaction, the participants walked down a staircase, where another confederate dropped papers. An observer recorded if the participants helped the confederate pick up the papers. The results were analyzed to see if helping behavior increased after a compliment whether the gender of the either the complimenter or participant affected the helping behavior. The study showed no significant relationships between helping behavior and compliment and gender (for both complimenter and participant). The researchers suggest more studies need to be conducted in order to further investigate this issue.

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Poster Board No.7

Vertical Ozone and Boundary Layer Profiles at a Dairy Facility in Central California

Central California is one of the most polluted regions in the United States, a fact that is evident from being one of the few regions in the country currently classified as an extreme non-attainment for 8-hour ozone. The high ozone level in the area is partly attributed to emission of volatile organic compounds (VOCs) from dairy facilities. Characterizing lower boundary layer exchange processes as they affect dispersion and vertical transport of VOCs and ozone at these facilities is thought to be critical for revising regional ozone models for the area. In this study, we present results from field experiments conducted at a diary farm in Central California in which vertical profiles of ozone and meteorological parameters were measured, with the goal of characterizing vertical ozone transport at the site. In the spring and summer of 2011, vertical profile data of ozone concentration, air temperature, relative humidity, atmospheric pressure, wind speed and direction were measured by an electrochemical ozonesonde and a meteorological sonde tethered 5 m below a 9 m3 balloon. The data were collected as the sensors were raised or lowered and sent to a ground receiving station by telemetry. Analysis of the data showed vertical ozone variation with patterns different from those observed over urban areas. Implications of the results for improving regional ozone forecast will be discussed.

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Using Direct Reinforcers to Improve Reading Comprehension in Children with Autism

Children with autism often have language deficits affecting verbal communication and comprehension. These language deficits not only affect interpersonal language abilities but also abilities like reading comprehension. While many of individuals with autism show progress using data collection methods, like frequency data on the number of words mispronounced in a paragraph, or ability to memorize word definitions, they do not perform well on reading comprehension measures. There is currently a lack of research on effective methods for teaching reading comprehension to children with autism. The unique combination of social and language deficits in children with autism affects both their understanding of the written words and their ability to infer from social cues in written scenarios as well. It may be possible to increase reading comprehension by reinforcing behaviors that demonstrate the material was understood, in an active learning model. This study seeks to examine the effects of introducing direct reinforcers to reading comprehension training by systematically introducing simple to complex written instructions; which if read and followed correctly will lead the child to a desired reinforcer. The dependent variable is the performance on a reading comprehension test, which will be developed to cover the goals as stated in the English-Language Development Standards for California Public Schools. The test will be given at the beginning and end of the treatment to compare pre and post results. In addition data will be collected on the number of prompts required to assist the child or to keep the child in chair and on-task. This data will be used to determine if the need of a paraprofessional aide would be required. This study will use a multiple baseline across participants design. The study will consist of a baseline phase, treatment phase, and a follow up phase.

[Research still in progess, no results yet.]

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Poster Board No.9

Three-Dimensional Escape Trajectories in Larval Fish

Fish execute C starts when they escape from a threat. The neural control, body kinematics and hydrodynamics of escape responses have been studied extensively in adult and larval fish. However, due to experimental constraints, biomechanical studies have focused on mapping the body movements and the center-of-mass trajectories from a dorsal view, neglecting the vertical dimension. These 2-dimensional studies suggest that prey randomize their escape trajectories, but bias the response away from the stimulus. This study explored the escape response of larval fish to a horizontal startle stimulus by recording the trajectories in three dimensions. We used a piston to generate a brief suction event simulating a predator attack. Consistent with published findings, escape responses occurred either away or toward the stimulus in a horizontal plane, there seemed to be also no preference for left or right. However, our pilot data show that zebrafish larvae consistently responded to a horizontal stimulus with a downward escape trajectory. We developed several hypotheses: (1) Demersal lifestyle: zebrafish larvae are demersal and might therefore always escape towards the substrate; (2) Insufficient pitch control: fish larvae are more dorso-ventrally asymmetric and have smaller pitch control surfaces than adults and therefore experience a stronger downward pitch; (3) Directional response: fish larvae process the direction of the stimulus and select a trajectory biased away from the stimulus.

To test whether larvae use the stimulus direction to bias their escape response or default to a downward trajectory due to behavioral or mechanical constraints, we vary the direction of the stimulus.

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Proteomic Evaluation of a Caveolae-enriched Fraction From Different Integrin Backgrounds: Implications For Tumor Cell Motility

Defining tumor suppressors and oncogenes is fundamental to cancer. Both integrins and caveolins have known roles as tumor biomarkers both at early and late-stage disease. However, previous data has shown that depending on tumor origin, caveolin-1 can function either as a tumor suppressor or as a tumor promoter, and while excess integrins are generally associated with cancer progression and angiogenesis, even some integrin knockout models have increased tumor burden. This dichotomy is problematic and compounded by data indicating that certain integrin subunits can bind to caveolins. There is clearly a complex interplay taking place that is most likely cell type-dependent. The long term goal of this project is to determine the role and mechanism of integrin subunit association with caveolin isoforms. We hypothesize that the mechanism of integrin endocytosis/recycling is dictated by the combination of integrin subunits present on the cell surface and the combination of interacting caveolin members and isoforms. Our project focuses on model cellular systems in which differential caveolin isoforms and β integrin subunits are overexpressed, knocked-down, or reciprocally affected that will have a profound effect on function such caveolae formation, vesicle recycling, adhesion and migration. Using a combination of RT-PCR, subcellular fractionation, immunoblotting, and proteomic workflows, our preliminary data indicate that 1) different caveolin isoforms with respect to different β integrin subunit expression backgrounds have variable expression profiles, 2) the contingent of proteins from the endosomal compartment changes with respect to integrin levels. Our investigations of caveolin and integrins will provide a further understanding for molecular interactions associated with cancer cell motility with the hope of developing inhibitory or stimulatory mechanisms for therapeutic benefit.

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Association Mapping of Tolerance Genes in Populus Clones with the Use of Simple Sequence Repeat (SSR) Markers and Candidate Genes

The poplar tree (P. trichocarpa, P. deltoides) is a strong candidate for growth in regions of high trace element contamination. Using DNA from four salt/boron tolerant and six sensitive genotypes of poplar, we are searching for association linkages between DNA markers and the poplar genes conferring tolerance towards salt and boron contaminants in the soil.

Two types of DNA markers are being used in this study: SSR markers and a set of 19 candidate genes. For the SSR markers, we started with a set of 82 poplar primer pairs known from the literature. DNA from each of the nine poplar clones was amplified using each primer pair, and amplification and polymorphism is detected using polyacrylamide gel electrophoresis.

For the set of 19 candidate genes, PCR amplification for all genes was successful across DNA of all 9 poplar clones. Two of the markers (PTS10 and PTS17) showed polymorphism upon digestion of the PCR products with restriction enzymes. For several of the other candidate genes, polymorphism was not detected until the DNA was actually sequenced. Nine of the markers showed potential association linkage with the salt and boron tolerance phenotypes. Polymorphism was typically located outside of the presumptive coding regions, indicating that non-coding region polymorphism may play an important regulatory role in expression of this phenotype.

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Poster Board No.13

Identification and Relevance of Stem Cell Markers in Pancreatic Cancer Cell Lines

Pancreatic adenocarcinoma is an aggressive disease that is characterized by rapid progression and invasiveness. The lack of effective diagnostic methods this cancer often eludes detection during its formative stages. Even after resection of a tumor, multiple rounds of chemotherapy and radiation therapy, patients still have regrowth of the primary cancer. The ability of tumor cells to show profound resistance to extant treatments is believed due to an emerging concept in the cancer field known as the 'cancer stem cell'. Cancer Stem Cells (CSCs) may be the major culprits for initiating and maintaining the metastatic potential of tumors even after treatment. CSCs are a small subpopulation of cancer cells within a tumor that maintain an undifferentiated embryonic stem cell-like state; thus, CSCs share many common properties with Embryonic Stem Cells (ESCs). This includes the ability to self-renew, potential to proliferate extensively, and expression of similar cell surface markers. However, very little is known about the acquisition of CSCs characteristics. To fully understand CSCs, the cells must be isolated from the bulk tumor via identification of stem cells surface markers. Our primary goal for this project was to create an expression profile for nine stem cell markers against a panel of ten pancreatic cancer cell lines obtained from different stage of disease. Varying expression of stem cell surface markers were identified in human pancreatic cancer cell lines with BxPc3, AsPc-1 and HPAF II demonstrating high expression of all nine identified markers. We reasoned that this cell lines would be an attractive model system to further evaluate subpopulations of cells. This involves sorting CSCs from the bulk of tumor cells using a combinatorial approach of magnetic bead enrichment followed by flow cytometry. Furthermore, proteomic analyses of this cell demonstrated high levels of Mindbomb-2 (MIB2) an E3 ubiquitin ligase that positively regulates Delta-mediated Notch signaling. Notch signaling is known for its importance in cell/tissue differentiation and taken together, these results suggest 1) Pancreatic cancer cells are a strong model for identification and isolation of cancer stem cell biomarkers, and 2) BxPC3 cell line has de-differentiated into a stem cell-like state by regulating the Notch pathway. Ultimately, our hope is that our findings could be used as diagnostic markers to identify pancreatic cancers at an earlier stage while still treatable.

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Molecular Dynamics Simulations of Protein Enantiomers

Biological macromolecules, proteins and nucleic acids are composed exclusively of chirally pure monomers. Naturally occurring proteins are made of L-amino acids and form left-handed proteins. The chirality consensus (or homochirality) appears vital for life and it has even been considered as a prerequisite of life. The origin of this phenomenon is not clearly understood. It is well known that biological function of a protein not only depends on the 3D structure, but also on its dynamics. As new three-dimensional structures of enantiomeric forms of the proteins are beginning to be available, it provides an opportunity investigate the effect of chirality in molecular dynamics. In this research we take a comprehensive approach based on computational molecular dynamics (MD) simulations to determine whether molecular symmetry is maintained beyond three dimensional structure of a protein. Using GROMACS (GROningen MAchine for Chemical Simulations) we have simulated the motional behavior of the L and D form of a scorpion toxin. The structures of these molecules determined using X-ray crystallography was used in the simulation. MD simulations with explicit water molecules were performed to a total of 10 nanoseconds using the high performance computers on campus. Our simulation results show that selective local dynamic events could be altered between the D and L forms the protein suggesting certain molecular functions could be insensitive to chirality.

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Poster Board No.15

Determination of Molecular Self-Diffusion Coefficients using Pulsed-Field-Gradient NMR: An Experiment for Undergraduate Physical Chemistry Laboratory

NMR spectroscopy has become one of the primary tools that chemists utilize to characterize a range of chemical species in the solution phase, from small organic molecules to medium sized proteins. A discussion of NMR spectroscopy is now an essential component of physical and biophysical chemistry lecture courses, and a number of instructional laboratory exercises have been described. The latter includes experiments to understand restricted rotations, measure relaxation times, and run two-dimensional NMR experiments. This note describes how NMR spectroscopy can be used to measure the translational diffusion coefficients using pulsed-field-gradients (PFG). Though the principle of the diffusion coefficient measurements is based on one of the earliest pulse-sequences proposed, the advent of standard availability of PFG in commercial NMR spectrometers has made the implementation of this experiment straightforward. In addition to learning the basic operation of an NMR spectrometer, the specific goals of the experiment may include understanding the effect of temperature, solvent viscosity, and concentration on molecular motions as well as the analysis of a mixture.

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Physical Property Solutions Applied to Recycling Problems

A demonstration of the physical properties of density and magnetism was developed to show how these two properties can be applied to help promote a greener planet through recycling. The meaning of the term “density” as well an overview of magnetism will be discussed. In this demonstration various compounds including glass, metal and different plastics were separated from one another using nothing more than a simple magnet as well as various solutions consisting of materials one can typically find around the house. The items were separated to show how recycling plants separate substances before they are recycled. This demonstration is meant to be used as an effective way to show how the abstract ideas of density and magnetism can be applied to solve real world problems.

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Poster Board No.17

Green Catalytic Activation of Hydrogen Peroxide by Organochalcogenide Compounds

The catalytic properties of organochalcogenide compounds are of great interest in “green” chemistry because of their ability to enhance hydrogen peroxide as an oxidizing agent. Detty and colleagues tested the increase in the kinetic rate of the oxidation of NaBr with H2O2 and found that these organoselenide/organotelluride compounds activate H2O2 in a catalytic fashion. Given the issues of syn-elimination in Detty’s catalysts, diphenyl selenide and diphenyl telluride species are being considered because of their lack of â hydrogens. Using gas chromatography, the rate of oxidation was evaluated with these different catalytic species. A blank rate was first determined initially in order to standardize the efficiency of each catalyst. Upon data analysis, diphenyl selenide did not show an increased rate of oxidation while diphenyl telluride did. When diphenyl selenide was pre-oxidized, again no increase of rate was observed. NMR data was taken at specific intervals during the course of the reaction to observe the oxidation of the catalyst. This verified that the compound was being oxidized to diphenyl selenoxide, but then reduced half way through the reaction. Diphenyl selenide is commercially available but diphenyl telluride must be synthesized. Diphenyl ditelluride was made using phenyl magnesium bromide and elemental tellurium. Diphenyl ditelluride was then reduced to diphenyl monotelluride by using copper and heat. Diphenyl telluride shows evidence of activating hydrogen peroxide and catalytically increasing the rate of reaction of NaBr with cyclohexene and H2O2.

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Poster Board No.18

Kinetics of the Gas-Phase Reaction of Hexanal with Chlorine Atoms

Volatile Organic Compounds (VOCs) are very common pollutants in the air and are emitted from both natural and man-made sources. Their gas-phase reactions in the atmosphere, such as with hydroxyl radicals, are very important when evaluating the effects of VOCs on air quality, climate, and health. Understanding these reactions is therefore important in determining their impacts and formulating air pollution control strategies.

Carbonyl compounds are VOCs that are emitted directly into the air and that are also formed as first-generation reaction products from the atmospheric degradation of most VOCs. While the chemistry of smaller carbonyls (e.g., acetaldehyde, propanal, and acetone) is well understood, there have been few studies of larger carbonyls. The goal of this work is to investigate the atmospheric chemistry of these compounds to understand their impact on air quality. In the work reported here the reaction rate of hexanal with chlorine atoms (used as a proxy for hydroxyl radicals) was investigated.

The rate constant for the reaction between hexanal and chlorine atoms was measured using the relative rate technique as a function of temperature. Chlorine, hexanal, a reference compound and air were mixed in a 142 L photochemical reactor. Chemistry was initiated using internally-mounted blacklight lamps, and changes in the chemical composition were monitored using long path Fourier Transform Infra Red spectroscopy. The room temperature rate coefficient for the reaction was determined to be 2.49 × 10-10 cm3/molecule/s, in good agreement with literature values. The implications of these results will be discussed.

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The Effects of Manganese Ion on Oxidative Stress in a Drosophila melanogaster Parkinson's-like Model

Manganese exposure leading to the Parkinson's-like manganism disease was first observed in miners and bleaching powder producers, over 150 years ago. A loss of dopaminergic neuron function leads to the loss of control of voluntary movements.

Canton S fruit flies (age-matched females) exposed to varying concentrations of manganese in their diets (5, 25, and 50 mM) model the manganism disease in humans. I have analyzed four trials of manganese-fed flies for their viability, locomotor tapdown reactivity and CuZnSOD enzyme concentration using the Western blot technique. After a feeding period of three days, each group of 5 flies each was assessed for their locomotor activity, measured by a standard tapdown test. The control flies retained their ability to climb (90% reached the top in 10 s) while the treated flies (5 mM, 25 mM and 50 mM) exhibited a dose-dependent loss of climbing ability (84%, 78% and 62%). The 3-day mark was chosen for the locomotor assay to retain the maximum number of viable animals. However, by day 10, 95% of the control and 5 mM flies were alive, while only 65% of the 25 mM and none of the 50 mM flies remained alive. A Western blot on 3-day treated flies shows CuZnSOD concentration is increased in the presence of 5 and 25 mM manganese, while the highest dosage (50 mM) leaves the SOD either decreased in comparison to the low-mid manganese treatments or at levels equal to the untreated flies. Food avoidance was ruled out based on dye-based assays to quantitate food consumption. The results indicate that manganese-fed flies exhibit locomotor defects and increased oxidative stress, whether this is targeted at dopaminergic neurons is not known yet but the fruit fly serves as a novel model for further study of the human manganism disease.

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Effects of β-N-oxalylamino-L-alanine (BOAA) on the viability and locomotory behavior of *Drosophila melanogaster*

β-Methylamino-L-alanine (L-BMAA) is a neurotoxin produced by cyanobacteria and found in the Cycas Circinalis plant. This compound has been linked to amyotrophic lateral sclerosis-Parkinson dementia complex (ALS-PDC), a neurodegenerative disease that causes symptoms similar to ALS, Parkinson's disease, and dementia including loss of muscle control and progressive mental decline. β-N-oxalylamino-L-alanine (L-BOAA) is a chemical very similar to BMAA and has shown to cause similar abnormal neurological symptoms. BOAA is found in the chickling pea, Lathyrus sativus, found in parts of India and Ethiopia. The consumption of the seeds of this pea has caused Lathyrism, a neurological disease that involves partial loss of motor ability in the lower limbs.

We have already investigated the locomotor behavior of fruit flies fed 0, 12.5, 25, and 50 mM BMAA. There is a dose-dependent decrease in viability over a period of 1-5 days, where by day 3 only 80, 60 and 40% of the fruit flies fed the lower dosage to higher dosage flies remain alive. Fruit flies tend to climb up the walls of a container once they are tapped down it. The flies are tapped down a vial and the number of flies that are above the 5.5 cm mark after 30 seconds is recorded. The BMAA-fed flies show just like their viability, a dose-dependent decrease in reactive climbing behavior. In a parallel experiment, various concentrations of L-BOAA have been added to standard fly food and given to a group of age-matched female flies. The inactive D-form of BOAA, was fed to a separate group of flies as a negative control. The BOAA appears to be more potent than BMAA, in its effects on the viability and measurements of the locomotor ability are currently being measured.

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Poster Board No.21

Groundwater Elevations in a Gold-Mined Merced River Floodplain

The hydrology of the Merced River has been altered by rerouting water for irrigation and flood control. The 1930's quest for gold using mechanized dredging further disrupted the natural groundwater and flow patterns of the Merced River floodplain. This study was conducted at the Merced River Ranch (MRR) located in the Dredger Tailing Reach (DTR) of the Merced River; where more than fifty percent of the Chinook salmon of the Merced River spawn. The objective is to determine the hydrological connection between the canal, the highly conductive floodplain and ultimately the Merced River. An evaluation of groundwater elevations relative to the stage of the Merced Irrigation District (MID) Main Canal (MC) to the south and the Merced River to the north is necessary in order to determine whether seasonal sublateral flows occur.

MRR contains four monitoring wells drilled down to the Merhten Formation, a layer of volcanically derived sediments mixed with volcanic mudflows. Three additional monitoring wells were drilled in an area undisturbed by gold-mining dredging activities. Continuously recording pressure transducers were installed in all wells to measure water elevation. In this unconfined aquifer the depth to groundwater coincides with the water table.

Information from 2006 indicated that the MC serves as source and the Merced River as sink. The ten month data set from the transducers placed in April 2011 during a record wet year when the Merced River floodplain was inundated indicate that wells near the MC, approximately 825 meters from the river connect to the flood stage of the river. The magnitude, frequency, and duration of river stage are reflected in two monitoring wells; one near the river and one near the canal. Several wells within MRR reflect flow stage of the canal. During this flood of 2011, the Merced River dominates the groundwater connectivity of MRR.

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Exploring Asynchronous Flight-Muscle Activation in Insects through a Bio-Mimetic Flapping Machine

We have developed a flapping machine analogous to the asynchronous flight muscles found in insects of the higher Neoptera. The wing strokes of bees, wasps, beetles, and flies are not individually triggered by nerve impulses; instead, delayed stretch-activation allows the flight muscle to oscillate spontaneously when coupled to a resonant load. Our model is driven by a solenoidal linear actuator, which intrinsically mimics the force vs extension properties of muscle. The output of a Hall-effect position sensor controls the current to the solenoid. When this feedback is delayed with respect to the instantaneous actuator position, sustained oscillation is indeed observed. We have tested the effects of damping, feedback delay, and restoring force on the flapping amplitude and frequency. When damping is increased, the resonant frequency and optimal delays are not affected; however, a higher feedback gain is required to achieve oscillation. We have solved the corresponding delay differential equation for a damped, driven harmonic oscillator; this numerical map of oscillator amplitude as a function of delay and damping is in quantitative agreement with the behavior of the machine. For electro-mechanical robots, this machine is a flexible test bed for the investigation of distributed (vs central) control of flapping motion; however, the machine is not suitable for flight. Similar to insects, the absence of a separate ‘function generator’ – to define the flapping kinematics – is advantageous when autonomy, simplicity, and speed of the control system are crucial.

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Poster Board No.23

How Bladderwort Catch Prey: Hydrodynamic Models of a Suction-Feeding Carnivorous Plant

Bladderwort (Utricularia) is a genus of aquatic carnivorous plants that catch zooplankton in underwater traps. These traps are minute bladders that suck in water and prey when a trap door at the mouth is triggered. We have used high speed video Particle Image Velocimetry to measure vectorial flow fields outside the bladder's mouth. The observed fluid accelerations are unprecedented for an organism only 1 mm long. In the present study, we compare two analytic hydrodynamic models with the observed flows to explain the extreme performance of these bladders. In particular, we find that axial velocity transects fit better to a friction-free model than to a fully-developed viscous model. The reason why friction-free suction is desirable is illustrated by calculating the power required to achieve the observed flow speeds. Fully developed viscous flow, which wastes energy as heat, would demand three orders of magnitude more peak power than the case in which all energy is used to accelerate the water. Evidently, high accelerations are necessary not simply to entrain typical prey (which swim 10-100 times slower than the suction speed) but to prevent the development of a lossy boundary layer.

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Poster Board No.24

Optimization of Mixed Design for Permeable Concrete

Rainwater runoff has been a cause for concern in areas that are highly dependent on rain. Permeable concrete, a fairly new type of concrete, reduces rainwater by allowing it to percolate through the voids. The nature of this concrete allows for the possibility of addressing environmental issues concerned with storm drainage systems, water pollution, runoffs, island heat effect, and many others. However, more information is necessary for the optimum design of concrete mixes to include adequate permeability and a higher retention of strength.

Five different mix designs were created with the same type of aggregates and different admixtures, including: fly ash, super plasticizer, and accelerator. The maximum size of the aggregate was 3/8". The concrete was manually mixed. After the specimens were prepared, two were placed in a curing room at constant temperature of 70° F ± 12, while the others were placed outside and left to cure for four weeks.

Compressive Strength Test results exhibited higher values for the mixes prepared with super plasticizers, while the mixes with fly ash and accelerators exhibited lower values. Also, specimens with higher permeability showed a decrease in compressive strength values.

With gravity alone and a water tank set at a height of 138.2 cm, a Constant Head Permeability Test was conducted by forcing water through the concrete. This was done to determine the permeability rate.

Concrete specimens with super plasticizers exhibited higher compressive strengths than the specimens from the other mixes. Having an average of 574.52 psi for the specimens that were placed inside and permeability of k = 13.85 cm/sec. On the other hand, the outside specimens exhibited an average compressive strength of 535.03 psi and permeability of 14.87 cm/sec. Maintaining the consistency and having the right amount of water was a pivotal component to maximizing the strength of the concrete.

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Reusble and Heterogeneous Smart Phone Application Development

When supplying any type of service to a group of people, the larger crowd is the better off that service will be. Having a broader audience gives a more diverse feedback, larger financial gain, and a stable loyalty to that service. These rules also apply to software development. As a developer that is developing for smart phone applications, having a larger number of users is the main goal. Currently, only developers that are supported by large companies can produce multiple applications spreading over all the leading smart phone operating systems. This is because large companies alone have the money and resources to support such complex development across each smart phone operating systems. This project presents a centralized system that applies code generation to allow the sharing of information between each leading smart phone operating system. Any developer could easily use this system to integrate their applications in a hassle-free manner. The result would even the playing field between freelance and full-scale industry developers in the smart phone domain.

Creating new software for each project instead of reusing trusted software is expensive, time consuming, and error-prone. This project attempts to have the developer create a centralized system to reuse, save money and time. Django, the python web framework, is chosen as the centralized hub to host all the data that is shared among mobile devices. Django organizes its data using models, which is code that defines how data is used, created, and validated. These models contain the information needed to transparently generate source code to provide the developer access to share information among smart phone devices. Extensible Markup Language (XML) documents are used to carry data or information from system to system. If there is a need to update the way information is structured, the developer can regenerate the source code using a simple command, recompile each smart phone device, and redeploy the newly updated executables to the market.

Using existing models to allow the sharing of information between two heterogeneous devices is common today. Although, this system provides the flexibility needed to develop rich smartphone applications without compromising interoperability. This system generates source code that integrates heterogenous mobile platforms, saving time and money. Also, the code generation is designed with software evolution in mind; allowing users to easily mold their project overtime, in a hassle-free manner. This research will benefit both company hired and freelance programmers because it would simplify the job of the integration of complex software.

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Poster Board No.1

Optimizing in Vitro Propagation of Douglas Fir (Pseudotsuga Menziesii) for Use in Pacific Northwest Timber Industry Reforestation Efforts

Douglas Fir (Pseudotsuga menziesii) is one of the most important timber species in the United States, and although propagation of this species occurs naturally through seed, the inconsistency in cone production and a 10-15 year life-cycle prohibits the large-scale use of seed as a propagule source. Attempts to propagate this species through vegetative methods have not been widely successful primarily due to the rapid deterioration of propagules prior to rooting. To remedy this, much effort has been focused on the use of in vitro culture as a method for propagating these species. To date, thin-cell-culture, embryo-culture, somatic- embryogenesis and direct-organogenesis from cotyledon-, or hypocotyl-derived calli have been utilized with varying degrees of success. The objective of this project was to 1) conduct side-by-side evaluations of the efficacy of these existing methods and 2) to optimize acclimatization of these in vitro derived cultures to greenhouse and nursery environments.

A preliminary evaluation of seed dormancy was conducted via in vitro culture of scarified, stratified seed, and several degrees of embryo excision in which intact embryos were microscopically dissected from surrounding seed coat and endosperm. Seed were initially surface sterilization with 20% NaOCl, 75% EtOH and cultured on standard Quoirin and Lepoivres media supplemented with 3% w/v sucrose and solidified with 0.65% TC agar and maintained in a growth room under 16/8h (day/night), 50 M m-2 s-1 at 25 C. In vitro culture acclimatization was evaluated with the use of vermiculite filled 0.5 mm polypropylene bags modified with varying additions of KOH to absorb CO¬2 or KMnO4 pellets to oxidize C2H4. The results of this study increased our understanding of the factors limiting clonal propagation of P. menziesii.

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Potential of Using Vermicompost Tea to Optimize Growth and Yield of Bell Peppers

Vermicompost is the product derived from the breakdown of organic waste by the action of earthworms. The aqueous extract from vermicompost is commonly referred to as "vermicompost tea" (VCT). In this study the effects of VCT concentrations and reduced water application rates were evaluated on growth of and yield of bell peppers (Capsicum annuum L.), as well as the effect on soil pH and electrical conductivity (EC). A greenhouse study was conducted using 2.5-gallon pots in a completely randomized design, replicated four times, with two VCT concentrations (full and half strength) and three irrigation rates (IR) applied at 100%, 80% and 60% of ETc. Bell peppers were established as transplants, and IR and VCT applications were based on Hydrosense™ soil moisture monitoring and visual observations of leaf turgidity or wilting. Between 90 to 120 days after transplanting (DAT) peppers were harvested and any remaining blossoms and flowers were counted. At 120 DAT, plant and root biomass were determined and soil samples were analyzed for pH and EC.

At harvest, there was a significant difference in plant dry weight, with average weights ranging from 11.6 grams for the 50% VCT / 100% IR treatment to 23.8 grams for 0% VCT /100% IR treatment. Generally, plants that received the 0% VCT had the greatest biomass. Also, VCT concentration increased dry root weight under irrigation stress. There was a significant effect due to the interaction between irrigation and VCT rates on soil pH levels at plant harvest. However, neither VCT nor irrigation rates influenced soil EC values. Generally, VCT significantly increased blossom and pepper yield for plants grown under irrigation stress conditions. These findings are encouraging as growers seek out innovative techniques for enhancing bell pepper growth with limiting water supplies.

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Effect of Organic and UAN-32 Fertilization on Bok Choy Yield and Soil Properties

California leads the nation in agricultural production with over three hundred crops produced annually. Among these crops are specialty vegetables such as Bok Choy, Daikon, Bitter Melons and Nappa cabbage which are commonly grown by the South East Asian Community (SEAC). With the need to increase production and remain competitive in the local, national and global markets, these SEAC growers are often turning to excessive agro-chemical applications to ensure high yields and early maturity. These growers are also faced with environmental regulations, particularly linked to soil salinity and nitrate contamination of water resources. The overall goal of our current study is to evaluate if slow release nitrogen (N) fertilizer formulations, applied to various South East Asian (SEA) vegetables commonly grown in California. In this phase, the objective was to evaluate the effects of an organic (ORG12) and inorganic (UAN32) fertilizers on the (i) yield of Bok Choy, and (ii) soil pH and electrical conductivity (EC). A sandy loam soil was used in a greenhouse (pot) study. Bok Choy seeds were planted in early November 2011 (0 DAT). The experimental setup was a completely randomized block design (CRBD) comprising of 4 blocks of 6 pots each (2 fertilizers x 3rates). Fertilizer rates were 30, 90 and 150 lbs N/ac. Irrigation was be based on the crop- evapo transpiration (ETc) requirements, determined primarily by the soil moisture levels in the top four inches in the pots, and visual observation of either leaf turgidity or wilting. At harvest, there were significant differences in yield due to both fertilizer type ($P= 0.03$) and application rates ($P= 0.09$) with the mean weight of Bok Choy heads being 275 ±16 g and 219± 20g for the plants treated with the UAN32 and ORG12, respectively. However, there was no significant difference in soil pH and EC as a result of the fertilizer treatments. These findings are encouraging as SEAC growers seek out innovative fertilization techniques for enhancing vegetable production.

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Effect of Irrigation, Surfactant and Fertilizer Rates on Chlorophyll Content in Tomato Leaves

Tomato is one of the most important vegetables grown in the United States. Due to continuous rise in the cost of fertilizers and irrigation water crisis, there is a need to continuously find ways for efficient use of fertilizers and irrigation water, without affecting the quality and quantity of the tomatoes. Current approaches involve utilizing products such as soil surfactants which can potentially enhance water and nutrient uptake by plants, and thereby optimize overall crop productivity. The objective of this study was to evaluate the influence of surfactant, Nitrogen (N) fertilizer and irrigation rates on the chlorophyll content of tomato leaves. The study was conducted on a sandy loam soil, as a split-split plot experiment, with irrigation (high, medium and low) as the main factor, and surfactant (with and without) and fertilizer rates (100, 150 and 200 lbs N/acre) as secondary factors. Chlorophyll contents were determined using a SPAD 502 Plus Chlorophyll Meter on leaves beginning at 1" diameter of fruit stage (first ripe stage) and continuing weekly until tomato harvest. Overall, there was a slight decrease in the chlorophyll contents in leaves as the tomatoes progressed from immature green to full red stage (harvest). At first ripe stage, irrigation rates had a significant effect ($P = 0.06$) on leaf chlorophyll content. At harvest, there was no significant difference in the chlorophyll content due any of the three factors investigated in this study. It is noteworthy that unlike other studies reported in the literature, the chlorophyll contents measured with the SPAD meter in this study did not show any positive correlation with the nitrate concentrations determined in leaf petioles. In future studies, we intend to investigate the correlation between chlorophyll readings and total nitrogen content of the leaves. +

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Determining the Habitat Preference of Sand Lance (Ammodytes hexapterus) using Multibeam Bathymetry in the San Juan Islands, Washington.

Ammodytes hexapterus (Pacific Sand Lance or PSL) is an important forage fish supporting many marine populations, ranging from 29 species of birds, 10 species of marine mammals, and 30 species of commercial and sport fishes. Previous studies have shown PSL to be highly substrate specific (Robards et al., 1999). Due to the lack of swim bladders, sand lance spend time buried in the substrate and come out into the water column to feed. If the sand particles are too fine their gills can be clogged (Wright et al., 2000). Little is known about the species sub-tidal habitat and new information regarding habitat preferences in deep water would be beneficial in determining their distribution and abundance. Preliminary examination undertaken in this investigation was limited to three sand wave fields in the San Juan Islands, Washington: one, the central San Juan Channel (a known PSL sub-tidal habitat), and two previously un-sampled fields west of Sucia Island and west of Iceberg Point. Multibeam bathymetric data, subsea video, and sediment analysis show that PSL have occupied the San Juan Channel, which is composed of well-sorted medium grained (.5 mm size) siliciclastic sand.

Several sediment samples from in and around the fields were collected and analyzed to determine a grain size distribution of the sediments. The two un-sampled fields examined have an average grain size higher and lower respectively than the San Juan Channel field, at a depth of 60 to 80 m with wavelengths of 50 m and amplitudes of 2 m. PSL have been recovered in the Sucia and Iceberg Point fields, which have depths of 40 to 45 m and 30 to 40 m respectively and wavelengths between 10 to 15 m and amplitudes of .1 to 1 m, but not in the quantity found in the San Juan Channel field. Overall, it appears that the San Juan Channel field provides the most ideal habitat for PSL. These findings could in the future help develop a more comprehensive predictive model for PSL sub-tidal habitats.

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Kaic CII-CI Ring Interaction Regulates Kaib Binding

Circadian oscillators of Cyanobacteria, is comprises of three proteins, KaiA, KaiB, and KaiC. By simply mixing of these proteins with ATP, a 24-hour oscillation can be generated that functions as the basis of a biological clock. By studying this simple system, our lab focuses on how biological time keeping is produced and maintained at the molecular level.

In the KaiABC clock system, the circadian oscillation is generated in KaiC, which exhibits phosphorylation and dephosphorylation profile over a 24-hour period. KaiC is a ring-like hexametric protein composed of two domains, CI and CII domains. Initially, CII domains of KaiC interact with KaiA to produce the phosphorylation signal over the first 12-hour period. Then the phosphorylation signal at CII domains is transmitted to CI domains, which subsequently interact with KaiB and KaiA forming a dephopshorylation complex in the next 12 hours to complete the oscillation. However, how CII domains transmit the phosphorylation information to CI domains is unclear. Therefore, we hypothesize that CII and CI domains of KaiC exhibit critical interactions that is important to regulate the dephosphorylation complex formation with KaiB and KaiA.

From our preliminary data based on Nuclear Magnetic Resonance Spectroscopy and Gel filtration Chromatography, we observed that CII domains of KaiC indeed interact with CI domains upon phosphorylation. To further test our hypothesis, we are designing KaiC mutations that can disrupt this CII-CI interaction. Then, we will perform experiments to see if KaiB binding to CI domains of KaiC is affected. If the formation of KaiB-CI dephosphorylation complex is critically dependent on this CII-CI domain interaction of KaiC, it may serve as an important signal transduction mechanism in the KaiABC clock. \

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The Effects and Function of he Hypothalamic-Pituitarythyroid Axis on Fasting Northern Elephant Seals

Northern elephant seals sustain long bouts of food deprivation while remaining physically active with relatively high metabolic rates, and unlike hibernating mammals, they also remain normothermic. In terrestrial mammals, food deprivation is associated with reduced thyroid hormone (TH) levels and metabolism; however, elephant seals pups exhibit sustained, if not, elevated TH. The functional relevance of this apparent paradox is not understood. To address the hypothesis that increased TH levels in prolong-fasted seals are associated with elevated TH receptor expression, we measured the changes in fasting-induced TH levels and the mRNA expression of the TH receptor, THrβ-1, in muscle and blubber. To better ascertain the relevance of the changes in THrβ-1, we also measured the protein content and mRNA expression of products associated with changes in THrβ-1. Preliminary data shows almost a three-fold increase in THrβ-1 gene expression in both muscle and blubber and we observed an elevation in tT3, tT4, and fT4 over the course of the fast decrease in total T3:T4 ratio over the 49 days. Furthermore, both Deiodinase 1 and 2 increased in muscle tissue suggesting an increase in availability of t3 to meet the higher demands of an increase in the receptor. It would be pertinent to attempt to clarify the mechanism of the hypothalamic-pituitary axis and its overall function and effect on metabolism.

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Understand the Timing Mechanism of Circadian Clock Proteins

Based on the cycles of day/night change, life on Earth evolved molecular mechanism to keep track of time. This timing mechanism arises from generating stable oscillations with a 24 hour period known as the circadian rhythm. Major physiologies such as metabolism, gene expression and cell division are tightly regulated by the circadian oscillatory machinery.

To understand how the circadian oscillation is generated, our lab focuses on the circadian oscillator of cyanobacteria: a simple mixture of clock proteins KaiA, KaiB, and KaiC, and ATP produces a self-sustained ~24 h rhythm of KaiC phosphorylation. There are two distinct phases to this oscillator: in Phosphorylation Phase, KaiA binds to the C-terminal residues of KaiC known as the A-loop and stimulate KaiC autophosphorylation; in Dephosphorylation Phase, KaiA is inhibited from binding to A-loop by KaiB, then KaiC autodephosphorylates. Our goal here is to elucidate the transient and time-dependent interactions that are central to the function of this oscillator.

Our central hypothesis is that in order for KaiC to autophosphorylate to a sufficient level, KaiA should preferentially bind to unphosphorylated KaiC than to phosphorylated KaiC. Thus, we propose that this preferential KaiA-KaiC interaction is regulated via the A-loop. This hypothesis is formulated on the KaiA-KaiC complex structure and on our preliminary data from Fluorescent Anisotropy and Gel Electrophoresis assay. Our results show that in the unphosphorylated KaiC, A-loop is indeed in an exposed state, which allows more accessibility that may help strengthen KaiA-KaiC binding. In the phosphorylated KaiC, A-loop is in a buried state, which limits accessibility and may decrease KaiA binding to KaiC. To further test our hypothesis, we are designing experiments to detect whether A-loop exposure can fine-tune KaiA-KaiC interaction. For a circadian clock, the ability to fine-tune its components is important in order to maintain sustained synchrony over a long time.

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Construction of an AC Magnetic Susceptometer

An AC magnetic susceptometer has been created for the purpose of measuring the magnetic susceptibility of materials. It consists of two wounded coils, which are referred as the primary coil and the secondary coil, and a sample holder. The primary coil provides an applied AC magnetic field. The secondary coil is made up of two oppositely wounded solenoids; this is done in order to cancel the background signal. The sample lies in the center of one of the solenoids of the secondary coil. Due to the applied magnetic field, the sample will become polarized and will cause an induced voltage on the secondary coil. This induced voltage is proportional to the magnetic susceptibility of the sample. One useful feature of the susceptometer is determining the phase transition of a compound. The phase transition usually causes a sharp change in the magnetic susceptibility at a critical temperature. We used a Gadolinium (Gd) sample to test the susceptometer. The measured temperature dependence of susceptibility of the Gd sample qualitatively agrees with the literature data [1]. We will be using this susceptometer for future work on the characterization of the magnetic properties of the rare earth nano-particles.

References:

[1] H. E. Nigh, S. Legvold, and F. H. Spedding, Physical Review 132, 1092 (1963)

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Finite Pulse Relaxation Calorimetry and Specific Heat f NdOs4Sb121

The compound NdOs4Sb12 is a mean-field ferromagnet at about 1 K. As inferred from specific heat measurements below 10 K, the electronic specific heat coefficient of this compound is very large (~ 520 mJ/mol-K2). Intriguingly, a recent ultrasonic measurement shows that this compound has double ultrasonic dispersions at ~15 K and 40 K. We have used our newly developed relaxation calorimeter to measure the specific heat of NdOs4Sb12 in the temperature range 11 K to 300 K. In this presentation, we will describe the experimental setup used for the finite pulse relaxation calorimetry in a crycooler and the results of our measurements on the NdOs4Sb12 sample.

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The Outbursts of the Cataclysmic Variable V425 Cassiopeiae

We present observations of the cataclysmic variable V425 Cassiopeiae, in the constellation Cassiopeia the Queen. A cataclysmic variable (CV) is a close binary star system containing a burnt-out remnant of a star, called a white dwarf, which is orbited by a relatively normal star. The companion star spills gas into orbit around the white dwarf. Heating in this disk can make its luminosity, or power output, dominate that of the system.

CVs act as natural laboratories, in which the wonders of the Universe unfold before our eyes. This is because CVs can vary in luminosity rapidly, for several reasons. One reason is a nuclear explosion on the surface of the white dwarf, called a nova eruption. Another reason is tidal waves in the disk, called superhumps. Another reason is uneven flow though the disk, also called dwarf nova outbursts.

We have observed the relative luminosity of the cataclysmic variable V425 Cas over several weeks using Fresno State's station at Sierra Remote Observatories. We see no evidence of variability at or near the orbital period in the light curve, which excludes superhumps. We do find a periodicity of 4.24 ± 0.71 days, with an amplitude of 0.8 magnitudes (in a Clear filter). This low amplitude and repetition exclude a nova eruption. It is relatively small even for a dwarf nova; it is also unusually rapid, for a dwarf nova, but not unprecedented.

We argue that V425 Cas is a Z Cam star. The Z Cam stars are a class of CVs that have dwarf nova outbursts that go into standstills. We present infrared observations from the 2MASS survey to estimate the luminosity of V425 Cas, as well as light curves from other investigators, to support our argument.

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Improved Simulations to Search for New Physics at ATLAS

ATLAS experiment at the Large Hadron Collider (LHC) of CERN is designed to make new discoveries in particle physics. Some of the possible findings are the Higgs boson, supersymmetry (SUSY), extra spatial dimensions, micro-black holes and a whole zoo of other exotic possibilities. However, before looking for these new possibilities, one needs to verify our current theories and understanding of physics at the level of Quantum ChromoDynamics (QCD) of the Standard Model. Since HEP experiments look for rare events, the amount of data that needs to be analyzed is astronomical. Also the fact that the comparison of the experiment to data is often done by using event generators such as Pythia makes the process of analysis extremely time consuming.

The purpose of this research project is to utilize and develop additional software tools in order to decrease the time and computing power required for calculations done at ATLAS. The APPLgrid software package allows for quick calculations with any parton distribution function(PDF) which could take only a few milliseconds where as the same calculation using could take weeks for PDF. The results that will be shown in this presentation are some sample calculations done by APPLgrid and also the comparison with similar calculations done by Pythia at the level of QCD and beyond. This is a research project the author did at CERN during the summer of 2011.

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Jets in ATLAS Data from Fresno's Tier 3 Computing System

California State University, Fresno is the only CSU campus on the ATLAS experiment at the Large Hadron Collider (LHC) of the European Organization for Nuclear Research (CERN). The huge amount of ATLAS data (~10 PB per year) is stored in multiple tiers across the world. Fresno's Tier 3 cluster is part of the ATLAS Grid Computing system and allows our students to analyze raw data and generate Monte Carlo events.

The proton-proton collisions recorded by the ATLAS detector are analyzed in order to identify sprays of new particles (known as jets). The jets are characterized by their transverse momentum, angle which the cone axis makes with respect to the beam axis (rapidity), and the angle at which the cone encircles the beam axis (phi), etc. When analyzing these jets in raw data, it is extremely difficult to distinguish jets created by possible new physics processes from those jets created by known physics processes (QCD backgrounds).

The Monte Carlo simulations are an integral part in calibrating the detector with known physics and ensuring that the raw data we are detecting looks correct. We use ROOT to find the transverse momentum, rapidity, phi, and invariant mass of the collision jets. The jet with the greatest transverse momentum is significant to us because it is more likely to contain new physics at higher energies. Once having found the jet with the highest transverse momentum from the Monte Carlo simulations, we know where to look in the raw data for potential new physics. These ATLAS Monte Carlo simulations of jets are from the authors' summer 2011 work at CERN.

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Effect of Irrigation, Surfactant and Fertilizer Rates on Nitrate Levels in Tomato Leaves

Tomato is one of the most important vegetables grown in the United States. Due to continuous rise in the cost of fertilizers and irrigation water crisis, there is a need to continuously find ways for efficient use of fertilizers and irrigation water, without affecting the quality and quantity of the tomatoes. Current approaches involve utilizing products such as soil surfactants which can potentially enhance water and nutrient uptake by plants, and thereby optimize overall crop productivity. The objective of this study was to evaluate the influence of surfactant, Nitrogen (N) fertilizer and irrigation rates on the nitrate concentration of tomato petioles. The study was conducted on a sandy loam soil, as a split-split plot experiment, with irrigation (high, medium and low) as the main factor, and surfactant (with and without) and fertilizer rates (110, 150 and 200 lbs N/acre) as secondary factors. Leaf petioles were analyzed for nitrate concentrations at 1" diameter of fruit stage (first ripe stage) and at harvest. At first ripe stage, fertilizer rates had a significant effect ($P = 0.02$) on leaf tissue nitrate content, with rates of 150 and 200 lbs N/acre resulting in the highest levels for all the irrigation and surfactant treatments. At harvest, mean petiole nitrate level was highest in plants receiving 200 lbs N/acre. Also, there was an interaction effect ($P=0.10$), of the three treatments which resulted in plants grown in soils receiving surfactants, fertilized with 150 and 200 lbs N/ acre, and irrigated at the medium and high rates, having relatively higher nitrate levels than those at the lowest irrigation rates. These initial findings concur with our earlier studies with turfgrass which indicated that the addition of soil surfactants can potentially enhance vegetative plant growth.

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Yield, Fruit Quality and Plant Nutrition of Tomatoes Subjected to Elevated Carbon Dioxide

Steady increases in atmospheric carbon dioxide (CO_2) have been attributed to global warming and climate variability. Because of the role of CO_2 in photosynthesis and glucose production essential for plant growth, increases in atmospheric CO_2 could potentially lead to greater crop yield. Elevated CO_2 may also influence plant nutrition. The goal of the study was to assess the effects of two different CO_2 levels on tomato yield, fruit quality and plant nutrient content. During summer 2011, tomatoes were grown on a sandy loam soil within sixteen open-top chambers (15ft W x 5ft L x 10ft H) at the California State University-Fresno farm. Half of the chambers received ambient air and the other half were subjected to elevated CO_2 delivered through poly vinyl chloride (PVC) tubes. For the CO_2 enriched plots, mean daily CO_2 levels within the crop canopy ranged from 580ppm to 600 ppm during the 8 hours of application, whereas concentrations in the ambient plots averaged 390 ppm. Subsurface drip irrigation was used to apply water at rates equivalent to 100% ET and 80% ET based on California Irrigation Management Information System (CIMIS) data. There was no significant difference ($\alpha \leq 0.10$) in the yield of red and green tomatoes, and in the incidence of blossom end rot. However, CO_2 and irrigation rate had a significant effect ($\alpha \leq 0.10$) on the yield of breaker toma toes, with the greatest amount of breakers occurring within the plots subjected to elevated CO_2 and 100% ET. Elevated CO_2 did not have any significant effect on the tomato Brix indices. Leaf N content was significantly affected with the highest levels measured in the Ambient CO_2-100% ET treatment. ET. Elevated CO_2 did not have any significant effect on the leaf P content. However, leaf P content was greater under the 100% ET irrigation treatment. There was no significant difference in leaf K content at the end of season. These results are a major contribution to the overall goal of our ongoing research aimed at evaluating productivity, quality and water use efficiency for vegetable crops subjected to elevated CO_2 levels.

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Modeling Hydroecological Effects of Tephra Layers in Sierra Nevada Meadows

Tephra from eruptions in the Mono-Inyo volcanic chain, dated approximately 720 and 1200 years before present, form widespread deposits in the high elevation meadows of the southern Sierra Nevada from Yosemite National Park south to the Kern River drainage. While their presence is well documented, their potential impact on the hydrology of the meadows has not been investigated. When desaturated, the tephra layer(s) acts as a hydraulic barrier that significantly restricts downward drainage from the top layer as well as evaporative loss from the lower layer.

This barrier leads to the following important hydroecological implications: (1) Moisture available in the top layer is preserved from loss by deep drainage, preferentially helping plants with shallow roots and soil microorganisms that inhabit the top layer. This effect is pronounced during summer precipitation events. Almost all the precipitation that occurs after the water table has dropped below the tephra layer will be restricted to the top layer, providing competitive advantage to shallow roots. (2) Moisture stored below the tephra layer is preserved from evaporative loss when the hydraulic continuity at the tephra layer is broken. This “mulching” effect helps plants with deeper roots to utilize the soil moisture for much longer period.

To demonstrate the above implications, we simulated the moisture dynamics in a one-dimensional meadow soil column using Hydrus 1D- a numerical simulator which solves flow of water in variably saturated soil and incorporates the soil-plant-atmosphere continuum. We found that as the water table begins its natural drawdown during the growing season, soil moisture levels follow that same trend. As the water table exceeds the depth of the tephra layer, the continuity between the layers is disrupted, not allowing further drainage from the top layer of the soil, or evaporative losses from the lower layer of the soil. We test the hydroecological implications of this by sequentially incorporating root water uptake in each of the layers. We conclude that the tephra layer(s) can effectively buffer plant water stress by helping the soil maintain higher levels of moisture than would be expected during the summer season.

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The Localization of Vitellogenin Gene Expression by RNA in Situ Hybridization in Banana Shrimp (Fenneropenaeus Merguiensis De Man)

Vitellogenin (Vg) is a yolk precursor protein to supplies the nutrients for embryonic development. The Vg mRNA expression of the banana shrimp, Fenneropenaeus merguiensis, was present in the ovary and hepatopancreas by RT-PCR. In this study, we examined the tissues structure by the histochemistry and confirmed the localization of Vg mRNA by in situ hybridization in the ovaries and hepatopancreas. The histological structures of the previtellogenic stage show the ovaries contain developing oocytes with follicle cells surrounding the oocyte cells. In vitellogenic ovaries yolk granules and the rod-like bodies of cortical protein are present. The in situ hybridization of the Vg transcript was detected in the follicle cells of vitellogenic ovaries and the parenchymal cells of the hepatopancreas. In the ovary, Vg mRNA expression was highest in the early vitellogenic stage and remained high through the vitellogenic stages, but the mRNA expression was not found in follicle cells of the previtellogenic ovaries. The detection signal decreased in late stage mature ovaries. For the hepatopancreas, the Vg mRNA showed high expression in the vitellogenic stage and remained high during the maturation stage. The mRNA was not detected in the hepatopancreas of previtellogenic stage. Vg gene of banana shrimp is transcribed in both the ovary and hepatopancreas tissues for the Vg protein, which is then uptaken into oocytes to complete ovarian maturation. These results suggest that the expression of Vg gene in ovary and hepatopancreas may play an important role in ovarian maturation. Further study of mRNA expression of Vg in the molecular approach is necessary to understand the ovarian maturation in penaeid shrimps.

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Evaluation of Pesticide Involvement in Breast Cancer Cell Lines

There is considerable evidence linking cumulative and sustained exposure to estrogens as a key promoter of breast tumor proliferation. Chemicals with estrogenic activity can bind to the estrogen receptor (ER) to affect downstream signaling of estrogen-responsive genes. The orphan nuclear receptor Estrogen Related Receptor (ERR) is known to respond to estrogenic signals, without binding estrogen, and act in a hypoxia (low oxygen) induced pathway. Organochlorines are a class of chemical pesticides that can act as xenoestrogens to disrupt normal endocrine function. Methoxychlor and Toxaphene are two organochlorine pesticides that have been widely used in California. Statistical data suggest that past use of these pesticides shows a positive association with age-adjusted incidence of breast cancer in Hispanic women in Central California counties. This study investigates the link between these pesticides and molecular mechanisms of breast cancer by examining the hypothesis that Methoxychlor and Toxaphene exposure induce differential molecular pathways in a cell culture model utilizing cell lines that are either ER positive (ER+) or ER negative (ER-).

Two breast cancer cell lines, MCF-7 and MDA-MB-231, were used as a model to evaluate the response to Methoxychlor and Toxaphene treatment. Cytotoxicity studies established different sensitivities of the two cell lines to pesticides. MCF-7 (ER+) was more sensitive to both pesticides, which supports the premise that organochlorines may be acting as endocrine disruptors. Furthermore, pesticide-resistant clones of MCF-7 and MDA-MB-231 were established and compared to their sensitive counterparts. RNA was collected from cells treated in a hypoxic environment, cells treated with a pesticide, and cells that had a co-treatment of hypoxia and pesticide for RT-PCR evaluation of ERR and other hypoxic factor expression. Flow cytometry was used to evaluate how the treatments affected mitosis and mitochondrial function due to its role in cellular detoxification and apoptosis. We report the positive identification of several differentially expressed proteins of pesticide-resistant cells when compared to non-resistant control cells. We also found that ERR and hypoxic factor expression changed in a similar manner suggesting a shared mechanism by pesticide treatment or hypoxic conditions. These results provide a basis for understanding specific pesticide-induced molecular mechanisms and their possible relationship to ER+ and ER- breast cancer

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Locating the Geographical Origin of Lobesia Botrana (Lepidoptera:Tortricidae): A Recent Invasive Pest to the Americas

The European grapevine moth (EGVM), Lobesia botrana (Denis & Schiffermüller) is a major pest of grapevines in the Palearctic ecozone. In 2008, the moth was reported in Chile and subsequently in California in 2009, representing the first establishments in the Americas. Grape commodities are the second most productive generating around four billion dollars in revenue yearly, and the EGVM has the capacity to significantly damage grape production in California.

The primary goal of this study was to try and ascertain the geographical source of the invasive EGVM population in California so further introductions could be stopped. The second was to evaluate the EGVM for genetic races. Thirteen populations originating in Europe and the Middle East were compared to populations from the Americas with phylogenetic techniques using 686 bp of the mitochondrial CO1 gene and 369 bp of the ribosomal ITS2 intron.

Results show similar genetics, among and within sample populations, resulting in no genetic structure so the invasive population could not be determined. Genetic homogeneity also indicates global populations feeding on grapes are not composed of alternative genetic races, likely due to high population connectivity and interbreeding throughout the Mediterranean range. Data support that established populations in the Americas are the same as those homogenous populations in the Old World and more sensitive molecular techniques are needed to create definite molecular structure.

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Reactivating Inhibited, Is Derepression Possible?

Smac (second mitochondrial activator of caspases), is a protein that is located in the mitochondria, but in response to apoptotic stimuli, is released into the cytosol where it can bind to IAPs, possibly even displacing caspases from their inhibited complex with XIAP (derepression). There has been extreme interest in the use of Smac mimetics to reactivate the apoptotic cascade in cancer cells. The use of Smac mimetics should enhance cancer cell apoptosis by relieving any caspase activities held in check by IAPs.

In this study four different Smac mimetic compounds that were previously shown to have μM binding affinities to XIAP's BIR2 and BIR3 were characterized for the ability to 1) derepress (dissociate preformed caspase/BIR complexes) or 2) compete (prevent caspase binding by IAPs). To distinguish between these two models recombinant purified Caspases 3, 7 and 9 were used in combination with recombinant purified XIAP BIR2 and BIR3. The ability of the Smac mimetic compounds to derepress or compete for the binding of XIAP was determined by the reactivation of the caspases.

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A New Behavioral Assay to Quantify Locomotor Competence of Drosophila: Lenticular Arena

As toxicological screenings become widespread because of legislation requiring environmental impact studies and risk assessment to human health, Drosophila (fruit flies) have become the invertebrate model organism of choice. Drosophila are also an important model organism for mutational and genetic analysis. Screening assays have been developed to assess mortality, reproduction, or behavioral competence. In this study, we developed a new assay to assess locomotor competence. We developed a circular walking arena with a lenticular floor and a flat cover, so the slope of the floor increases gradually from the center to the edge of the arena. The arena is 75 mm in diameter and 7 mm high. Drosophila are negatively geotactic – they climb as high as possible. We tested whether our arena can detect subtle differences in walking ability by treating adult Drosophila with an environmental neurotoxin that is known to cause Parkinson's like symptoms in humans. This neurotoxin is a glutamate-agonist, which should cause insect muscles to contract involuntarily. We therefore expect this toxin to cause loss of fine motor control in fruit flies. We quantify the climbing ability of 40 flies (10 controls, 30 treated with three different doses) for 10 minutes per day over three consecutive days. We use custom-made software (Ctrax), student-developed MATLAB routines and manual behavioral scoring to track the flies in the arenas. Our experiments show that the lenticular arena not only detects a loss in climbing ability, like the tap-down assay. But it also enabled us to show that BMAA causes an increase in activity levels despite the loss of motor ability. So the lenticular arena allowed us to detect more complex effects of the neurotoxin than the tap down.

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Anti-Angiogenic Effects of Zoledronic Acid on Osteotropic Breast Cancer

Bone is the most common organ for tumor metastasis in breast cancer patients. Currently, a class of drugs called bisphosphonates is a main-stay of cancer treatment known to effectively relieve pain, prevent pathological fractures, and treat hypercalcemia of malignancy. Recent literature has indicated that Zoledronic Acid (ZOL), the most potent bisphosphonate, not only induces cell death, but also inhibits angiogenesis (formation of new blood vessels), which is crucial for cancer cell survival. We are using MDA-MB-231 cells (an invasive breast cancer cell line) and MDA-MB-231 BO (bone metastatic MDA-MB-231 cells) to further investigate the anti-angiogenic effects of ZOL by profiling pro-angiogenic and anti-angiogenic cellular proteins before and after treatment with ZOL.

Our previous results have shown that MDA-MB-231 BO is more sensitive to ZOL than MDA-MB-231. Cell lysates of both cell lines, before and after ZOL treatment, were analyzed by 1D and 2D SDS-PAGE and differentially expressed proteins were identified by MALDI-TOF mass spectrometry. Vasohibin-1 and Prolyl Hydroxylase-2, both angiogenesis inhibitors, were upregulated in response to ZOL, and this was confirmed by semi-quantitative RT-PCR and Western blots. By RT-PCR, we have also analyzed expression of various pro-angiogenic proteins: Cysteine Rich Protein 61, Vasohibin-2, Caveolin-1, and integrin $\alpha v\beta 3$, which were all downregulated after ZOL treatment. All of these results further support the working hypothesis that ZOL suppresses angiogenic signals from breast cancer cells. Future directions include silencing expression of these proteins, and performing invasion assays to test how these cells respond to ZOL.

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Cross-Complementation of CRP and Vfr

The Escherichia coli cAMP receptor protein (CRP) and the Pseudomonas aeruginosa virulence factor regulator (Vfr) belong to the same (CRP-FNR) superfamily of bacterial transcription factors. The two proteins are very similar in terms of both amino acid sequence and protein structure, but their physiological functions are totally different: CRP regulates carbon metabolism in E. coli when glucose is absent and Vfr regulates virulence genes in P. aeruginosa upon entry into host cells. Therefore, it is a reasonable hypothesis that the proteinsâ€™ functional difference does not originate from the difference between the two proteins, but rather from a differential genomic context; i.e. the difference in the combination of promoters and genes that each protein activates. If this is true, these two proteins should be functionally interchangeable.

In this study, we experimentally tested our hypothesis by monitoring whether or not CRP is able to complement the defect of Vfr-deleted P. aeruginosa and vice versa. For this, we introduced Vfr and CRP genes cloned into pRK415 (a broad-host-range vector) along with the vector control into CRP-deleted E. coli and Vfr-deleted P. aeruginosa strains in order to generate three different E. coli and three different P. aeruginosa strains. Next, we isolated total RNAs from the six strains above, made cDNA libraries and measured the expression levels of CRP signature mRNAs and Vfr signature mRNAs using real-time PCR. Vfr up-regulated two CRP signature genes: tnaA and gatZ in the CRP-deleted E. coli. CRP up-regulated two Vfr signature genes: pcrV and lasR in the Vfr-deleted P. aeruginosa. The real-time PCR data shows that Vfr is able to fulfill the role of CRP in CRP-deleted E. coli and also that CRP can fulfill the role of Vfr in Vfr-deleted P. aeruginosa. Our results provide an important implication for the functional characterization of many unknown CRP homologs.

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Propargyl Bromide Degradation in Isolated Soil Bacteria

Methyl bromide use as a soil fumigant has been curtailed due to its categorization as a Class I stratospheric ozone depleting agent and this has created a need for effective alternatives. Propargyl bromide (PBr) has shown promise as a replacement but has not been fully characterized. This study seeks to characterize the biotic degradation of PBr by soil bacteria as well as determining the genetic pathways involved, and their relationship to similar known pathways. Gas chromatography was conducted on ten strains in triplicate. Fresh cultures were incubated at 30oC with minimal media broth containing 100ppm of PBr in sealed bottles for one week and sampled throughout the incubation period. Identical media preparations, without bacteria, provided a control for the degradation through abiotic processes. The samples were extracted with ethyl acetate and analyzed with gas chromatography. Bacterial strains were also incubated in pesticide spiked sterile soil. PCR used master mix and meiA primers. The abiotic control showed an approximate reduction of 2% over 4 hours and a reduction of approximately 10% over 7 days. The degradation in three of the bacterial strains averaged approximately 41% over 4 hours and approximately 53% reduction over 7 days. In the soil degradation was enhanced, 83% degradation after the first hour of incubation, compared to 16% degradation due to abiotic processes. Testing with primers for meiA, a gene known to be needed in chloropicrin and methyl iodide degradation in some bacteria, yielded no amplified fragments. Results show that the degrading strains enhanced abiotic degradation and that in sterile soil degradation was faster and that a greater percentage of pesticide was degraded. We also show that the pathway for the degradation is different than the pathway seen for degradation of similar compounds. Work is currently under way to determine the genes needed for PBr degradation.

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Epidemiology of Inmate Exposures to Poisons in California Penal Institutions

PURPOSE:
Although poisonings occur frequently in the California Poison Control System they are poorly described in the medical literature, hence this study was done in an attempt to characterize them.

METHODS:
A computerized search of free-text entries in CPCS Dotlab was performed. Search terms included jail, prison, detention, correctional, institution, inmate and prisoner. The computer-selected records were then manually reviewed to exclude all but inmate poisoning exposures occurring while incarcerated in CA's penal institutions, including jails, prisons and juvenile halls.

SUMMARY OF RESULTS:
627 inmates with 881 poison exposures in 2009 and 2010 were identified. Average age was 49 years, with 85% male, 15% female. Identified exposures included drugs (666) and non-drugs (141). Reasons for exposure were: intentional self-harm (540), unintentional (106), abuse (75), misuse (67), therapeutic error (37), unknown (20), adverse reaction (13) and drug withdrawal(3). Outcomes were death in 3 cases, major effect in 14 and moderate effect in 114. 51 patients were admitted to hospital critical care units and another 49 to non-critical care units. 23 other inmates were seen in emergency departments.

CONCLUSIONS:
Our study provides a significant epidemiologic glimpse into inmate poisonings occurring in penal institutions in California. Most of the exposures were to over the counter analgesics, psychotropic medications, anticonvulsants, cleaning agents and street drugs. In-custody methamphetamine and heroin use was surprisingly high. These cases had an unusually high rate of hospital utilization (58%) and a mortality rate of 0.48%. These numbers suggest that person in need of substance abuse treatment in California may instead receive jail confinement with or without treatment of their substance abuse problem.

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Poster Board No.26

Self-Reported Experiences of Prenatal HIV Testing in Fresno County

Introduction: Antiretroviral treatment during pregnancy can dramatically reduce the risk of perinatal HIV transmission. In 2008, California AB 682 helped make HIV testing a routine part of prenatal care, an opt-out rather than opt-in practice. This study aimed to assess Fresno County prenatal HIV testing practices, specifically whether women were offered HIV testing during pregnancy, rates of acceptance, and reasons for accepting and declining.

Methods: Between 2008 and 2011, postpartum women awaiting discharge at three Fresno County birthing hospitals were asked to participate in this study. Those who agreed completed a 24-item self-administered questionnaire available in English and Spanish. Demographics, prenatal care and prenatal HIV testing experience were collected. Descriptive statistics, Chi-square and logistic regression analysis were done.

Results: Two hundred forty-three women completed the questionnaire. Mean age was 26.3 years (13 to 45 yrs), 65% were Latina, 46% had less than a high school education, and 47% received prenatal care in a community clinic. Twenty-one women (8.5%) did not know if they received prenatal HIV testing. One hundred seventy women (73%) agreed to testing, of whom 134 received counseling about the test. Thirty-nine women (16%) did not agree to testing, of whom half received counseling. The primary reasons women agreed to prenatal HIV testing were "*For the health of the baby"* and "*My doctor told me I should*;" the primary reasons women did not get tested were "*I wasn't offered the test"* and "*I am not at risk*." Accepting prenatal HIV testing was significantly associated with receiving HIV test counseling (X^2 =14.5, d.f.=1, p <0.001).

Conclusions: The majority of postpartum women surveyed reported receiving prenatal HIV testing and most did so for the health of their baby. Delivery of HIV test counseling by a doctor or nurse may positively influence acceptance of an HIV test during pregnancy.

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Effectiveness of Emotive Epoc's Ability to Create Movement Using Thought

There is a growing field of technology designed to allow for computer-mind interface, where computer functions are controlled by nothing more than thought. For example, the company Emotiv has created a headset that is said to be able to create an algorithm of a human brain activity that is tied activity to specific computer functions such as moving a computer-generated object. The EPOC headset uses 14 sensors to acquire and process a person's neuro-electrical signal to create this movement. Through training (biofeedback), an individual should be able to increase control, accuracy and complexity of movement. In the present experiment, we set out to create a quantitative assessment of the Emotiv system. Participants (n=7) were given the task to move a computer-generated floating box to either the left (n=4) or the right (n=3). They visited the lab once a week, and performed six 5-minute sessions, three consisting of actively trying to move the box and three sessions with the computer screen off (as the control). In all six sessions, the movement of the box was recorded using the screen-capturing software (Camtasia). The recorded screens where then scored using a scan sampling technique. Using a Likert Scale from 0 to 4, 0 meaning neutral and 4 reaching the furthest extreme, a point value was given every 10 seconds depending on the location of the box. We found a significant difference between the two types of sessions (screen on / screen off) indicating that participants could actively control the object, though performance was not extremely strong.

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Examining the Views and Perceptions of Female Genital Circumcision among Somali Aand European American Women

The purpose of this study is to provide an overview of the topic female circumcision. The World Health Organization coins the term female circumcision (FGC; or female genital mutilation), as partial or complete removal of external female genitalia for cultural or other non-medical reasons (WHO, 1997). The practice is frequently performed in some regions of Africa, the Middle East, and Asia. Recently, there has been a growing debate over this sensitive topic. Organizations such as United Nations and Amnesty International have recognized FGC as a violation of human rights (Kalev, 2004). Thus, there has been a global effort to implement proposals to abolish the practice because of its deleterious physical and psychological effects. Previous research has examined the health effects of FGC, but a scarce amount of literature pertaining to perceptions of Somali and European American women regarding FGC exists. This study seeks to determine whether the differences in culture affect their views and perceptions about FGC and how their views and perceptions affect the way they perceive gender roles. Furthermore, this study investigates and examines Somali and European American women's cultural knowledge and attitudes of FGC and their attitudes about the procedure. In addition, whether Somali and European women conceive of their relationship to men differently is examined. A total of 46 participants were recruited for the study. All 46 participants were heterosexual women between the ages of 18-26 years old. Participants ethnic background was either Somali (African) or European American and the sample size included an equal amount of Somali (n=23) and European American women (n=23). Participants completed a survey that consisted of 42 questions and was designed to be completed in about 15 min. The survey was divided into 3 sections. The first section collected demographic background information and the second section assessed Somali and European American women's perspectives about FGC. Finally, section three utilized the Ambivalent Sexism Inventory (ASI) developed by Glick and Fiske (1996). A one-way ANOVA was performed to evaluate the study's primary hypotheses. Participants ethnicity was entered as the independent variable and benevolent sexism scores and hostile sexism scores were used as the dependent variables. Overall, there were no significant differences between Somali and European American women on any of the items on the Perspectives on Female Circumcision Questionnaire. Furthermore, there were no significant differences in hostile sexism between Somali and European American women. However, there was a significant main effect between Somali and European American women's scores on the Benevolent Sexism Scale of the ASI. Somali women scored higher on Benevolent Sexism (M=32.47, SD= 7.10) than did European American women (M=27.79, SD= 3.60).

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The Role of Social Capital in Latino High School Student's Academic Success: Teacher-Student Relationships

The aim of this study was to investigate the level and forms of social capital in teacher-student interaction at two schools: a charter and public high school. Teacher based forms of social capital in regard to three mechanisms were examined; educational expectations, social support and academic challenge. Secondly, we assessed the influence of these factors on student aspirations to go to college for each school using the teacher-student relationship and school climate survey. Sixteen male and female Latino high school students from the charter school participated in the study. The data were analyzed by comparing average means and percentages of students that agreed with each of the 13 statements for both types of schools. Results showed that there was a difference between both schools in social capital. Specific statements demonstrated that participants agreed that the previous public school had higher levels of school spirit and fair discipline, but agreed that teachers at the charter school were more interested in students. Students responded that teachers from the charter school gave them more moral support, listened to what they have to say and were good at teaching when compared to the regular public school. This study is an exploratory study due to a small sample size and probationary status of participants; thus findings are preliminary. Future research should include a larger sample and more in depth interviews with a representative sample of students.

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The Effects of Service-Learning on Diverse Students Attending an Urban Public University

Service-learning is a teaching strategy that integrates meaningful community service with instruction and reflection (Corporation for National Community Service, 2011). In higher education, it is considered a high impact practice, meaning that it is associated with enhanced student learning, college retention, and academic engagement (Pascarella & Terenzini, 2005). Participation in service-learning classes has been demonstrated to increase undergraduates' civic involvement, leadership skills, academic achievement, and career development (Astin, Vogelgesang, Ikeda, & Yee, 2000). Service-learning seems to exert particularly powerful effects on the college achievement of underrepresented students (Kuh et al., 2006). In order to better understand the different effects of service-learning and to examine the influence of this pedagogy on underrepresented students, a study was undertaken at a diverse, urban, public university. Pencil and paper pre and post tests surveys containing standardized measures were used to examine 279 students involved in service-learning and non-service learning courses across disciplines over the course of a semester. As expected, compared to students who did not participate in a service-learning course, students who did participate in a service-learning course showed significantly higher levels of engagement in college, commitment to activism, leadership skills, and service-related career plans. However, the service-learning group significantly differed from the non service-learning group at both pre and post test; thus, the distinct effects of service-learning could not be determined. Interestingly, service-learning course participation increased factors related to academic achievement among non-White students, $t(218) = 2.57$, $p = .01$. Qualitative reports from service-learning students emphasized the potent effects of service-learning on students' engagement with college and career development. Implications of these findings for pedagogical practices in higher education will be discussed.

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The Body Image Psychological Inflexibility Scale: Development and Psychometric Properties

Recent data support that body image disturbance and body dysmorphic disorder are both comprised of intra- as well as inter-personal factors. One intrapersonal factor tied to psychological inflexibility is experiential avoidance: it is the inability to experience unpleasant internal states such as thoughts, feelings, and emotions. It has been shown to be a common problematic coping strategy in many psychological disorders and plays an important role in body image disturbance as well as body dysmorphic disorder. In an effort to clarify the role of intrapersonal problems such as experiential avoidance and psychological inflexibility, a new measure was created called the Body Image Psychological Inflexibility Scale (BIPIS); the theoretical basis for this measure stems from the principles and research of Acceptance and Commitment Therapy, a cognitive behavioral intervention. 333 participants completed the BIPIS. The scale has high reliability ($\alpha = .93$), a single factor solution, and excellent convergent validity. These data demonstrate a relationship between psychological inflexibility in body image and a variety of measures of body image satisfaction, disturbance, and general psychological distress and inflexibility. Overall, the data provide empirical support for a behavior analytic conceptualization of body image problems.

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Smooth Pursuit and Saccadic Eye Movement Mechanisms

Mechanisms used to drive eye movement behavior have been under debate in the past decades (Lisberger, Morris, & Tychsen, 1987; Liston & Krauzlis, 2005; Rashbass, 1961). Smooth pursuit and saccades have been identified as voluntary eye movements used in search and track. Traditionally, these movements were thought to be reflexes elicited by low-level stimuli. Conventional theory claimed that smooth pursuit and saccades were driven by completely separate systems, since they employ a difference in threshold and selection bias. Recent work shows that the eye movements may be linked to a complex high-order decision-making mechanism. The purpose of this literature review is to highlight the sequence of events that has led to the theory of a shared decision-making mechanism for both smooth pursuit and saccadic eye movements. In this review, data from single-unit recording, behavior, and stimulation are presented. These tools have tested the hypothesis that pursuit and saccades are guided by a shared decision-making mechanism.

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Child Language Brokers: How Young and In What Situations?

Children of families that immigrate to the United States typically learn English and acculturate more quickly than their parents. Because of this, many immigrant parents rely on their children to help them communicate in a variety of settings and under many conditions. Child "language brokers" transmit not only linguistic information; they also identify nuances in cultures, mediating to convey each party's tone and sentiment within the context of cultural norms. Some practitioners are raising concerns over the implications of young children language brokering in sensitive or stressful situations, such as in medical settings or during business negotiations.

This paper reviews peer-reviewed literature published over the past 10 years and looks to identify the earliest ages and the conditions under which Latina/o children engage in language brokering. Conditions were defined using dimensions from Tse's (1995) Language Brokering Scale, a measure employed in much of the research on language brokering. The literature reveals that children as young as 8 years of age language broker, mainly for their parents, under conditions of varying complexity (e.g., translating TV shows, interpreting a jury summons). However, retrospective qualitative accounts by former child language brokers indicate brokering may be occurring at even younger ages.

Findings from this review suggest that the language broker's developmental stage is not always considered when he or she is asked to interpret. Medical, educational and financial settings are rife with important and often sensitive information being transmitted by children serving as informal interpreters. The weight of outcomes associated with transactions occurring in each of these areas can be heavy, leaving children feeling potentially responsible for decisions made by adults. Immigrant families and their service providers may benefit from further inquiry into the cognitive, social and psychological effects of language brokering on children and their parents.

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Development of An Adolescent Standardized Patient Visit Protocol: A Case Study with Adolescent Safer Sex Education in Community Clinics

Standardized patient visits (SPV) are a common method for training and development in healthcare. SPV is an excellent tool to form training and real-time assessment. Despite their prevalence, SPV for adolescent health are scarce. Challenges in identifying, training and working with adolescents in healthcare may be too burdensome to enable adolescent SPV (ASPV). A community clinic program using health educators to promote safer sex among adolescent patients offered an opportunity to develop and pilot test an ASPV. Social Learning Theory served as the framework to develop the ASPV, with the patient serving as model and source of stimuli and performance feedback. The SPV was a university Latina selected by judges that assessed her appearance based on the need to be under 18 years of age. The ASPV script was created based on three sources of data: (1) comprehensive literature review of SPV and safer sex interventions targeting Latinas, (2) video-recorded practice of the ASPV, and (3) surveys to assess the video-recorded ASPV for how well it portrayed adolescent patient behavior. The survey was completed by twelve participants, including teens, young adults and community members working with or familiar with teens. Participants watched the ASPV video and completed a brief survey to rate the acting and content for representation of adolescent patient behavior. Survey items included 5-point Likert Scale ratings of qualitative and quantitative data. Sixty-seven percent participants strongly agreed or agreed the actress and dialogue “fit together” in a consistent manner creating a believable teen. However, forty-one percent participants strongly disagreed or disagreed the actress responded about sexual relationships as a believable teen. The ASPV is being refined based on these findings. Preliminary use of the ASPV with two health educators suggests that it is a worthwhile approach for training and feedback. Further development of ASPVs may be important for clinical settings serving adolescents.

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The Hidden Voices of Adolescents

There is no doubt that an education is needed in today's technological world. In addition, not having an education could limit an individual's future career goals and cause them to endure irregular employment and criminal behavior. However, despite the benefit and necessity of an education, research shows that 7,000 students drop out in a day and 1.2 million students drop out each year. Furthermore, schools in urban areas endure more student failures, which put these students at more risk. There are many factors that can help keep students in school. Youth reports suggest that positive teacher-student interaction can play a big part in motivating students to seek an education, which will result in graduating from high school. This study investigated student's personal relationships and personal experiences with teachers. Ten interviews were conducted with young people from a local community teen center in East San Jose. The interview questions were directed towards youth academic challenges and struggles. In addition, questions were asked about the relationships youth experience with their teachers and the communication patterns teachers portrayed within the school setting. Further, this research not only addressed student's academic endures and the drop-out epidemic, but provided insight from students themselves who are faced with academic struggles. The findings in this study reveal how crucial positive teacher-student interaction is to these minority students. In fact, when students do not receive encouraging words, they are left feeling ungratified, which then contributes to academic limitation. The goal of the project was to give disadvantaged students the ability to express their academic experiences and endeavors. Moreover, whether students come from a low or high social economic status, students want to academically succeed. What determines the differences among student success is not only their home environment but also the resources and support they receive from their social and school environment.

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The Face of Rape Culture at Fresno State

A. Introduction

We hypothesized that "rape culture"-- a term originating in feminist thought and referring to a societal environment in which sexual violence against women is both prevalent and condoned-- was present at Fresno State. We focused on the prevalence of a key symptom of rape culture, which is victim blaming, or rather the idea that a rape victim is in some way responsible for any sexual crime committed against her.

B. Methods

Our methodology was influenced by feminist theory and consisted of three segmented focus group sessions. Questions and moderation were designed such that the discussion would be led by five integral questions specifically tailored to elicit answers, but not so much as to limit any discourse.

C. Summary of Results

There were three areas of interest that related to our question. We were assured of our assumption that rape culture was present at Fresno State. Additionally, we discovered instances of respondents asserting a distinction between violent and non-violent rape. There was also data to suggest that there is a lack of willingness to use the vocabulary necessary to discuss rape.

D. Conclusions Reached

The analysis confirms the presence of rape culture at Fresno State, in that we can see the indicator of victim blaming. The respondents's tendency to distinguish between violent and non-violent rape is also highly indicative, as feminist theory maintains that all rape by definition is violent, and any belief to the contrary is rape culture. In regards to the patterns of language about rape and other sexual crimes, we conclude that this is also inherently tied to rape culture, in that when a phenomenon is condoned and excuse, there is no need for a discourse to be utilized.

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The Unspoken Voices of Immigrants

Immigrants have experienced their fair share of discrimination upon their arrival to the United States. And while some immigrant groups have adapted easily and have generally enjoyed success, other immigrants have experienced more difficulties assimilating and being accepted into the cultural melting pot of the United States. My research focuses on the historical background of immigration and draws attention to the political and economic climates that led to quotas and restrictions being sanctioned to various immigrant groups. In addition, my research elucidates the role the media has played in contributing to the perception of the modern day Mexican immigrant. With anti-immigrant sentiment spreading and misconceptions continually being echoed by the media, this research serves as a guide to extracting the veracities regarding both immigrants that have become naturalized citizens and immigrants that comprise the undocumented population. Furthermore, it sheds light on the interminable misconstructions that have plagued various immigrant groups. Although a great deal of research is still needed in this area, it serves as a reminder that a better and more efficient immigration system is needed in the United States. We conclude the paper with a synopsis of the Dream Act and a future proposed methodological approach to supplement this issue with more needed research.

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Risk Perception, Pesticide-related Illnesses, and Risk Communication Strategies to minimize Pesticide Exposure among Migrant Farm Workers in California

My study concerned the most common pesticide-related illnesses that farm workers are at risk of developing including: pesticide poisoning, cancer, respiratory illnesses, weakened immune systems, and damaging effects on pregnant women and their unborn children. In addition, dermatitis, heat stress, tuberculosis, and back problems are also examined due to the high incidence of these occupational injuries among farm workers. The Environmental Protection Agency states that approximately 300,000 field workers become ill with pesticide poisoning annually, representing "the highest rates of toxic chemical injuries of any group of workers in the United States" (Hansen & Donohoe, 2003, p. 157). The San Joaquin Valley of California, is one of the largest suppliers of produce in the world, and reports an extensive use of organophosphorus (OP) pesticides in its agricultural fields. My study concludes that firstly, in the future more employers should make farm workers aware of pesticide health hazards through pesticide training in Spanish. Secondly, the U.S. government should also impose tougher sanctions on growers who fail to provide safe working conditions for their workers. And thirdly, Employers should be required to attend pesticide safety training as well in order to lesson field workers' risk of occupational pesticide exposure. This segment of the population contributes to the nation's economy, but the workers often pay a high price personally when their health is put at risk by pesticide exposure, more needs to be done to safeguard their health.

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A Look at Whether Particular Outreach Groups for Domestic Violence Victims can Alleviate Psychological and Physical Symptoms Of Domestic Violence Abuse

Intimate partner violence is an injustice imposed on both men and women; however the vast majority of victims are women. Therefore, my study focuses solely on women. Moreover, abused women deal with an array of complexities in terms of their overall quality of life due to the abuse they suffered, as a result a variety of outreach programs are being offered in hopes that these women will have a chance of a better living situation and better health outcomes. This paper will examine the psychological and physical symptoms experienced by battered women and the role of outreach programs to help them. My quantitative study will examine the efforts of one particular organization and its attempts to address the issue through the services offered to the victims of domestic violence in that particular area. I surveyed the clients to assess the impact of the group on physical and psychological symptoms. I distributed a self-administered questionnaire during a group meeting. From the discussion group I was able to collect 19 surveys from both the Spanish and English groups. The majority of the participants were from the Spanish discussion group since that group was the larger out of the two as well as more willing to participate in the survey. Through this study I found that the women attending the discussion groups did benefit from the program substantially through the alleviation of some of their symptoms. The majority of participants expressed that they wanted to receive individual counseling. While many women expressed satisfaction with the discussion group many of them felt they would like to receive individual counseling for themselves and their children.

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Nicolás Guillén: Afro-diasporic Commonalities Through the Lens of Translation

This research examines how Afro-diasporic commonalities between the African-American and Afro-Cuban cultures of the mid-twentieth century are overshadowed by linguistic and cultural disparities as seen through the lens of translation. In-depth analyses of Langston Hughes' and Ben F. Carruthers' translations of Nicolás Guillén's "Ayé me dijeron negro" in Cuba Libre: Poems by Nicolás Guillén provide a detailed perspective on the deeply-rooted divergences between the two cultures. Original works by Guillén were read in Spanish, and scholarly publications in both English and Spanish were consulted to gain an understanding of previous research on related topics. Numerous articles by Guillén scholar Vera M. Kutzinski were used to establish my research topic, as well as to provide sound support to my findings. I also completed my own translations of some of Guillén's poems and compared them to published translations to find similarities and differences between the methods, diction, and grammatical structures employed.

The United States' extreme segregation and anti-miscegenation policies at the time of publication of Hughes' and Carruthers' Cuba Libre (1948) meant that American society simply did not have a place for considering cultural hybridity as a common, or even valid, aspect of society. Conversely, Cuba thrived on its mestizaje, which was accepted, assimilated, and regarded as an intrinsic aspect of Cuban society.

This lack of commonalities made Hughes' and Carruthers' translation work additionally challenging. Not only did they have to find an equivalent to the unique dialect of Cuban criollo, but they also had to present the content of the poetry in such a way that the heavy political and social undertones so critical to Guillén's works would seem less foreign and more relevant to their American audience. Simplifying these complex social and political messages, though, almost always led to some degree of mistranslation, as well as confusion for American readers.

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Bilingual Education: Destined or Doomed for English Language Learners

Bilingual Education for children with limited English language skills is a controversial issue in California. On one hand, English-only proponents argue that learning one language interferes with learning a second language. With increasingly limited California resources to support bilingual education programs, English language learners are at risk of losing additional language support. On the other hand, there has been a growing acceptance of the potential benefits of bilingual services provided to English Language Learners among educational leaders and researchers. This paper looks at the following: 1.) how the Spanish translation can help English language learners in reading and spelling sight words; 2.) bilingual education, the debate, and models/program of bilingual education; 3.) how bilingual education has played in history and how it affects English Language Learners in California; and lastly 4.) the benefits of bilingual education and thoughts on how to recreate the school community by including bilingual education in the curriculum. This paper also suggests a future study using first-grade, Spanish speaking, first-generation English language learners. This study would be an example of comparing English-only vocabulary instruction versus English and Spanish vocabulary instruction throughout the school year. The purpose of this study is to determine whether or not the children produce an increase of vocabulary learning as opposed to children receiving only English instruction throughout the school year. Key words: Bilingual Education, English Language Learners

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Acculturation as a Predictor of Clinical Anxiety Disorders in Collegiate Mexican-American Populations

The amount of research pertaining to clinical illness within the Mexican-American community is relatively minute. This is especially disconcerting considering the large Mexican-American population in the United States, as well as the prevalence of mental illness in Mexican-American populations. Our study sought to assess how college adjustment stressors impact clinical illness in a multi-racial college population. Results indicated that Mexican-American college students' prevalence of anxiety disorders was predicted by acculturation, family and self-esteem adjustment stressors. Future research should utilize these findings to increase research pertaining to mental illness in the Mexican-American community, and decrease the stigma and lack of understanding it currently experiences.

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Plasmids with Genes for Pesticide Degradation

T
he fumigate Chloropicrin (CP), an alternative to Methyl Bromide, is used to sterilize the soil before planting. We isolated ten species of degraders from CP-treated soils and looked for cmuA, a gene necessary for the degradation of CP. Three species, Bacillus sp., Frateuria sp., and Rhodanobacter sp., were found to contain cmuA. Phylogenic analysis of the cmuA DNA sequences from these species shows these sequences form a distinct clade despite originating from diverse bacteria and, since horizontal gene transfer is often mediated by conjugative plasmids, these results suggest the gene is acquired through horizontal gene transfer. In this study we examined isolates of the three species for the presence of plasmids containing the cmuA gene. We found that five strains of Frateuria sp. contained plasmids. The plasmids' size varied slightly in each strain, ranging from 2.95kb to 4.8kb. We amplified the purified plasmids by PCR with cmuA specific primers and found that in four out of the five strains, the plasmids coded for cmuA. Restriction endonuclease mapping suggests the four plasmids have similar structural composition despite the size variation. Analysis of cmuA containing plasmids provides insight into the evolution of degrading microbes and the diversity of pesticide degrading pathways.

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Why Flies Stumble – Developing Ways to Quantify the Loss of Motor Control

Walking insects can stabilize their body using neural feedback and/or self-stabilizing physical mechanisms. In our study, we are interested in quantifying a fly's ability to maintain stability and avoid stumbles. We consider a stumble to be a temporary loss of motor control. Stumbles can result from either: (a) limb tripping or (b) the center of mass moving outside of the triangle of support (formed by the three feet remaining on the ground at any given moment during fly walking). In order to understand what causes a fly to stumble, we developed several performance metrics: (1) surface area of the triangle of support, (2) distance of the center of mass from the centroid of the triangle of support and (3) variation in the angles within the triangle of support. These three metrics measure stumbling due to cause (b). We tested these metrics on adult fruit flies that were treated with a neurotoxin (L-BMAA affects motor ability). Fruit flies treated with L-BMAA stumble more often than control flies. We recorded the footfall patterns of the flies using high-speed cameras and digitized the position of the flies' feet, snout and tip of the abdomen. We found that treated flies have smaller triangles of support (metric 1), but we found no significant effects in metrics (2) and (3). We are currently developing and testing metrics to address cause (a), limbs tripping over each other.

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Poster Board No.19

Hispanic Farmworkers of the San Joaquin Valley with Polymorphisms in Specific Xenobiotic-Metabolizing Genes have Elevated Risk of Hormone-Dependent Cancer

Organochlorines (OC) are a common class of pesticides known as endocrine disruptors in humans. OC pesticides are known to modify the effects of estrogen and testosterone and may act as agonists or antagonists or have mixed effects in the microenvironment of tissues. The pathway to pesticide (xenobiotic) elimination from the body is a multi-step process resulting in excretion of contaminants through the urine or bile. The first step involves oxidation which is thought to be primarily carried out by the Phase I enzyme family, cytochrome P450 (CYP), and is typically an activating reaction creating a more polar byproduct. The second step involves conjugation with an endogenous ligand through a Phase II enzyme family, glutathione-S-transferase (GST), and is typically a detoxifying reaction. The goals of this study have been to determine the association between exposure to OC pesticides and risk of a hormone-dependent cancer (breast or prostate) in the Hispanic population of the intensely agricultural San Joaquin Valley of California. Our study involves the use of DNA samples consented from 42 Hispanic female participants and 131 Hispanic male participants and assesses single nucleotide polymorphisms (SNPs) in select xenobiotic-metabolizing genes utilizing three different molecular strategies. For female samples, we found no association between the GSTM1 null polymorphism and breast cancer risk in this sample (O.R. = 0.99, 95% CI=0.28, 3.51), but did find a doubling in breast cancer risk among those women who carried the null polymorphism for GSTT1 (O.R. = 2.21, 95% CI=0.39, 12.63). In females, two CYP1B1 polymorphisms (codon 119 Ala/Ser and codon 432 Val/Leu) were also genotyped. While no association in breast cancer risk for codon 119 (O.R. = 0.77, 95% CI=0.14, 3.70) was found, we did find elevated risk of breast cancer (O.R. 2.33, 95% CI= 0.64, 8.54) at codon 432 (Val>Leu) suggesting that women carrying the Val CYP1B1 allele had higher risk than those women with the Leu/Leu genotype. Due to the small sample population, Odds Ratios are deemed statistically unstable and thus one must be prudent in drawing firm conclusions. This study indicates that it is feasible to identify, trace, consent and recruit female and male Hispanic participants in the San Joaquin Valley of California who have recently been diagnosed with breast cancer or prostate cancer for future interventional studies.

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Poster Board No.20

A New Sunflower (Helianthus) Species From Central California

A new species, Winter's Sunflower (Helianthus winterii), is described from the Sierra Nevada foothills in central California. The new species is distinguished from the common sunflower (Helianthus annuus) by its perennial growth habit, woody trunk and year round bloom. The species description is based on growth habit and phenology, leaf form and morphology, structure of the phyllaries, ray and disk florets, and seed morphology. Helianthus winterii occurs in annual grassland and open foothill woodlands on steep well-drained granitic soils in limited locations in southern Fresno and northern Tulare Counties. Observations of the two currently known Helianthus winterii occurrences suggest that the plant occurs on relatively steep open areas (south facing grassy slopes, rocky outcrops, roadcuts) on well-drained soils within foothill woodlands and ranging in elevation from 180 to 460 m. Associate species at the type locality include Carduus pycnocephalus, Centaurea melitensis, Chaenactis glabriuscula var. glabriuscula, Amsinckia eastwoodiana, Phacelia cicutaria, Pholistoma auritum, Lupinus bicolor, L. benthamii, Quercus douglasii, Q. wislizenii, Erodium brachycarpum, E. cicutarium, Datura wrightii, Dichelostemma capitatum, Avena barbata, A. fatua, Bromus hordeaceus, B. tectorum, and Poa bulbosa. Helianthus winterii is named after Robert F. Winter who has influenced the development of many Californian botanists and natural historians.

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Characteristics of Shiga Toxin-Producing E. Coli Including their Responses to Predation

Escherichia coli can contaminate food, such as beef and spinach, causing illnesses ranging from recurring diarrhea to death in susceptible individuals. They may produce a toxin typically associated with another harmful bacterium known as Shigella spp. This toxin is referred to as “Shiga-toxin”, and E. coli that produce this toxin are known as STECs. While E. coli O157 remains the most common STEC in the United States there are over 100 STECs that can be just as harmful. My project, conducted in collaboration with individuals at CSUEB and the USFDA, involves identifying chemical indicators that would help detect different strains of non-O157 E. coli in contaminated foods, and determining if these STECS are vulnerable to a coliphage and a Bdellovibrio sp. invasion. Specifically, nine different STECs were chosen to be screened for their ability to produce catecholate siderophores (phenolates), such as enterobactin, chelating compounds important for some pathogenic bacteria in the acquisition of iron. The same STECs will also be screened for the presence of acyl homoserine lactones, chemicals involved in bacterial communication, also known as quorum sensing, and expression of virulence factors. Assays will also be conducted to determine if a coliphage and a Bdellovibrio sp. can infect these STECs. Detection and identification of non-O157 STECS is not easy, which hinders determination of their origin and, subsequently, how to eliminate them. If new tools, such as the use of predators or chemical indicators were developed to facilitate detection of these bacteria, then determination of the source of contamination (e.g.., packing plants and fields) may occur, and quicken measures that prevent or, at least, decrease further infection, disease and/or death.

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Elevated CO2 has Minimal Effect on Vegetatively-Propagated Giant Reed (Arundo Donax) during the Establishment Phase

Giant reed (Arundo donax) is an invasive weed of aquatic systems. Its high transpiration rate combined with a persistent distribution can cause strain on both natural and agricultural systems. As a C3 plant, giant reed theoretically has the potential to capitalize on an increased atmospheric CO2 levels in its photosynthetic process. This may result in an increase in its above- and below-ground growth and make it more invasive in future predicted atmospheric CO2 levels and mandate the need to reevaluate current control measures. One of the most consistent effects of elevated atmospheric CO2 on plants is an increase in the rate of photosynthetic carbon fixation by leaves. However, the effect of increased CO2 levels on newly establishing giant reed plants from rhizomes is not known. Therefore, the objective of this experiment was to study the effect of ambient (390 ppm) and elevated (600 ppm) CO2 levels on the above- and below-ground growth of vegetatively- propagated giant reed rhizomes during its establishment phase.

One plant was placed into each of the 16 open top field chambers, 8 of which had ambient CO2 and 8 had elevated (600 ppm) CO2. The CO2 was pumped into the chambers and the plants were exposed to these two CO2 regimes for approximately three months. Weekly measurements were taken on the growth of the plants (stem height, leaf numbers, and number of tillers) and water use. Photosynthesis and stomatal conductance was measured by a LICOR 6400 systems three times during the course of the experiment. Chlorophyll concentration of the leaves was also estimated weekly by taking SPAD readings with a Minolta chlorophyll meter. At the end of three months final plant height was measured and the plants were harvested and separated into leaves and stems. Number of leaves on each plant was counted and leaf area was estimated with a LICOR 3100 benchtop leaf area meter. The leaves, stems, and below-ground plant material were then dried at 60 C for 72 hours and the dry weight of each was recorded. Data were analyzed using ANOVA procedures. Results showed that there were no significant differences between the two treatments in any of the parameters tested at a 0.05 level of significance. However, measurement close to harvest showed that the photosynthesis rate of the plants in the elevated CO2 chambers was greater than those in the ambient CO2 chambers. Therefore, this study showed that initial above- and below-ground growth of giant reed was not affected by elevated CO2. However, giant reed is a perennial plant and it probably takes more than three months to see any changes in the photosynthetic rates of the leaves, allocation of carbohydrate to below-ground plant parts, plant water use, and their interactions. A longer period of exposure of the plants to elevated CO2 than in this study could probably show different results.

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Use of Recycled Paper Mulch for Weed Control During Establishment of Blackberries

One material being tested for weed control is recycled paper mulch. However, the efficacy of this mulch in weed control, and on soil and crop growth parameters has not been explored. Therefore, a field experiment was conducted in a transition-organic plot at the CSU Fresno Farm in 2011. The objective of the study was to determine if recycled paper mulch mats could serve as a viable alternative for weed control in blackberries.

Eighteen blackberry plants were planted on raised beds on April 20, 2011. They were separated into six randomized complete blocks containing 3 plants each. In each block, one plant was surrounded by a thin type (1 mm) of recycled paper, one plant with a thick type (2 mm) of recycled mulch (EcoCoverLLC, Huntington Beach, CA 92647), and one without any mulch. The square mulch mats, measuring 0.2 m2, were placed around each plant on the soil surface after crop planting. The blackberry plants were surface drip irrigated and the mulch was placed over the drip tape. The mulch mats were then staked down with specially designed biodegradable stakes provided with the mulch mats. No chemicals were used in the plots and any weed control only involved hand weeding. Weekly measurements on plant height, light interception, soil water content (measured at 12 cm depth), soil temperature (measured to a 12 cm depth), and chlorophyll measurements (in SPAD units) were taken. At the end of each month, weed density and weed biomass was taken. Data were analyzed using ANOVA procedures at a 0.05 level of significance.

At the end of the first month in May, weed biomass in the 0.2m2 area around the plants was 51% and 49% lower in the 2mm and 1mm mulch, respectively compared to the plot area without mulch. Weed densities in June were also lower by 72% and 65% in the 2mm and 1mm mulch respectively compared to no mulch. However, there were no differences in weed density or weed biomass between the two mulch types. There were no differences in weed density or biomass between any of the treatments thereafter. Therefore, the mulches were successful in providing weed control during the first few months of this experiment. The area around the plants and the pots were hand weeded after sampling. Throughout the growing season plants with the 2mm mulch were significantly taller than in the other treatments. Soil temperature was higher in the area around the plants with no mulch at most of the sampling dates. Soil moisture was generally similar in the mulch and no-mulch plots throughout the growing season. At the end of the growing season pruning weights were taken, with significant difference between the plants in any of the treatments. Nitrate leaf tissue samples and SPAD readings were also similar in all treatments. The mulch was still intact on December 30, 2011 indicating that the product could last for several months.

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Application of Nanotechnology in Agriculture and Food: A Review

The focus of this report is to cast light on the usage of nanotechnology within the agriculture and food industries. It is a review type paper. The difference between nanoscience and nanotechnology will be presented in first place. Bearing in mind that the sub application areas are precision farming, smart delivery systems, and food packaging, we will then analyze and discuss the correlations between the food market and the use of nanotechnology. For instance, consider precision farming; currently, a Sonoma county winery is using nanotechnology based sensors to maximize its grape production. A grocery store is keeping track of expiration dates for its products using similar nanosensors. In addition to integrating nanotechnology with existing equipment, precision farming attempts to maximize output while minimizing input. This is achieved by utilizing computers, GPS and nanotechnology based sensors to determine if crops are growing at maximum efficiency. Smart nutrition delivery systems integrated with nanotechnology will be able to monitor plant health and report back to farmers if everything is going good or give suggestions of different biological pesticides to administer. In the future, these sensors could eventually make their own decision on how to best help the plant and autonomously fulfill that decision. In the food industry, smart packaging has been stirring up conversation. This paper will present information about advanced packaging techniques, food processing methods and food safety issues in the appropriate order. Further, the ramifications of nanotechnology will be assessed within other industries. How it impacts contemporary techniques within agriculture and food will also be compared along with the trends and movement of nanotechnology. We will present research related activities that are going on around the world.

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A Review on Recent Developments in Technology

This poster presents information on trends in technology. Primarily, we will focus on the trends in four areas of development such as Transportation, Robotics, Mobile Devices, and Micro Systems. The presentation of this paper motivates to inform the common people about where our society is at now. For instance, people use a form of transportation everyday from traveling in the air or on the ground. There are many new forms of transportation that is changing the way we get from place to place like the high speed rail road system that can get people from the central valley to L.A. just in an hour, or a human body suit that can fly up to 150 mph. Technology evolves around us every day, and is getting more advanced. Our communication devices have changed so rapidly, the new i-phone5 has some non-physical technology that uses light projection as a keyboard that expands in the air, and the user can prepare a document or graphics without physically touching the real keyboard. After the user is done typing a paper, for instance, he or she can send it to their teacher right from the palm of their hand via email. Another option the user can do is send the paper from the i-phone to a printer that uses MST-(Micro Systems Technology) just to print a piece of paper. Micro systems are very unique and complex 3D technology (unlike traditional VLSI (Very Large Scale Integration) chip) that is being developed for next generation technology systems for most of the sensing and actuating applications. These devices and systems consume less energy. In Germany, they are making MST chips that can be implanted in human bodies that can monitor blood levels for diabetics and insert insulin when needed. But overall, most of all this technology is being assembled by precision technology systems including mocro and nano robots. Thus, robotics is also advancing in many ways that aids our community to a better life. Just recently in 2012, a company issued a patent that uses robotics to detect nerves in human bodies. They mainly use this robot to help aid a surgeon and this system notifies where nerves are. While going under surgery, nerves are very easy to cut and damage. Overall, technology is advancing so fast to a point that in the next 10 years many things that are not currently possible will be. Soon we may have a fully electrical perpetual motion car, to fully replacing a limb on a human being that can feel it again. In our technical society, many problems can be solved through technology systems. This paper will highlight some of the recently developed new technology systems and their impacts to the human society.

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Vegetable Oil as an Alternative Fuel to Diesel

Project Description

The purpose of this project is to evaluate the feasibility of converting diesel engine automobiles to run on Waste Vegetable Oil (WVO). The process involved taking an already exhisting diesel car (my personal 1982 Mercedes diesel) and modifying it to run on vegetable oil. After acquiring the necessary materials, I installed everything on the car. The installation process took about 2 weeks working on the car about 3 hours a day. The results seem very promising, the car seems to be running fine on vegetable oil, and suffers nearly zero power loss, and only ten percent less fuel mileage.

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Traumatic Stressful Life Experiences and Metacognitive Rumination

Past research has found a strong relationship between life stressors and depressive rumination. However, recent validation of a scale assessing an individual's integration of stress after a traumatic experience can give further insight into this relationship. In order to fully understand this relationship, scales assessing integration of life stress and rumination were administered online to 56 California State University, Fresno students. We hypothesized that persons with higher amounts of integrated stress, post-stressor, would exhibit signs of increased depressive rumination. Results confirmed our hypothesis, indicating a significant correlation between metacognitive rumination and integration of stress, comprehension of trauma, and footing in the world post-life stressor. This reaffirms past research as well as DSM-IV diagnoses of anxiety disorders. Future research should examine the extent to which rumination can mediate or exacerbate anxiety and depression after a traumatic event.

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Altering Impressions Based on Attractiveness Through Delay Conditioning

Research shows that children's attractiveness influences how they are perceived such that unattractive children are perceived more negatively than attractive children. The purpose of this study was to explore whether it is possible to modify this bias. Previously rated photographs of attractive and unattractive children were paired with pleasant or neutral photographic stimuli using a delay conditioning paradigm. We predicted that participants would attribute more positive characteristics to unattractive children when the photographs have been paired with pleasant stimuli. 102 adult participants from California State University, Fresno were assigned to one of four conditions: low physical attractiveness paired with pleasant stimuli, low physical attractiveness paired with neutral stimuli, high physical attractiveness paired with pleasant stimuli, and high physical attractiveness paired with neutral stimuli. After viewing photographs in 20 blocks (8 per block), the unattractive stimulus children were rated on attractiveness, friendliness, honors, and cooperation. We found that less attractive children received more positive ratings if attractive children did not comprise the stimulus set. The pairing manipulation (either pleasant or neutral) did not influence ratings. The results suggest the operation of a mere exposure effect or a contrast effect however further research is necessary to clarify these findings. Additionally, an unexpected finding was that participants' performances on the matching tasks were found to be more accurate in the pleasant stimuli conditions suggesting that short term memory can be facilitated by different types of stimuli.

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A Reliability Generalization of the Eating Attitudes Test (EAT) from 2008 to 2011

A reliability generalization of the Eating Attitudes Test (EAT) was conducted in order to determine both the average internal consistency of the measure as well as the variability when administered to various populations. As reliability is a property of the scores obtained from a measure not an immutable aspect of a measure it is helpful to assess the degree of variability as well as determinants of higher reliability. This study assessed sample and measurement characteristics in relation to reliability.

The EAT was selected for analysis as it is one of the most widely used measures for assessing eating disorder symptomology. The terms “EAT-26,” “EAT-40,” and “eating attitude*” were searched in four separate databases, resulting in 180 possible sources. Of these, research studies in English were evaluated for inclusion of a reliability coefficient related to the sample in the study. Only 36 studies (20%) provided reliability information for their sample; information on other variables of interest was only collected for these studies. Each study was recoded blind by a second coder.

A stepwise regression was performed to assess whether gender, language, location, publication year, publication type, sample size, and version would be significant predictors of the total reliability of EAT scores. The variables publication year, sample sizes, and gender (percentage of females in each study) were measured continuously, while location (within the United States or not), language (English or non-English), and EAT version (EAT-26 or EAT-40) were measured dichotomously. Gender was the only significant predictor of total reliability for EAT scores ($F(1, 23) = 5.91$, $p = .02$) and accounted for 20% of the overall variance ($R2 = .204$). Due to missing data in a number of studies a separate Pearson Correlation was conducted to assess the relationship between the standard deviation of the EAT total score and the Cronbach’s alpha coefficient. The total EAT SD was significantly correlated to reliability ($r = +.68$, $n = 19$, $p = .001$) and can account for approximately 46% of the variance in total reliability of the EAT scores.

This instrument appears appropriate for cross-culture use, but has significant limitations with biologically male samples. No significant differences were found for studies conducted outside of the US or for those that used a non-English version of the EAT. However, nearly 20% of the variation in reliability estimates can be accounted for by the percentage of women in the sample. This RG study posits that one of the most widely used measures of eating disorder symptomatology is inappropriate for use with biologically male individuals. Items on the EAT reflect a more female-centric focus, and the growing number of males affected by an ED may have a divergent experience from females. Future research is needed to adapt or create an instrument that may be more effective with male populations.

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Maternal Incarceration and Childhood Development

This study evaluated the developmental impact of maternal incarceration on children in the sixth through twelfth grades. It determined the ages of the children at times of maternal incarceration and asked various general life questions of adolescents whose mothers had been incarcerated for at least 6 months at some point in the children's lives. The researcher created two demographic questionnaires, one for the parent/guardian and one for the participant to complete at the initial enrollment meeting. The researcher established a secure Web page using the Alliant International University Moodle Web site to collect data through the use of questionnaires completed by each individual participant. Participants were nominated from various agencies within Madera and Fresno Counties. The study's sample consisted of five participants: 2 females and 3 males, between grades sixth through twelfth and ranging in age from 12 to 16 years.

The results of this study found no significant evidence that having had an incarcerated mother increased anti-social or acting-out behaviors, nor did it increase academic difficulties. This study revealed a potential safety factor for males: males are less susceptible to negative impact than females, based on the developmental stage they are in at the time of maternal incarceration. Females were shown to develop more negative viewpoints of themselves and their surroundings than were males. Furthermore, it showed that the age of the child at the time of maternal incarceration correlated with the impact on child development and caused difficulties during adolescence that could continue into later life.

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A Standardization Study: Acculturation and Mental Health among Nigerian Immigrants in America

The Nigerian-American Systemic Scales (NASAS; Ndika, 2011), an acculturation scale, was standardized on first generation Nigerian immigrants in America using Principal Component Analysis (PCA). The NASAS was specifically constructed to assess the acculturation strategies used by Nigerians in the Diaspora to adapt to the host culture. Also using PCA, two additional measures were revalidated on this Nigerian sample. The measures were the Self-Efficacy Scale (SES; Sherer et al., 1982) and the Depression, Anxiety, Stress Scales 21 (DASS-1; Lovibond & Lovibond, 1995).

Adult, first generation Nigerian immigrants (N = 104) living in California, New Jersey, Michigan, New York, Texas and Massachusetts responded to four self-report instruments. These instruments included a Socio-demographics Questionnaire and the Nigerian-American Systemic Acculturation Scales (NASAS). The Self-Efficacy Scale (SES) and the Depression Anxiety Stress Scales 21 (DASS-21) were also administered to the sample.

The three components that emerged from PCA of the NASAS fit Berry's model of acculturation only modestly. These components accounted for 38.08 percent of the total variance in the instrument. The components that emerged from PCA of the SES and DASS-21 failed to fit the underlying structures proposed by the original authors, respectively.

Post hoc analyses suggested that the acculturation strategies used by the Nigerian immigrant participants to adjust to the American mainstream culture could be predicted by their levels of self-efficacy and immigration support. Furthermore, post hoc analyses provided information on the likely relationships between acculturation, depression, anxiety, normative stress, self-efficacy, as well as the socio-demographics data obtained from the participants. The importance of the research findings, limitations of the study and recommendations for further research were discussed.

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Number of Subtests Failed on the LANSE-A and LANSE-C as a Screen for Cognitive Deficit

Introduction/Objectives

The Lebby-Asbell Neurocognitive Screening Examinations for Adolescents and Children (LANSE-A and LANSE-C) contains 14 subtests, each with an independent clinical cutoff. Failure to achieve a score above the cutoff suggests cognitive compromise within that domain. Another way to score the LANSE-A/C involves an assessment of the number of subtests failed or below the cutoff.

This study compared brain injured versus non-brain injured children and adolescents on the LANSE-A/C to determine whether there was a statistical difference between the number/s of subtests failed. In addition, the sensitivity, specificity and positive predictive value of three difference cutoff values were assessed.

Methods

After obtaining written consent from a parent or guardians, participants were tested on the LANSE-A/C based upon on their age. The non-injured control group (NC) consisted of 130 individuals without a prior history of head injury or neurological disorder. Control group participants were recruited from multiple cultural backgrounds within California. The brain injured group consisted of 157 individuals. Chi-square test of independence was conducted with group membership as the independent variable. Sensitivity, specificity and positive predictive value were calculated using three different values.

Results

Chi-square analysis revealed a significant difference ($P < .0000$) between the two groups, for the three values of subtests failed. A cutoff of > one subtest provided the greatest positive predictive value (97.69%), a cutoff of > two subtests provided the greatest sensitivity (94.62%), and cutoff of > three subtests provided the greatest specificity (98.73).

Conclusions

As the LANSE-A and LANSE-C are screening measures, using two or more missed subtests in order to provide the best sensitivity is the most appropriate classification technique. These data suggest that using the number of subtests failed by a subject is useful way to assess functioning.

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Manipulating Public Policy Judgement Through Unconscious Priming

As consumers of policy, United States citizens must be aware of the fact that there are components to judgment and decision-making that are unconscious and determined by outside events not in conscious perception. Research has shown that public policy can be driven by many emotions including anger, guilt, fear, and collective guilt. These emotions have been successfully primed in many experiments to sway participants' choices of one option over another. However, there is a lack of research linking priming with public policy preference.

The researcher utilized a cognition-priming procedure with 176 Fresno City College students. Then, all students completed a policy-preference survey to measure support for either two opposing antiterrorism policies.

The cognitive-priming method influenced judgments about public policy. The anger-primed group ($M = 4.46$, $SD = 1.593$) rated the policy 2 significantly higher than the neutral ($M = 3.76$, $SD = 1.588$) or guilty ($M = 3.69$, $SD = 1.849$) groups. A one-way ANOVA shows a significant priming effect of the angry priming situation [$F(2,147) = 3.242$, $p < .05$, Omega Squared = .11 (a medium-sized effect)].

The participants were not forced in any explicit or detectable manner to experience any emotions at all. Yet, the implicit-memory priming task effectively influenced the participant's public policy ratings. Therefore, it would seem that implicit cognitive processes influence judgment on public policy issues. The idea that people can be manipulated to think differently about public policy can be important, especially to consumers of public policy (voting citizens).

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Predicting Fall Risk using the 30 foot Walk Test in Low-Functioning Community Dwelling Older Adults

Introduction: With an estimated one-third of older adults falling each year, a number that is steadily increasing as the population ages, increased attention needs to be paid to actions that predict and help prevent falls. It has been well-documented that declines in gait velocity and gait adaptation seen with aging are large contributors to the increased risk of falls. However, further details surrounding this occurrence are less known. The purpose of this study therefore, was to examine preferred and fast gait velocity as predictors of fall risk in the lower-functioning community-dwelling older adult (CDA) population, using the Berg Balance Scale (BBS) as indication of fall risk. The BBS was specifically developed for lower-functioning older adults (Berg et al, 1989). A secondary purpose was to determine a cutoff score for gait velocity in the lower-functioning CDA population.

Methods: Seventy-two lower-functioning CDA were timed while walking 30 feet at their preferred and fast speeds within a 50 foot walkway. All subjects received < 12 on the physical activity questionnaire placing them in a lower functioning category. Risk for falls was determined by using a cut-off score of 45/56 on the BBS (Berg et al 1989). Data Analysis: Receiver Operating Curves (ROC) curves were calculated to determine how well preferred and fast walking predicted fall risk.

Results: Both preferred and fast (area=.84 and .81 respectively) gait speeds had good predictability of fall risk. A time of 12 seconds during preferred walking provided 84% Sn and 70% Sp, whereas a score of 10 seconds during fast walking provided 69% Sn and 78% Sp.

Conclusion: In lower-functioning CDA, a cut-off gait speed of 12 seconds during the 30 Foot Walk is recommended as an appropriate cutoff to predict falls.

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The Effects of Music and Gender on Emotional-Altruistic Behavior

The study was designed to analyze the effects of gender and music on emotional altruistic behavior. The type of study used was a 2x2 PxE factorial design. Music was the first independent variable in the experiment, with the two levels being happy and sad. The second independent variable was gender, with the two levels being male and female. Each group was exposed to a separate condition of music and the groups were of mixed gender. The dependent variable was emotional helping behavior and was measured by the number of sentences and the number of words that describe an emotion in the empathetic letters written by the participants.

The researchers' hypothesis was that females exposed to happy music would behave more altruistically than in any other condition. The results showed that participants who were female wrote significantly more emotional words than the male participants, participants who listened to happy music wrote significantly more emotional words than participants who listened to sad music, and participants who listened to happy music wrote significantly more sentences than participants who listened to sad music.

The results of this study suggest that the hypothesis was supported. These results also support The Social Role Theory of helping behavior (Lamy, Fischer-Lokou, & Gueguen, 2009) and the Empathy-Altruism Hypothesis (Bierhoff & Rohmann, 2004).

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Investigation on the Conformational Characteristics of the N-Terminal Region of Coat Protein of Brome Mosaic Virus

The Brome Mosaic Virus (BMV) is an RNA virus that infects granary plants. It consists of three distinct viral particles and each of three viral particles consists of each of three distinct BMV RNA molecules wrapped by many copies of the Coat Protein (CP). CP has 189 amino acid residues and regulates important events in the viral replication through its binding to different parts of its own viral RNA. CP's overarching regulatory roles in the replication processes of BMV are conducted through controlling the efficiency of both RNA replication and protein translation. Previous studies have shown that a 22-residue peptide (CPNT) derived from the N terminal region of CP can penetrate the host cell membrane and deliver the BMV genomic RNA into the host cell. CPNT can also deliver double-stranded RNA into cells, resulting in gene silencing. The long-term goal of this project is to investigate the conformational characteristics of CPNT and to explore its binding characteristics on the different parts of BMV genomic RNA. As a first step, a 29 residue-long peptide mimicking the N-terminal region of CP (CPNT-1) was chemically synthesized and its overall conformation was investigated using Circular Dichroism (CD) and NMR. The CD spectra showed that it has only 12% of a-helix structure and 50% of random coil, implicating high conformational flexibility. Proton NMR spectra showed broad proton peaks, indicating possible existence of a micro-aggregation state for CPNT-1 through the formation of intermolecular disulfide bonds between Cys residues of CPNT-1. Given that these Cys residues are not a part of the functionally crucial region of CPNT, we designed a new CPNT construct without any Cys residues (CPNT-2). CD as well as NMR analyses have been performed on CPNT-2 and the preliminary data showed that the peptide forms appreciable secondary structure. Currently we are investigating the detailed structural characteristics of CPNT-2 using a series of CD and NMR analysis. The details of our analysis will be presented as a poster at this conference.

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Analysis of Conformational Influences Within (2R,3R)-butanediol

2,3-Butanediol is a simple polyol with two different isomers: the meso isomer and the racemic isomer. We examined (2R, 3R)-butanediol in different solvents and investigated its conformational preferences to determine the conformational influences present in (2R,3R)-butanediol. (2R,3R)-butanediol serves as a model molecule to understand the conformational influences in more complex compounds such as proteins. Some conformational influences we investigated are steric bulk, intramolecular hydrogen bonding, Coulombic attraction/repulsion, solvent effects, the polarity of the conformer versus polarity of the solvent, and hyperconjugation. This project primarily aimed to understand possible occurrence and effect of hyperconjugation between vicinal hydroxyl (OH) groups, which are present in (2R, 3R)-butanediol. Hyperconjugation is an interaction between sigma bond electrons and vicinal, coplanar anti-bonding sigma orbital, which is thought to increase the stability of the system. The methodology employed was 1H NMR and 13C NMR on (2R, 3R)-butanediol in different solvents. Then, we simulated the experimental spectrum on gNMR to extract the coupling constants. We used the Altona equation in order to correlate the coupling constants with dihedral angles, thereby determining the conformation of the compound.

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Fluorescence Lifetime Quenching of Au25(S(CH2)2Ph)18 and the Effect of the Carbon Chain on the Quenching Constant

Emission fluorescence spectra was used to measure the quenching effect of a small thiolated nanoparticle Au25(S(CH2)2Ph)18. The size-dependent Au25 exhibits properties that can be characterized in terms of band gap, electrochemical charging, and electron transport dynamic. The study of quenching effect was achieved by analysis of fluorescence spectrums where the dyes and concentrations of Au25 were varied. The quenching constant of Au25(S(CH2)2Ph)18 was determined to be 1.678x107 by the correlation of the Stern-Volmer kinetic relationship. The protecting ligands that surround the gold center act as a solvent shelf with properties that dictates the dynamics of the electron transfer. The investigation of the effects of ligands size on the quenching was accomplished by changing the length of the carbon chain during ligand exchange reaction and analysis of the emission fluorescence spectrums. It was observed that the longer carbon chain length of the ligands increased the quenching constant of the nanoparticle Au25(S(CH2)2Ph)18.

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Effects of Solvents and Supporting Electrolyte on Electroreduction of C60 and C70 Fullerenes in Aprotic Solvents

Since its discovery back in 1985, fullerene has become a hot topic for chemists. A fullerene has a hollow cages structure consisting entirely of carbon atoms interconnected in pentagonal or hexagonal rings. Due to this characteristic structure, fullerene expresses unique behavior such as exhibiting a very rich redox property. In this project the electroreduction of C60 and C70 Fullerene in various environments are studied. More specifically half wave potentials of each fullerene as a function of solvent and supporting electrolytes are compared. As the half wave potential approaches positive value, it shows that the elevated stability of the reduced species. In the actual experiment, C60 and C70 fullerenes were each dissolved in seven different aprotic solvents and eight different supporting electrolytes were added into solutions before being analyzed by cyclic voltammetry. The aprotic solvents used were Benzonitrile, Dichlorobenzene, Dichloromethane, dichloroethane, N,N-Dimethylforamide, Tetrahydrofuran, and Pyridine. While the cations contained in the supporting electrolytes were quaternary ammonium cation with various carbon chain lengths, ranging from two carbons (tetraethylammonium) to eight carbons (tetraoctylammonium). On the other hand, the anions of the supporting electrolytes were bromide, perchlorate, tetrafluoroborate and hexafluorophosphate. The half wave peak potentials for the first and the second redox couples correlates well with the carbon number contained in the carbon chain of quaternary ammonium cation. For anions, half wave potentials increased in order of hexafluorophosphate, perchlorate, and bromide. These trends were seen in both C60 and C70 solutions. Furthermore solvent effects on half wave potentials were also seen as linear correlations of half wave potential and Gutmann solvent donor number were observed.

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Development of Chalcone-Based apoE modulators through Structure-Activity Relationship (SAR) Study

Apolipoprotein E (apoE) is a transport lipoprotein that helps distribute cholesterol and triglycerides in the body and the brain. ApoE polymorphism and high levels of lipoproteins are risk factors for the development of Alzheimer's Disease (AD). Our research group has designed and synthesized small molecules to modulate apoE gene expression. Two distinct classes of chalcones exhibited contradictory effects on apoE gene expression. The SAR study of these two specific classes of chalcones will be presented here.

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Levels of Induced Oxidative Stress in Drosophila Melanogaster Exposed to an Environmental Neurotoxin

The human body naturally produces reactive oxygen species (ROS) such as hydrogen peroxide (H_2O_2), superoxide anion ($O_2^{\bullet -}$), and hydroxyl radical (•OH) to attack and to eliminate invasive pathogens. Hydrogen peroxide alone is nonreactive, but its high concentration has been shown to injure animal cells in culture. On the other hand, superoxide anion and hydroxyl radical are highly reactive species. If ROS exceed the level of antioxidants such as superoxide dismutase (SOD), they react with specific biological molecules and damage DNA. Thus, the excessive level of ROS causes oxidative stress, which is associated with human neurodegenerative diseases such as amyotrophic lateral sclerosis (ALS).

A cyanobacterial neurotoxin known as β-Methylamino-L-alanine (BMAA) induces oxidative stress, and oxidative stress is found to cause neurodegenerative diseases. The purpose of this research is to look at levels of induced oxidative stress by using SOD to probe for superoxide anion in *Drosophila* exposed to 0 mM, 5 mM, 12.5 mM, 25 mM, and 50 mM of BMAA for 1-3 days. Presence of SOD was verified using Western blot, which indicated a single band at 16 kDa. SOD in gel assay resulted in two bands: one at 32 kDa indicating the presence of SOD activity and the other band at 80 kDa is unknown. Protein samples from SOD overexpressed *Drosophila* indicated higher intensity of SOD bands compared to controls and BMAA-fed *Drosophila*. This study can potentially provide information for diagnosis and future therapies for neurodegenerative diseases in human.

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NMR Analysis of the Neurotoxin L-β-Methylaminoalanine (BMAA) and the Physiological Interaction with Bicarbonate

Amyotrophic lateral sclerosis-Parkinson dementia complex (ALS-PDC) and Alzheimer's disease (AD) are both neurodegenerative diseases that are beginning prevalent in the United States and other countries. The diseases are both currently un-curable and cannot be prevented. The exact cause of these diseases are still unknown, but in order to possibly prevent or cure the amount of people affected with one or both of these diseases, research needs to be completed to what causes these diseases. Recent studies have shown that a possible cause for ALS-PDC or AD can be from the neurotoxin L-β-Methylaminoalanine (BMAA). BMAA is thought to be present in the diet of individuals via consumption of foods containing cycad plants or from drinking water that contains cyanobacteria that produce BMAA. BMAA has been proposed to bind to the glutamate receptor and cause neuronal damage. In order to investigate the ability of this toxin to bind to the glutamate receptor, the structure that BMAA takes in conditions similar to the human body, must be determined.

To determine the structure of BMAA nuclear magnetic resonance (NMR) was used. A sample that consisted of 50 mM BMAA, 10% deuterium oxide and HPLC grade water was prepared. This sample was then run in a 400 MHz NMR. Two different H-NMR spectra with varying water suppression techniques were collected along with the diffusion coefficient spectrum and finally a C-13 NMR spectrum. The pH and temperature of the sample was then varied and the spectra were obtained under the new conditions.

Current results show a temperature dependence of the BMAA structure at varying temperatures, along with a structural dependence based on the pH of the sample. This temperature dependence presents a physiological relevant structure and can explain how BMAA mimics glutamate and is a possible analogue of an excitotoxin. The reaction with bicarbonate and subsequent NMR experiments will further confirm the structure of BMAA and how it can mimic glutamate. BMAA behaving like glutamate is detrimental because glutamate is a major neurotransmitter that in excess results in neuronal death.

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The Effect Of Neurotoxin βeta-Methylamino-L-Alanine (BMAA) On Proteolytic Processing Of Amyloid Precursor Protein (App)

Alzheimer's disease (AD), a progressive brain disorder correlated with the presence of beta amyloid or β/A4 peptides, a sticky peptide predominant in brain plaques. These β/A4 peptides accumulate as filamentous aggregates in the extracellular space of AD brains and they are derived from the Amyloid precursor proteins (APPs). The increased expression and/or over expression of this APPs results in the formation of β-amyloid or A4 peptides. Cleavage of APP by β-secretase followed by γ-secretase results in the formation of β-amyloid or A4 peptides which accumulate in the brains of AD patients.

The neurotoxin β-methylamino-L-alanine (BMAA) has been anticipated to contribute to the pathology of ALS-PDC. BMAA has been recently detected at high concentrations in the brain tissue of patients with AD. Ntera-2 cells (NT2), human neuronal carcinoma cell lines were used as a model system because they express endogenous levels of the protein precursor to the plaque forming amyloid beta peptide, also called, APP.

Our laboratory has investigated the post-translational effects of the amyloid precursor protein (APP) after treating the NT2 cells with varying concentrations of BMAA (0, 30, 100, 300 and 1000 uM). APP proteolytic processing is decreased in the presence of BMAA where the alpha-secretase cleaved APP-CTFalpha or C83 is lower in comparison to the control neurons, measured by Western blot. The amyloid beta levels, which are the plaque forming species have been evaluated using the APP overexpressing cell line called, CHO-APP. The combination of these two cell lines delineate a mechanism where BMAA alters and perhaps lowers the formation of the non-deleterious APP-CTF, paving the way for an alternative mechanism that produces the deleterious beta APP-CTF or amyloid beta peptides. This cellular mechanism may explain why the pathology of BMAA ALS-PDC patients resemble the plaque-forming units founds in Alzheimer’s Disease.

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Understanding the Conformational Preference of Intrinsically Disordered Proteins by NMR Based Solvent Perturbation: Application to the Small FG-Nucleoporin

In this work we look to gain insight into the possible conformational behaviour of an Intrinsically Unstructured Protein (IUP). A 19 residue polypeptide from Nup 159 containing three FG repeats was chosen. Solvent perturbation was used in an attempt to force a β-turn mediated by F-F hydrophobic interactions which has been theorized by molecular dynamic (MD) simulation (not published). To show this turn, the structure of a minimal FG-domain in 100% DMSO was obtained from Nuclear Magnetic Resonance (NMR) restraint based molecular modeling.

Two dimensional NMR spectra including 13C-HSQC, 1H-NOESY, DQFC, and TOCSY were obtained for the peptide in d6-DMSO. All chemically distinct protons, along with HSQC available carbon atoms were assigned to their respective chemical shifts. Nuclear Overhauser Effect distance based restraints along with chemically viable peptide backbone torsional angle restraints were used to produce an ensemble of viable peptide structures.

An ensemble of 20 structures, all of which were consistent with the empirically derived restraints, were found to have an RMS deviation from the backbone of 0.4 nm. An interaction between adjacent phenylalanines was not observed, nor was a beta turn under these conditions. This research opened up a tangent line of questions as to the nature of solvent induced conformational sampling on IUP's.

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Development of apoE Inhibitors by Structure-Activity Relationship (SAR) Study on Triarylmethyl Amine Compounds

Apolipoprotien (apoE) is a cholesterol and lipid-carrier lipoprotein implicated in aging, atherosclerosis, Alzheimer's Disease (AD), and other neurological and lipid-related disorders. ApoE is a major genetic risk factor for the development of AD. Studies have established that the e4 isoform of the apoE gene increases an individual's risk for developing late-onset AD. We designed, synthesized and screened four scaffolds in apoE ELISA assays and demonstrated that specific triarylmethyl amines inhibited apoE secretion. Mechanistic studies have unveiled that these apoE inhibitors are Liver-X-Receptor (LXR) antagonists. The SAR study of the triarylmethyl amine compounds and glimpses of the mechanistic study will be presented in this poster.

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A Candidate Gene Strategy to Identify Resistance Genes in Pepper to Phytophthora Capsici

Phytophthora capsici is a deadly soil-borne disease that is responsible for root rot and crown blight of bell and chili pepper. It also affects tomatoes, cucurbit crops, and many other species. Currently, there is no major commercial variety of pepper that shows resistance to a majority of the pathogen isolates. Our project investigates the genetics of resistance against P. capsici through the use of a candidate gene strategy. Candidate genes are genes suspected of being involved in the expression of a particular trait. We are using previously cloned resistance genes from other members of the Solanaceae, Brassicaceae, Poaceae, and Asteraceae families as candidate genes for quantitative trait loci (QTL) that confer resistance to P. capsici. PCR amplification of DNA from our two mapping parental plant lines can detect differences, or polymorphism, between the two lines. Analyzing these polymorphisms in the progeny lines will indicate where the candidate genes are located. After conducting multiple searches on GenBank for potential candidate gene DNA sequences, primers were designed that amplify those sequences. Resistance gene analog primers were also designed based on conserved sequences of R genes that were reported in previous studies. Polymorphisms between parental lines are currently being sought. Amplicons that are monomorphic in size on a gel will be digested in restriction enzymes to seek cleaved amplified polymorphism or will be cloned and sequenced to identify any single-nucleotide polymorphisms (SNPs). SNPs will be detected and analyzed utilizing pyrosequencing technology. Polymorphic candidate genes will be placed onto the pepper linkage map by amplification of the same genes in a segregating recombinant inbred line population. If any candidate genes map to the same location as any of our previously identified resistance genes, then there is a high likelihood that the candidate gene actually confers resistance to P. capsici.

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Bacterial Growth on and Degradation of Methyl Bromide Alternatives; Chloropicrin and Methyl Iodide

Chloropicrin and Methyl Iodide are fumigants that are alternatives to methyl bromide, which has been banned because of its ozone depleting properties. Bacteria were isolated that used chloropicrin as a sole source of carbon and energy. Chloropicrin is also known to be degraded by light and abiotic chemical reactions, though biotic factors provide for substantial degradation of the pesticide. Bacteria degraders of chloropicrin; Bacillus sp., Frateuria sp., Streptomyces caelestis, and Rhodanobacter sp. were tested. For all tests bacteria were grown on chemically defined media with chloropicrin (100 PPM), sometimes with casein amino acids and chloropicrin, and with and without light. Strains grown on chemically defined media with glucose were used as a control. For degradation studies, samples were removed from cultures every 24 hours. Growth was measured by optical density and samples were extracted with ethyl acetate and sodium sulfate for gas chromatography analysis. A growth curve, a viable count, protein assay, and SDS-PAGE gel were performed on Rhodanobacter sp. cultures sampled after 300, 600, and 900 minutes of growth on chloropicrin. Oxygen uptake assays were performed on Frauteria sp. grown on chloropicrin to compare consumption rates of oxygen when fed chloropicrin or methyl iodide. Degradation of chloropicrin occurs with or without the addition of casein amino acids; however, the addition of casein amino acids increases the rate of degradation and increases cell counts. Growth curves for Rhodanobacter sp. show that growth rate was superior on chloropicrin media until 500 minutes, but bacteria grown on dextrose had higher protein content per cell. Oxygen consumption for Frauteria sp. on methyl iodide and chloropicrin were similar; suggesting, that the same biochemical pathway is used to degrade both compounds. More study is needed to determine to optimize degradation of chloropicrin and methyl iodide.

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A Reverse Genetics Study of Vlp, a Potential Virulence Factor, from Pseudomonas aeruginosa

Pseudomonas aeruginosa is an opportunistic human pathogen and its pathogenicity mechanism has been the focus of vigorous research. Vfr, a member of the CRP-FNR superfamily of bacterial transcription factors, has been known to be important for P. aeruginosa virulence. In this study, we have found a protein sequentially very similar to Vfr (termed Vlp; Vfr-like-protein) from the genome of P. aeruginosa and have tested the involvement of the protein in the virulence mechanism. For this, we have acquired putative mutant strains of P. aeruginosa devoid of the vlp gene, confirmed one of the two strains as an authentic vlp-deleted P. aeruginosa mutant and tested the impact of vlp deletion on P. aeruginosa pathogenicity using a fruit fly model. First, a mutant devoid of the vlp-deleted gene was confirmed in a P. aeruginosa strain through the isolation of genomic DNA, PCR amplification and agarose gel electrophoresis. Then, a set of 10-fold serial dilutions at OD600nm2.0 was created to identify the proper dilution that would kill the aged-match male flies in a window of 24 to 72 hours. Next, the vlp-deleted P. aeruginosa (HYX 68) was injected into male fruit flies (Drosophila melanogaster), along with wild-type P. aeruginosa strain (HYX35). Subsequently, experiments were set to inject with HYX35 and HYX68, using bacterial dilutions of 0.2 and 0.02. The results so far have revealed that the vlp-deleted mutant behaved much like the wild-type P. aeruginosa, implying that Vlp has a minor role in P. aeruginosa virulence. Currently, other potential impacts of Vlp on P. aeruginosa physiology are under investigation.

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Evaluation of the 5Cs Training Model for Consultations for Undergraduate Medical Education

Effective communication during physician consultation is a critical component of healthcare. The objective of our study is to determine if the 5Cs training model of consultation produces more effective consultations for undergraduate medical education students. Also, we want to determine if trained medical students feel more confident during a consultation after the 5Cs training. Third and fourth year medical students from geographically diverse medical schools who were completing a four-week Emergency Medicine rotation were asked to participate in the prospective, randomized, multicenter, single-blinded controlled study.

Students that agreed to participate in the study were consented and randomized into the control group or one of the two arms of the intervention group. The intervention group had an educational intervention-live arm and an educational intervention-asynchronous arm. We used a process of block randomization to prevent students from discussing the 5Cs with one another. The educational intervention-live arm received a classroom-based lecture on the consultation process and the 5Cs model, and the educational intervention-asynchronous arm received an asynchronous learning module of the same topic. The control group received other didactic learning without discussion of the 5Cs. Raters listened to the medical students consultations and filled out a checklist data form, without revealing the results with the student. Each student needed to complete four consultations as well as a post-test survey to gather basic demographic information. Each group is going to have approximately 80 students for a total of 240 students and our site is still recruiting participants.

We are in the process of analyzing the data of each group’s checklist scores. We will take the average score for all four checklist ratings as well as compare across the groups their individual scores of each chronological assessment. The hypotheses will be tested by a 2x2 between-subjects analysis of variance.