35th ANNUAL CENTRAL CALIFORNIA RESEARCH SYMPOSIUM

PROCEEDINGS OF THE 2014 SYMPOSIUM

Convened on

Thursday, April 24, 2014

in the

University Business Center

California State University, Fresno

35th 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

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

California State University, Fresno

Thursday, April 24, 2014

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PREFACE

Welcome to the *35th 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 presentations. *California School of Professional Psychology at Alliant International University* has provided two cash awards for the best poster and oral presentations by a student. The *American Chemical Society, San Joaquin Valley Section* has sponsored a cash award for best chemistry 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* has provided a cash award for best poster presentation. The *Educational Employees Credit Union* has sponsored an award for best 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.
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Loren Alving, M.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

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Jason Bush, Ph.D.
Daniel Cady, Ph.D.
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Doug Carey
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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 2014

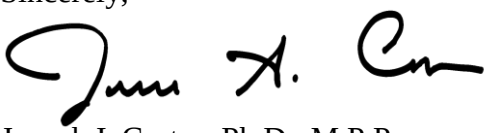
MESSAGE TO ALL RESEARCH SYMPOSIUM PARTICIPANTS

California State University, Fresno is pleased to serve as the host campus for the 35th 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,



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WELCOME

35th Annual Central California Research Symposium
April 24, 2014

It is my pleasure to welcome each of you to the 35th 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, MD
Associate Dean, UCSF Fresno Medical Education Program
Assistant Clinical Professor of Pediatrics, UCSF

CSPP CALIFORNIA SCHOOL OF PROFESSIONAL PSYCHOLOGY
ALLIANT INTERNATIONAL UNIVERSITY

April 9, 2014

Dear Symposium Participants,

The California School of Professional Psychology (CSPP) at Alliant International University is proud to be a sponsor of the 35th Annual Central California 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

Concurrent Session A

University Business Center
Auditroium, Room 191

9:00 a.m. ***Role Of Phe-Phe Hydrophobic Interactions in Intrinsically Disordered Proteins from Yeast Nucleoporins***
Korey M. Reid, Viswanathan Krishnan

9:15 a.m. ***Emissions of Vocs And Methane from a Central California Dairy***
Catalina Olea, Aroob Abdelhamid, Segun Ogunjemiyo, Shawn Ashkan, Julie Steele, Srikar Middala, Kennedy Vu, Laxmi R. Addala, Lucien Nana, Austen Scruggs, Reynaldo Luna, Alam Hasson

9:30 a.m. ***Product Yields from the Reaction of Isoprene with OH Under Low Nox Conditions***
Jaime R. Green, Lucas Algrim, Nick Vizenor, Geoffrey Tyndall Alam S Hasson

9:45 a.m. ***Se-Enriched Tall Wheatgrass Hay as a Substitute for Sodium Selenite in the Diets of Dairy Cattle***
Grace S. Cun, P.H. Robinson, Sharon Benes

10:00 a.m. ***Screening for Glyphosate-Resistance in Palmer Amaranth (Amaranthus Palmeri) Populations of California's San Joaquin Valley***
Sonia I. Rios, Steven D. Wright, Anil Shrestha

10:15 a.m. Break – University, Business Center, Gottschalks Gallery
10:30 a.m. Concurrent Session Resume

Concurrent Session B

Univeristy Business Center
Room 192

9:00 a.m. ***Spreads and Parallelisms***
Megan Kuneli, Oscar Vega

9:15 a.m. ***Blocking Polygons in Finite Projective Planes***
Karen Willism Oscar Vega

9:30 a.m. ***The Dubrovnik Polynomial of Rational Knots***
Katherine Urabe, Carman Caprau

9:45 a.m. ***Preconditioned Multigrid***
Elda Bautista, Doreen De Leon

10:00 a.m. ***The Kauffman Bracket for Virtual Singular Links***
Kelsey Friesen, Thoa Tran

10:15 a.m. Break – University, Business Center, Gottschalks Gallery
10:30 a.m. Concurrent Session Resume

Concurren Session C

University Business Center
Room 194

9:00 a.m. ***A Kinetic and Mechanistic Study of Isoprene Hydroperoxide with Ozone***
Aroob Abdelhamid, Vinay Kumar, Austen Scruggs, Edwin Lozano, Dr. Alam Hasson

9:15 a.m. ***Synthesis towards a stabilized Zampanolide Analog as an Anticancer Agent***
Rubing Wang, Nithya Subrahmanyam, and Qiao-Hong Chen

9:30 a.m. ***Synthesis and Characterization of Nd Nanoparticles***
Maya Castro de La Torre, Ryan Fukuda, Dennis Margosan, Saeed Attar, Melissa Golden, Pei-Chun Ho

9:45 a.m. ***Efficient Wireless Power Transfer (WPT) for Microscale Biosensors over Mid-Range Distance with Magnetically Resonant Coils***
Abhijit Suprem, Nagy Bengiamin

10:15 a.m. Break – University, Business Center, Gottschalks Gallery
10:30 a.m. Concurrent Session Resume

Concurrent Session D

University Bussiness Center
Auditroium, Room 191

10:30 a.m. ***Characterization of Self Dual Lattices in R, R^2, and R^3***
Comlan de Souza, David Kammler

10:45 a.m. ***Numerical Simulations Of Near-Nozzle Exit Characteristics For An Effervescent Atomizer At Low Gas to Liquid Mass Flow Ratio***
Deify Law

11:00 a.m. ***Use of Synchrophasors for Fault Area Detecion And Monitoring – A New Scheme***
Laura N Valencia Navarro

11:15 a.m. ***Android Mobile Security Enhancement Using a Hybrid Approach***
Gautam Bagaria and Jin Park

11:30 a.m. ***The Economy Impact of Jordan Research Center Construction in Fresno County***
Ran Wei, Dr. Pei Xu, Dr. Daming Zhang

11:45 **Break -- University Business Center, Gootschalks Gallery**
12:00 **Plenary Session – University Business Center, Auditroium, Room 191**

Concurrent Session E

Univeristy Business Center
Room 192

10:30 a.m. ***Navigating Citizenship How Histories of Immigration Affect Voting***
Marie Lerma, Loretta Kensinger

10:45 a.m. ***The Daughters of Sojourners: The Yemeni-American Female's Experience in Education***
Gokh Alshaif, Noor Qwfan, Kent Price

11:00 a.m. ***Secure and Anxious Attachment Styles in Relation to the Use of Nonverbal Immediacy***
Carolina Alvarez, Taron Tadevosyan, Leslie Ramos-Salazar

11:15 a.m. ***Online Dating and American Culture: Economy, Serendipity, and Self-Construction in Memoirs of Internet-Mediated Courtship***
Andrew Anguiano, Todd Ormsbee

11:30 a.m. ***Riot Grrrl and Third Wave Feminism: Creating Space, Challenging Norms and Shaping a Generation***
Sasha Bassett, Tanya Bakhru

11:45 **Break -- University Business Center, Gootschalks Gallery**
12:00 **Plenary Session – University Business Center, Auditroium, Room 191**

Concurrent Session F

University Business Center
Room 194

10:30 a.m. ***Untangling the Grim Web: Women's Hair as Rhetorical Space in the Victorian Dramatic Monologue***
Michael Gray, Ruth Jenkins

10:45 a.m. ***Health and Mental Health Assessments of Informal Caregivers of Cancer Patients***
Elizabeth Kenerly, Martha Vungkhanching

11:00 a.m. ***MSW Student***
Nadine Mejia, Martha Vungkhanching

11:15 a.m. ***Distress in Cancer Patients Receiving Life-Sustaining Treatment***
Martha Vungkhanching, Elizabeth Kenerly

11:30 a.m. ***Conceptualizing Health and Health Seeking as Agency and Resistance among Older Mexican immigrant Men in California's Central Valley***
Tania L. Pacheco

11:45 **Break -- University Business Center, Gootschalks Gallery**
12:00 **Plenary Session – University Business Center, Auditroium, Room 191**

Plenary Session

University Business Center
Auditroium, Room 191

12:00 p.m. Opening Remarks and Welcome

Dr. Thomas McClanahan, California State University, Fresno

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

12:25 p.m. ***Analysis of Visual Characteristics related to Control of Travel Direction in Navigation of Ants***
Carson Hoffman, David D. Lent

12:40 p.m. ***Monsters, Meat, and Monopoly: Rio de Janeiro's Meat Market, 1850-1889***
Jordan Lapadula, Maria De Souza Lopes

12:55 p.m. ***The Determination of the Electrochemical Heterogeneous Rate Constants of Gold Nanoparticles with Different Alkanethiolate Ligands***
Hafez Alawdi, JaiPil Choi

1:15 p.m. Break – University Business Center, Gootschalks Gallery
1:30 p.m. Concurrent Sessions Resume

Concurrent Session G

University Business Center
Auditorium, Room 191

1:30 p.m. ***Expression of Thiol Biosynthetic Genes and Peroxiredoxins in Mycobacterium Smegmatis***
Ruzan Orkusyan, Derek Vargas, Mamta Rawat

1:45 p.m. ***Antimicrobial Effects of Curcumin Analogues against Select Bacteria***
Samantha Hartanto, Mamta Rawat

2:00 p.m. ***Comparison of Personal Exposure of Bicyclists to PM2.5, Black Carbon (BC), and Ultrafine Particles in Indoor and Outdoor Air.***
Melany Bunting, Yai Xiong, Sally Lam, Ezechimere Nwachukwu, Ku Lee, James Davis, Ashley Aliotti, Harshavardhan Deoghare, Jaymin Kwon

2:15 p.m. ***LGBTQQIA Communities and Relationship Violence: Investigating Attitudes, Beliefs, and Perception of Service Needs***
Amanda Dougherty, Jennifer Morazes

2:45 p.m. Break – University Business Center, Gootschalks Gallery
3:00 p.m. Concurrent Sessions Resume

Concurrent Session H — University Business Center Room 192

1:30 p.m. ***The Exploration of Dance Film Production***
Jessica Arnold, Kenneth Balint

1:45 p.m. ***The Hidden effects of Telenovelas***
Vania Alfaro, Susy Zepeda

2:00 p.m. ***The Relationship between Child Maltreatment and Socioemotional Development of Children in the First Two Years of Life***
Alexis Staver, Mark Van Selst

2:15 p.m. ***Curiosity in College Students: Associations with Academic Achievement and Religiosity***
Morgan Sparlin, Kathleeen Dyer

2:30 p.m. ***Peer Influence on First-Generation College Students' Motivation***
Michael West, Jennifer Morazes

2:45 p.m. Break – University Business Center, Gootschalks Gallery
3:00 p.m. Concurrent Sessions Resume

Concurrent Session I

University Business Center
Room 194

1:30 p.m. ***Victim Participation in the Community Justice Conferencing Program and Its Effect on Juvenile Offender Recidivism***
Yongseol Jang, Yoshiko Takahashi

1:45 p.m. ***Cultural Competency: An understanding of Cultural Competency within the Division of Student Affairs at Fresno State***
Brenda Sifuentez, Susana Hernandez

2:00 p.m. ***A Meta-Analysis Examining Sex Offender Treatment Effectiveness among CBT Programs***
Jennifer L. Harrison, Siobhan K. O'Toole, Sue Ammen, Sean Ahlmeyer, Jacinda L. Peltz, Sheera N. Harrell

2:15 p.m. ***Female Youth Incarcerated In The Juvenile Justice System In Central California: A Preliminary Analysis***
Ioana Cebulla, Katie D. Walker, Trisha M. Kivisalu, Paul C. Lebby

2:30 p.m. ***Gender Bias and the Consequences of Those Involved in Teacher-student Sexual Relationships***
Cody Charette, Eric Hickey

2:45 p.m. Break – University Business Center, Gootschalks Gallery
3:00 p.m. Concurrent Sessions Resume

Concurrent Session J

University Business Center
Auditorium, Room 191

3:00 p.m. ***Molecular Evidence of Heartworm Larvae in Field Collected Aedes Sierrensis in Eastern Madera County, California***
Jessica S.Tyson, Paul R. Crosbie

3:15 p.m. ***Characterizing the linker region of DgcZ***
Cameron Pospisil, Joel Curiel, Kenneth Cadiente, Jacob Gringold, Hwan Youn

3:30 p.m. ***Thiol-dependent Detoxification of Aldehydes and Nitric Oxide in Mycobacterium smegmatis***
Derek Vargas, Mamta Rawat

3:45 p.m. ***Elucidating the Synthesis of Methyl Farnesoate in the Tissues of the Tadpole Shrimp, Triops longicaudatus***
Alan Terusaki, Brian Tsukimura

4:30 p.m. Conculuding Address – Alice Peters Auditroium, Room 191
Dr. Thomas Holyoke
"Eureka Moments"
Department of Political Science, California State University, Fresno

Proceed to Student Awards Presentations and Social Hour

Concurrent Session K

University Business Center
Room 192

3:00 p.m. ***Cardiopulmonary arrest in pregnancy: Who will die? A case series***
Theresa L. Gipps, Pamela L. Emeney, Alfred G. Peters, Conrad R. Chao

3:15 p.m. ***Emergent Cerclage: McDonald is superior to Wurm-Hefner procedure***
Jolyn Chen, Michael O'Shaughnessy, Alfred Peters, Conrad Chao

3:30 p.m. ***Predictors of Poor Birth Outcomes among Hmong Women in California's Central Valley***
Kao Tang Ying Moua, Cynthia Cortez, Fenglaly Lee, Alfred G. Peters Jr., Conrad Chao

3:30 p.m. ***The Impact of Ambivalent Sexism on Individual Perceptions and Career Expectations***
Ivy Rivera, Jill Bradley-Geist, Susan Geringer

3:45 p.m. ***Parental Satisfaction over Time When Children Are Not Given Antibiotics for Upper Respiratory Infections***
Alex Moir, Dee White, Susan Hughes

4:00 p.m. ***The Effects of Reciting the Lord's Prayer and Resisting the Urges to Commit Suicide in Patients with Posttraumatic Stress Disorder (PTSD)***
Hani Raoul Khouzam

4:30 p.m. Conculuding Address – Alice Peters Auditroium, Room 191
Dr. Thomas Holyoke
"Eureka Moments"
Department of Political Science, California State University, Fresno

Proceed to Student Awards Presentations and Social Hour

Concurrent Session L

University Business Center
Room 194

3:00 p.m. ***"French Cafés and its Present Perception"***
Chiara Nardocci, Kao-Ly Yang

3:15 p.m. ***A Taste of French Culture: The Patience to Their Cuisine***
Ricardo Vargas, Kao-Ly Yang

3:45 p.m. ***University On-Campus Textbook Stores: "Convenience or CON-venience?"***
Jonathan Salcedo, Brenda Garcia, David Vera

4:00 p.m. ***From Futility to Hope: The Byronic Hero from Childe Harold to Rochester***
Samantha Crain, Paul Douglass

4:30 p.m. Conculuding Address – Alice Peters Auditroium, Room 191
Dr.Thomas Holyoke
"Eureka Moments"
Department of Political Science, California State University, Fresno

Proceed to Student Awards 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) ***Culturing Clothes: Recreating a 1920s Garment***
Lauryn Moles, Elizabeth Payne

(2) ***Regular Breakfast Consumption and Children's Performance on the California Fitness Test***
Kimberly Rafael, Amber Hammons

(3) ***Mapping of the Grandad site near Mariposa, California***
Shelby Jones, John Pryor, Barry Smith

(4) ***Perception of Elementary School Staff on Child Bereavement***
Rosio Azua-Valdez, Martha Vunkhanching

(5) ***The Efficacy of Concurrent Treatment in Improving Speech Sound Production and Generalization in a Child with a Cochlear Implant***
Karina Harris, Frances Pomaville

(6) ***Effectiveness of an Educational Presentation in Increasing the Knowledge of Fall Prevention in Older Adults Living in Fresno***
Alina Marrone, Peggy R. Trueblood

(7) ***Magnetorheological Shock***
Christopher Pineda, The M. Nguyen

(8) ***Design of a Dynamically Scaled Robotic Bladderwort for Flow Visualization***
Adrienne Olaivar, Otto Berg, Ulrike Müller

(9) ***Acoustic Noise Reduction***
Daniel R. Hairabedian, The M. Nguyen

(10) ***Designing a Robot with Shape Metal Alloy (SMA) as Actuator and Controlling it with Arduino***
Johnny Vang, The M. Nguyen

(11) ***Magnetorheological (MR) Fluid Brake for Prosthetic Knee***
The Nguyen, Vicente J. Munguia

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) ***Vertical Axis Wind Turbine Dynamic Analysis***
Jose Angeles, The M. Nguyen

(13) ***Synthesis and Cytotoxic Evaluation of Genistein Analogs as Anticancer Agents***
Pahoua Xiong, Eduardo Delatorre, Xiaojie Zhang, and Qiao-Hong Chen

(14) ***Structure-Activity Relationship Studies on Curcumin-Based Anticancer Agents***
Rubing Wang, Joshua Keith, Xiaojie Zhang, Nithya Subrahmanyam, Guanglin Chen, Qiao-Hong Chen

(15) ***Redox Active Organic Signatures in Particulate Matter***
Kylie Markarian, Alam S. Hasson, Kennedy- Kiet T. Vu, Catalina Olea, Annabelle Lolinco, James Baroi, Clarissa Nino, Robyn Verhalen, Teagan Zoldolske, Sowmya Tummala

(16) ***Real Time Monitoring of Enzyme Kinetics by Nuclear Magnetic Resonance (NMR) Spectroscopy***
Cheenou Her, Aaron P. Alonzo, Justin Y. Vang, Ernesto Torres, Krish Krishnan

(17) ***Study of the Regulatory Role of Bcl-2 Family Proteins on Lactic Fermentation***
Miriam Ahmad, Bushra Mahmood, Jessica Wilson, Laurent Dejean

(18) ***Stability and Proteases Resistance of Camelidae Nanobodies for the Development of Oral Therapeutics***
Samariah Bautch, Mohammadreza Movahedin, Jyothi Kumaran, Robert Gene, C. Roger MacKenzie and Cory L. Brooks

(19) ***Specific Quantification of Activated Bax Using a Conformation-specific ELISA Method***
Ashley Peton, Rhaul Llanos, Navneet Kaur, Laurent Dejean

(20) ***Isoprene Hydroxynitrates***
Austen Scruggs, Aroob Abdelhamid, Vinay Kumar

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) ***Nitrogen Uptake of Glyphosate-susceptible and Glyphosate Resistant Horseweed and Hairy Fleabane Seedlings***
Hannah Pacheco, Anil Shrestha

(2) ***Spent Oyster Mushroom (Pleurotus ostreatus) Substrate as a Pre-emergent Bio-herbicide***
Nadia Juarez, Anil Shrestha

(3) ***Fabrication of SU-8 nanofibers via Electrospinning***
Brian Pham, Marco Antonio Rodriguez, Jaskawal Mann, Lisa Huynh, Harry Calvin Cramer, Selena Romero, Venu Polineni, Anand Gadre

(4) ***Improving Branch Prediction Performance in a Multicore Processor***
Lawton Nichols, Jin Park

(5) ***An Efficient Protection Scheme for Database-driven Web sites from SQL Injection Flaws***
Yogesh Bansal, Jin Park

(6) ***An Invariant for Virtual Singular Links***
Thoa Tran, Kelsey Friesen

(7) ***Specific Heat of Pr1−xNdxOs4Sb12 from 10K to ~300K***
Taylor McCullough-Hunter, Pei-Chun Ho, M. Brian Maple, Tatsuya Yanagisawa

(8) ***Bow-Shock Nebulae in the WISE All-Sky Survey: Around the Celestial Equator***
Kendall P. Hall, F. A. Ringwald

(9) ***Nonaqueous Synthesis of Gadolinium and Neodymium Nanoparticles***
Ryan H. Fukuda, Maya Castro, Pei-Chun Ho, Saeed Attar, Melissa Golden, D. Margosan

(10) ***Thermopower Puck for Measurements of Thermodynamic Properties***
Andres Vargas, Ryan Fukuda, Nicholas Soliz, Pei-Chun Ho

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) ***Variability in Hot Subdwarfs and Related Objects from the Palomar Green Catalog***
Melissa Blacketer, Frederick A. Ringwald

(12) ***Exploring Factors Associated with Enrichment of 'Candidatus Liberibacter solanacearum' in Excised Tomato Leaves***
Nicholas Clark, TariLee Frigulti, Zheng Zheng, John T. Bushoven, Chris Wallis, and Jianchi Chen

(13) ***A Description of Petrolisthes cinctipes and Petrolisthes manimaculis vitellin and the Development of an Enzyme-linked Immunosorbent Assay***
Robert Delmanowski, Brian Tsukimura

(14) ***Neutralization of Listeria Monocytogenes by Single Domain Antibodies***
Ian Huh, Robert Gene, Jyothi Kumaran, C. Roger MacKenzie, Cory L. Brooks

(15) ***Effect of Glutathione on Lifespan in Drosophila Subjected to Stressful Conditions***
Sandeep Gorle, David Lent

(16) ***Metabolomic Analysis of Her2-Positive Breast Cancer Cells***
Malika Sahni, Resmi Ravindran, Jason Bush, Krish Krishnan

(17) ***Polymorphism Analyses in Specific Xenobiotic-Metabolizing Genes of Hispanic Farmworkers from the San Joaquin Valley with Hormone-Dependent Cancer***
Yesenia Thompson, Kathyn Patterson, Malika Sahni, Kenya Covarrubias, Karina Hernandez, Jason Bush, Paul Mills

(18) ***Effect of Nef protein on TNT formation in macrophages.***
Shivalee Gujarathi, Karine Gousset

(19) ***Novel Methods for 3D Spheroid Cultures Using MDA-MB-231 Breast Cancer Isogenic Variants***
William Whalen, Jason Bush

Poster Session III
1:00 p.m. until 2:30 p.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 1:00 p.m. until 2:30 p.m.

(1) ***Empathy, Possessions, and Identity: Defining Ourselves Through Objects***
Raymond Tam, Clifton Oyamot

(2) ***The Psychosocial Contributors to a Healthy Identity Development in LGB Youth During the Coming out Process***
Nisa Faragasso, Russell Arias

(3) ***The Relationship Between Personality Traits and Polydrug use***
Pauline Bayati, Sean Laraway

(4) ***A Comparison of Intensifier and Non-Intensifier Labels on Likert-Type Scale Responses***
Ryan Welker, Monica Kiser, and Ronald Yockey

(5) ***Fresno State Psychology Alumni's Perception of Their Major: Differences Between First Generation and Non-First Generation College Students***
Judith Gagnebin, Constance J. Jones

(6) ***The Psychosocial Contributors to Identity Development in Multiracial Youth Within the Bay Area***
Janora Davis, Russell Arias

(7) ***Spirituality and Experiential Avoidance in Social Anxiety***
Elizabeth Mejia-Munoz, Jennifer A. Gregg

(8) ***Education (In)Equality: Institutional Organization and its Effects on Latino Students***
Gabriela Gonzalez, Claudio Vera Sanchez

(9) ***A 3-Year Evaluation of Graduates from the Fresno County Post Conviction Drug Court***
Helen B. Miltiades, Virginia Rondero Hernandez

(10) ***Mitochondrial Gene Loss Following Whole Genome Duplication in Xenopus Laevis***
Andres J. Nevarez, Adam Session, Daniel Rokhsar

Poster Session III continued
1:00 p.m. until 2:30 p.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 1:00 p.m. until 2:30 p.m.

(11) ***Ocean Acidification Effects on Copepod Mortality***
Robin Michele Lopez, Brian Tsukimura

(12) ***Identification of Disrupted Genes in Mycobacterium Smegmatis***
Alisha Ramlan, Mamta Rawat

(13) ***Exploring Speciation in Caenorhabditis Briggsae Through Mitochondrial Dysfunction in Hybrids***
Joel Rodriguez, Joseph A. Ross

(14) ***Spatial Learning Assessment in Split-Brain Periplaneta Americana***
Matthew Pomaville, Sheyla Aucar, David D. Lent

(15) ***Metabolic Profile of Irradiated Embryonic Stem Cells***
Carrie Tambo, Malika Sahni, Megha Kumar, Jason Bush, Krish Krishnan, Amir Huda

(16) ***Current Strategies in Eradicating Pancreatic Cancer Stem Cells by Targeting the Hedgehog Pathway***
Kristin Herring, Lulu Wong, Alexander Tran

(17) ***Quantification of Fat Levels in Nematodes Suffering From Hybrid Dysfunction***
Chih-Chiun Jamie Chang, Joseph Ross

(18) ***Learning and Memory Deficits Associated with Overexpression of The Alzheimer's Disease Associated Protein Tau in Drosophila Melanogaster***
Daeun Hwang, Anhad Gujjar, Joy Aparicio Valenzuela, Nischint Gondara, Pallavi Bekal, David D. Lent

(19) ***Comparative Study of DNA Specificity in CooA and CRP***
Hwan Youn, Austin Mendoza, Susana Mariscal Chavez, Geil Merana

(20) ***Polymorphism Analyses in Specific Xenobiotic-metabolizing Genes of Hispanic Farmworkers from the San Joaquin Valley with Hormone-dependent Cancer***
Yesenia Ibarra, Kathryn Patterson, Kenya Covarrubias, Karina Hernandez, Malika Sahni, Jason Bush, and Paul Mills

Poster Session IV
3:00 p.m. until 4:30 p.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 3:00 p.m. until 4:30 p.m.

(1) ***The Effects of Choice on Memory***
Kara Sidorowicz, Karl Oswald

(2) ***Self-Harming Behavior in Individuals with Disorders of Sex Development***
Jennie Hosey, Tamar Kenworthy

(3) ***Moral Injury in Combat-Related PTSD***
Megan Pollock, Amy Mouanoutoua, Katie Walker, Paul C. Lebby

(4) ***Performance of Traumatic Brain Injured Versus Other-Brain Injured Children and Adolescents on the Lebby-Asbell Neurocognitive Screening Examinations***
Brittany Cunningham, Denise Hinshaw, Sukhjit Mann, Alinna Card, Don Vercellini, Paul Lebby

(5) ***Psychological Well-Being and Hypertension in Elderly in Rural Vietnam***
Ioana Cebulla, Kristina Reynolds, Suni Petersen

(6) ***Using Self-Authorship Theory to Elevate Student Success***
Byron Harwell, Cheri Cruz

(7) ***A Novel Class of Potential Anticancer Agents Inspired by Dietary Curcumin***
Chengsheng Chen, Rubing Wang, Xiaojie Zhang, Qiao-Hong Chen

(8) ***Cytotoxic Evaluation of Curcumin-Based Anticancer Agents Against Hela Cells***
Xiaojie Zhang, Rubing Wang, Guanglin Chen, Laurent Dejean, Qiao-Hong Chen

(9) ***Structural Basis for Antigen Recognition of a Tumor Specific Therapeutic Antibody***
Mohammadreza Movahedin, Teresa M. Brooks, Madi Madiyalakan, Cory L. Brooks

(10) ***Synthesis, Purification, Characterization, and Gas Phase Studies of Atmospherically Relevant and Model Hydroperoxides***
Edwin I. Lozano, Truc D. Le, Emilio L. Cardenas, Nicholas M. Vizenor, Austen K. Scruggs, Alam S. Hasson,Santanu Maitra

Poster Session IV continued
3:00 p.m. until 4:30 p.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 3:00 p.m. until 4:30 p.m.

(11) ***Development of Apolipoprotein E (Apoe) Modulators Based on Triarylmethyl Amine Pharmacophore Using Structure-Activity Relationship (SAR) Studies.***
Jhonnathan Brawley, Santanu Maitra

(12) ***Electronic Effects On Double Bond Character: NMR Studies of Substituent Effects In Para- And Meta- DEET Analogs as a Model System.***
Salvador Vazquez, Quyen A. Nguyen, Kalyani Maitra, Viswanathan Krishnan, Santanu Maitra

(13) ***Characterizing Spectroscopic Properties of N-Methylfulleropyrrolidines***
Randy Espinoza, Zinab Alsubhi, Jai-Pil Choi

(14) ***Development of Small Chalcone and Analogous Organic Molecules for Apolipoprotein E (Apoe) Modulation Through a Structure-Activity Relationship (SAR) Study***
Emilio L. Cardenas, Kalyani Maitra, Santanu Maitra, Irfan Tamboli, William G. Rebeck

(15) ***The Anti-Apoptotic Proteins Bcl-2 and Bcl-Xl Differentially Affect Citrate Synthase Activity, a Mitochondrial Marker of Oxidative Energy Metabolism'***
Dejean, L. Wilson, Laurent Dejean

(16) ***The Effects Of BMAA, an Environmental Neurotoxin, on Learning and Memory in Fruit Flies***
Shayan Zoghi, Joy J. Goto

(17) ***Concentrations of Selected Organics and Reactive Oxygen Species Generation From PM 2.5 Extracts***
James A. Baroi, Sowmya Tummala, Kennedy-Kiet T. Vu, Annabelle Lolinco, Kylie Markarian, Clarissa Niino, Robyn Verhalen, Catalina Olea, Alam S. Hasson

(18) ***Improving Nutrition Iq: Results of an Interactive Peer-To-Peer Intervention in A High-School Setting***
Madison Hope Espinosa, Gabriela Alquinzon, Isiah Aranda, Aleija Trice, Renee Kinman

Poster Session IV continued
3:00 p.m. until 4:30 p.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 3:00 p.m. until 4:30 p.m.

(19) ***Renal Cell Carcinoma: Retrospective Analysis of Outcomes in Patients Treated with Cytoreductive Nephrectomy***
Andrew Yue, Jaynesh Patel, Terence Sio, Nick Youssefi, Christopher Russo, Melanie Soch, Uzair Chaudhary

(20) ***Self-Reported Reasons Why HIV/Aids Patients Miss Appointments in a Metropolitan Specialty Clinic***
Sam Wijesinghe, Ivan Gomez, Susan Hughes, Alex Moir, Roger Mortimer, Simon Paul, MD

(21) ***Comparison of International Normalized Ratio Values to Bleeding and Coagulation-Related Complications in Patients on Warfarin***
Christopher A. Nerantzinis, Subathra Murugaiah, Robert Tevendale, John Zweifler, Roger Mortimer, Susan Hughes, Linda Ly

(22) ***Arthritis, Monkeys, and a Case for Movement***
Sierra Madden, Erinn Madden

Judges for Undergraduate and Graduate Oral and Poster Presentations

Dr. Loren Alving	University of California, San Francisco
Dr. Jason Bush	California State University, Fresno
Dr. Comlan DeSouza	California State University, Fresno
Dr. Kathleen Dyer	California State University, Fresno
Ms. Marie Fisk	California State University, Fresno
Dr. Joseph Gandler	California State University, Fresno
Dr. Alam Hasson	California State University, Fresno
Dr. Howard Hendrix	California State University, Fresno
Dr. Robert Hierholzer	VA Medical Center-Fresno
Dr. Donna Hudson	University of California, San Francisco
Ms. Susan Hughes	University of California, San Francisco
Dr. Thomas McClanahan	California State University, Fresno
Dr. Mamta Rawat	California State University, Fresno
Dr. Ellen Shimakawa	California State University, Fresno
Mr. Rick Stewart	Fresno City College
Dr. Brian Tsukimura	California State University, Fresno
Dr. Oscar Vega	California State University, Fresno

Moderators for Oral Presentations:

Mr. Doug Carey	California State University, Fresno
Dr. Carmen Caprau	California State University, Fresno
Dr. Daniel Griffin	California State University, Fresno
Dr. Ellen Shimakawa	California State University, Fresno
Dr. Brian Tsukimura	California State University, Fresno
Dr. Oscar Vega	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)

Aroob Abdelhamid, Alam Hasson, Ph.D.
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A Kinetic and Mechanistic Study of Isoprene Hydroperoxide with Ozone

Isoprene accounts for 30-50% of non-methane emissions in the atmosphere, and thus plays a large role in determining how the atmosphere behaves. The atmospheric degradation of isoprene has shown to make secondary organic aerosols, particles that have been proven to have negative effects on human health. Understanding these compounds is important to eventually remedy these problems. One intermediate that shows up in these oxidations is the peroxy radical, and this radical directly has a role in producing these secondary organic aerosols, as its products are hypothesized to condense into the particles. This study set out to determine the product yields of the reaction of hydroperoxides with ozone. Past research indicates that hydroperoxide fragments in a mass spectrometer. This study has seen the mass of an unfragmented hydroperoxide for the first time. The rate of reaction with ozone has been limited to a rate slower than 10-19 cm3.molecule-1.sec-1. Results of this experiment will be discussed.

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The Determination of The Electrochemical Heterogeneous Rate Constants of Gold Nanoparticles with Different Alkanethiolate Ligands

The surface-dependent electrochemical properties of molecule-like gold nanoparticles, Au25L18, were studied. Seven alkanethiolate ligands with an increase of one carbon in the carbon chain were used in this study, and were as follows: 1-Hexanethiol, 1-Heptanethiol, 1-Octanethiol, 1-Nonanethiol, 1-Decanethiol, 1-Undecanethiol, and 1-Dodecanethiol. The diffusion coefficients for each alkanethiolate-coated monolayer protected clusters with Au25 core were calculated using the cyclic voltammograms obtained and corrected for the percent of ligand exchange determined by 1H NMR spectroscopy. The electrochemical heterogeneous rate constants were then calculated using the corrected diffusion coefficients and were found to decrease as the length of the alkanethiolate ligands increased. Computational corrections of the cyclic voltammograms through computer simulations were then used to correct the heterogeneous rate constants and a comparison against the theoretical values revealed that the experimental heterogeneous rate constants were within the same order of magnitude.

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The Hidden Effects of Telenovelas

This paper examines the effects that telenovelas have on the American-born Latina community. Telenovelas are considered part of the Mexican culture due to its dedicated viewers and the financial support it gains over the Mexican film industry. These programs are highly respected for their rich history within the Mexican culture and it is almost impossible for telenovelas to disappear permanently within the popular media. Spanish networks in the U.S. are constantly airing telenovelas in order to offer the growing Latino population what they want in an English-speaking dominated television industry. The collaboration and conversations I had with my Latina participants offered me an in-depth look in their private life. One of my questions asked participants to reflect on how their lives are structured by these programs. This would eventually reveal how many of my participants have already felt the pressure and expectations from family members, especially from the women. Another participant knew that she would face even more obstacles since raising children was something that she did not want. Additionally, I questioned how a girl would feel knowing that she does not want to have a happy ending with a man. Instead of using a simple survey distributed to the masses, I had in-depth one on one interviews with my participants allowed me to go deeper into this topic by uncovering their true feelings toward the subjects and messages exploited in these programs. I decided to focus on quality instead of quantity since the feelings of women were more valuable than statistics. In the end, I learned that there are numerous benefits and problems toward female telenovela viewing.

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Secure and Anxious Attachment Styles in Relation to The Use of Nonverbal Immediacy

This study investigated the associations between attachment styles and nonverbal immediacy behaviors. The attachment style theory was used to drive this study's research questions. Attachment styles include secures, anxious-preoccupied, dismissive-avoidant, and fearful-avoidant patterns in relationships. Further, nonverbal immediacy behaviors include behaviors such as smiling, hugging, and eye gazing that are often performed in romantic relationships. Previous research has shown that individuals who use nonverbal immediate behaviors tend to be more satisfied in their relationships. This study sought to explore the associations between the attachment styles and the use of nonverbal immediacy behaviors in romantic relationships. This study employed the survey method methodology and recruited 103 undergraduate communication students by invited them to complete a questionnaire via Qualtrics with the exchange of a small amount of extra credit. The two research questions of this study were analyzed using the one-way ANOVA statistical procedure. This study found that securely attached individuals are more comfortable using nonverbal immediacy in their relationships. However, anxious individuals reported using less nonverbal immediacy behaviors in their romantic relationships. This study also found that attachment styles differ in the use of individuals' use of nonverbal behaviors, such that, those that are secure tend to use them, but non-secure attachment styles such as those individuals who are anxious do not use them. These findings have implications about the predictability and role of attachment style theory in the use of nonverbal immediacy behaviors in romantic relationships. This study revealed that nonverbal behaviors are associated with relational satisfaction in romantic relationships. This study also offers heuristic ideas for future research on the study of romantic relationships. In conclusion, the results of this study created a better understanding for research regarding attachment styles and their profound effects on the ways in which people interact.

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Online Dating and American Culture: Economy, Serendipity, and Self-Construction in Memoirs of Internet-Mediated Courtship

In less than two decades, online dating has become a two-billion-dollar industry. Yet its enduring stigmatization raises the question of how it achieved this meteoric growth, and moreover, how online dating interacts with American ideals of love and courtship. To answer these questions, I first introduce Beth Bailey's concept of the "economy of dating" and provide a historical overview of computer-mediated courtship. This informs my primary analysis in which I analyze six recent memoirs of online dating for the authors' motivations, ideals, and perceptions of Internet-mediated courtship. Bailey explains that laws of scarcity and abundance governed shifts in twentieth-century courtship ideals; I assert that the economy of dating similarly directed the advent of Internet courtship, as my selected memoirs attest to a perceived shortage of relationship-seeking singles in American culture. Online dating then serves as a remedy to this perceived scarcity, though users still express chagrin at their results due to the perceived disparity between online and offline personas and the presumed incongruence between Internet courtship and the romantic ideal of serendipity. Online dating services, however, cannot be dismissed as ineffective. They merely do not work in a way Americans expect. Even so, a shift between the earliest memoir (2005) and the most recent (2013) suggests a decline in the stigmatization of online dating as well as a reconstruction of serendipity: the fabricated personas that proliferate online now contribute to a similarly circuitous yet distinctly new narrative of finding a perfect partner. In this way, online dating responds to economic/historical pressures as it modifies rather than supplants earlier courtship ideals.

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The Exploration of Dance Film Production

Have you ever wondered what happens when dance and film pursue an artistic adventure together? I have; and I am not referring to dance movies such as the Step Up series produced by Summit Entertainment, however fabulously entertaining such movies may be. I am speaking of the artistic work where dance is communicating something intimate, and the film is participating as the equally important role of the recipient and translator of the message. I have delved into a cultural study of dance video with a focused look on videos that possess the specific intent of portraying a story or concept through dance. Some of the modern video dance works I have examined so far include Away From Here and The Time It Takes by Katrina McPherson, Pina by Wim Wenders, and Harris by Michael Cook. I am in the process of viewing an expansive array of dance films, as well as referencing the relevant scholarly and artistic reviews of the dance film artworks where applicable. Through the research of these dance films, I am developing a wider cultural lense and appreciation for this art form, while also expanding my own artistic vision. To culminate my research through the study of dance films, I will produce my own fifteen minute dance film that pulls from the experience, techniques, and artistic ventures of the artists and dance films I have been studying. In my dance film I will focus on keeping the integrity of both the video manipulation and the dance choreography. The finished project I plan to present will be evidence to the artistry of dance film and an encouragement for future exploration in video dance production.

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Android Mobile Security Enhancement Using a Hybrid Approach

The usage of smart-phone has been rapidly increasing recently, with the development of new versions being able to have processing power competitive to desktop computers. With the technology development, application software market has also been rapidly grown. Studies show that millions of 3rd party application software have been downloaded billions of times. With this growth of accessing the application software, security enhancement has been the critical issue.

In this project, we implemented a hybrid scheme of achieving the higher security for accessing the application software. In general, a user should be granted a permission to access the application and the user is fully responsible for the information provided, e.g., location, contact information, etc. Basically, there appeared two dominant types of methods of accessing applications in the market. The permission based method used by Google asks a user to either provide all the requested information or choose not to install the application. The other method, shadow manifest file approach lets a user install the application first and change the permission information later. In our hybrid scheme, both the normal permission based approach and the selective permission policy with the k-means analysis help to detect malicious applications and provide users knowledge about the types of data being used by each application.

To test the efficiency of the hybrid scheme, we built a simulation model and forcefully injected some pieces of spyware and malware into the mobile phone. The simulation model lets a user fully aware of the kinds of information being invaded by an application and gives control to the user to either terminate the process or view the false input information. One overhead from the implemented hybrid approach is that users should set everything manually, but it is manageable since a user generally does not install and use more than few handful applications on his/her smart-phone.

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Riot Grrrl and Third Wave Feminism: Creating Space, Challenging Norms and Shaping a Generation

This study examines the relationship between the third-wave feminist movement and the riot grrrl movement, and provides insight into how each allowed for the creation and occupation of public spaces. Space, in and of itself, is a powerful social tool allowing individuals the opportunity to identify with groups, voice their opinions, and be recognized publicly. While riot grrrl and third-wave feminism both had the power to create space for women, these spaces varied widely in their tone, notoriety and social capital. Through careful analysis of biographical, journalistic, and scholarly works I will show that third wave feminism and the riot grrrl movement of the 1990s influenced one another in terms of theory and action. I will also investigate their influences on the way women create, identify with and utilize public spaces. Arguing that the polarized nature of these two social movements impeded the overall success of intersectional theory, this study highlights the contributions of third wave feminism and riot grrrl to societal norms and portrayals of women in popular media as well as how the tension between these two groups inevitably impeded the success of both.

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Preconditioned Multigrid

Discretization of elliptic partial differential equations (PDEs) generate large, sparse linear systems of equations. This project has been inspired by the need for efficient and robust numerical methods for solving these PDEs with very few iterations. The examination of larger and larger problems will increase as computer restrictions allow it, so we need to develop a method whose convergence is independent of the number of unknowns. Multigrid is characterized by this and by its rapid convergence and less use of computer memory than other iterative methods. The power of multigrid methods resides in the combination of a simple iterative method, such as the Gauss-Seidel method, and prolongation and restriction schemes. However, multigrid methods are problem oriented and do not always converge in few iterations. We are incorporating the robustness of preconditioners with the power of the multigrid methods. First, we examine the formulation of multigrid methods, multigrid as preconditioner of a projection method (GMRES), and preconditioned multigrid. Then, we compare the performance of the multigrid, multigrid preconditioned GMRES, and the precondi- tioned multigrid methods using three well known preconditioners – SSOR, ILU(0), and AINV– in numerical examples. We can conclude based on the results obtained in the numerical examples that AINV-MG is the most robust and efficient method of the five methods studied in this project. The preconditioner generated by AINV is the sparsest of all preconditioners, and the AINV-MG converges in one digit number of iterations in most cases.

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Comparison Of Personal Exposure Of Bicyclists To PM2.5, Black Carbon (BC), And Ultrafine Particles In Indoor And Outdoor Air.

Ambient air quality in Fresno, California has been an important environmental issue impacting public health for decades. People who participate in outdoor recreational activities such as bicycling are exposed to outdoor pollution. In March 2014, these personal exposures to multiple air pollutants in Fresno were measured while young male adult participants rode stationary bikes in outdoor and indoor locations. PM2.5, ultrafine particles, and black carbon concentrations were measured using real-time monitors. Personal exposures were measured inside of the South Gym on campus of California State University Fresno and outside of the California State University Fresno Foundation near highway 168 for comparison.

PM2.5 concentrations were measured using Dust Trak DRX 8533 and 8534. Using CPC 3007, personal exposures to ultrafine particles were measured. MicroAeth AE51 collected the black carbon concentration. Temperature and humidity were recorded using sensors. The time-location data for each bicyclist was recorded hard copy. It is a within- group experimental design in which all subjects participate in the outside and inside stationary cycling. The heart rate, blood pressure, respiratory rate, and pulmonary function test via a spirometer were measured at baseline, during the test, post-test, and 4 hours after for each condition. Subjects cycled within an hour period under the same cycling protocol while cardiopulmonary and air pollution measurements were conducted throughout testing.

PM2.5 and ultrafine particle concentrations were significantly higher in the outdoor air compared to levels measured in the indoor air. Ultrafine particle concentrations were influenced immediately when wind was blown from a smoke stack broiler of a nearby restaurant. The personal exposure to air pollution levels by location and time are to be analyzed and compared.

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Synthesis and Characterization of Nd Nanoparticles

The study of nanoparticles is currently an area of great interest because they exhibit new and improved properties compared to their bulk material. These properties make them very valuable in numerous applications in areas such as optics, biomedicine, and electronics. Our laboratory has been focused on the synthesis and characterization of neodymium nanoparticles. The neodymium clusters are produced by the reverse micelle method, which consists of creating small spherical cages that are formed around the reactants when the surfactant is combined with a polar and non-polar solvent. A solution containing the reducing agent is then added to produce the desired metallic nanoparticles. The small cages protectively confine the reduced reactant and prevent it from combining into larger size. Liquid-liquid extraction and vacuum filtration are used to separate our products and excess surfactant. Three reverse micelle systems are under investigation for their ability to efficiently form small and stable reverse micelles: hexane/methanol/AOT, heptane/methanol/AOT, and heptane/methanol/DDAB. The Scanning Electron Microscopy (SEM) and the light microscope analysis showed that the most effective micelle system was heptane/methanol/AOT because its resulting neodymium particles were smaller and more uniform in shape. The size of the synthesized particles using this arrangement was in the range of 1-10 micrometers. The system hexane/methanol/AOT produced uniform neodymium particles of 10-30micrometers in diameter while the remaining system did not show any formation of uniform particles.

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Female Youth Incarcerated in The Juvenile Justice System in Central California: A Preliminary Analysis

Adolescent mental health and juvenile justice face enduring challenges in meeting the needs with regards to education, reducing recidivism, and improving services aimed to effectively providing them with the necessary skills and tools to prosper in society. The proposed study focuses on incarcerated females in a Central California institution.

Traumatic Brain Injury (TBI) was measured by the Lebby-Asbell Neurocognitive Screening Examination – Adolescent version (LANSE – A). It was administered to a population of incarcerated females (N = 55) ranging in age from 13 to 17. Demographic data in combination with the LANSE – A was analyzed using SPSS.

The rate of Traumatic Brain Injury (TBI) in this population was 31% (N = 17). Average year of education was high school (M = 9.85; SD = 1.38). Approximately one third of the population resided with their single mother (N = 20; 36.4%). The majority of the sample (N = 86.3%) identified as ethnic minorities (Hispanic, African American, or Multiethnic). Analyses did not yield statistically significant differences between those youth with and without TBI.

Often these adolescents are described as troubled youth who are unable to adapt and adjust to social norms, exhibit impulsivity, poor social judgment, and poor decision-making ability. The limited ability in cognitive functioning can impede progress and completion of educational pursuits. This initial review is aimed to educate and inform researchers about the importance of creating resources and emphasize the importance of female youth staying in school. Offending youth are considered an at risk population and without adequate and effective intervention, they are more inclined to encounter incarceration in adulthood, have difficulty sustaining adult responsibilities, and positively contribute to society. It is essential to improve screening, mental health treatment and educational interventions for minority youth with and without TBI.

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Gender Bias and The Consequences of Those Involved in Teacher-Student Sexual Relationships

The purpose of this study was to determine if a gender bias exists between either participant genders or study condition situations under various conditions. The 287 participants consisted of 195 females and 92 males ranging in age from 18 to 66. An online questionnaire was used to measure participant ratings on a number of dependent variables concerning one of four possible study condition vignettes. The dependent variables were seriousness of the situation, responsibility of the teacher and student, anger toward the teacher, sympathy toward the teacher and student, consequences for the teacher and student, and negative impact upon the student. In addition, the following demographic variables were examined: gender, age, highest education level completed, parental status, and if a parent, the age range of the oldest child.

A number of 2 x 2 ANOVAs and independent samples t tests were conducted to determine a statistically significant gender bias. Results indicated that regardless of the opposite-sex or same-sex study condition, the male teacher was rated to have more anger toward him, more responsibility for the situation, and more substantial consequences, indicating a bias in favor of female teachers. Under the opposite-sex study condition, the female student involved with a male teacher was rated to have a significantly more negative impact upon her than the male student involved with a female teacher. Additionally, across all study conditions female participants rated significantly more seriousness to the situation and a more negative impact upon the student than did male participants.

These results indicate the presence of a gender bias in favor of female teachers regardless of participant gender. Also, female participants seem to be more emotionally invested in the situations than do male participants. The presence of an increased negative impact on female students under just the opposite-sex study condition may also indicate an orientation bias.

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Emergent Cerclage: Mcdonald is Superior to Wurm-Hefner Procedure

Objective: The Wurm-Hefner cervical cerclage procedure has been suggested as an alternative technique for late cervical insufficiency. This technique involves the placement of two perpendicular mattress sutures from 12 to 6 and 3 to 9 o'clock and is believed to be particularly useful for emergent cerclage with an effaced cervix. We sought to determine the relative efficacy of the McDonald versus the Wurm-Hefner procedure for the prolongation of pregnancy when emergent cerclage is performed.

Study Design: Retrospective review was undertaken of all emergent cerclage procedures performed in a single tertiary institution over a seven year period. Records were abstracted for type of cerclage, reason for cerclage, gestational age at time of procedure, and gestational age at delivery. The only types of cerclage procedures performed at this center were Wurm-Hefner and McDonald.

Results: A total of 76 emergent cerclage procedures were identified, of which 59 were McDonald and 17 were Wurm-Hefner. Gestational age at time of procedure was roughly equivalent in the Wurm group compared to the McDonald (143 +/- 4 days (SEM) vs. 136 +/- 2, p=0.10). The mean prolongation of pregnancy for the McDonald (107 days +/- 5 (SEM)) exceeded that of Wurm (89 +/- 10) by more than two weeks and this finding had borderline statistical significance (p=0.063) due to high variance in the Wurm group. However, Kaplan-Meier survival analysis (see figure below) revealed consistent and statistically significantly greater prolongation of pregnancy with use of the McDonald procedure compared to the Wurm-Hefner (P=0.029).

Conclusion: The McDonald cerclage procedure prolongs pregnancy significantly longer than the Wurm-Hefner when used in the setting of emergent cerclage.

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From Futility to Hope: The Byronic Hero from Childe Harold to Rochester

My paper will examine the ways in which the Byronic Hero constantly transforms as other writers imitate and critique Byron's original conception of a man doomed by one inexpiable transgression. In Byron's work, the hero's offense is usually his perceived responsibility for the loss of his Beloved—the one woman he permanently loves, who exerts immense power over the hero's psyche but is unable to do more than torment her lover, since she symbolizes both ideal beauty and unremitting reproach. In Glenarvon, Lady Caroline Lamb replicates but also transforms the Byronic Hero, acknowledging his loss of a Beloved, but critiquing Glenarvon's cruelty to his subsequent lovers, whom he ruins and discards, and suggesting that the hero is not the only one to suffer for his transgression. The greatest nineteenth-century revision of the Byronic Hero occurs in the Victorian era, however, when the Brontë sisters transform him by transforming his Beloved. In Wuthering Heights and Jane Eyre, Heathcliff and Rochester are made Byronic by mistreatment at the hands of their families; and their Beloveds, unlike those of the Romantic era, possess Byronic qualities themselves and are strong enough to help their heroes achieve redemption. Both Brontë heroes overcome their transgressions through suffering and are subsequently rewarded by reunion with their Beloveds. Heathcliff is released thus only after death, but Rochester embraces domesticate life by marrying Jane, and thus he transcends his Byronic past in his own lifetime. The protean nature of the Byronic Hero is thus the product mainly of women writers' engagement.

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Se-Enriched Tall Wheatgrass Hay as a Substitute for Sodium Selenite in The Diets of Dairy Cattle

The San Joaquin Valley (SJV) is California's most productive agricultural region and it houses more than ¾ of California's dairy cows. With increased forage and mineral prices, producers are looking for alternative feeds to mitigate costs without decreasing milk production.

'Jose' tall wheatgrass (TWG) is a highly salt tolerant forage which can be irrigated with saline drainage water which has limited disposal options due to high concentrations of selenium (Se) that pose a hazard to wildlife. In the eastern San Joaquin Valley, soils and forages can be deficient in Se and dairy cattle commonly receive dietary supplements of sodium selenite (NaSe). Irrigation of TWG with saline drainage water could solve this disposal problem and the Se-enriched forage has potential as a locally-produced, feed supplement to replace NaSe and thereby reduce the importation of 'new' Se into the SJV.

Our study utilized Se-enriched (~5 mg/kg of dry matter - DM) TWG hay as a Se source for lactating dairy cows and measured Se accumulation patterns in blood, urine and feces to determine its bioavailability. Three pens of ~310 cows each were fed a similar total mixed ration in a 3x3 Latin Square design over 4-week periods, except that the supplemental Se source differed (i.e., none; TWG or NaSe). The chemical composition of the diets was the same, except for Se which was higher ($P<0.01$) in the TWG and NaSe diets (0.53 and 0.65 mg/kg DM) versus 0.35 mg/kg DM in the control diet. Feeding Se-enriched TWG increased blood Se by 6.4% over control; whereas NaSe increased it by only 4.8%, suggesting slightly higher bioavailability for Se from TWG hay versus NaSe. In contrast, the amount of dietary Se which was apparently digested increased from 47 to 58% with NaSe, but with TWG supplementation there was no increase over control, suggesting lower bioavailability for TWG as compared to NaSe. As Se outputs in the urine did not differ among treatments ($P=0.07$), the apparent metabolizability of Se was higher for the NaSe diet as compared to Control and TWG diets. Overall, the similar metabolizability of Se, in the TWG and the base diet suggests that Se-enriched TWG hay can be used as a value-added Se feed supplement for cattle producers in the eastern SJV who are currently challenged by environmental regulations to reduce the use of trace minerals imported to the SJV in their cattle rations.

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Characterization of Self Dual Lattices in R, R^2, and R^3

This paper shows that the only self dual lattices in R, R^2, R^3 are rotations of Z, ZxZ, and ZxZxZ.

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LGBTQQIA Communities and Relationship Violence: Investigating Attitudes, Beliefs, and Perception of Service Needs

INTRODUCTION: Health care providers and researchers often focus on the heterosexual population when discussing relationship violence. Due to this oversight, researchers and policy makers often do not take into account the reality and stigma of relationship violence in LGBTQQIA communities.

METHODOLOGY: This study employed qualitative research methods to investigate attitudes and perspectives of LGBTQQIA individuals regarding relationship violence and interventions. Data were collected from five focus groups that were conducted at two LGBTQQIA resource centers in two urban settings in California. A brief survey was administered to gather demographic information.

RESULTS: I conducted five focus groups with a total of twenty-four participants and an average of four participants per group. Four main response categories emerged from the discussions: 1) inconsistent knowledge of relationship violence and its prevalence, 2) inconsistent awareness of LGBTQQIA relationship-violence resources, 3) lack of education and outreach, and 4) concern for social and legal acceptance of LGBTQQIA relationships as a priority issue in these communities.

CONCLUSIONS AND IMPLICATIONS: Overall, participants indicated that not enough attention is devoted to addressing LGBTQQIA relationship violence and its prevalence. Participants also expressed concern that although it is beneficial and necessary for LGBTQQIA communities across the nation to advocate for marriage equality, this does not mean that attention should be drawn away from LGBTQQIA relationship violence. The theory of intersectionality provides an important lens from which to view and understand the LGBTQQIA experience regarding relationship violence, as this theory considers contextual factors as well as behavioral and power-imbalance elements of relationship violence. Services and providers can employ this theory to develop necessary, culturally competent resources for relationship-violence education in these communities.

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The Kauffman Bracket for Virtual Singular Links

A classical mathematical knot is a simple closed curve in space, and a link is a disjoint union of knots, which can be linked together. A singular link is an immersion of a circle or a disjoint union of circles in space, which admits only finitely many singularities that are all transverse double points. A singular link diagram is a projection of a singular link into a plane, and contains classical and singular crossings. We call such a diagram a planar diagram.

Virtual knot theory, introduced by Lou Kauffman in 1996, can be regarded as a "projection" of classical knot theory in thickened surfaces. Virtual singular links then can be thought of as immersions of disjoint unions of circles into thickened surfaces. A virtual crossing arises when strands are on opposite sides of the ambient space. A virtual singular link diagram contains then three types of crossings: classical, singular, and virtual crossings. We can think of such a diagram as being non-planar.

To distinguish knots we need knot invariants, which are quantities associated to knots that are independent of the knot diagram. In particular, a knot invariant can be calculated from a given knot and stays the same no matter how we move that knot around in space. The goal of our research is to take known invariants for classical knots and links and extend them to virtual singular links. One such classical invariant is the Kauffman bracket polynomial. Our focus is to come up with relations such that the Kauffman bracket can be extended to a polynomial for virtual singular links. By doing so, we obtain a polynomial invariant for virtual singular links.

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Cardiopulmonary Arrest in Pregnancy: Who Will Die? A Case Series

Objective: We reviewed cases of maternal cardiopulmonary arrest to evaluate whether there were identifiable patterns in maternal comorbid conditions, inciting event, and maternal and neonatal outcome.

Study Design: Two methods were used to identify the target population: pregnant women with in-hospital cardiopulmonary arrest between Jan 2007-12. First, a hospital generated "code report" was reviewed to find women aged 15-50 who suffered cardiopulmonary arrest during pregnancy. Second, a hospital discharge query was performed for ICD-9 diagnoses pregnancy and 'cardiac' or 'respiratory arrest.' Abstracted data included pre-morbid conditions, cause of arrest, invasive procedures including transfusion and intubation, and maternal and neonatal outcome.

Results: A total of 16 pregnant patients were identified with in-hospital cardiopulmonary arrest. Of these, 7 women and 5 neonates died. Seventy-one percent of the fatalities were due to hemorrhage: all arrests secondary to maternal hemorrhage led to fetal or neonatal demise. Other causes of cardiopulmonary arrest were anesthesia (N=4), other pulmonary conditions (N=5), cardiomyopathy (N=1), and trauma {N=1). All mothers with antepartum arrest were delivered via cesarean section. All mothers were intubated and 8 (50%) were transfused blood products. Mortality rates for cardiac arrest during pregnancy (40%) were similar to that of trauma in childbearing age women (50%).0verall and neurologically intact survival was better following arrest in pregnancy than in the general population, consistent with prior studies. No arrests identified in this review were due to suspected homicide or suicide.

Conclusion: Cardiopulmonary arrest due to hemorrhage was a greater contributor to maternal death than arrest due to all other causes combined (P-0.002). In pregnant women, early identification of hemorrhage and expedient treatment may be instrumental in reducing preventable mortality.

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Untangling The Grim Web: Women's Hair as Rhetorical Space in The Victorian Dramatic Monologue

Rhetorical theory has not yet been applied to analysis of Victorian poetry, so my articulation is limited in the range of sources; I hope my scholarship can begin to fill this gap in its attempt to remap how Victorian women are understood through their bodies, their hair, what is said, how language is formed in response, and the role of location and space in these figurings. I will use a conversation between textual analysis of the poems and balance it with some existing scholarship. Scholars such as Elizabeth G. Gitter argue that for the Victorians, hair was a captivating symbol of female power, wealth, and sexuality, an "obvious and ideal vehicle for expressing their notorious—and ambivalent—fascination." Such attitudes are informed by the rich tradition of fairy tales and literature that place a golden-haired heroine at the center or obsess over its magic and mythic qualities, and potential use as a mantrap. This tradition influences subsequent portrayals of golden-haired women, particularly in dramatic monologues of Dante Gabriel Rossetti and Robert Browning. Roxanne Mountford's "On Gender and Rhetorical Space" articulates the idea of rhetorical space, the "effect of location on a communicative event," inclusive of its cultural and material elements and the various uses of space. Drawing on this Victorian fascination and Mountford's theory, I argue that the hair of the females in Rossetti's "Jenny" and Browning's "Porphyria's Lover" act as important rhetorical space where the male speakers find the ability to act on their ambivalent sexual impulses and assert themselves, ultimately, using the form of the Victorian dramatic monologue. Results include new ways of understanding spatial relationships, notions of place, and the link between Victorian women's hair and the text in which they find themselves. Further rhetorical analysis must be done with other Victorian texts to continue this conversation.

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Product Yields from The Reaction of Isoprene With OH Under Low NOx Conditions

Field studies in remote regions have reported unexpectedly high concentrations of hydroxyl radicals (OH) that cannot be fully explained by currently accepted chemical mechanisms. Proposals to account for this discrepancy are a radical recycling pathway from interactions between hydroperoxy radicals (OOH) and organic peroxy radicals (RO2).

$$OOH + RO2 \rightarrow OH + RO + O2$$

These reactions are typically thought to be chain terminating processes that result in the formation of organic hydroperoxides (ROOH).

$$OOH + RO2 \rightarrow ROOH$$

In this work, the OH initiated reactions of isoprene were investigated under low NOx (NO + NO2) conditions to examine the OOH reaction with isoprene peroxy radicals. Experiments were performed in a reaction chamber using long path infra-red spectroscopy and gas chromatography with flame ionization detection to monitor the chemical composition. OH radicals were generated reacting alkenes (2,3-dimethyl-2-butene and trans-2-butene) with ozone. 2-Butanol was added to the reaction mixture to attempt to modulate the OOH concentration. The chemistry was simulated using a chemical model and the radical branching ratio was determined from fits to the experimental yields of two of the major reaction products (methacrolein and methyl vinyl ketone). The radical branching ratio is determined to be 11 %; which is too small to use the contribution of isoprene peroxy radical interactions with OOH to explain the high OH radical concentrations observed in field campaigns.

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A Meta-Analysis Examining Sex Offender Treatment Effectiveness among CBT Programs

Sex offender literature has focused on the importance of recidivism reduction in an effort to increase public safety. While CBT programs are currently considered a mainstream treatment method, it is essential to study recidivism as an indicator of treatment effectiveness. This meta-analysis examined research published since 1970 to determine the overall effectiveness of treatment in reducing recidivism among adult male sex offenders. Treatment time implementation and CBT treatment features were also assessed as moderating variables.

The researchers reviewed each study to determine whether it evaluated treatment effectiveness, as defined by recidivism. Recidivism must have been defined as re-arrest or reconviction for a general, sexual, or violent/combination offense after treatment concluded. Studies that did not include recidivism as outcome data were excluded. Qualifying studies included those utilizing CBT treatments for adult male sex offenders in a community or institutionalized setting. The reported recidivism rates of a treated sex offender sample must have been compared with a control group using similar criteria for both groups. All articles were coded by trained researchers. To ensure inter-rater reliability, all articles were blind coded and discrepancies were discussed until resolved.

Results were computed using Comprehensive Meta-Analysis software from Biostat. A random effects model demonstrated significant overall effect sizes for treatment for general, sexual, and violent/combination recidivism; however multiple indices indicated heterogeneity in the effect sizes. Assessment of treatment time implementation as a moderating variable indicated significant differences in the overall effectiveness of treatment by decade with treatment delivered during the 1990s related to lower levels of sexual and violent recidivism. Finally, the difference between studies with a cognitive-behavioral treatment feature of relapse prevention was more statistically significant than studies with a combination of relapse prevention and Risk-Needs-Responsivity in relation to general recidivism. The implications and limitations of these results will be further discussed.

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Antimicrobial Effects of Curcumin Analogues Against Select Bacteria

Curcumin is a naturally-occurring phenol derived from the Curcuma longa plant. Studies have found curcumin to possess cancer prevention, cancer suppression, anti-inflammatory, antioxidant, and antimicrobial properties. Despite its wide range of biological activity, curcumin is only slightly soluble in aqueous solutions. This study is an investigation into the antimicrobial effects of curcumin and curcumin analogues, featuring different chemical groups to increase stability and solubility, and whether the analogues are more effective at inhibiting bacterial growth. This study also briefly examined interactions between curcumin analogues and low-molecular-weight (LMW) thiols, antioxidants that work to protect cells against oxidative damage.

Curcumin and 33 analogues were screened against the following bacteria: Escherichia coli o157, E. coli ATCC 25922, Salmonella serotype Enteritidis, Pseudomonas aeruginosa ATCC 10145, Staphylococcus aureus JE2, Enterococcus faecalis ATCC 29212, Mycobacterium smegmatis. Thiol-deficient strains of S. aureus, M. smegmatis, and Bacillus subtilis and strains disrupted in thiol-S-transferase were also used. Nine analogues were selected for further testing based on their efficacy against a wide range of bacteria. Using a broth microdilution method, minimum inhibitory concentrations (MICs) of curcumin and analogues were obtained for each strain.

Results show that curcumin analogues were just as or more efficient at inhibiting bacterial growth than curcumin itself, implying that the substitution of moieties on curcumin produces compounds that are more effective against bacteria. For three analogues, QGC-8-27-1, QGC-8-16-1, and QGC-8-42A, Gram positive bacteria exhibited greater sensitivity than Gram negative bacteria, suggesting interactions between bacterial cell walls and the analogues' structures. Furthermore, three other analogues, QGC-8-45-1, NS-2-25A, and NS-2-26A, were more effective against mutants lacking LMW thiols than they were against wild type. This suggests that those analogues may be thiol-reactive. The results of this study show that substitutions on the curcumin molecule produce compounds that may be more effective against bacteria.

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Analysis of Visual Characteristics Related to Control of Travel Direction in Navigation of Ants

The process by which ants visually encode and process natural scenes for navigation is poorly understood. The objective of this study is to analyze feature recognition processes by which ants can complete successful navigation. From previous studies, it has been found that ants extract multiple features of a visual panoramic scene to facilitate route guidance. Such feature information includes: center of mass, fractional mass, peaks, edges, and intensity differences. To develop our model of scene recognition and visual perception, real ant navigation data was acquired and plotted to find trends in ways ants visually store information. This analysis identified multiple visual inputs that could be removed to help simplify the ant's recognition systems. Using this data and MatLab, virtual worlds were created to simulate ant navigation in which different weighting factors were placed on the visual features. The scenes examined were of simple construction and contained basic geometric shapes. This simple approach allows for the development of robust visual recognition algorithms that can be extended to more geometrically complex scenes. As the scenes become more representative of a real world scenario, we predict that these simple algorithms can extract the fundamental visual features necessary to aid navigation. Additional simulations are needed to test the validity of our navigational and scene perception algorithms in order to better understand how ants perceive the world. Once a model is created that can correctly predict the scene perception necessary for robust navigation of ants, we will examine how sequences of features that ants experience en route are stored in memory to facilitate return.

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Victim Participation in The Community Justice Conferencing Program and Its Effect on Juvenile Offender Recidivism

There is a victim-offender mediation program called the Community Justice Conferencing (CJC) program in Fresno County, California, which has been operating in collaboration with the Victim Offender Reconciliation Program (VORP) and in conjunction with Fresno County Juvenile Hall since 2009. This official restorative justice intervention program for first time offenders utilizes victim-offender mediation to take an innovative approach to juvenile misdemeanors. For the purpose of evaluating the effectiveness of the CJC program, this study aims to examine victim participation in the CJC program and determine its effect on referred juvenile offender recidivism. This study analyzed the secondary data that consist of 783 referrals from July 1, 2009 to August 31, 2012 including 777 juvenile offenders and 799 victims. This study compared recidivism patterns of the CJC program participants and non-participants to ascertain whether or not the victim-offender mediation, that needs direct victim participation, had an effect on recidivism. Three sets of statistical analysis concluded that the most influential predictor of referred offenders' recidivism was whether they participated in the direct victim-offender conference. This finding highlighted victim participation considerably influences outcomes of the CJC program. Hence, the result of this study underlined crucial indications with regards to understand the importance of victims' role, to increase victim participation in the CJC program, and to lead the CJC program to succeed in terms of the restorative justice principles.

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Health and Mental Health Assessments of Informal Caregivers of Cancer Patients

Introduction: In the U.S., the number of informal caregivers has been steadily increasing. These caregivers face difficulties with depression, anxiety, and quality of life. Along with psychological needs, these caregivers have informational, financial, and social needs. While all caregivers are at risk for these difficulties, caregivers of people living with cancer may be more susceptible due to the sudden onset of cancer and long periods of remission. This study explored the reaction to caregiving, psychological functioning, and self-reported needs of informal caregivers of people receiving radiation treatment for cancer.

Methods: Participants for this study were recruited from an outpatient cancer treatment facility in Central Valley, California. All English-speaking informal caregivers of patients receiving radiation treatment were invited to participate. During the two-month data collection period, a total of six caregivers completed a demographics sheet, Caregiver Reaction Assessment (CRA), needs assessment, and Center for Epidemiologic Studies Depression Scale (CESD-10). A score of 10 or above indicates at-risk for depression.

Results: This study found that all the participants expressed a desire to care for the patients; however, most of them strongly agreed that taking care of their loved ones leave them with no time to relax or visit with friends and family. The mean score on the CESD-10 was 10 (sd = 6.10). All the participants reported needing information regarding what to expect with the patients' illness, how to prepare for the unexpected, and how to manage finances. Participants also expressed concerns regarding the discrepancy between the patient's level of functioning and the caregiver's skills.

Conclusions: These findings support the importance of the psychosocial screening of caregivers of cancer patients. Although the small sample size limits the generalization of the study findings, ensuring caregivers have adequate information about what to expect and identifying caregivers at-risk for depression may indirectly help the psychosocial well-being of the patient.

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The Effects of Reciting The Lord's Prayer and Resisting The Urges to Commit Suicide in Patients With Posttraumatic Stress Disorder (PTSD)

Objectives: To assess the effects of reciting the Lord's prayer in resisting the urges to commit suicide in young adult patients with childhood onset PTSD.

Method: Young adult patients average age of 23 who had a childhood onset of PTSD, and were residing in a Respite Care Residential Home in Auckland , South Island of New Zealand, were assessed in an open –label case series. Inclusion criteria were the presence of recurrent suicidal ideation in patients who met the DSM-5diagnostic criteria for PTSD. Clinical status was assessed using the PTSD Check List (PLC).

Results: Remission of suicidal urges 100% was observed in all (5/5) of the patients following the reciting of the Lord's prayer. All of the patients who experienced remission of suicidal urges had a pre-PTSD history of knowing the Lord'sprayer due to their long life held Christian faith.

Conclusions: Despite the positive outcome of this open –label case series; controlled studies would be necessary to establish the efficacy of reciting the Lord's prayer in reversing suicidal urges in young adult patients with childhood onset PTSD.

Clinical Implications:
. This open-label case series illustrated the possibility of implementing the reciting of Lord's prayer as an intervention to reverse suicidal urges in patients with PTSD.
. It is also possible to conclude that reciting the Lord'sprayer could revive previously held Christian beliefs that oppose and prohibit suicide.

Limitations:
. An open-label case series
. Confirmation of the reported results is needed through randomized, placebo-controlled studies. Such studies would be difficult to design and conduct.
. Formal assessment of the precipitating factors that triggered the suicidal ideations were not conducted
. The findings could be generalized to other young adult patients with childhood onset PTSD due to the highly selected patient population.

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Spreads and Parallelisms

Let V be a four-dimensional vector space over the finite field containing q elements. A spread of V is a set of two-dimensional subspaces of V which partitions the nonzero vectors of V. A parallelism of V is a set of spreads which partitions the two-dimensional subspaces of V.

Our purpose is to find a set of linear transformations and a spread such that the set of images of our spread under the set of linear collineations is a partial parallelism of V. In this talk, we will show several conditions under which our objective is achieved.

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Monsters, Meat, and Monopoly: Rio De Janeiro's Meat Market, 1850-1889

The objective of my research is to analyze the role of the açougues monstros,translated to monster butchers, who were a group of butchers active in Rio de Janeiro starting in 1854. I used the Almanack Laemmert to gather the addresses and names of the açougues monstros and other butchers not involved in the group, but selling meat in the city. My research focused on the role of the açougues monstros on Rio de Janeiro's meat market and the society they fed. I looked at studies done on other major cities including New York and Paris as well as other cities in Brazil. The Almanack Laemmert providing the addresses also allowed me to look at the concentration of meat venders in Rio over time and how it changed as the city grew.

Through examination of the meat market and the relationship between butchers and consumers, the liberal ideology was transforming Rio de Janeiro and other growing urban centers. The questions I explore deal with the origins of the açougues monstros and their status as a monopoly or otherwise. Also I will discuss if the group was necessary for the city and what was the result of the açougues monstros' existence in Brazil during the second half of the nineteenth century.

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Numerical Simulations of Near-Nozzle Exit Characteristics for an Effervescent Atomizer at Low Gas to Liquid Mass Flow Ratio

Effervescent atomization is a process in which a bulk liquid is transformed into a spray of droplets by injecting a small amount of gas into the liquid before it is ejected from the atomizer. Advantages of using effervescent atomization method include larger exit orifices to reduce clogging issues, reduced injection pressures, and lower gas to liquid mass flow ratios (GLR) as compared to pressure or air-blast atomizers [1]. Effervescent atomization has been used in a number of applications including agricultural irrigations and sprays, paint sprays, combustion for lowering pollutant emissions, spray cooling for gas turbine and medical applications, waste incineration, and process industry applications. In the present work, the near-nozzle exit characteristics of an air-water effervescent atomizer at gas to liquid mass flow ratio such as 0.25% are investigated numerically through two-fluid Eulerian-Eulerian ensemble-averaged modeling. The two-fluid model is solved through the finite volume method. Numerical simulations are performed using the commercial computational fluid dynamics (CFD) code ANSYS FLUENT. The effects of effective (average) air bubble diameter size inside the atomizer, exit nozzle diameter, and injection pressures on the average liquid water jet width are presented. An optimal bubble size is observed for increasing the average liquid jet width which leads to enhanced jet break-up at downstream of the nozzle. The twin-peak water volume fraction profiles within the sprays are also observed. The numerical predictions of non-dimensional average jet width given a non-dimensional average bubble size are in good agreement with experiments [2], particularly at smaller non-dimensional average bubble sizes. The numerical spray structures as well as bubble conditions are also studied and compared qualitatively with experiments. To conclude, the average jet width is found to be generally greater given an optimal bubble diameter size, a higher injection pressure, or a smaller nozzle exit diameter.

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Navigating Citizenship How Histories of Immigration Affect Voting

Analysis of the 2012 presidential election discussed the political importance and strength of the young and second/third generation as a voting group. This paper seeks to understand the voting attitudes of second/third generation people in the Central Valley of California, as well as how their immigrant parents have shaped their attitudes. This paper used snowball sampling in order to get qualitative interviews about voting and politics, along with a brief survey, although there were some issues with this. This paper found that children of immigrants potentially have a very high view of voting and politics, though they do not vote because they do not feel informed enough to vote. The findings of this paper have implications for political activists about engaging these growing populations.

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This phenomenological study explored Army National Guard Female Veterans experiences to Iraq and/or Afghanistan during the time frame of the Global War on Terrorism. Four issues were explored: mental health, physical health, hardships while deployed, and home interpersonal relationships. Although several studies have addressed the issues experienced by Veterans, the current literature does not specifically address the Army National Guard Female Veteran population even though it has its own unique qualities. The findings illustrated that the study participants experienced trauma and mental health symptoms but did not manifest these symptoms until after they returned home from deployment. The study participants experienced a variety of physical health concerns which included: back pain, carpal tunnel syndrome, traumatic brain injury, pregnancy, exhaustion, rosacea, and common cold. The hardships these Veterans experienced were leadership difficulties, living conditions, and working conditions. The Veterans reported they had a good support system from their families. This study provides a framework for social workers to comprehend this particular population in order to provide best suited services. It is important to incorporate diverse populations including the various subpopulations of Veterans in social work education. This will ensure cultural competency and confidence in the social work students when working with diverse populations.

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Parental Satisfaction Over Time When Children are Not Given Antibiotics for Upper Respiratory Infections

Introduction: Overuse of antibiotics is fueled in part by providers trying to satisfy parent's treatment wishes. Our previous research had shown that parents were generally satisfied with care at the time of the visit when their child did not receive antibiotics for viral illnesses. This study followed parents for 10 days to see if they remained satisfied and if they sought additional care.

Methods: This was a prospective study of self-reported parental satisfaction where their child was diagnosed with a viral infection and did not receive an antibiotic prescription. Parents participating in the study completed a survey asking about demographics, satisfaction, and antibiotic need. Satisfaction questions all used an 11 point Likert scale. Follow-up phone calls were made 3-5 days and again 7-10 days after the initial visit asking the same satisfaction questions and about additional care or medications given to the child. Paired t-tests were used to look at differences over time in parent's satisfaction. McNemar's test was used to look at changes in perceived antibiotic need.

Results: 100 participants enrolled and completed the initial questionnaire. 82 parents were contacted for the first phone follow up and 74 were contacted for both follow ups. On average, parents rated educational information as helpful on initial visit at 9.37. This number significantly increased by 0.26 ($p=0.03$) at final follow-up. On average, parents rated their happiness with initial medical care a 9.49. Parents' level of satisfaction with treatment on initial encounter was 9.63. This significantly decreased by 0.20 ($p=0.048$) at the first follow up, but was not significantly different on second follow up. 64% of parents did not think their child needed an antibiotic at the initial visit. No differences were found over time. Four parents sought additional care during the study. There were no emergency room visits.

Conclusions: Parents were highly satisfied at the initial visit and their satisfaction with education received increased over time. Overall most parents did not feel that their child needed an antibiotic.

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French Cafés and Its Present Perception

Introduction

The importance of absorbing different types of cultures, traditions and ideas with an open mind were explored through research in France. The study focuses on the French café, its history, evolution and contemporary perception of its functions in the French society.

Methodology

A group of six informants constitute the core of the sample population. They were interviewed with a semi-directive questionnaire in the city of Pau during a period of two months from May 21st to July 27th, 2013. Observations, pictures, and recording were used to collect the data. After transcribing and translating the interviews from French into English, key aspects forming patterns of idea and behaviors were identified during the data analysis step.

Results

Three main outcomes will be discussed during the presentation.

1. The main period of development and of evaluation of the French Cafes. Pascal and Procope were responsible for the introduction and incorporation of coffee - the new imported hot beverage – paving the way for cafés a new culture all over France.

2. The culture of the French Café. Interviewees in the possession of, or in the progress of obtaining a title in higher education were the core informants to the research. All informants drink coffee for pleasure and as a quotidian routine. Habits and activities of French café-goers in cafés was found to be “les commérages” – gossiping and community discussion regarding “de tout et de plus” – anything and everything.

3. The perceptions of the functions of French Cafes. Cafés are no longer a place to enjoy a coffee, but also a location where friends can meet over an “aperitif” – a light meal, usually including a beer. The investigation of particular habits and interests of contemporary French café-goers in Pau were obtained. Cafés are seen as socializing grounds, a pause between shopping sprees and a mode of enjoying the beautiful scenery of the Pyrenees Mountains with good company.

Conclusion Statement

Attendees will learn in this presentation about the historical importance of French cafés and the continuing tradition of present day café-going.

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Emissions of VOCs and Methane from a Central California Dairy

Volatile organic compounds (VOCs) are pollutants that react with nitrogen oxides in the presence of sunlight to form ozone in the lower atmosphere. Since dairies are believed to be a major source of VOCs, particulate matter precursors and greenhouse gases in the region, accurate emission measurements from these facilities are important to determine their effect on air quality.

New results from our ongoing stud at the Fresno State Dairy will be presented. Samples were collected from upwind and downwind from pollution sources at the facility. Isolated samples from feeds were collected using a 30L flux chamber. AERMOD and Wind Trax models were used to calculate the methane and VOC fluxes from the dairy. Emissions of alcohols and carbonyls from feed sources measured using flux chambers are in the range 0.1-1 g m-2 hr-1 and 0.02-0.3 g m-2 hr-1, respectively. Methane concentrations downwind of the dairy lagoon are consistently higher than upwind concentrations. The data obtain and implications will be addressed.

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Expression of Thiol Biosynthetic Genes and Peroxiredoxins in Mycobacterium Smegmatis

Tuberculosis is one of the world's deadliest diseases and the risk of infection is substantially elevated due to antibiotic resistance. Multi drug resistant strains of Mycobacterium tuberculosis, causative agent of TB, create an urgent need for novel antimicrobial agents. Understanding how the pathogen survives under the harsh conditions found in human macrophages, particularly how it overcomes overwhelming oxidative stress, is a key step toward this end.

In eukaryotes and Gram-negative bacteria, the low molecular weight (LMW) thiol – glutathione (GSH) – plays an important role in protecting cells against oxidative stress. Actinomycetes however, including Mycobacterium tuberculosis and Mycobacterium smegmatis, a model organism for M. tuberculosis, synthesize mycothiol (MSH), which serves analogous functions to GSH. Additionally, ergothioneine (ESH), another LMW thiol found in mycobacteria, may play an important antioxidant role. Previously, our lab showed that MSH and ESH deficient mutants are more sensitive to various oxidants, metals, and other xenobiotics that manifest as oxidative stress, suggesting both thiols play a role in oxidative stress protection. Moreover, we demonstrated that MSH and ESH might play compensatory roles in mycobateria. To further study this relationship and develop a deeper understanding of the role of thiols and thiol dependent peroxidases in mycobacterial physiology, we used real time quantitative PCR (qPCR) to monitor the expression of genes involved in thiol biosynthesis and peroxiredoxin genes in M. smegmatis. Using qPCR, I quantified transcription of target genes by monitoring the mRNA levels upon treatment with oxidants, metals, and acids.

Our analysis revealed significant induction of mshC, an enzyme involved in MSH biosynthesis, following all treatments. Expression of egtA, an enzyme involved in ESH biosynthesis, was only significantly induced after acid, hydrogen peroxide, and copper sulfate treatments. These differences suggest MSH may play a more prominent role in oxidative stress response, and furthermore, the two thiols likely use distinct detoxification pathways. We also looked at expression of the thiol peroxidases including tpx, ahpC, ohr, bcpA and bcpB. We found that bcpA was downregulated after hydrogen peroxide and cumene hydroperoxide treatment, while tpx was downregulated after diamide treatment. Otherwise the expression of these genes was unchanged or upregulated following treatment with the three oxidants.

Our findings further highlight the importance of MSH in oxidative stress protection and suggest ESH also can act as an antioxidant under certain conditions. Moreover, the data warrants further study of thiol peroxidases, and in the future we plan to quantify expression of thiol peroxidases and thiol biosynthetic genes in MSH and ESH deficient mutants to better understand interactions between these molecules.

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Conceptualizing Health and Health Seeking as Agency and Resistance among Older Mexican immigrant Men in California's Central Valley

The study is geared at understanding of how gender, immigration, and aging impact health behaviors in older men. Mexican elders, along with other Latino elders, are disproportionately poor and plagued with chronic and other disabling conditions. It is imperative to understand the complexities of elder Mexican immigrant health status, health care, and the social and structural conditions that lead to both health status and behavior. The research project aimed to 1) explain the conceptualization of health, illness, risk and prevention and 2) map the health seeking process for this population. Data includes 20 in person interviews of older Mexican immigrant men in four California Central Valley counties using a semi-structured interview guide and collection ethnographic data. Analysis of written, audio, and visual data was coded using grounded theory methods. Participants have very informed conceptualizations of health that are related to autonomy. Illness is tied to emotion. While active participants in their own self-defined health regimens, they rely on women in their lives help them navigate the United States healthcare system. Participants saw themselves as adhering patients and did not portray an overall negative sentiment about the healthcare system yet they resisted screenings, lab work, and seeking health care within the US system for reasons other than time, money, transportation, or literacy. The reasons were tied to their goal of retaining autonomy. Participants are enacting their aging, masculine, and immigrant identities to refrain from seeking care. This is done within the constraints and as a consequence of systemic barriers to health care.

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Characterizing The Linker Region of DgcZ

DgcZ is critical regulator of biofilm synthesis in pathogens. It is one of many diguanylate cyclase enzymes synthesizing cyclic di-GMP in bacteria. Like other diguanylate cyclase enzymes it possesses a dimer-forming domain and a catalytic domain separated by a linker sequence of nondescript function. Convention suggests the linker sequence plays a noncritical role in enzyme function, , but recent work in the Youn lab and as well as generated diguanylate cyclase consensus sequences suggest that this may not be the case. We have generated site-directed alanine substitutions (alanine scanning) in the DgcZ linker region and assayed for cyclic di-GMP production.

Our blue/white screening assay takes advantage of cyclic di-GMP role as an effector of the transcription factor, Xanthomonas campestris CRP-like Protein (Clp). Clp, when bound by cyclic di-GMP, becomes unable to bind its target DNA sequence with high affinity. In our in vivo reporter strain, the target DNA sequence has been inserted after the polymerase binding sequence of the lacZ gene. Thus, when the SDM variant of Dgcz produced high volumes of cyclic di-GMP, Clp was rendered functionally inactive and could not block the polymerase from binding its downstream target sequence. Results were consistent with the notion that the linker region plays a role in the function of DgcZ and possibly other diguanylate cyclases as well.

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The Daughters of Sojourners: The Yemeni-American Female's Experience in Education

Over the years, Yemeni females have become an increasingly more visible part of the Kern County community as they enroll in our schools, participate in our community, and are part of our workforce regardless of how small the numbers may be. Yet, relatively few studies have been conducted exploring the experiences of these women. Given the seemingly contradictory values of both their Yemeni and American identity when it comes to education, this study sought to understand the restrictive, as well as autonomous, factors that influence Yemeni women's access to higher education. We wished to further understand how these women mitigated their cultural barriers to gain access to higher education as well as how they have come to view their own experiences. This explorative study rooted in grounded theory uses an in-depth qualitative interviewing method to understand what factors contribute to the educational opportunities—or lack of opportunities—of Yemeni-American females in Kern County. We have found that these factors included: (1) strength of Sojourner Mindset, (2) adherence to traditional gender roles, (3) type of support system, and (4) existence of precedent.

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Role of Phe-Phe Hydrophobic Interactions in Intrinsically Disordered Proteins From Yeast Nucleoporins

Intrinsically disordered proteins (IDP) are a class of proteins that do not adopt a well defined three-dimensional structure, and are characterized by their minimally folded structure with high intramolecular flexibility under physiological conditions. Their structural disorder - directly or indirectly, plays an important role in many essential cellular and regulatory processes. The nuclear pore complex (NPC) is a large protein complex that is the sole gateway for transport of proteins and RNAs between the nucleus and cytoplasm of a cell. It is composed of approximately 30 nucleoporins, or nups, a third of which are intrinsically disordered and contain a high count of phenylalanine-glycine domain repeats (FG-nups).These FG-nups occupy the central pore region of the NPC and play an integral role in the regulation of nucleocytoplasmic transport of macromolecules through the NPC.It is hypothesized that the FG-Nups function in the NPC by forming either cohesive elements mediated through –GLFG- rich motifs or non-cohesive elements mediated through –FG- or –FxFG- motifs. In this study we focus on understanding the role of Phe (F) residues in the ensemble of conformations formed in a model FG-nup peptide.

A 25 AA model peptide (model-FG) is designed using the native sequences of yeast nupscontaining three FG-domains, two of which are GLFG-motifs. In order to understand the role of Phe, a variantpeptide (variant-FG), with a substitution of Phe withAla is also considered. Molecular conformations of these peptides are determined using modern nuclear magnetic resonance (NMR) methods and all atom molecular dynamics (MD) simulations. Multi-dimensional NMR experiments combined with distance geometry algorithms are used to determine the ensemble of conformations of the two peptides. All atom MD simulations were performed with multiple solvent models to understand residue specific details of intra-molecular interactions. Experimental results suggest that the model-FG is slightly more compact than the variant-FG. However, MD results suggest that the average radius of gyration of the model-FG is greater than that of the variant-FG. One possible reason for the difference between the NMR and MD simulations could be the time-scale of the dynamics sampled between these two methods. Detailed analysis of the ensemble of conformations obtained experimentally and using simulations will be presented, in addition to the implications of these results on the role of intrinsic disorder in the function of FG-nups.

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Screening for Glyphosate-Resistance in Palmer Amaranth (Amaranthus Palmeri) Populations of California's San Joaquin Valley

Glyphosate has been a popular herbicide for weed management in annual and perennial cropping systems, and in non-crop areas for more than a decade. However, heavy reliance on a single mode of action can increase the risk of weed species evolving resistance to that mode. Glyphosate-resistant (GR) populations of Palmer amaranth have been confirmed throughout the southeast U.S. since 2005. Since 2012, growers in California's San Joaquin Valley (SJV) have observed poor control of Palmer amaranth in glyphosate-tolerant corn (Zea mays L.) and cotton (Gossypium hirsutum L.). However, it is not known if these are cases of GR populations or application of glyphosate at more tolerant stages of the weed. Therefore, Palmer amaranth seeds from 23 different locations of the SJV were collected for evaluation. Seeds from two locations selected from preliminary screening studies and a known GR and GS population from New Mexico (NM) were germinated and plants were grown in growth chambers. When the plants reached the 5- to 8-leaf stage, they were treated with glyphosate either at 0.5x, 1x, 1.5x, 2x, 2.5x, 3x, 3.5x, and 4x rates, where 1x= 840 g ae ha-1 (labeled rate). A non-treated control was also included. The study was repeated. Both the SJV populations had 100% mortality at the 840 g ae ha-1 rate of glyphosate in the first study. However, when the light intensity was increased from 600 to 1200 µmol m-2 s-1 and daylength from 12 to 14 h in the chamber in the second study, some of the plants from one of the SJV population survived the 1.5x and 2.5x rate of glyphosate. The study will be repeated using the later growth chamber settings to ascertain if these were cases of GR plants. Further, the remaining populations will be also screened against the GR and GS population from NM.

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The Impact of Ambivalent Sexism on Individual Perceptions and Career Expectations

This study investigated the relationship between gender, ambivalent sexism, and career expectations. Undergraduate students studying business (N=195) were randomly assigned to read one of three interview transcripts depicting either hostile sexism, benevolent sexism, or no sexism (control). Participants also completed a survey containing the Ambivalent Sexism Inventory, and questions about career expectations and the importance of various job factors. One purpose of the study was to assess whether the presence of sexism (either hostile or benevolent) in an interview affects an individual's career expectations. Another purpose was to assess whether gender predicts career expectations, job factors, and sexism levels. As predicted, women place more importance on intrinsic rewards when evaluating job factors compared to men. Also as predicted, men endorsed hostile sexist attitudes more than women did. The results suggest that gender and sexism continue to influence both society and the workplace.

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University On-Campus Textbook Stores: "Convenience Or CON-Venience?"

One of the most fundamental assumptions in the social science of economics is that of the rational consumer. According to this notion of rationality, individuals will seek the lowest cost alternative given their available choices. It is used in many situations to assist in creating models of consumer demand and to make attempts in predicting economic behavior of said individuals. In turn, one contemporary issue that has recently come to light is the fact that many college students continue to purchase textbooks at their university's textbook store, regardless of the several lower cost alternatives available in the market, behavior that seemingly violates the assumptions made by rational choice theories. This paper is concerned with identifying and explaining the variables that contribute to such consumption behavior by college students in an attempt to dig deeper concerning the textbook market and rational choice. Using a public opinion questionnaire and econometric analysis via statistical software, we find the factors that inform the preference for online vs. on-campus purchases include: individual students' characteristics (major, race, highest level of parental education), the student's funding sources (financial aid, available scholarship funds, financial parental assistance, loans), students' tastes and preferences (frequency of online purchases, perceived online purchase security, preference for specific conditions), and other external factors including the instructors' recommendations and the existence of proprietary university edition textbooks. Rationality assumptions may not necessarily be broken, as many factors lead to students' desire to continue supporting university on-campus textbook stores. Preliminary conclusions simply assert that there is significant diversity and preference heterogeneity in university student populations and textbook purchasing behavior.

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Cultural Competency: An Understanding of Cultural Competency Within the Division of Student Affairs at Fresno State

As more campuses strive to be inclusive of underrepresented students by creating diversity plans, offices of institutional equity, and chief administrative diversity positions, there has been a call to increase cultural competency amongst faculty, staff, and administration. This qualitative study examined the ways in which leaders in the Division of Student Affairs at Fresno State view their role in the creation of a division and campus that is culturally competent. Using cultural competency as a theoretical framework, the study used qualitative research methods to determine the relationship between the division leaders understanding of cultural competency in relationship to the strategic diversity plan. Four types of evidentiary sources were used internal and public documents, interviews, the diversity plan, websites, and a demographic survey.

The findings of this study discuss the views on cultural competency of leaders in the Division of Student Affairs, their role within the university strategic diversity plan and how their practices are informed by the strategic diversity plan. The findings indicated that their needs to be a clear connection between the strategic diversity plan and the Division of Student Affairs strategic plan to become a cultural competent division. The relationship and indicators of both of these plans should align to enhance the cultural competency of the campus. This study seeks to add to the literature available on cultural competency among student affairs professionals and their involvement with creating a cultural competent division and an inclusive campus environment. Based on the findings of this study recommendations are given to student affairs leaders and concludes with recommendations for future research.

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Curiosity in College Students: Associations with Academic Achievement and Religiosity

Introduction: Objective of the study is to identify correlates of curiosity in college students.

Methods: Current students in selected Fresno State classes surveyed. Questionnaires will include measures of: curiosity, adult attachment style, religiosity, interest in various academic subjects, and general demographic information.

Results: 227 students completed surveys. Those majoring in a science had higher curiosity scores than those with other majors, but curiosity was not related to academic achievement. For instance, Smittcamp students (n=44) had identical curiosity scores to non-Smittcamp students (n=183). Curiosity scores were not at all correlated with self-reported GPA ($r=0.001$, $p=0.988$). However, curiosity scores were strongly predictive of lifelong learning activities, such as travel, visiting museums, watching documentaries, and looking things up in dictionaries and encyclopedias. With respect to religiosity, curiosity was unrelated to the emphasis on religion in childhood, but one measure of curiosity was negatively correlated with current religiosity ($r=-0.132$, $p=0.05$). Furthermore, when the sample was divided into two groups, those who profess no faith and those who profess any faith, curiosity scores were significantly higher for those without religion. In addition, students who changed their religious orientation from childhood to currently (i.e., became religious, n=2; or lost religion, n=26) were significantly more curious than those who did not change (i.e., never religious, n=17; always religious, n=175) ($p=0.005$).

Conclusion: The lack of a relationship between curiosity and academic achievement is surprising and contradicts our expectations. However, if it is true, it may reflect something about the nature of higher education that could be problematic. The relationship between curiosity and religion is complex, with very little effect of childhood religious training, but some tantalizing associations with current religious beliefs.

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The Relationship Between Child Maltreatment and Socioemotional Development of Children in The First Two Years Of Life

The purpose of a home-visiting service is to provide the tools for appropriate parenting and thus yield opportunities for children's optimal development. This study explored whether previous maltreatment impacts a child's social and emotional development and whether participation in an intervention program decreases the consequences of such maltreatment on child's development. All of the participating families were enrolled in Healthy Families Massachusetts (HFM), a newborn home-visiting program in Massachusetts for first-time parents under the age of 21. The participating families had previously been randomly assigned to either a home-visiting services group (HVS) or a referrals-and-information-only group (RIO). The at-risk preschool-aged children of these families were assessed using the Brief Infant-Toddler Social and Emotional Assessment (BITSEA), a brief screening tool used for the early detection of emotional and/or behavioral problems in young children. The children of the families were categorized as having either a documented history of potential maltreatment or no documented history of potential maltreatment. Documentation was via records from the Massachusetts Department of Children and Families (DCF). A 2 × 2 analysis of variance (ANOVA) was conducted on BITSEA scores to evaluate the effects of maltreatment and the potential ameliorating effect of the HVS intervention. The BITSEA measures of problem and competence scores were assessed in this way. Surprisingly, a history of maltreatment did not affect the BITSEA scores regardless of program assignment (HVS vs. RIO). Similarly, program assignment did not yield any differences on the BITSEA scores. A secondary analysis categorized the BITSEA data as either high risk (scores that fell below the 26th percentile ranking and reached the clinical cutoff for developing future problematic behaviors) or not high risk (scores that fell below the clinical cutoff). When using this more serious level of criteria for problem behavior, there was a significant relationship between child maltreatment and problem-behavior cutoff scores ($X2$ (1, $N = 322$) = 5.75, $p = .017$), but not competency cutoff scores ($X2 < 1$, ns). Child maltreatment was associated with higher risks for socioemotionally-based behavioral problems.

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Synthesis Towards a Stabilized Zampanolide Analog as an Anticancer Agent

(-)-Zampanolide, first isolated from marine sponge in 1996, is a 20-membered macrolide which exhibits potent cytotoxicity (IC¬50 = 1-5 ng/mL) against both drug-sensitive and multidrug-resistant cancer cell lines. Its mechanism of action features a unique covalent interaction to β-tubulin, targeting the binding site of the FDA-approved Taxol®. Only a few Zampanolide analogs have thus far been reported. The long-standing program of this group is the synthesis of several proposed analogs of Zampanolide with improved stability both in vivo and in vitro as well as the potential to treat multidrug-resistant cancer. The objective of this research was to synthesize two advanced intermediates common to several of these analogs. This was accomplished through a synthetically complex route involving more than 20 steps. Results of each step are confirmed by NMR data. The synthesis of these fragments provides the crucial stepping stone towards the synthesis of several highly-promising anti-cancer drug-like compounds. The design, retrosynthetic analysis, and synthetic studies of these novel analogs will be presented.

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Efficient Wireless Power Transfer (WPT) for Microscale Biosensors Over Mid-Range Distance with Magnetically Resonant Coils

In most biological laboratories, the analytical devices and interfaces are becoming smaller and smarter, suggesting miniaturization of core components. Such microscale devices called micro-devices and interfaces require power for their own functions and operations; however, extant nanoscale batteries that are available locally and integrated into the micro-devices and interfaces can neither provide enough power, nor survive under in vitro stress. This research demonstrates substitute local power storage cells in terms of developing a wireless power transfer framework using which the micro-devices and interfaces including the biosensors will be capable of getting power wirelessly from the external wireless power transfer (WPT) system. There has been renewed interest in WPT since the discovery of a strongly coupled regime for magnetically resonant coils that operates with a high degree of efficiency at mid-range distances. Thus, this method of WPT is a step forward to traditional inductive power transfer where magnetic-resonant was not playing significant role. In our design power transfer can occur over significantly greater distances of 1.5 times coil radii. In this project, paired resonant coils were designed with high efficiency in mind. Orthogonal orientations impede transfer. Further, power transfer occurs through solid obstacles as coupling is magnetic. Coils for in vitro implantation were designed to test the validity of transfer of power. PDMS was used as the substrate for the coils. The implantable coils are flexible due to both planar configuration and PDMS elasticity. The coils have higher inductance and higher Q factor. Capacitors were added to both transmitter and receiver coils to tune each to the same resonant frequency. The power transfer occurs with highest efficiency at coaxial orientations. The reachability is about 2 centimeters. The research was conducted in collaboration with Gwangju Institute of Science and Technology, South Korea in the Implantable Microsystems Laboratory during summer 2013.

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Elucidating The Synthesis of Methyl Farnesoate in The Tissues of The Tadpole Shrimp, Triops Longicaudatus

In crustaceans, methyl farnesoate (MF) acts as a juvenilizing factor, maintaining juvenile characteristics and delaying reproductive development. The synthesis of MF is catalyzed by the enzyme farnesoic acid O-methyltransferase (FAMeT) in the mandibular organ (MO) of crustaceans through the methylation of farnesoic acid (FA). The tadpole shrimp (TPS) have a simplified body structure lacking such endocrine organs like the MO. Previous research in our lab showed that TPS fed on nutrient pellets containing the hormone MF have decreased oocyte production during larval and juvenile stages. This decrease in oocyte production is due to a delay in the reproductive development mirroring the effects seen in other crustaceans. However, the site for MF synthesis has yet to be determined. In this study we look to identify tissues responsible for the synthesis of MF. A radiochemical assay was used to measure the synthesis activity of select TPS tissues. Our results show that TPS synthesize MF ubiquitously across their entire body. This notable difference correlates with the absence of a MO in the TPS and suggests that there may be no central site of synthesis of MF. FAMeT activity decreased in 5 day old TPS to 2.398 nM/μg/min. from 3.643 nM/μg/min. on day 4. This decrease at 5 days old may be associated with the end of the TPS juvenile stage and reproductive development. We also measured the activity of TPS fed daily on a diet containing MF. Isolated tissues and whole body homogenates of animals fed on the MF diet showed no observable difference in activity compared to controls. FAMeT activity increased on day 9 with a peak in activity in the back abdominal section at 11.62 nM/μg/min. Then decreased by day 12, which corresponds to low MF levels in adults.

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Molecular Evidence of Heartworm Larvae in Field Collected Aedes Sierrensis in Eastern Madera County, California

The objective of this study was to assess the heartworm vectorial capacity of Aedes sierrensis. Heartworm (Dirofilaria immitis) is a mosquito vectored filarial parasite of domestic and wild canids that causes severe morbidity and mortality in its mammalian hosts. A recent study found there was a higher incidence of heartworm in domestic dogs living in the Sierra Nevada foothills (151-1,000 m) of Madera and Fresno Counties than in elevations above or below that range (Miller and Crosbie 2011). It has been proposed that this trend may also be found in the suspected vector, Aedes sierrensis. To date, only one study has been done in California that assessed the vectorial capacity of field collected Ae. sierrensis (Walters and Lavoipierre 1982), and none have been done using molecular based techniques. Mosquitoes were collected from three sites in Eastern Madera County, California in two different elevation ranges, and both the head/thorax and abdomen were tested for D. immitis larvae using a PCR-based assay. More mosquitoes collected in the elevation range of 151-1,000 m were D. immitis positive in the head/thorax (21/71, 29.6%) than mosquitoes collected above 1,000 m (16/83, 19.3%). Presence of heartworm larvae in the head/thorax is indicative of vector competence in Ae. sierrensis. The results of this study showed that wild Ae. sierrensis can ingest D. immitis microfilariae, and that nematode development to the vertebrate infective L3 larval stage occurs.

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The Dubrovnik Polynomial of Rational Knots

We sought a closed form expression for the Dubrovnik polynomial of a rational knot in terms of the entries of its associated vector. Rational knots and links arise as numerator closures of rational tangles, which form a basis for their classification. A rational tangle is the result of consecutive twists on neighboring endpoints of two trivial arcs, and is associated in a canonical manner with a unique, reduced rational number or infinity. This number equals a continued fraction with all numerators equal to one and all denominators of the same sign, that can be read from a particular diagram of the tangle. Equivalently, one can associate to a rational tangle diagram (in standard form) a vector of integers.

We examined the effect of applying the Dubrovnik skein relation to diagrams in braid form. This yielded patterns that enabled us to write a reduction formula. Applying the reduction formula over a level tree gave the closed form expression.

Thus we found a closed form expression for the Dubrovnik polynomial of a rational knot or link diagram in terms of the entries of its associated vector. The resulting closed form allowed us to write a Mathematica program which efficiently computes the Dubrovnik polynomial of rational knots and links.

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Use of Synchrophasors for Fault Area Detecion and Monitoring – A New Scheme

With advancements in synchrophasor based technology, a new era of power system monitoring is emerging. As more distributed sources are deployed into the electric power grid, synchrophasors have the potential to help reconfigure the grid and accommodate the inclusion of alternative energy resources. Synchrophasor based technology offers viable solutions to wide-area system monitoring and control. As a processing device, synchrophasors can be used to monitor and analyze the power system behavior and real–time control. In this research, some of the applications of synchrophasors in system monitoring are discussed. Two schemes for power swing detection are evaluated with the goal to fill in the gaps of previous research. A new scheme for fault area detection and monitoring is introduced and applied to fault detection in a two-area system.

The two schemes that are evaluated in this research are the Phase Angle Algorithm and the Out-of-Step Tripping scheme. With the introduction of the Fault Area Detection scheme, a more effective way to monitor a two-area system is introduced. The Fault Area Detection scheme introduces a solution for faults in both areas to be detected and warning to be sent to the affected area. The Fault Area Detection algorithm also resolves parameter and sensitivity issues for the Phase Angle algorithm. For the Out-Of Step Tripping scheme, ambiguity as to where the synchrophasors units need to be placed is resolved, and fault clearing action is enabled by using the Fault Area Detection algorithm.

Applications in power swing detection and power quality protection such as: system overload detection, islanding detection, and loss of synchronization detection are also discussed for the case of distributed power generation. The goal of this analysis and the simulation results presented will demonstrate that synchrophasor information can be used not only for wide area system monitoring, but also for local area monitoring and control.

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Thiol-Dependent Detoxification of Aldehydes and Nitric Oxide in Mycobacterium Smegmatis

Tuberculosis, caused by Mycobacterium tuberculosis, is a leading cause of death and a serious public health risk. This disease is difficult to treat because the bacterium can withstand the host immune response, which involves reactive oxygen and nitrogen species and the formation of a hypoxic granuloma. A mycobacterial enzyme of importance is the formaldehyde dehydrogenase / nitrosothiol reductase (MscR). This enzyme uses mycothiol (MSH), a low molecular weight (LMW) thiol, as a cofactor to oxidize formaldehyde and reduce nitrosothiols. The MscR of other bacteria have also been shown to play a role in the detoxification of other short chain aldehydes. The role of MSH in redox control has been well documented, but little is known about ergothioneine (ESH), another LMW thiol found in mycobacteria. To study these detoxification mechanisms, we used Mycobacterium smegmatis, a non-pathogenic model organism. Quantitative PCR showed that mscR, mshC, involved in MSH biosynthesis, and egtA, involved in ESH biosynthesis, were induced in response to S-nitrosoglutathione, a nitric oxide donor. The genes mscR and mshC were also induced when M. smegmatis was exposed to the reactive aldehydes formaldehyde, glycolaldehyde, glyceraldehyde, and methylglyoxal. A M. smegmatis mscR mutant and a mutant lacking MSH were more sensitive than the wild-type strain to killing by nitrosative stress and formaldehyde, glycolaldehyde, glyceraldehyde, and methylglyoxal, which correlated with the increase in mscR and mshC expression. A mutant lacking ESH was not sensitive to these stressors. Taken together, these data indicated that MscR and MSH protect the cell from nitrosative stress and aldehyde stress.

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A Taste of French Culture: The Patience to Their Cuisine

The purpose of the research focuses on French cuisine, its diversity, notion of taste and flavor, and its feasibility in the United States with different ingredients.

A brief description of methods

A phenomenological approach was chosen to conduct this research. I cooked five French dishes using Louis Diat's book Gourmet's: Basic French Cookbook and Julia Child's book Julia Kitchen Wisdom: Essential Techniques and Recipes from a Lifetime of Cooking and an internet source L'atelier des Chefs: Recette de Macaron truffe noire- chocolat blanc and anticipated how the projected would turn out by taking notes on choice ingredients, their quantity used, the taste, and their feasibility while preparing the dishes which are divided into two separate meals with three courses; an appetizer, an entrée and a dessert. One meal was prepared one week and other one was prepared the next week.

A summary of results

Origin of the dishes. The word "quiche" comes from German or Lorraine Franconian for cake or tart. Its composition was cheese, eggs, milk, butter and fat, later on smoked bacon was added which is a specialty of the Lorraine region. The origin of beef bourguignon is from Burgundy who is known for their beef from Charolais and their wine. The combination of regional foods contribute to French cuisine.

Taste and flavors. The French cuisine emphasizes flavors of saltiness from the bacon, bitterness from the use of wine, pungency from the wine and the amounts of onions and textures of thickness, creaminess from the sauces, smoothness and tenderness from crepes, and crispness from the sugar in macarons. In the following dishes, there is a taste of onion and wine with the accent of smoothness from the sauce and the intensification of flavor of the reduced stock.

Feasibility. The project presented some challenges. The French cooks have been mastering their cuisine and developing certain taste and flavors over the centuries which gave birth to the French cuisine sophistication and particularity made of a combine taste and flavor.

The experience of French cuisine reminds me that cooking requires curiosity and willingness to practice in order to develop senses of tastes.

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Distress In Cancer Patients Receiving Life-Sustaining Treatment

Introduction: Previous research estimates that a third of people newly diagnosed with cancer experience elevated levels of distress. If left untreated, psychosocial distress has negative effects on cancer treatment outcomes. Identifying patients with heightened levels of distress and the sources of their distress will allow healthcare practitioners to provide appropriate interventions and referrals. This study explored the self-reported levels of distress and their contributing factors in cancer patients starting a new round of chemotherapy or radiation treatment using the National Comprehensive Cancer Network's (NCCN) Distress Thermometer and Problem Checklist.

Methods: Participants for the study were recruited from an outpatient cancer treatment in Central Valley, California. At intake (during the first week of treatment), the NCCN Distress Thermometer and Problem Checklist were administered to 36 patients. At a follow-up measure (during the last week of treatment), 18 patients completed the same measure of self-reported levels of distress.

Results: The study found that at intake 50 percent of patients were clinically distressed. Physical problems contributed to distress in 69 percent of participants; fatigue, pain, and eating issues were the highest reported symptoms. Emotional problems contributed to distress in 44 percent of participants with nervousness, worries, and fears being the highest reported symptoms. The follow-up assessment indicated that 50 percent of the patients were clinically distressed. Physical problems were reported at a higher percentage (83%) followed by pain as reported by 55 percent of the patients.

Conclusions: These findings support the importance of distress screening as part of oncology psychosocial needs assessment. Although the small sample size limits the generalization of the study findings, identifying factors contributing to distress may provide important implications to increase treatment adherence and psychosocial well-being of cancer patients.

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Peer Influence on First-Generation College Students' Motivation

BACKGROUND Recent studies have demonstrated that first-generation students are more likely to depart college within their first two years than are their counterparts with college-educated parents (Ishitani, 2006). This attrition is related to a variety of factors, including lack of peer support, lower educational expectations from family and/or peers, and being an ethnic minority (Dennis, Phinney, & Chuateco, 2005; Ishitani, 2006). Studies indicate that peer support, or the lack of needed peer support, is a strong predictor of college grades, college adjustment, and persistence to earn a degree (Dennis, et al., 2005).

PURPOSE: It remains unclear how different peer groups influence first-generation college students' motivation to persist in college. Therefore, my study investigates this topic. METHOD: By conducting in-depth qualitative interviews, I investigated how peer relationships affect first-generation college students. I interviewed twelve students concerning how specific peer groups influence their college motivation. Interviews were inductively analyzed to collect common themes. Themes were then deductively analyzed though the lens of self-determination theory.

RESULTS: I identified nine themes from student interviews. This study contributes knowledge about how peers can encourage or detract from motivation to persist in college for this important student population.

CONCLUSION: The results of this study indicate that peers support first-generation college students' extrinsic motivation to complete a college degree. Involvement in student organizations is one means by which students can experience such peer support.

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Blocking Polygons in Finite Projective Planes

We extend the standard definition of a polygon to finite projective planes, and then examine of sets of points that block certain lines to see if they also guarantee the blocking of polygons.

We find connections between the sets blocking polygons with standard blocking sets, and other well-known geometric structures, such as arcs and ovals in finite projective planes. Although most of our results concern small polygons, a few of our results can be applied to polygons of any size.

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The Economy Impact of Jordan Research Center Construction in Fresno County

Jordan Research Center will be built in spring 2014 as a key project partially sponsored by Jordan College of Agricultural Sciences and Technology, Fresno State University. The Construction cost is estimated to be over 17 million US dollars. Most studies on infrastructure investment have emphasized the importance of job creation and its impact on local economy. This paper aims to apply the so called Social Accounting Matrix (SAM) method and use the IMPLAN V3 software to conduct an economic impact analysis. The study, will utilize multiplier analyses to show how the investment in Jordan Research Center will increase employment, generate taxes, and contribute to other economic sectors in Fresno County. The results show that the impact of Jordan Research Center construction in Fresno County would create more than 200 jobs and add over 11 million dollars to labor income.

a. An introduction stating objectives of the study.
Jordan Research Center will be built in spring 2014 as a key project partially sponsored by Jordan College of Agricultural Sciences and Technology, Fresno State University. The Construction cost is estimated to be over 17 million US dollars. Most studies on infrastructure investment have emphasized the importance of job creation and its impact on local economy.
b. A brief description of methods.
This paper aims to apply the so called Social Accounting Matrix (SAM) method and use the IMPLAN V3 software to conduct an economic impact analysis. The study, will utilize multiplier analyses to show how the investment in Jordan Research Center will increase employment, generate taxes, and contribute to other economic sectors in Fresno County.
c. A summary of results. (It is not satisfactory to state "the results will be discussed")
The results show that the impact of Jordan Research Center construction in Fresno County would create more than 200 jobs and add over 11 million dollars to labor income.
d. A statement of conclusions reached.

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Predictors of Poor Birth Outcomes Among Hmong Women in California's Central Valley

Introduction

Our objective was to estimate the proportion of Hmong women who delivered preterm or low birth weight (LBW) infants from 2011-2012 at Community Regional Medical Center (CRMC) in Fresno, CA, and to examine factors potentially associated with these poor birth outcomes.

Methods

We identified Hmong women who had delivered a singleton infant at CRMC using electronic medical records and an algorithm based on last names, and collected information on birth weight and gestational age in order to assess the rate of preterm and LBW delivery. We examined these two outcomes individually, using logistic regression models. Univariate analyses of potential risk factors, including timing of prenatal care initiation, complications of pregnancy, and type of insurance, were conducted to obtain odds ratios, and characteristics significant at the p=0.05 level were included in multivariable models.

Results

We collected data on 730 Hmong women who gave birth at CRMC from 2011-12. Of these, 12.3% delivered preterm (<37 weeks) and 10% LBW (<2500g) infants. Fewer than half of the women sought first trimester prenatal care, although this was not significantly associated with either outcome. Having private insurance was a risk factor for having a LBW but not a preterm baby. Hypertension was associated with both LBW and preterm births ($p<0.0001$ for each). Placental abruption was a risk for both LBW and preterm delivery ($p<0.0001$ for each), placenta previa was a risk for LBW ($p=0.04$), and gestational diabetes was a risk for preterm delivery ($p=0.007$).

Conclusion

The little-studied Hmong population has a high risk of poor birth outcomes. Their unique profile in terms of demographics, health care-seeking behaviors and co-morbid conditions of pregnancy contribute to this risk and warrant further study with an appropriate comparison group.

POSTER PRESENTATION ABSTRACTS

(IN NUMERICAL ORDER BY POSTER BOARD NUMBER)

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Poster Session I
Poster Board No. 1

Culturing Clothes: Recreating a 1920s Garment

The goal of my project was research a garment in the Fresno State Costume Shop's Vintage Clothing Collection in order to recreate a wearable version to fit the modern body for theatrical performance and rental. For my presentation I will bring two dress forms to display the original 1920s garment and the reproduction I built. In order for the final product to be possible I researched how the dresses during this period were built as well as investigating the garment itself. Some techniques used to create the original dress were not feasible or sensible for a costume reproduction, so adjustments were made. The fabric was chosen based off the original and as part of the project, this new fabric was processed and dyed a new color to appeal to prospective renters. For the embroidery, multiple samples were made with machine and hand stitching and the positives and negatives of both tactics were noted. In the end, the overarching goal of the project was achieved: to learn more about clothes (and thus the culture) from another period by utilizing and spreading awareness about Fresno State's Vintage Clothes Collection.

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Regular Breakfast Consumption and Children's Performance on the California Fitness Test

In this study we aimed to examine the relationship between breakfast consumption and elementary school children's performance on the aerobic capacity physical fitness test in California schools. Questionnaires were sent to parents asking about their child's nutritional habits and height and weight. Eighty-seven children participated in an endurance run facilitated by the researchers, and filled out questionnaires asking about their nutritional habits and physical activity. In our sample, 77% of children were normal weight, 17% were overweight, and 6% were classified as obese. In regards to fitness performance, 64% were classified in the healthy zone based on their fitness performance on the aerobic capacity test. ANOVA results revealed that regular breakfast consumption is associated with better performance on the PACER test, $p < .05$. Students who regularly consumed breakfast had an average of 26 laps while those who only sometimes consumed breakfast had an average of 18 laps. For 5th and 6th grade boys, this could be the difference between performing in the healthy zone or performing in the needs improvement or at-risk zone. Additionally, the quality of the breakfast on the day of the test was significantly related to performance on the fitness test ($p < .05$), with a higher quality breakfast being related to better performance. With the connection between breakfast skipping and obesity, emphasizing the importance of eating breakfast may be an important component to consider including in interventions, prevention programs, and physical education curriculum.

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Poster Board No. 3

Mapping of the Grandad Site Near Mariposa, California

The Grandad site is an archeological wonder located in the foothills of the Sierra Nevada, California near Mariposa. The site has been occupied, almost continuously, by Native Americans for at least five thousand years. Long-term settlements, like the Grandad site, are archeological anomalies, making it a prime location to study long-term cultural variability in the pre-Miwok and Miwok cultures. However, the current mapping resolution of the Grandad site is not ideal. Without a detailed map of the individual features and the age distributions of the site, conclusions regarding the development of the native cultures are challenging.

As of yet, eighteen of the forty-five subaerial bedrock features have been mapped with respect to each other and characteristic landforms. These measurements were made using compasses, transit systems, and tape measures and have been uploaded into a digital map. Additionally, each individual feature was recorded and the anthropogenic structures on each feature were mapped with respect to each other. This process allows for a multidimensional analysis of the site – on the individual feature level and as a whole. Currently, the remaining twenty-seven features are being characterized, recorded, mapped, and uploaded into the digital form for future use. Future studies will incorporate archeological, biota, and geochronological data into the digital map. Additionally, this map will act as the foundation for a potential doctoral project looking at the statistical variations in the magnetic properties of archeological artifacts through time, through the Scripps Institution of Oceanography at UC San Diego.

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Perception of Elementary School Staff on Child Bereavement

Introduction: Death and grief will affect the lives of students at some point, often resulting in academic performance issues, social relationships, mental health, and behavioral concerns. Prior studies reported that children who receive compassion, understanding, and early intervention can heal and grow from their bereavement experiences. This study examined elementary school staffs' perceived preparedness to assist students experiencing loss and bereavement.

Methods: An online survey questionnaire was sent to two elementary schools in Kings Canyon Unified School District in California.

Results: Twenty-six school staff (16 teachers, 7 helping professionals, and 3 other) completed the survey. Ninety-two percent of the respondents were female, 58 percent Hispanic, and 42 percent Caucasian. The respondents age ranged from 20 – 51 and above); the majority were aged 51 years and older (n = 8). Approximately 78 percent reported that they have not received training on assisting students with loss and bereavement. In the past two years, 74 percent of the respondents have encountered at least one student who has experienced the loss of a close relative. However, most of the respondents did not feel adequately prepared to assist students with their loss and grief. Eighty-eight percent of the participants expressed the need for training on grief and loss to better assist their students. This finding is consistent with previous research which reported that most school staff have little or no training in helping grieving students.

Conclusion: School social workers can play a vital role in assisting and promoting grief awareness training to school staff. Future research should focus on implementing grief and loss training in rural elementary schools. The study findings are limited due to the small sample size.

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Poster Board No. 5

The Efficacy of Concurrent Treatment in Improving Speech Sound Production and Generalization in a Child with a Cochlear Implant

This study examined the treatment efficacy of a behavioral speech therapy program utilizing Concurrent Treatment, a randomized variable practice sequence, with a profoundly deaf child who used a unilateral cochlear implant (prosthetic device used to provide the sensation of sound). A multiple-baseline-across-behaviors research design was used to examine the effectiveness of a Concurrent Treatment program for speech therapy on improving the production of target speech sounds in a child with a unilateral cochlear implant, who participated in a structured individual therapy program based on behavioral principals and methods. In addition, pre-test and post-test scores from a standardized articulation test, the Arizona Articulation Proficiency Scales, Third Revision (Arizona-3) (Fudala, 2000), and measurement of speech errors during spontaneous conversational speech were compared. Generalization to untrained stimuli and to conversations across settings (i.e. clinic, home, school) was also assessed.

Use of Concurrent Treatment yielded positive results in the participant and was proven to be effective and efficient in improving speech sound production and generalization in a child with a cochlear implant. Progress made during the study was quick, and the participant demonstrated significant generalization across untrained stimuli and to conversational speech across settings (i.e. home or clinic). A maintenance measure was taken after treatment was discontinued to see if the participant maintained accurate production of the target behaviors, of which the participant did. The findings from this study will contribute to evidence regarding speech treatment techniques for the correction of speech sound errors in individuals using cochlear implants.

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Poster Board No. 6

Effectiveness of an Educational Presentation in Increasing the Knowledge of Fall Prevention in Older Adults Living in Fresno

Background and Purpose:

As the population ages, falls are on the rise as a leading cause of injury. Studies show that older adults have minimal working knowledge of fall prevention. We know that fall prevention programs can increase a person's knowledge, however fewer studies examine an educational program alone. Therefore, this project investigates the effectiveness of an educational presentation in increasing knowledge of fall prevention.

Methods:

Fall prevention presentations were delivered to groups of 15-30 seniors at 7 different sites. 87 seniors participated with a mean age of 80.4 + 9.02 s.d. 82% were female and 44.7% reported at least 1 fall in the last year. A preliminary survey was given before the presentation that asked participants to rank their level of knowledge on fall prevention and asked to list three things that can help prevent a fall. The presentation displayed basic information about fall risks and fall prevention. After the presentation, participants were re-surveyed.

Results:

There was a statistically significant increase in rankings of knowledge from pre to posttests (mean scores of 4/7 pretest vs 5.3/7 posttest) using a paired t test ($p<.01$). There was also a statistically significant increase in the number of risk factors listed posttest (mean scores of 1.7/3 to 2.8/3) using a paired t test ($p<.01$). When the increase in knowledge across sites was compared, there was no significant difference.

Conclusion:

A brief (10-15 minute) presentation about fall risk factors to a group of seniors was effective in increasing their awareness of fall prevention.

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Poster Board No. 7

Magnetorheological Shock

Magnetorheological (MR) is a fluid classed as a "smart" material, having the ability to change from liquid to a solid within micro seconds. The state of the fluid can be reversed just as quickly. The MR fluid contains iron particles that when exposed by a magnetic flux assembles together, changing the viscosity of the fluid. Applying a magnetic field to the fluid transforms its viscosity and becomes a stiff damper when needed. Then when a soft damping is desired, it can be done by reducing or removing the magnetic flux. These dampers/shock absorbers are rarely seen outside a few high-performance car suspensions. Its main job is to minimize the bouncing of the vehicle going through rough terrains. In order to achieve a much better dynamic response and riding control during abrupt impulses induced by the road surface, the damper's damping coefficient will undergo various changes. The adjustment will give the correct values for the MR fluid's viscosity and yield stress. The micro-controller Arduino will be used in the involvement in the fluid damper's damping ability. The process will take the motion input, i.e. large displacements, velocities and acceleration due to bumps and apply an out sending a signal to activate the viscosity.

As a current active member of Fresno State's Baja team, I plan on testing this shock absorber on our vehicle. At the moment, the vehicle is still being assembled, so I haven't been able to do any testing yet. However, while the team is in the final stages of completing the vehicle, I am designing the suspension system that will be incorporated into the system. I am confident by the end of my research, not only will I be more familiar with the MR fluid characteristics' application, but I will also have a unique design suspension for Baja to display at the completion.

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Poster Board No. 8

Design of a Dynamically Scaled Robotic Bladderwort for Flow Visualization

Many aquatic organisms capture prey by suction, and the mechanics of suction feeding are well understood in large animals (> 10 cm). Yet the smallest suction feeders (≤ 3 mm) present a fluid-dynamic puzzle: current models predict that prey capture on this scale is ineffective. In order to investigate the physical limitations and corresponding biological adaptations, we have chosen bladderwort as a model organism for experimental, theoretical, and simulatory studies. This family of aquatic carnivorous plants ranges down to 0.2 mm in size, perhaps limited by fluid mechanics. We have previously presented high-speed video recordings of live prey capture by relatively large specimens. Now, in order to observe the flow fields in greater detail (and to test the consequences of operating outside the natural parameter space), we are building a working model of the suction apparatus. For a given nozzle size, the timescale and fluid viscosity can be chosen so as to preserve the relative size of the flow field. A larger model requires slower suction; since these adjustments increase the spatial and temporal resolution of our visualization methods, the model will provide a stringent test of analytic and computational theory.

Our poster presents the overall BladderBot design, a result of dynamic scaling calculations in the context of practical robotics. Interest is focused on the external mouth of the bladderwort as it narrows to the minimum-diameter flow bottleneck, where viscosity has the greatest effect. Based on imaging of bladderwort specimens, the model nozzle is scaled up, 3D printed, then mounted to a hydraulic piston submerged in a large reservoir of viscosity-tuned oil. The piston is driven by a programmable linear actuator which creates a suction flow from the reservoir into the nozzle. The control system must accommodate programming of the suction volume in time, logging of the volume and/or applied force, and synchronization with multiple high-speed cameras. An overriding consideration for the selection of actuator and construction materials is the need to reproduce the sudden onset of flow and the concomitant large accelerations.

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Acoustic Noise Reduction

Noise reduction systems are used in a wide variety of applications including quiet car cabins, libraries, headphones and controlled laboratory facilities. The purpose of this project is to further research the development of low cost noise reduction systems using components available to the everyday person.

Noise reduction is achieved by producing an opposite sound wave to the one intended to be cancelled; the net result is a cancellation of the sound waves. This is accomplished by collecting time dependent audio data from the incoming sound wave and converting it into frequency. Once the frequency is obtained the opposite sound wave is constructed and sent to a speaker. The source waves were captured with a microphone and analyzed with LabView software.

The research, which is ongoing, will attempt to cancel source sound waves that have only one frequency. Further research will include optimizing the noise cancelling process as well as cancelling source sound waves composed of multiple frequencies.

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Poster Board No. 10

Designing a Robot With Shape Metal Alloy (SMA) as Actuator and Controlling It with Arduino

The purpose of using shape-memory alloy (SMA) in replace of electric motors is to reduce the cost and weight of a product. The objectives of this research are to prove that SMA wire can be used to replace electric motors and show the efficiency of it versus conventional counterparts. A mini-robot was designed with four legs and one arm, which only used SMA wires to move each component. SMA is a smart metal that remembers its original shape. If the SMA is deformed through force or other means, it will return to its pre-deformed shape when heated. The SMA in this experiment was heated by passing electricity through each wire. Torsion springs were also used to deform the SMA and helped move the components back to their original position. The robot was then programed with the microcontroller Arduino that controlled the level of electricity being inputted to each SMA wire. The degree of inputted electricity directly relates to the output of heat to the SMA wire. Standard equations of motion for SMA were also derived and used to model how SMA would move in relation to the inputted electricity in Simulink (Simulation and Model-Based Design). With the combination of Arduino and Simulink, the robot was controlled via controller and demonstrated that SMA can be used in replace of electric motors. Though the adaptation of using SMA wire greatly reduces the efficiency of the robot, it proves that alternative methods can be used to electronic motors.

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Magnetorheological (MR) Fluid Brake for Prosthetic Knee

This research focuses on applying smart materials for an above knee amputee and identifying the best design for this application. The aim was to demonstrate using Magnetorheological (MR) fluid and Shape Memory Alloy (SMA) wires are a viable alternative to electric motors and hydraulics. A novel MR brake was designed and optimized for walking at low impact and speed. The majority of available prosthetic limbs rely on electric motors that require a high amount of current to sustain a fixed position. An MR brake has the potential to be more efficient and provide a lighter, fast responding limb. Literature review was undertaken on MR fluid behavior and modeling. Examination of MR brakes, in similar applications, and patents were done in order to help spur innovation. Finite-Element Method Magnetics (FEMM 4.2) software was used to analyze various geometric layouts to find the highest magnetic density across the fluid gap. After the layout was finalized a computer-aided design was developed based on the optimal geometry found. These first two phases have resulted in unique features in the MR brake. One of the two features is the use of a non-circular rotor instead a long cylindrical rotor. The other key feature is the triangular magnet used to localize the field and save weight. Future works include mathematical modeling, verification and control system.

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Poster Board No. 12

Vertical Axis Wind Turbine Dynamic Analysis

The objective of this study is to analyze the structural instabilities of vertical axis wind turbines. Vertical axis wind turbines are known for producing very low starting torque and are also known for experiencing dynamic instabilities. Several studies have demonstrated that the blades within the turbine experience structural instabilities due to a wide variation of forces acting on the blades during the turbine's normal operating conditions. In addition, the blades within the first turbine prototypes have been known to experience bending and twisting during normal operating conditions which create structural instabilities within the turbine. Thus, the following analysis points out several methods which can help address and solve the structural instability issues occurring among vertical axis wind turbines. A dynamic analysis compose of a vibration, static and aerodynamic analysis are the methods outline in this study in order to address the structural instabilities occurring among vertical axis wind turbines. The results highlight the turbine's dynamic characteristics which result in the turbines structural instabilities. The results demonstrate vertical axis wind turbine's experience structural instabilities due to the resonance occurring among the turbine blade's natural frequency and the turbine's harmonics happening during operating conditions.

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Poster Board No. 13

Synthesis and Cytotoxic Evaluation of Genistein Analogs as Anticancer Agents

Genistein is a bioactive isoflavone derived from soybeans. The correlation between the intake of genistein and the decreased incidence of some solid tumors (e.g. breast and prostate cancer) has been evidenced by epidemiological studies. Genistein entered clinical trial as a chemopreventive agent to prevent breast and prostate cancer in 1996. Genestein exhibits an anticancer potential in cell cultures and in animal models. However, there is only a little report on the cytotoxicity of its analogs and derivatives.

The current study is to synthesize genestein analogs for its cytotoxic evaluation towards an aggressive cervical cancer cell line (HeLa) and two prostate cancer cell lines (PC-3 and DU-145). Five genistein analogs in which ring C (phenol) in genestein has been replaced by various heteroaromatic rings have been successfully synthesized. The chemical synthesis of the analogs has been achieved through a four-step reaction sequence with Suzuki-Miyaura coupling reaction as a key step. The structures of the analogs have been confirmed by analyzing their 1H NMR and 13C NMR spectra. The cytotoxicity of the synthesized analogs against the HeLa cell line has been evaluated, and the results showed that these analogs are less cytotoxic towards HeLa cells than genistein. The cytotoxicity of these synthesized analogs against two human androgen-independent prostate cancer cell lines (PC-3 and DU-145) will be evaluated. The available biological data are being used to design better genestein analogs.

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Poster Board No. 14

Structure-Activity Relationship Studies on Curcumin-Based Anticancer Agents

As part of our ongoing project to engineer improved curcumin ananlogs for the potential treatment of aggressive cancers, the purpose of this project is to explore the structure-cytotoxicity relationships of heteroaromatic curcumin analogues. Five scaffolds of heteroaromatic curcumin analogs have been designed by incorporating different linkers between two identical heteroaromatic rings. Five linkers are N-methylpiperidone, cyclohexanone, dienone, trienone, and 4,4-dimethyl-1,6-dien-3,5-dione. Ten analogs have been synthesized using different reaction sequences, and their cytotoxicity against an aggressive cervical cancer cell line (HeLa) has been evaluated by trypan blue dye exclusion assay. The results showed that the five-carbon linkers are generally better than the seven-carbon linkers. Among the three five-carbon linkers, the linear dienone is the optimized linker. The design, synthesis, cytotoxic data, and structure-activity relationships will be presented.

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Poster Board No. 15

Redox Active Organic Signatures in Particulate Matter

Reactive oxygen species are a class of reactive compounds that are known to initiate cell injury by means of oxidative stress. They are the leading hypothesis for the mechanism of particulate matter pollution's role in illness, particularly cardiovascular diseases and asthma, because they cause inflammation in the lungs. This study reports the findings from a Claremont, CA summer 2012 sampling period. Through gas chromatography-mass spectrometry, quinones, polyaromatic hydrocarbons, and two chemical tracers (levoglucosan and 17α(H),21β(H)-Hopane) were measured. Several quinones were identified in the vapor or particle phase including 1,2-napthoquinone, 1,4-naphthoquinone, 1,4-chrysenequinone, and 5,12-naphthoquinone. The results were used to assess potential sources of these compounds, and were combined with results from parallel studies investigating the ROS production by measured organics. Results suggest that the contribution to the overall ROS formation in fine particulate matter is small in the samples collected.

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Poster Board No. 16

Real Time Monitoring Of Enzyme Kinetics by Nuclear Magnetic Resonance (NMR) Spectroscopy

Kinetics provides useful data for understanding reactions. An important branch of kinetics widely studied is Enzyme Kinetics. The kinetics of an enzyme catalyst binding on a substrate may vary depending on the strength of their affinity. If the affinity of the reaction is strong, then the possibility of lowering the activation energy occurs and in turn forms a product more quickly. The rate at which the enzyme helps to catalyze a substrate into a product can be interpreted through the Michaelis-Menten equation. Traditionally, enzyme kinetics is tested through techniques such as UV-Vis spectroscopy, polarimetry, and titration. However, these methods only provide insight into enzyme-subtrate activity at the beginning and the end of each reaction. Nuclear Magnetic Resonance (NMR) spectroscopy is a powerful experimental method that studies the structure and dynamics of small molecules to large proteins. By using this method, enzyme kinetics can be monitored in real time. Through an array of 1D experiments, the conversion of sucrose to glucose and fructose by the enzyme invertase, can be monitored systematically following the time dependence of sucrose and glucose specific peaks in the NMR spectrum. To determine both Vmax (maximum velocity) and KM (Michaelis-Menten constant), the results were analyzed using both the traditional Lineweaver-Burk plot and the Lambert W function, a comparative analysis of the progress curve. We expect that real time NMR based method for enzyme kinetics will be widely used in the classroom and replace the traditional methods as well as in laboratory research related to enzyme catalysis and inhibition.

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Poster Board No. 17

Study of The Regulatory Role Of Bcl-2 Family Proteins on Lactic Fermentation

Apoptosis is defined as a mechanism of programmed cell death that is essential for tissue homeostasis in multicellular organisms. This process is highly controlled by interactions between Bcl-2 family proteins in the mitochondria that contain both pro-apoptotic and anti-apoptotic members. We worked with Bcl-2 and Bcl-xL, two Bcl-2 family members that play a role in inhibition of apoptosis; and Bcl-2 G145E, a mutant form of Bcl-2 that has lost its ability to interact with Bax.

It has been shown since the discovery of the Warburg effect that cancer cells are prone to increase their glycolytic/fermentative activity. Most recent studies have also indicated that upregulation of anti-apoptotic Bcl-2/Bcl-xL may favor tumor formation. However, very little information exists concerning the direct effect of Bcl-2/Bcl-xL expression levels on the regulation of carbohydrate metabolism. Our main goal is to characterize the effects of anti-apoptotic Bcl-2/Bcl-xL on energy metabolism in FL5.12 prelymphocytic murine cells, particularly their subsequent effect on glycolysis and lactate production.

The first step of our overall examination of the global activity of the glycolytic/fermentation pathway in cells overexpressing Bcl-2 or Bcl-xL included measurements of specific activity of lactate dehydrogenase (LDH), the enzyme allowing the catalysis of the last reaction of the lactic fermentation pathway. LDH assays were performed on total protein extracts from FL5.12 cells overexpressing Bcl-xL, Bcl-2, or Bcl-2 G145E. Enzyme activity was measured at Vmax and rate of production of NADH was measured spectrophotometrically as an increase in absorbance at 340 nm. Differences in specific activities for each cell line were observed. Bcl-2 overexpressing cells had a significant increase in LDH activity. Interestingly the overexpression of the mutant Bcl-2-G145E, which had lost its ability to interact with Bax, led to the obtention of LDH activity similar to that of the parental cell line. These preliminary results indicate that Bcl-2 plays a direct role in carbohydrate metabolism and that the ability of Bcl-2 to interact with Bax is essential during this process.

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Poster Board No. 18

Stability and Proteases Resistance of Camelidae Nanobodies for the Development of Oral Therapeutics

An illness affecting approximately 1600 people per year, the effects of Listeriosis can be devastating. According to the CDC, it results in 260 deaths annually in the United States. Due to its ability to cross the placental barrier, it is especially harmful when it infects pregnant women and their unborn child. This study aims to develop oral therapeutics that can target the disease. The immune systems of camels, alpacas and llamas produce a unique heavy chain only antibody, by cloning the variable region of these antibodies the smallest known antigen binding fragment is produced, the nanobody. Due to the unique binding sites of nanobodies, they are able to bind epitopes frequently unavailable to traditional antibodies. They also have unusually high affinity and stability. We have isolated five nanobodies that potentially inhibit Listeria colonization of cells, and offer the potential for a new type of Listeria therapeutic. In order to develop effective pharmaceuticals that block infection by Listeria, we must understand the stability of the nanobodies in the conditions of the human body. To this end we are examining the resistance of the nanobodies to the digestive proteases trypsin, chymotrypsin and pepsin using gel shift assays. We are also examining the thermal stability of the nanobodies using differential scanning calorimetry. The results obtained form this study will guide future development of these nanobodies as oral therapeutics for treatment of Listeria.

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Specific Quantification of Activated Bax using a Conformation-Specific ELISA Method

Apoptosis is initiated upon the reception of a stress signal which may originate from inside or outside the cell. The cell death signal is received by a group of proteins known as the Bcl-2 family which consists of both pro- and anti-apoptotic members. Upon reception, a pro-apoptotic protein known as Bax (Bcl-2 associated X protein) is transformed from a cytosolic monomer to an activated oligomer within the mitochondrial membrane. These oligomers then form the mitochondrial apoptosis-induced channel (MAC), the pores through which cytochrome c and other effectors leak into the cytoplasm and essentially kill the cell.

The activated Bax oligomers may be used directly as early markers of apoptosis; and indirectly as indicators of the progression of diseases which are associated with an over-activation or a major inhibition of apoptotic cell death. The quantification of the activated/oligomeric form of Bax may therefore represent a promising diagnostic tool in the treatment of cancers, neurodegenerative, and autoimmune disorders. However, current methods used only provide a qualitative (or at best semi-quantitative) detection of Bax. In order to be utilized in medical practice, methods of full quantification of the activated Bax oligomer must be developed. The purpose of this study is to establish a protocol which would allow for this quantification, specifically by using an enzyme –linked immunosorbent assay (ELISA). This technique utilizes antibodies which are capable of binding to the oligomeric form of Bax specifically. After the binding of protein and antibody, Bax is quantified using colorimetric analysis.

Using recombinant protein, we have been able to verify the specific binding of antibodies to the oligomeric form of Bax. Our assays show a response in absorbance of oligomeric Bax that is several times that of monomeric Bax of the same concentration. This ELISA allows for the specific quantification of the activated Bax protein in vitro; and future studies will test if the specificity of this ELISA is maintained in more complex biological samples such as mitochondria and cell total protein extracts.

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Poster Board No. 20

Isoprene Hydroxynitrates

Isoprene is a volatile organic compound (VOC) that is emitted into the atmosphere by plants and trees. It has the largest emission rate of any VOC and is very reactive, and therefore has a major impact on the chemical composition of the atmosphere. Isoprene hydroxynitrates (IHN) are formed in the atmosphere from the chemical degradation of isoprene. The atmospheric chemistry of these compounds is of interest because of their potential to produce aerosol particles and to mediate ozone formation by affecting atmospheric levels of nitrogen oxides. However, despite their importance, the atmospheric chemistry of IHN is not well understood. Isoprene hydroxyl nitrate was injected into a chamber containing air. Chemistry was initiated using either ultraviolet light or by the addition of ozone. Changes in chemical composition were monitored using long path infrared spectroscopy and proton transfer reaction mass spectrometry. Reaction rates were determined using the relative rate technique, and some reaction products were monitored to evaluate the reaction mechanism. Based on the rate constants measured, reaction with hydroxyl radicals is expected to be the major chemical sink for IHN. The yield of formaldehyde from this reaction is high (88%), suggesting that nitrogen oxides are not a product of the reaction. The implications of these results will be discussed.

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Poster Board No. 1

Nitrogen Uptake of Glyphosate-Susceptible and Glyphosate Resistant Horseweed and Hairy Fleabane Seedlings

Horseweed (Conyza candensis) and hairy fleabane (C. bonariensis) are troublesome weeds in California. Further, glyphosate resistant (GR) populations of these species occur in California. Earlier reports showed differences in the growth rates of the GR and glyphosate-susceptible (GS) populations. However, it is not known if this was due to differences in nitrogen (N) uptake. Therefore, the objectives of this project were to determine N uptake patterns and effect of N rates on GR and GS biotypes of the two species.

An ion exchange study was conducted to determine N uptake pattern and uptake using CaSO4 and KNO3 solutions. Only the roots of the plants were exposed to the solutions. The solutions were changed every 12 hours, 4 times and the pH and nitrate (NO3-) concentration of the solution was measured each time. After 48 hours, the shoot and root weights of the plants were recorded. In the second study, the plants were grown in pots containing potting medium. Measured amounts of N fertilizer were applied weekly. After 60 days, they were harvested and biomass was recorded. Data were subjected to analysis of variance ($\alpha = 0.05$).

Results showed that the GR and GS hairy fleabane had similar NO3- uptake; however, the GS horseweed was more efficient than the GR horseweed in NO3- uptake. The root weight of GS hairy fleabane was greater than that of the GR hairy fleabane but the shoot weight was similar. In contrast, the shoot weight of the GS horseweed was greater than the GR horseweed.

The GS hairy fleabane had more root and shoot biomass than the GR type at all N levels. However, in horseweed, only the root biomass was greater in the GS than the GR type. Therefore, differences between the biotypes were observed in N uptake pattern and response to N rates.

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Poster Board No. 2

Spent Oyster Mushroom (Pleurotus Ostreatus) Substrate as a Pre-Emergent Bio-Herbicide

Weed management in organic cropping systems has often been cited as a major problem. Weed control in these systems generally rely on mechanical or physical methods because of the lack of reliable, organically accepted herbicides. In recent years, some organic herbicides have been accepted and registered for use in these certified organic systems. However, all of them are non-selective post-emergent materials that have the potential to injure the crop. Therefore, development of an organically-acceptable bioherbicide that prevents weed seed germination and seedling emergence can be of benefit to organic producers.

Isolated cases of allelopathic properties of spent oyster mushroom (Pleurotus ostreatus) substrate on weeds and crops have been reported in literature. The spent substrate is readily available locally and the material at present is being disposed as waste material by the mushroom industry. Therefore, the costs of developing this product as a bioherbicide may be very low. The range of weed seeds that are susceptible to extracts of this substrate is, however, unknown. Similarly, the phytotoxicity of the material to transplanted crops is also unknown. Therefore, the objective of this study was to examine the potential of extracts of spent oyster mushroom substrate as a pre-emergent bio-herbicide.

Spent oyster mushroom substrate was obtained from a local mushroom farm in Fresno. The volume of 3 kg of the substrate was measured and a volume of deionized water equivalent to half that of the substrate was added (1:0.5, v/v i.e. 3 kg of substrate and 3.22 l of water). The substrate and water was thoroughly mixed and allowed to soak for 24 hours. The extracted solution was filtered and collected in a conical flask. Twenty five seeds each of common weeds such as common purslane (Portulaca oleraceae), field bindweed (Convolvulus arvensis), hairy fleabane (Conyza bonariensis), horseweed (C. canadensis), and Palmer amaranth (Amaranthus palmerii) were placed in a 9.5 cm diameter petri dish containing Whatman#2 filter paper. Five ml of the solution was pipetted into each petri dish. An additional set of seeds was put into petri dishes and 5 ml of deionized water was added. The petri dishes were immediately sealed with parafilm and placed in a growth chamber at a constant temperature of 20°C with a 12 hour day light. Each treatment was replicated five times and the experiment was arranged as a completely randomized design. The seeds were checked for germination every third day for two weeks. A seed with a 1 mm radicle and plumule emergence was considered as germinated. Data for total seed germination was recorded. The experiment was repeated. None of the seeds of the weed species tested germinated in the solution containing the oyster mushroom substrate extract whereas, the seeds of all the species germinated in the petri dish containing deionized water. Therefore, this study showed that the oyster mushroom substrate extract contained some allelochemical(s). A low molecular weight phenolic composition test is being conducted to determine the potential allelochemical(s) in the extract. The study will be expanded to larger greenhouse and small plot studies to examine the potential of this substrate as a pre- and post-emergence bioherbicide.

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Poster Board No. 3

Fabrication Of SU-8 Nanofibers via Electrospinning

In this project we focus on the development of polymeric electrospun nanoscale fibers that can be used for various applications such as filtration, textile manufacturing, and medical uses that range from tissue engineering to drug delivery. Electrospinning is a fabrication technique in which an electrical charge is passed through a liquid polymer using a metal syringe tip in order to draw fibers at the size of nano or micro scale. To study the fabrication we included how various parameters, such as needle gauge, deposition distance, voltage, flow rate, polymer concentration, and conducting material can affect the surface morphology of the electrospun nanofibers and their formation. The candidate material chosen is SU8, which is an epoxy based negative photoresist. Due to its viscous properties, SU-8 is commonly spun or spread over a surface and processed using contact lithographic methods. The lithography exposes certain regions of SU-8 causing crosslinking of the polymer chains and patterning the spread into a specific structure. Nanoscale SU8 fibers were achieved by creating two different concentrations of SU-8 solutions (100% and 94% w/v) and manipulating multiple variables from the electrospinning, primarily voltage and height, to find a set of parameters that could produce continuous nanofiber structures. To achieve the optimum fiber diameters varying needle gauge between 18-23, it was determined that for the 100% SU-8 solution, optimum fibers of a diameter of 1μm were produced at a deposition height of about 5 cm and at a voltage range of 5.5 KV. For the 94% SU-8 solution diluted with cyclopentanone, continuous nanofibers of a diameter of 5-7μm were produced at a height of 5.5 cm and a voltage range of 5.8 KV. These parameters will be used to study the reproducibility and alignment of the nanofibers for microfluidics and biomedical applications.

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Improving Branch Prediction Performance in a Multicore Processor

Modern processor design technology has moved towards multicore processors from complex and highly energy consuming processors. One of the major hurdles in modern processor design is manipulating branch instructions, which direct the program control to move to one of two destinations based on the result of a condition check. Since modern processors are deeply pipelined, they must predict the outcome of a branch decision before it is made to reduce the branch misprediction cost, which includes backtracking operations. Branch prediction logic hired in the processor is responsible for reducing the misprediction rate.

In this research, we address the issue of achieving high performance on branch prediction in a multicore processor environment. Our proposed approach uses idle core(s) in the processor to reduce the overall branch misprediction cost by executing both branching directions in parallel, rather than improving the accuracy of each core's branch predictor.

To measure the performance of the proposed approach, we built a simulator capable of executing a program with a given number of cores, which are based on a MIPS processor, and processed a bundle of test bench programs, which consist of common integer operation functions. Each core in the simulator is equipped with a generic 2-bit history-based branch predictor, and state transition logic is added to implement the proposed prediction scheme.

In our practice, we used variable rates of idle core availability to measure the efficiency of the scheme. In the case with using four cores and 50% idle core availability rate, our most complex test bench program, selection sort, showed that 9.3% of processor execution time is saved. It is also observed that random availability rate yields analogous gain. Although our experiment is limited to integer operation programs, it is demonstrated that the proposed approach achieved a considerable amount of performance gain by utilizing idle cores during computation.

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An Efficient Protection Scheme for Database-Driven Web Sites from SQL Injection Flaws

SQL (database query) injection is a type of frequently reported security attacks on database-driven Web sites in which the attacker executes unauthorized SQL commands through insecure codes, bypassing the firewall. To prevent the SQL injection attacks there have appeared various protection schemes including Dynamic Candidate Evaluations Approach, SQL-IDS Approach, SQLIA Prevention Using Stored Procedures, SQLrand Scheme etc.
In this research, we design and implement an efficient method of authentication based on a couple of hashing operations and multiple databases to achieve higher security from SQL injections. The proposed protection system model consists of three phases, which are registration, login and validation phases, respectively in order. In the proposed scheme, one database is used to store the product data and the other one is used to store information from hashing queries and pre-defined results from other queries. By using multiple hashing operations and dual functioned databases, the proposed scheme achieves higher efficiency than the existing schemes, which do not use sophisticated hashing operations. The implementation of the proposed scheme is done with Mac OSX system with script and database query languages, including HTML, PHP and MySQL. To implement the enhanced encryption, we also used SHA-512, which is a cryptographic hashing function.

To measure the performance of the proposed approach, we tested with a number of simulated attacks with various settings of the database size. In our practice, the proposed approach showed that the protection rate was 100% comparing to the existing schemes, which showed that at least once the protection was failed. Based on our experimental results, we conclude that the proposed authentication method is highly effective for preventing SQL injection attacks with negligible amount of time overheads, which is less than the factor of 10^-2 seconds.

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Poster Board No. 6

An Invariant for Virtual Singular Links

A singular link is an immersion of a disjoint union of circles into three-dimensional space, which admits only finitely many singularities that are all transverse double points. A singular link diagram is a projection of a singular link into a plane, and contains two types of crossings, namely classical crossings and singular crossings.

Virtual knot theory, introduced by Lou Kauffman in 1996, can be regarded as a "projection" of classical knot theory in thickened surfaces. We take one step further by studying virtual singular links, which can be thought as immersions of disjoint unions of circles into thickened surfaces. A virtual singular link diagram contains then three types of crossings: classical, singular, and virtual crossings. Much as in the case of the classical and virtual knot theory, when studying virtual singular links we seek for ways to tell them apart. An invariant for a virtual singular link is a quantity associated to it, which is independent on the link diagram, and may provide a powerful tool at distinguishing virtual singular links.

In this research, we employ a certain model for the sl(n) polynomial of classical links and extend it to a polynomial invariant for virtual singular links, which is defined as a state-sum formula.

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Poster Session II
Poster Board No. 7

Specific Heat of Pr1−Xndxos4sb12 from 10k To ~300k

The filled skutterudite compound, PrOs4Sb12, displays unconventional superconductivity at a relatively low critical temperature Tc=1.85K. The underlining physics behind this heavy fermion superconductor compound is largely unknown. To gain better insight into this phenomenon, we study the effect of ferromagnetism on the unconventional superconductivity of PrOs4Sb12 by using Neodymium- doped samples Pr1−xNdxOs4Sb12. We measured the heat capacities of the sample with x=1, 0.75, 0.5, and 0.25 using relaxation calorimetry of finite heat pulse width in a cryocooler system from 11K to 300K. The electronic specific heat coefficient, from the analysis of specific heat, of end member compound x=1 concentration is found to be ~35 mJ/K2-mol; this is smaller than previously estimated ~520 mJ/K2-mol below 10K, but it is still relatively large when compared to simple metals, which are typically ~1 mJ/K2-mol. The doped compounds x=0.25, 0.5, 0.75 were found to have electronic specific heat values of ~20 mJ/K2-mol, ~35 mJ/K2-mol, and ~10 mJ/K2-mol, respectively. This presentation will describe the technique used in obtaining the data and report the result analysis of specific heat measurements from sample with x=1, 0.75, 0.5, and 0.25 concentrations.
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Poster Board No. 8

Bow-Shock Nebulae in The WISE All-Sky Survey: Around The Celestial Equator

This is a preliminary survey for bow-shock nebulae within one degree of the celestial equator using the WISE All-Sky Data Release. Bow-shock nebulae are clumps of gas and dust that have been condensed by the winds of stars moving through the interstellar medium. This survey has discovered 24 bow-shock nebula candidates and their candidate wind-blowing stars. The bow shocks were preferentially found at low galactic latitudes and near the Galactic Center and Anti-Center, as expected. Intriguingly and contrary to previous assumptions, they were not found primarily around OB-runaway stars. Of the 15 bow-shock nebulae we discovered with stars with known spectral types, 3 were around OB stars, and 6 were around T Tauri stars or young stellar objects (YSOs). Even more unexpectedly, 6 of the bow-shock nebulae we found are around A- and F-type stars, which seem too cool to excite the nebulae, but too hot to have the massive, dusty wind of an M giant or supergiant.

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Poster Board No. 9

Nonaqueous Synthesis of Gadolinium and Neodymium Nanoparticles

Nanoparticles are of great interest due to their magnetic properties, such as superparamagnetism, that are not exhibited by their bulk counterparts. Gd and Nd nanoparticles are being synthesized using the reverse micelle method. The reverse micelle method consists of using a surfactant with a large nonpolar solvent to polar solvent ratio to form spherical cages that control the size of the products. This study employs DDAB and AOT as surfactants to form the reverse micelles. Many studies using the reverse micelle method employ water as the polar solvent. Since Gd and Nd are highly reactive to water, methanol is being used as a replacement with hexane or heptane as the nonpolar solvent. Gadolinium chloride or neodymium nitrate are reduced using sodium borohydride after the reverse micelles encapsulate the rare earth compound. Scanning electron microscopy (SEM) and light microscopy show small, spherical clusters with diameters in the micron range. Higher magnification of the SEM melted the clusters, so the samples were carbon coated. Energy dispersive x-ray measurements show the reactions happen, but significant oxidation is present. Future efforts will be directed at reducing cluster size by varying chemical proportions and oxidation by cleaning the glove box environment.

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Poster Board No. 10

Thermopower Puck for Measurements of Thermodynamic Properties

A thermopower puck was created in order to measure the thermoelectric power and thermal conductance of strongly correlated electron materials from 10K to 300K. The puck consists of a 2k□ resistivity heater and 2 thermometers. The heater is connected to the top of the sample and applies heat until thermal equilibrium is reached. This creates a temperature gradient across the sample which is read by 2 thermometers, one reading the hotter temperature and the other reading the colder temperature. The wire that is used as the thermal anchor for the high temperature thermometer, which is electrically isolated from thermometer, is also used as one of the leads to measure the thermal voltage produced across the sample. To calibrate the measurement probe, the thermoelectric power and thermal conductance of a nickel sample were measured.

We are currently analyzing and troubleshooting the measurement probe. When the probe is improved, the measured thermopower results will be compared with data provided by Quantum Design. For future work, the measurement probe will be used to investigate the thermodynamic properties of intermetallic compounds.

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Poster Board No. 11

Variability in Hot Subdwarfs and Related Objects from the Palomar Green Catalog

We search for variability in about 988 hot subdwarf stars and related objects chosen from the Palomar-Green (PG) Catalog of Ultraviolet Excess Stellar Objects. Variability in these stars could be from pulsations, cataclysmic variable outbursts or eruptions, eclipses of binary companion star systems, irradiation variations in close binary star systems, and other causes. The PG catalog included stars that were brighter in ultraviolet radiation relative to blue light than in normal stars. Hot subdwarf stars and hot white dwarf stars, both late stages in stellar evolution, dominate the PG catalog. We used the Catalina Real-Time Transient Survey and UBVRI photometric standard stars measured by Landolt to discover that over 100 hot subdwarf stars show evidence of being variable.

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Poster Board No. 12

Exploring Factors Associated with Enrichment of 'Candidatus Liberibacter Solanacearum' in Excised Tomato Leaves

This project studied changes in titer of 'Candidatus Liberibacter solanacearum' (CLso) in aging, excised tomato leaves. The main objective of this study was to describe factors associated with in planta CLso enrichment. We evaluated the factors of cultivar, endophytic bacterial population dynamics and host metabolite profiles as they related to the enrichment of CLso in a novel in planta culture system we called 'leaf culture.' CLso titers, as monitored by qPCR, were observed to increase in CLso infected, excised tomato leaves propagated in potting soil in a greenhouse over time. CLso titers increased up to 224 fold in leaves maintained for 28 days. It was concluded that aging of tomato leaves propagated in potting soil in a greenhouse provided a more suitable environment for CLso enrichment than maintenance in actively growing tomato plants. Plant metabolite profiles were measured over the course of 21 days in order to evaluate changes in plant defense associated metabolism. A significant increase of sucrose concentration over time was observed. Finally, to explore the microbial community dynamics associated with CLso infection in tomato leaf culture, a pyrosequencing experiment using DNA extracted from CLso-enriched tomato leaves yielded 100,867 sequencing reads averaging 419 base pairs each. Basic local alignment search tool (BLAST) analyses with selected bacterial genomes as queries against a database prepared from the pyrosequencing results showed that CLso ranked first among top-hit bit scores (sequence similarity). In addition, a cache of Pseudomonas- and Streptomyces-like bacterial genome sequences was also observed to be similar in abundance to that of CLso. Co-enrichment of these bacteria was further confirmed by PCR experiments. This is the first observation on the association of Pseudomonas-like and Streptomyces-like bacteria with CLso in tomato plants. The observations made in this project will aid in future research to artificially culture CLso and facilitate characterization of its genome.

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A Description of Petrolisthes Cinctipes and Petrolisthes Manimaculis Vitellin and the Development of an Enzyme-Linked Immunosorbent Assay

Petrolisthes cinctipes and P. manimaculis are two closely related species of porcelain crab that live in the upper intertidal zone along the California coast. P. cinctipes is living near its thermal maximum in the upper intertidal zone, and may begin to relocate lower in the intertidal zone, where it is cooler, as the climate continues to warm. The objective of this study is to isolate, purify, and characterize P. cinctipes and P. manimaculis vitellin, which is an egg yolk protein, to develop an enzyme-linked immunosorbent assay (ELISA) protocol that is compatible with Petrolisthes vitellogenin, which can be used to measure the effect temperature has on the fitness of the crabs. The vitellin was isolated from homogenized ovarian tissue by a series of spins in a centrifuge. An SDS-PAGE was used to analyze whether the vitellin protein consists of subunits and a standard curve was developed from a high range molecular weight marker to determine the molecular weight of the vitellin subunits. Using these methods, it was discovered that both P. cinctipes and P. manimaculis vitellin consist of five subunits that have molecular weights of 109,761, 90,962, 79,525, 62,515, and 39,312 Da. Now that the vitellin is characterized, four different antibodies will be tested in a Western blot analysis to determine if any show specificity to the vitellin and vitellogenin. Then it will be possible to develop an ELISA that can be used to measure the concentration of vitellogenin in the hemolymph of both species.

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Poster Board No. 14

Neutralization of Listeria Monocytogenes by Single Domain Antibodies

Listeriosis is a serious food-borne disease caused by the Gram-positive bacteria Listeria monocytogenes. The bacteria are of particular concern for pregnant women, as even in asymptomatic cases the bacteria can cross the placental barrier to cause abortion. Although the bacteria can be treated with antibiotics, inclusion of a prophylactic that can prevent Listeria colonization as a component of pre-natal care would greatly reduce the risk of Listeriosis and abortion of the fetus during pregnancy. Bacterial invasion of epithelial cells is mediated by coupled-bindings of the virulence factors Internalin A (InlA) and Internalin B (InlB) to receptors on the target cell surface. InlA binds the E-Cadherin while InlB binds the hepatocyte growth factor receptor (c-Met) to trigger endocytosis of Listeria. Therefore, inhibition of internalin interactions with their cognate receptors may inhibit Listeria from invading a cell, opening a new therapeutic avenue. Single domain antibodies (sdAb) are the smallest known antibody fragments that retain binding function. They are derived from the unique heavy chain antibodies found in camels, alpacas and llamas. Due to the convex architecture of sdAb binding sites, they can access epitopes unavailable to conventional antibodies, such as enzyme active sites and protein-protein interaction sites. Using gentamicin protection assays and flow cytometry we have demonstrated that InlB specific sdAb are capable of inhibiting Listeria invasion of HeLa cells in vitro. Furthermore, we have discerned the molecular mechanism behind the capability of the sdAb to inhibit Listeria colonization. We have obtained a high resolution X-ray crystal structure of InlB in complex with an sdAb. The structure revealed that the sdAb binds in a negatively charged cavity on the surface of InlB. Comparison of our structure with a structure of InlB in complex with c-Met revealed that the sdAb directly competes for the same binding site as the Listeria cell surface receptor, leading to the invasion inhibition. Our results demonstrate the potential of sdAb as a new class of therapeutics to protect women from Listeria during pregnancy.

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Poster Board No. 15

Effect of Glutathione on Lifespan in Drosophila Subjected to Stressful Conditions

Drosophila melanogaster is an emerging model organism for age related research because it is inexpensive to house, reach adulthood in a short time and have a relatively short life span. I am planning to study the effects of oxidative stresses like caffeine treatment, continuous light and looming visual stimuli on the sleep pattern and the longevity in Drosophila. Simultaneously, the antioxidant glutathione will be provided in the diet to assess its effect in improving the lifespan. My main aim is to show that glutathione counters the oxidative damage produced by oxidative stresses and slows aging.

Sleep is measured using a simple motion detector. Every time a fly crosses the path of the laser beam, the detector records it as one movement but it excludes minor twitching and spasms made by flies. Living and dead flies are counted everyday and to make sure that the flies are not sleeping, they are subjected to shaking.

Flies subjected to caffeine, continuous light and looming visual stimuli showed decreased sleep as compared to control flies. They also showed a decreased lifespan as compared to the control flies. Upon administration of glutathione in the diet, the treatment groups showed an increase in lifespan as compared to those without treated with glutathione.
The results of my findings suggest that glutathione had a positive impact in countering the oxidative stresses and increasing the lifespan in flies subjected to oxidative stresses.

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Metabolomic Analysis of Her2-Positive Breast Cancer Cells

The distinctive nature of HER2-positive breast cancers is marked by overexpression of the HER2 receptor and little is known about its role on cellular metabolism. Changes in metabolic flux are considered a common hallmark of cancers and can be traced to perturbations in gene expression. This study investigates the relationship between HER2 signaling and cellular metabolism in HER2-expressing cell lines, to test the hypothesis that metabolic profiles change with increasing HER2 positivity. A NMR-based metabolomics approach combined with interrogation of public gene expression databases was taken to compare the impact of metabolite and gene expression profiles of four human breast cancer cell lines under two experimental conditions: (1) varying HER2 expression, and (2) treatment with a broad-range phosphatase inhibitor. Data analyses reveal elevated levels of leucine and isoleucine that correlate with increasing HER2 expression. Accumulation of lactate was also seen with increasing HER2 expression consistent with a metabolic flux favoring glycolysis. And phosphatase treatment highlighted a role for two classes of phosphatases in HER2 signaling. This study demonstrates the utility for data-driven research towards biomarker discovery in human disease models.

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Polymorphism Analyses in Specific Xenobiotic-Metabolizing Genes of Hispanic Farmworkers from the San Joaquin Valley with Hormone-Dependent Cancer

Organochlorines (OC) are a common class of pesticides known as endocrine disruptors in humans and are known to modify the effects of estrogen and testosterone, which may act as agonists or antagonists 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 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 will be to evaluate whether there is an association between exposure to OCs and risk of a hormone-dependent cancer (breast or prostate) in the Hispanic population of the intensely agricultural San Joaquin Valley of California. Our case-control study involves Single Nucleotide Polymorphisms (SNPs) analysis of selected genes using DNA samples consented from 42 Hispanic female participants, and 180 Hispanic male participants. In addition to CYP and GST analysis, for the male samples we will follow with Paraoxonase-1 (PON1) analysis. PON1 is involved in drug metabolism and is also responsible for the biotransformation of Organophosphate (OP) pesticides (chemically similar to OC). Female samples have been analyzed of which we found 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 addition, 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). Due to the small sample population for the female study, Odds Ratios are deemed statistically unstable and thus one must be prudent in drawing firm conclusions. Male samples analysis is still on going. Furthermore, 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 for future interventional studies.

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Effect of Nef Protein on TNT Formation in Macrophages

Tunneling nanotubes (TNTs), transient, long, actin-rich projections, are a recently discovered mechanism for long-distance intercellular communication. TNTs are known to readily form between a wide variety of immune cells, including macrophages, as well as in neurons and glial cells. Recent studies using T-cells and B-cells suggested that Nef (Negative Regulation Factor), a small 27-35 kDa myristoylated protein encoded by primate lentiviruses such as HIV-1 virus, induces protrusion formation, thereby contributing to cell-cell spread of viral infection and chronic immune activation during AIDS pathogenesis. But, exactly how Nef induces protrusions remains unclear. We have recently shown that Myosin X (Myo10), an unconventional actin molecular protein, stimulates TNT formation in neuronal cells.

I propose to investigate the effects of Nef on nanotube formation in macrophages, which are important targets during HIV-1 pathogenesis. Determining the mechanism of TNT formation (i.e Myo10-dependent or –independent) will be critical in understanding the role of Nef and TNT in virus-host interaction.

We obtained a murine macrophage (RAW 264.7-N5) cell line that is stably transfected with pSC Nef 51 to produce low levels of Nef, that can be specifically induced with 10μM cadmium chloride overnight to express high levels of Nef. By western blot analyses, I was able to verify Nef expression in N5 cells compared to wild-type macrophages (RAW 264.7) and its over-expression upon cadmium chloride treatment. Preliminary data suggest that Nef expression results in an increase in filipodia and TNT numbers, as well as the length of these protrusions, as observed by fluorescence microscopy. Finally, I am starting to analyze the role that Myo10 might play in this mechanism.

Overall, these data suggest that the regulation of Nef levels in macrophages have a profound effect on the formation of filipodia and nanotubes, and are the first steps toward elucidating its mechanism of action

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Novel Methods for 3D Spheroid Cultures using MDA-MB-231 Breast Cancer Isogenic Variants

Traditional cell culture techniques grow cells in a 2D format on compatible surfaces, but cells do not grow like this in vivo. A fast emerging alternative is 3D cell culture, which encourages cells to work together while suspended in a matrix rather than relying on adhesion to a treated surface. Most studies utilize a commercially available, industry standard recombinant basement membrane substitute---Matrigel®; however, this is proprietary and expensive. For these studies, our goal was to refine an alternative to Matrigel® for use as a suspension media. Our efforts focused on economical methylcellulose (a synthetic derivative of cellulose dissolved into basal growth media and called Methocel) in combination with rat-tail collagen (Type I). Methocel allowed the formation of spheroids among several cell lines including all three isogenic variants of a metastatic breast cancer cell line, MDA-MB-231, notoriously difficult to get into spheroid culture.

While not required for all cell lines, the addition of collagen (Type I) greatly increased the efficacy of spheroid formation among all cell lines. Final collagen concentration in solution had a dramatic effect on final spheroid size by varying the scaffolding size available for cell attachment. Once developed, spheroids were harvested, rinsed, and finally suspended within a Methocel-collagen gel. Cultures were then exposed to various breast cancer drugs treatments which included: bisphosphonates, Ibandronate and Zoledronic acid, which are typically used in cases of bone density loss, and Docetaxol, a second line chemotherapeutic drug. The effectiveness of these drugs to slow or stop the metastasis of the MDA breast cancer variants through a surrogate extracellular matrix was determined but the degree, or lack there of, of invasion. Ultimately, this cost effective model system allows for an in vivo-like microenvironment in which to study tumor development and metastasis with the simplicity and replicability of in vitro methods.

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Empathy, Possessions, and Identity: Defining Ourselves through Objects

When asked to define ourselves, we often associate ourselves with personality traits and characteristics first and foremost. However, in a world where material objects are used to express ourselves in various ways, do we associate our possessions with our identities as well? The current study analyzes one aspect of a larger study investigating the incorporation of possessions into the self-concept. In this study, I investigated the role of empathy in the incorporation of possessions into one's identity. I examined this relationship on the premise that evidence was found for a positive relationship between one's interpersonal connectedness and strength of implicit association with one's possessions. Empathy plays an essential role in one's ability to interpersonally connect, thus I am hypothesizing that empathy will play a significant role in one's association between possessions and the self. Participants completed measures of interpersonal connection and empathy, such as the Interpersonal Reactivity Index (IRI) (Davis, 1983), a Personal Possessions Questionnaire (Oyamot, 2004), and a modified Implicit Association Test (IAT). The IAT measured participants' reaction times to words of traits and photographs of their personal possessions (special, not special, clutter, unowned) throughout various conditions in order to determine strength of implicit association. People tended to have stronger self-connections with their special objects than non-special objects. Contrary to expectation, empathy was not related to the strength of implicit self-possession associations, though, trends were found towards a supportive direction. Future research is necessary to further investigate who most strongly attaches their possessions and why.

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The Psychosocial Contributors to a Healthy Identity Development in LGB Youth during the Coming Out Process

This study explores the coming-out process of eight individuals from San Jose, California who identify as lesbian, gay, or bisexual. These individuals come from a variety of racial and ethnic backgrounds and range in age between 21 and 30 years old. Hour-long interviews were held with the participants, with questions ranging from their coming-out process, from childhood through emerging adulthood, and the developmental steps they encountered, as discovered by E.S. Morales (1990) and V.C. Cass (1979). They were also asked about the schemas and stereotypes they held of the lesbian, gay, bisexual, and transgender (LGBT) community and how support groups and resources could better serve this population.

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The Relationship between Personality Traits and Polydrug Use

Studies conducted on drug use focus largely on the motivations for and consequences of drugs (e.g., Burnett, Sabato, Walter, Kerr, Wagner, & Smith, 2013; Chiauzzi, DasMahapatra, & Black, 2013; Dow, & Kelly, 2013). Although there is a growing number of studies examining polydrug use (the use of more than one drug), few studies have examined the relationship between personality traits and polydrug use; most have emphasized the five-factor model and theory as well as general and mono drug use and/or use of two substances (e.g., Malouff, Thorsteinsson, & Schutte, 2012; Terracciano, Löckenhoff, Crum, Bienvenu, & Costa, 2008). Simultaneous polydrug use (SPU) refers to the overlapping consumption of multiple drugs or the overlapping effects of drugs, whereas concurrent polydrug use (CPU) is the existence of a break in between the use of multiple substances. The primary goal of the proposed study was to examine the relationship between polydrug use and personality traits.

The survey participants completed consisted of (a) the SJSU Simultaneous Polydrug Use Questionnaire (SJSU SPUQ), which measured monodrug and polydrug use; (b) the Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992), which measured the Big 5 personality traits; and (c) a demographic questionnaire, which measured various individual characteristics (e.g., age, gender, race/ethnicity).

Our results found that there were no significant differences in characteristics between SPU and Non-SPU participants, similar results existed between those of CPU and Non-SPU participants. Although some trends appeared in the data, we did not find statistically significant associations between polydrug use and/or other variables.

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A Comparison of Intensifier and Non-Intensifier Labels on Likert-Type Scale Responses

This study examined the effect of the use of intensifiers (i.e., strongly agree and strongly disagree) and non-intensifiers (i.e., agree and disagree) on response patterns on Likert scale items. Undergraduate students (N=123) completed two 5-item scales online (i.e. academic procrastination scale (APS) and satisfaction of life scale (SWLS)) after enrolling in one of two randomly presented studies using the online Pool Participation System in the Psychology Department at Fresno State. One of the groups completed both scales with intensifiers (strongly agree and strongly disagree), while the other group completed the scales without intensifiers (agree and disagree). We predicted that those who did not have label intensifiers would gravitate more towards the anchors on either side of the Likert-scale, resulting in greater variability in their responses. To assess this, both the variances and means of the individual scale items and total scores for each scale were tested for significant differences between the two groups.

The results indicated significant differences in the variability of the items between the two groups in both APS and SWLS scales. On the SWLS scale, both the third item and the total scale score had significantly different variances ($p<.05$) for the two groups. On the APS scale, the third item showed significantly different variances. Contrary to expectations, all three significant results showed that the items with the intensifiers had greater variability than non-intensifiers. No significant differences were found between the two group means on any of the items or total scores. Since significant differences were found in the variability on some of the scales, this suggests that the labeling of endpoints can potentially have an impact on how people respond to Likert-type items. Implications of the findings will be presented.

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Fresno State Psychology Alumni's Perception of their Major: Differences between First Generation and Non-First Generation College Students

The purpose of this research is to access Fresno State Psychology undergraduate alumni's satisfaction with their major and success after graduation. This study is assisting the Psychology department in understanding their alumni's current employment and education status, their perception of their degree, and demographics. Archival data from 156 undergraduate alumni, who graduated in the Fall 2006 to Spring 2012, are included in this study. Freshly collected data from 50 additional undergraduate alumni will be included in this analysis. The combined data will be used to explore the differences between first generation and non-first generation college students with respect to their satisfaction with their major, and whether or not they pursued additional education after graduation. Students' contact information was taken from PeopleSoft and telephoned. Analysis of archival data indicate the majority of undergraduate alumni reported that they use their skills learned (85%), they are glad they chose the major (89%), and they are currently employed full-time or obtaining additional education (81%). However, first generation college students were significantly less likely to be glad they chose a Psychology major (84%) than non-first generation college students (95%) χ^2 (N=156,df=1) = 5.09, p=.024. Differential expectations regarding the consequences of obtaining a college degree may explain this difference.

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The Psychosocial Contributors to Identity Development in Multiracial Youth within the Bay Area

The United States has a dramatic increase in the population of multi-racial youth. Current research involving youth from two or more ethnic backgrounds propose that their individual experience is instrumental in their development. Research also suggests that youth from multiple ethnic backgrounds are more vulnerable to experiencing pressure from their peers, struggle with fitting in socially, exhibit ethnic difficulties within their cultures and ultimately yearn for lifelong acceptance. This paper attempts to analyze the past, present and future concerns of multiracial youth in the Bay Area. Additionally, it addresses the dynamics of the positive and negative experiences that may factor into a multiracial individuals overall psychosocial development. This paper is comprehensive because the personal accounts embody the latest trends. It employs these trends in a historical setting and discusses the impact on future multiracial posterity. The respondents derive from a vast array of multiracial and ethnic backgrounds which range between the ages of 18-30 years old. The respondents, who participated in the qualitative study, were interviewed anywhere from 26 minutes to one hour and 27 minutes. The sample size consisted of 15 individuals consisting of eight males and 7 females. The interviews that were conducted included question pertaining to: the age that the respondents first became aware that they were multiracial, socialization, diversity, individuality, self-identification, level of activism, responsibilities, pride, privilege, prejudice, praise, preference, stereotypes, discrimination, schemas, stigmas and labels. In theory, most Americans may currently accept ideologies of equality; however, people fail to implement them in practice (Myrdal, 1944). The research aims to examine and develop a better understanding of the multiracial experience and how resources (i.e., support groups, clubs, assemblies, counseling, mentoring etc.) could better serve this population and future posterity.

Keywords: multiraciality construct, divisions, passing, religion, self-hatred, separatism,equality, multiracialism, diversity, multiculturalism perspective, categorizing, stereotyping, blending, racism, pride

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Spirituality and Experiential Avoidance in Social Anxiety

There has recently been a growing interest in spirituality and its role in a number of psychological problems. Having a religious affiliation appears to be related to lower overall anxiety, and intrinsic religiosity is associated with less worry. The psychological mechanisms of this relationship, however, are not well understood. Experiential avoidance is a psychological construct that has been shown to be a factor in the development and maintenance of anxiety disorders such as social anxiety disorder. Recent research has suggested spirituality may decrease social anxiety and other psychological disorders. While psychological interventions have begun to view the task of reducing experiential avoidance as a spiritual effort, the relationship between experiential avoidance and spirituality in an anxious population is still not clear. The present study investigated whether spirituality moderates the relationship between experiential avoidance and social anxiety in a college student population (N = 161). There was no statistical evidence found that spirituality served as a moderator between experiential avoidance and social anxiety. Future studies should use more detailed analyses to better understand this relationship

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Education (In)Equality: Institutional Organization and Its Effects On Latino Students

At 15.1% Latinos in the Unites States have the highest dropout rates in comparison to any other ethnic group. Though it has been stated that there are multiple factors contributing to this, there is not a strong literature built around addressing the role that institutions play in this equation. Latinos are constantly funneled out of the educational pipeline and are stripped of educational benefits available to non-Latinos. As a consequence, they become discouraged from going to college. This project provides a background on many issues affecting Latino youth and hindering their chances of success. Specifically, this study focuses on how gender and institutional organization relate to educational attainment and the concept that far too many Latinos are being "pushed out" of schools that do not have enough resources to serve this category of students, instead of dropping out, which is viewed as a personal choice. Along these lines, cultural ecology and cultural deficit theory will be used to outline the negative perceptions many educators hold towards Latino students. Further, this project sets the stage for continuing research on how students' experiences with the disciplinary system impact their educational attainment and what can be done to move the focus away from the student and target ways in which schools and institutions can change in order to better serve the growing Latino student body.

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Poster Board No. 9

A 3-Year Evaluation of Graduates from the Fresno County Post Conviction Drug Court

This report contains the findings of a three year program evaluation of the Post Conviction Drug Court Program (PCDC), operated by the Fresno County Superior Court. One focus of this evaluation was to determine which program and client characteristics predicted graduation. A longitudinal database was created from the Services Accountability Improvement System Government Performance and Results Act database.

623 clients entered the program. The average age was 31. 65% were male. Most were Caucasian or Hispanic. Comparison tests revealed that graduated clients were older, had higher educational attainment and income, and were more likely to have children. Graduated clients had fewer overall days of substance use, and were less likely to use methamphetamine and marijuana. 28% of methamphetamine users graduated as compared to 60% of non-methamphetamine users. Methamphetamine users were more likely to use additional drugs, to use illegal drugs frequently, to be less concerned about illegal drug use, and not attend self-help groups.

In terms of program characteristics there was a link between assessment during intake and graduation. Graduated clients were more likely to have a treatment plan developed that included intensive outpatient treatment, individual and group counseling, and relapse prevention/coaching than were terminated clients.

Recommendations include improving assessment practices to appropriately identify client needs. Ongoing assessment is necessary to monitor progress, to change the treatment plan as necessary, and to identify relapse cues. Second, given that over one-third of the client population uses methamphetamines the court would benefit from offering drug rehabilitation programs tailored to meet the unique needs of those who use methamphetamines. A curricular redesign is necessary to implement cognitive behavioral therapies specific to this client population.

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Mitochondrial Gene Loss Following Whole Genome Duplication in Xenopus Laevis

Xenopus laevis has recently undergone a whole genome duplication (WGD) through an allotetraploid mechanism. When this type of WGD occurs, the two progenitor species both donate nuclear genomes to the new species. Having two genomes in the same nucleus means that loci are relaxed from a purifying selection period while many redundant genes are lost, some will diverge and gain new functions. It is often overlooked that only one progenitor species will contribute its mitochondria. Nearly 1,000 genes are transcribed, translated, and exported to the mitochondria; because of this the nuclear encoded-mitochondrial genes and the mitochondrial-encoded genes have an intimate relationship. It has been experimentally shown by the copepod and Drosophila mitochondria replacement biochemical assays that there is an incompatibility between nuclear encoded-mitochondrial proteins and the mitochondrial-encoded proteins of different species. This is our basis for the hypothesis that there is preferential gene loss of the progenitor species that didn't donate the mitochondria because of this biochemical incompatibility following WGD. I have shown through multi-dimensional Perl analysis, data mining, and crystal structure mapping that mitochondrial genes are lost more often and are not preferentially retained on a single subgenome, disproving the hypothesis of incompatibility between the single copy nuclear mitochondrial genes of different species for the two subgenomes of X. laevis. By investigating the gene retention of specific pathway's functions in mitochondria we have gained insight into which pathways contribute to mitochondrial incompatibility, and how function plays a role in gene loss following allopolyploidy.

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Ocean Acidification Effects on Copepod Mortality

I am examining the effects of ocean acidification on mortality rates in copepods. The ocean is becoming more acidic on a large scale due to the increase in atmospheric carbon dioxide (CO2). Copepods construct their shells by secreting calcium carbonate, a pH sensitive process. The decreasing pH of seawater reduces the efficiency of calcium carbonate formation in animal shells, including copepods. This calcareous, chitinous exoskeleton is critical to copepod survival. Copepods are a fundamental component of the food chain, thus they are critical for the stability of the ecosystem.

This experiment explores the possible effects of ocean acidification at the beginning of the food web. The methods used include collection of live samples and field measurements of the environmental conditions such as temperature, salinity, and pH. In the laboratory, the copepods are placed in aquaria inside incubators where both temperature and pH is manipulated and then mortality rates assessed. I have designed and constructed seawater-circulating aquaria from 2L soda bottles. My first hypothesis is that decreasing the pH will increase mortality rates in copepods. My second hypothesis is that increasing temperature will have an adverse effect on mortality rates in copepods.

The mortality rates of copepods exposed to several treatments of pH and temperature were observed over a period of 2 weeks. Data was collected daily. There was a decreased mortality rate in all three pH and temperature treatments. The pH of the commercial salt water has a buffer system to prevent the aquarium environment from becoming acidic. This buffer system prevented the pH from stabilizing at the treatment pH values, and thus daily titration of acid was necessary to maintain pH variation. The change in mortality rates cannot be wholly attributed to the acidity of the water, as the daily acid titration was a significant factor.

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Identification of Disrupted Genes in Mycobacterium Smegmatis

Mycobacterium smegmatis is a non-pathogenic model organism for Mycobacterium tuberculosis, the causative agent of the disease tuberculosis (TB). This disease is a growing problem due to an increase in antibiotic resistant strains, making it difficult to treat TB infections. Our study aims to identify and characterize genes responsible for survival during the oxidative stress caused by the human immune response, as well as genes that confer antibiotic resistance. We also seek to identify genes that affect the degradation of the toxic dye malachite green, a popular antifungal agent in aquaculture.

M. smegmatis mutants were generated through random insertion of a transposon to disrupt gene function. These mutants were screened for sensitivity to diamide (an oxidant) and malachite green, and resistance to isoniazid and ethionamide (common TB drugs). The screening allowed us to isolate mutants in genes involved in oxidative stress survival, antibiotic resistance, and dye degradation. To further quantify the sensitivity, disk assays were performed using other common oxidants, such as hydrogen peroxide, tert-butyl hydroperoxide, plumbagin, and cumene hydroperoxide, and antibiotics, isoniazid and ethionamide. To identify the disrupted genes, we performed inverse PCR, sequenced the DNA up- and downstream of the transposon insertion site, and checked it against the genome sequence of M. smegmatis.

The disk assays revealed that M. smegmatis mutants from the diamide screening were also sensitive to other oxidative stress agents tested. Malachite green sensitive mutants yielded similar patterns of sensitivity to oxidants. We have successfully identified seven genes that were disrupted, one of which was the coenzyme F420 biosynthesis gene, which is responsible for most metabolic pathways.

Our data suggests that multiple phenotypes can be affected by a single disruption in a bacterial genome. Future work will aim to identify more genes involved with oxidant and malachite green sensitivity and resistance to the drugs, isoniazid and ethionamide.

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Exploring Speciation in Caenorhabditis Briggsae through Mitochondrial Dysfunction in Hybrids

The objective of this study is to investigate how two populations can diverge from one another to eventually produce two species. One method of identifying and studying how speciation starts is to find cases where hybrids between two populations of the same species have reduced fitness compared to the parental strains. It has been hypothesized that two Caenorhabditis briggsae populations produce less-fit hybrids because the hybrids suffer from mitochondrial dysfunction resulting from a mitochondrial-nuclear genetic incompatibility. To investigate this hypothesis, hybrid and parental population fitness was assessed by measuring the brood sizes and life spans of these strains. These experiments revealed a difference in brood size between the inter-population hybrids and one of the two parental strains. Hybrids also live longer than the parental populations. These data support the hypothesis that a genetic incompatibility exists between the mitochondrial and nuclear genomes. This reduction of hybrid fitness might represent a mechanism for speciation. Future efforts will focus on investigating the presences of this hybrid dysfunction phenomenon in other C. briggsae populations.

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Spatial Learning Assessment in Split-Brain Periplaneta Americana

One of the greatest challenges facing neuroscientists today is understanding the processes by which the brain operates. This study examines the effect of a procedure to separate the two cerebral lobes of a Periplaneta americana (the common American cockroach) on spatial learning of a simple conditioned response. This split-brain procedure allows the creation of an experimental and a control specimen in the same organism.

This study was conducted on two experimental groups composed of mature, male Periplaneta. Group one received the procedure to separate the brain lobes while group two received a "mock surgery" involving all steps except the actual incision to separate the brain lobes. The cockroaches were then placed into a restraint tube in the testing arena. In the arena, the cockroaches were presented with a repeated combination of a white and green light at an angle of approximately 30°, as well as a burst of food scent from the position of the green light. Reactions to the training were measured using antennal movements towards the scent source. The cockroaches were then presented with a series of lights with the same angle of separation, position, or orientation as the conditioned lights.

The results of this testing have shown that in split-brain models, the angular association between the reference light and the conditioned light can elicit a response even if the position of the lights is changed relative to the position of the cockroach. The rate of response is equivalent or higher than that of intact-brain cockroaches, showing little to no loss of ability due to the split-brain surgery. From this data, it can be stated that cockroaches with split brain lobes can be used in studies involving learning and memory in which experimental and control samples are needed from the same organism.

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Poster Board No. 15

Metabolic Profile of Irradiated Embryonic Stem Cells

Stem cells have remarkable ability to regenerate and replace themselves, with a capacity to study both normal and diseased state of a cell or a tissue. The desire to characterize diseases at the molecular level for developing personalized therapeutic techniques is of growing biomedical interest. Despite high cost and manpower requirement in genomic and proteomic studies respectively, understanding the casual linkage between genomic and proteomic studies would provide a new way to identify novel drug targets and measure its effectiveness. Metabonomics, on the other hand, has been proved to be extremely helpful in bridging the gap between genomics and proteomics. The need for such a field of science is crucial for decoding the flow of information from genes to its function or phenotype in response to exogenous or genetic factors. Several high-throughput technologies like Nuclear Magnetic Resonance (NMR) can be used to detect the metabolites in tissues, cells and biological fluids. This research project aims to utilize techniques such as NMR to examine the metabolites that are essential for maintenance and differentiation of Embryonic Stem Cell (ESCs) cultures. On identifying the metabolites, we can characterize alteration in metabolic pathway that might result in differentiation of stem cells in vivo. Radiation or chemically induced changes in an organism, results in disturbance in the concentration of endogenous metabolites. Studying these metabolites, would give a better understanding of the cell's physiology.

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Current Strategies in Eradicating Pancreatic Cancer Stem Cells by Targeting the Hedgehog Pathway

Evidence suggests that many aggressive tumors, including pancreatic adenocarcinoma, is characterized by rapid progression and invasiveness even after resection of a tumor. This ability of the tumor to show profound resistance to extant treatments is believed due to Cancer Stem Cells (CSCs). CSCs are a small subpopulation of cancer cells within a tumor that are the major culprits for maintaining the metastatic potential of tumors even after treatment. Within a tumor CSCs maintain an undifferentiated embryonic stem cell-like state; thus, CSCs share many common properties with Embryonic Stem Cells (ESCs). Understanding the acquisition of CSCs characteristics can provide a variety novel diagnostic and therapeutic approaches.

The SHH pathway is overexpressed in some pancreatic cancer cells, thus SHH target genes are upregulated, promoting cell survival and proliferation. Furthermore, blockade of this pathway should eliminate overexpression of SHH target genes and diminish the population of Pancreatic CSCs, along with advanced pancreatic malignancies. In this study we examined the synergistic coupling of gemcitabine with SHH inhibitors with respect to their influence on Pancreatic CSC gene expression and resistance to cytotoxicity. It is questionable whether resistance to gemcitabine for ductal adenocarcinoma is acquired after treatments have been administered, or if the malignancy possess inherent resistance mechanisms that allow cells to evade chemotherapy-induced apoptosis. The purpose of this study is to assess the effects of small molecule inhibitors of this pathway on select SHH target gene expression and restoring gemcitabine sensitivity.

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Quantification of Fat Levels in Nematodes Suffering from Hybrid Dysfunction

My study of evolutionary genetics revolves around Charles Darwin's concept that a population evolves through variation in reproductive success between its members. The basis of species formation is explored by identifying the genetic differences between two populations of a model species that reduce fitness when combined in inter-population hybrids.

The experimental organism for my research project is the nematode Caenorhabditis briggsae, a close relative of C. elegans. The two strains of C. briggsae used in the experiments are AF16, a tropical strain from India, and HK104, a temperate strain from Japan. Evolutionary adaptation to temperature might be responsible for some of the genetic differences that exist between these two strains. Unknown genetic variations do cause a developmental delay in second-generation hybrids of AF16 and HK104. My research project assesses whether reduced health is also evident in first-generation hybrids. In such a case, hybrid breakdown is occurring in the first generation, which is consistent with the biological species concept.

One way to estimate nematode health is to measure the amount of fat. The motivation for studying fat levels is that mitochondrial dysfunction has been shown to occur in later-generation hybrids. This dysfunction might result in malfunctions in electron transport, reducing ATP production and causing hybrid worms to metabolize more lipids to produce energy. To assess fat content, I label worms through ingestion of the fluorescent lipid stain Nile Red, which allows fat quantification by fluorescence microscopy. The measured fluorescence intensity correlates with the amount of fat each worm contains, allowing analysis of the relationship between the level of stored fat and the genotype of the worm (parental or hybrid).

Levels of fat in the F1 generation and the pure, parental strains are compared using a t-test. Data suggest that this is a useful method for assessing nematode health. Ultimately, this project will provide valuable knowledge to the field of evolutionary genetics by exploring the genetic and phenotypic basis of how species are formed.

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Poster Board No. 18

Learning and Memory Deficits Associated with Overexpression of the Alzheimer's Disease Associated Protein Tau in Drosophila Melanogaster

Alzheimer's disease (AD) is classified as dementia, loss of brain function-especially in spatial memory. Certain types of AD can be caused by mutations that lead to abnormalities in the Tau protein. The Tau protein, derived from the human MAPT (microtubule associated protein tau) gene, is responsible for encoding the Tau protein that is present in fruit flies (Drosophila melanogaster) and humans. We used Drosophila as test subjects to analyze the effects of the Tau proteins on different regions of the brain: Ellipsoid body (EB) and Mushroom bodies (MB). These two regions are associated with learning and memory in insects. We performed spatial memory tests on Drosophila with elevated amounts of Tau protein in these two brain regions and assessed spatial learning and memory functions.

In order to test visual place learning in Drosophila, three groups of flies (control, TauMB, TauEB) were used in a heat maze behavioral assay. The experimental protocol included ten training trials (10 min each) followed by a series of probe trials (10 min, 30 min & 1 hr). During training trials, the flies used the visual cues to guide them to the location of the cool spot. During probe trials, the cool spot was turned off. These trials examined learning performance and spatial memory through assessment of ability to locate the target.

The results showed that the control group had a significant reduction in time to locate the cool spot compared to the Tau flies, which required more time to learn the spatial association. TauMB group retained the memory for the cool spot for about 30 minutes whereas TauEB group had no establishment of memory. These differences indicate that expression of Tau in the ellipsoid body has a greater effect of visual place learning compared to the mushroom bodies.

The behavioral assay experiments have demonstrated that transgenic Tau flies have spatial and memory deficits in learning; however, the expression level of these flies has not been studied yet. For future experiments, we will conduct histology and immunoblotting to quantify the concentration and localize the expression of Tau protein in Drosophila.

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Comparative Study of DNA Specificity in Cooa and CRP

CooA from Rhodospirillum rubrum senses carbon monoxide and activates the transcription of genes that allow for oxidation of carbon monoxide. A minimal of six residues (positions 177-182) in CooA directly recognizes its specific DNA target sequence. The Escherichia coli CRP, the model protein of the family to which CooA belongs, has only 2 amino acids identical to CooA among the six DNA-contacting residues. In order to understand role of the CooA residues in DNA specificity and compare with that of CRP counterparts, we individually changed each of those four amino acids unique to CooA into the corresponding amino acid in CRP via site-directed mutagenesis, which created Q178E, T180V, S181G and T182R CooA mutants. We then tested in vivo CooA and CRP transcriptional activities for the four CooA mutants. Q178E and S181G CooA mutants did not show any transcriptional activity, while T180V and T182R CooA mutants were mildly perturbed. Also, none of the CooA mutants acquired the transcriptional activity of CRP. Four reciprocally matching E181Q, V183T, G184S and R185T CRP mutants were also constructed and their in vivo transcriptional activities were measured as well. E181Q and V183T CRP mutants were defective in CRP activity. Similarly, none of the CRP mutants gained CooA activity. The results indicate that all of the four residues of CooA are important for CooA activity and a similar conclusion can be drawn for the CRP residues Glu181 and Val183. We are currently working to discover target DNA sequences these proteins bind to with the highest affinity, which will help identify DNA-protein interaction rules among the CRP family of transcription factors.

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Polymorphism Analyses in Specific Xenobiotic-Metabolizing Genes of Hispanic Farmworkers from tfhe San Joaquin Valley with Hormone-Dependent Cancer

Understanding gene-environment interactions is an emerging field in biology and medicine. 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 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 case-control study involves the use of DNA samples consented from 42 Hispanic female participants and 180 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. Analyses of male samples are ongoing. 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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The Effects of Choice on Memory

This study was a thesis completed with the help of Dr. Karl Oswald for partial fulfillment of the requirements for the degree of Master of Psychology. The purpose of this study was to evaluate the effects of non-content choices on memory. Previous research has found that allowing people a choice in a learning situation facilitates memory benefits, but has allowed participants choice over the content. Providing choice of content prevents the separation of the pure effects of choice from the effects of content-related choice. To assess the effects of non-content choice, both content and non-content choices were manipulated using word lists and list readers. Participants were provided choice of a word list to learn, a reader to recite the list, or both. Participants in the no-choice conditions were assigned a reader and list. Memory was measured on a delayed free-recall task. Perceived control, motivation, task effort, and task satisfaction measures were also obtained. We hypothesized that participants who had a choice would have better memory on a delayed free-recall task than no-choice participants.

Results of the three experiments were all nonsignificant alone, but a meta-analysis revealed significantly higher recall when participants chose the reader ($n=119$, $M=0.40$, $SD=0.15$) than when assigned a reader ($n=115$, $M=0.35$, $SD=0.16$), $t(232)=2.19$, $p=.029$, $d=.32$. The nonsignificant differences in word recall between the choice and no-choice conditions in three separate experiments were in the predicted direction, with significance achieved in a comparison of non-content choice conditions in all three experiments. Given this emergence of a significant difference in recall between choice and no-choice conditions, it seems that the effects of choice are essentially there but are small. This provides reasonable indication that non-content choice really does also result in memory benefits.

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Self-Harming Behavior in Individuals with Disorders of Sex Development

The purpose of this study was to increase awareness about the potential prevalence of self-harming behaviors in individuals with a disorder of sex development (DSD) and to aid the improvement of treatment and standards of care for professionals working with this population.

Also known as intersex, DSDs are conditions that may impact an individual's development of gender and sexual identity and can make medical and psychological treatment of these individuals difficult. Until recently, little attention has been paid to the psychological factors affecting this population, with most of the attention focused on medical factors. Research investigating the psychological functioning of this population has suggested that individuals with a DSD may experience increased levels of psychological distress and may participate in self-injurious behavior.

In this study, the examination of nonsuicidal self-injury (NSSI) behavior in the DSD population was evaluated using the Inventory of Statements About Self-Injury (ISAS). The ISAS evaluates the type and frequency of 12 different self-injurious behaviors as well as 13 possible motivating factors for the respondents' self-injurious behavior. Data analysis revealed that the DSD group did not participate in levels of nonsuicidal self-injurious behavior greater than did those individuals without a DSD diagnosis.

The participants endorsed motivation for NSSI behavior consistent with self-efficacy/self-empowerment, creating pain, antidissociation, and emotional strength. The DSD group also did not endorse any of these four motivating factors for NSSI at a level statistically greater than did the non-DSD group. The clinical implications of these findings were discussed.

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Poster Board No. 3

Moral Injury in Combat-Related PTSD

Approximately 5-6% of the United States population is diagnosed with PTSD in their lifetime. A range 2-17% of military service men is diagnosed with combat-related PTSD. Patients with PTSD are six times more likely to commit suicide than the general population. Moral Injury has been defined as "perpetrating, failing to prevent, bearing witness to or learning about the acts that transgress deeply held moral beliefs and expectations" (Litz et al., 2009). Research indicates a relationship between killing in war and a number of adverse outcomes when soldiers return from deployment. Evidence-based treatments, such as Prolonged Exposure and Cognitive Processing Therapy have been found to be effective in treating combat-related PTSD including symptoms and adverse effects from moral injury. However, there is limited empirical research specifically addressing moral injury. There is a pressing need to develop and/or integrate assessment and treatment modalities to specifically address moral injury.

Procedure:

The researchers conducted a theoretical examination of the treatment efficacy for moral injury in combat-related PTSD. The literature analyses begin with the first documented conceptualization of moral injury related to combat in the U.S. Military. The researchers progress through major U.S. Wars; predominant attention is addressed to the Vietnam and OIF/OEF/OND (Operation Iraqi Freedom, Operation Enduring Freedom, Operation New Dawn) wars. The Vietnam and OIF/OEF/OND wars are of central focus given veterans of these wars present with combat-related PTSD most frequently, yet Desert Storm is also addressed. Researchers discuss applied factors to provide recommendations for future empirical studies for assessing and treating moral injury in combat-related PTSD.

Results and Conclusions:

Literature analysis for this study is in progress and will be finalized and presented by the conference date. Conclusion will entail limitations, suggestions for future work, and overall implications for understanding and treating moral injury in combat-related PTSD.

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Poster Board No. 4

Performance of Traumatic Brain Injured versus other-Brain Injured Children and Adolescents on the Lebby-Asbell Neurocognitive Screening Examinations

The Lebby-Asbell Neurocognitive Screening Examination for Children (LANSE-C) and Lebby-Asbell Neurocognitive Screening Examination for Adolescents (LANSE-A) were developed as tools to help clinicians identify areas of relative weakness involving cognitive functioning in children 6-years to 11-years (LANSE-C) and adolescents 12-years to 18-years (LANSE-A). These empirically-based screening instruments consist of 14 components that measure different neurocognitive abilities to assess for deficits in children and adolescents (Lebby & Asbell, 2007). These two screening instruments have been found to be clinically sensitive to cognitive disruption caused by brain injury.

The purpose of this study was to evaluate performance differences on the LANSE-C and LANSE-A between patients recovering from traumatic brain injury (TBI) versus patients recovering from other brain injury (OBI) such as infections, hypoxia, brain tumors and strokes. This study compared test failure percentage rates on the LANSE-C and LANSE-A between TBI and OBI patients. A failure rate of three or more subtests indicates the patient is 480 times more likely to be from a group with brain injury. This failure rate generates a sensitivity of 92.3%, a specificity of 98.7%, and a positive predictive value of 93.9%. As the number of subtests failed increases, the likelihood the child or adolescent is brain injured also increases.

Results suggest the LANSE-C and LANSE-A are useful in assessing performance of persons with TBI and OBI in a clinical setting. Our findings indicate 0% of normal control children failed three or more subtests, whereas 88% of children recovering from TBI and 91% of children recovering from OBI failed three or more subtests. Additionally, 1.5% of normal control adolescents failed three or more subtests, while 96% of adolescents recovering from TBI and 73% of adolescents recovering from OBI failed three or more subtests.

As expected, children and adolescents with brain injuries frequently fail more than three subtests on the LANSE-C and LANSE-A when compared to the normal control groups. Furthermore, these data suggest utilizing the number of subtests failed on the LANSE-C and LANSE-A is a clinically useful method of identifying cognitive dysfunction in traumatic and other-brain injured children and adolescents.

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Psychological Well-Being and Hypertension in Elderly in Rural Vietnam

This study investigated the incidence of anxiety, depression, psychological well-being and hypertension in elderly population of rural VietNam. Most of the studies conducted in Vietnam have assessed people in the urban areas, which tend to be more progressive and available. Few studies explore the mental health of elderly rural citizens. Hypertension is becoming one of the most important public health problems in the developing countries (Longo et al., 2012).

According to the World Health Report with data collected form South-East Asia Region, cardiovascular disease account for 29 percent of all death. A meta-analysis (Hoang & all., 2007) shows an increasing trend in the prevalence of hypertension in the elderly rural population. Additionally (Tsai and Chang, 2012), elderly with a cardiovascular disease and hypertension, have higher rates of depression than those who are physically healthy. A representative sample of 50 elderly adults (M = 79, SD = 6.4) were recruited in the village of Phong Binh, VietNam. Education levels ranged from zero to nine (M = 2.33, SD = 2.9), monthly income was $53 (M = $69, SD = 16). The predominant means of earning is farming. The measures used in the study were: Kessler Psychological Distress Scale (K-10) and the Wellness subscale of the Mental Health Inventory. Both instruments have been used on Asian populations with acceptable psychometrics on rural elderly. Reliability for the current sample on K-10, alpha = .95 and on MHI, alpha =.90. Results: The correlation between depression and blood pressure was not significant ($r = .005, 1.14, p < .97, .33$ respectively). There was no systematic relationship between depression or wellness and blood pressure. Only 10 percent of the participants scored in the clinical range of hypertension (M = 106/83, SD = 27/18); with the majority of participants showing high score of psychological well-being (M = 35.3, SD = 12.4). These results were likely due to the fact that the majority of people were not depressed and had a high level of well-being. It is equally possible that the rural lifestyle and practice of Buddhist meditation led to a greater state of well-being and controlled blood pressure.

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Using Self-Authorship Theory to Elevate Student Success

Presentation will showcase a best practices program for creating an early advising program that targets first generation college goers and students of color. We will feature a video, Prezi, and have graduate student mentors (Fresno State Counseling Education Students)) share their experiences working with the high school students in the program, "College Knowledge Admission Boot Camp;" that prepares high school students for the college application and admission process. Firstly, we will focus on the early advising and the Boot Camp format in which students stay a week at Fresno State with college Mentors and receive intensive college readiness presentations, curriculum; and secondarily, we will also share how we effectively train the high school students as College Opportunity Ambassadors (influencing their high school peers to attend college).

Our objectives are to share how to:

1. Increase the number of youth advocates (Youth Ambassadors for College Opportunity), and encouraging students to Self-Author
2. Deliver a strong curriculum or module, encourage students, especially potentially first generation college students to envision themselves in college while in high school, and
3. To have high school students feel empowered to encourage other young people to go to college.
4. Incorporate graduate interns into outreach and advising

Graduate Students will share our aim to empower more youth to attend college and our creative model through media, discussion, and interaction with the audience.

Program Announcement:

Many well-intended programs have been designed to tackle the challenge of increasing post-secondary access & completion, but few work as expected. A reason is people (students included) don't Self-Author. This session will introduce participants to the powerful insights of Self-Authorship & participants will learn the importance of reaching students early and how to coordinate a College Knowledge Admission Boot Camp so youth can navigate post-secondary programs and advising and how cutting-edge behavioral research can help us design programs. Secondarily, we will present how to create peer mentoring via College Opportunity Ambassadors that improve student outcomes.

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A Novel Class of Potential Anticancer Agents Inspired by Dietary Curcumin

Curcumin is the major chemical component from the East Indian Curcumin longa. Its potential to prevent and treat various cancers has been demonstrated by the in vitro and in vivo studies. Beyond this, curcumin possesses a very good safety profile as a drug candidate. However, its poor bioavailability and moderate potency prevent curcumin from advancing to clinical use. We recently reported three scaffolds of curcumin analogs with N-methylpiperidone, cyclohexanone, or acetone as a linker. Among them, the scaffold with acetone as linker (designated as dienone scaffold; 11 compounds in total) showed excellent cytotoxicity against PC-3 and DU-145 prostate cancer cell lines. Each of these 11 analogs contains two identical five-membered or six-membered heteroaromatic rings.

The present study is to further investigate the synthesis and cytotoxicity of new dienone scaffold analogs. Each of our new analogs features two identical bulky heteroaromatic rings and a dieneone linker. So far, six new curcumin analogs have been synthesized through a five-step reaction sequence and their structures have been determined by interpreting their 1H and 13C NMR spectra. The cytotoxicity of five synthesized analogs towards an aggressive cervical cell line (HeLa) has been evaluated. All these five curcumin ananolgs can kill over 90% of HeLa cells at 1 μM concentration, while parental curcumin cannot kill any HeLa cells at the same concentration. The preliminary results implied the potential of this new group of curcumin analogs as anti-cancer agents. The cytotoxicity of these compounds against other aggressive cancer cell lines will be evaluated; and more analogs are being synthesized for structure-activity relationship studies.

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Cytotoxic Evaluation of Curcumin-Based Anticancer Agents against Hela Cells

We recently reported a novel class of curcumin-based anticancer agents with the improved potential (relative to curcumin) to inhibit the growth of metastatic prostate cancer cells. Intriguingly, the four most promising curcumin analogs are also more potent than curcumin against an aggressive cervical cell line (HeLa) and demonstrate no apparent cytotoxicity towards MCF-10A normal mammary epithelial cells. These results spurred us to systematically investigate their cytotoxicity towards the HeLa cell line and to explore their action of mechanism.

The cytotoxicity of this panel of compounds (32 compounds in total) was tested using trypan blue dye exclusion method. Equal treatment volumes of DMSO were used as vehicle controls and curcumin was used as positive control. Cell numbers were counted with a cell viability analyzer (Beckman Coulter). We found that the optimum volume of DMSO is 0.05% and the best drug exposure time is three days. Our preliminary assay for 32 compounds started with two concentrations (10μM and 1μM), and the results showed that all of these analogs are more potent than curcumin itself towards HeLa cells. To acquire IC50 values for some promising compounds, those with more than 70% inhibitory ability at 1μM concentration were then chosen for further evaluation at 4 different concentrations. So far, we have acquired IC50 values, with a range from 0.22 μM to 0.95 μM, for seven compounds. The IC50 value for curcumin is 10.7 μM.

In conclusion, this panel of compounds showed excellent cytotoxicity towards HeLa cells with optimum IC50 value at 0.22 μM. It is 50 times more potent than curcumin. The bioassay and the cytotoxic data will be presented.

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Structural Basis for Antigen Recognition of a Tumor Specific Therapeutic Antibody

Antibody mediated immunotherapy of tumors can revolutionize cancer treatment. Specificity of monoclonal antibodies (MAbs) allows to specifically target tumor cells. A universal feature of cancer cells is aberrant protein glycosylation. Changes in the glycosylation pattern can result in exposure of new carbohydrate epitopes, that are normally masked from the immune system. these epitopes are tumor specific, they represent attractive candidates as targets for therapeutic MAbs. MUC1 is a membrane glycoprotein of the mucin family on epithelial cells in a variety of tissues.

The protein has a large extracellular domain called the VNTR (variable number of tandem repeats. The VNTR region is heavily O-lycosylated in healthy epithelial tissues. During neoplastic transformation the VNTR region of MUC1 exhibits truncated glycosylation, exposing the peptide sequence and truncated carbohydrate structures. The aberrantly glycosylated MUC1 is overexpressed in the majority of adenocarcinomas. These features render MUC1 an ideal target for antibody-mediated immunotherapy. MAb-AR20.5 is a therapeutic antibody currently undergoing clinical development for treatment of MUC1 positive pancreatic cancer. The antibody was generated by immunization with tumor-derived MUC1 and exhibits antitumor activity.

The antibody binds to a peptide epitope within the VNTR region , the molecular details of this interaction are uncharacterized and it is unknown what role antigen glycosylation plays in antibody binding., we have purified and crystallized the Fab fragments of AR20.5 in complex with a synthetic MUC1 VNTR peptide. We have cultured the AR20.5 hybridoma in a bioreactor producing large quantities of IgG. Using papain digestion and cation exchange chromatography we have purified Fab fragments from AR20.5 IgG, for a combination of binding and structural studies. We have grown crystals of AR20.5 Fab in complex with VNTR peptide. The Fab structures reveal the nature of the interaction between AR20.5 and cancer associated MUC1 furthering our understanding of how VNTR peptide glycosylation may influence antibody binding. Ultimately by understanding epitope recognition and the effects of antigen glycosylation we seek to improve antibody affinity and specificity for development of the next generation of therapeutics antibodies.

Our results have the potential to have direct translational benefits for the improvement of treatment outcomes in pancreatic cancer.

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Synthesis, Purification, Characterization, and Gas Phase Studies of Atmospherically Relevant and Model Hydroperoxides

Isoprene is a volatile organic compound (VOC) that is emitted in large quantities into the atmosphere by vegetation. Isoprene reactions undergo products that are present in the atmosphere, such as hydroxyl radicals, ozone, nitrates, and hydroperoxides. These products potentially produce secondary organic aerosols (SOA) that may impact air quality and climate. The nighttime atmospheric chemistry involves hydrogen peroxide as primary reactant with isoprene and is poorly studied. Under acidic conditions, we propose a synthetic route to produce hydroperoxides for mechanistic and kinetic studies. Preliminary results present possible hydroperoxide formation. The chemistry involves reactions of epoxides with peroxy nucleophiles. Due to the unstable nature of peroxy compounds, purification is challenging. The overall goal of this project is to gain insight into atmospheric chemistry with an emphasis on relatively unexplored chemistry.

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Poster Session IV
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Development of Apolipoprotein E (Apoe) Modulators Based on Triarylmethyl Amine Pharmacophore using Structure-Activity Relationship (SAR) Studies

Apolipoprotien E (apoE) has been correlated to the onset of Alzheimer's disease. The variant apoE 4 has been shown to support plaque buildup in the brain and is a target for inhibition. According to previous studies, the scaffold of triarylmethyl amine has shown to inhibit apoE production in the human CCF-STTG1 astrocytoma cell line. This study follows the Structure Activity Relationship (SAR) of compounds based on the successful triarylmethyl amine scaffold. The second generation molecules include modification of the two phenyl rings, the large naphthalene ring, deletion of the phenyl rings with an added new functionality, etc. Since the calculated cLogP of the previous scaffold is too large to be a viable drug, this study further follows the SAR of the scaffold with the addition of amides and sulfamides. That drug-like molecules synthesized based on the triaryl amine structure will be applied to in vitro and in vivo studies using transgenic mouse models to determine the modulation of apoE production.

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Electronic Effects on Double Bond Character: NMR Studies of Substituent Effects in Para- and Meta- DEET Analogs as a Model System

The partial double bond character of the amide bond is generally responsible for its restricted rotation and has been extensively studied by NMR spectroscopy. N, N-diethyl-meta-toluamide, or DEET is a widely used pest-repellant and an excellent model for studying this partial double bond character. We have previously carried out the conformational analysis of DEET and several ortho-DEET analogs using NMR spectroscopy. We evaluated the effects of various electron-donating or withdrawing groups at the ortho- position, thereby investigating the effect of steric interaction on the observed restricted rotation. It was then our intent to explore the electronic effects that these substituents have when they are moved to the farther meta- and para- positions, thereby reducing their steric interactions and isolating the electronic effects, enabling us to investigate any long distance interactions. This presentation will describe the design, synthesis, and conformational analysis of a six complete series of DEET analogs using a combination of NMR spectroscopy and molecular mechanics calculations.

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Characterizing Spectroscopic Properties of N-Methylfulleropyrrolidines

In the recent years fullerenes and fullerene derivatives have garnered attention by scientist in the analytical field due to its electrochemical properties and promising applications in the field. In this project, the spectroscopic properties of C60, C70, and their derivatives was studied to evaluate their possible applications in chemical sensors. N-methyl[60]fulleropyrrolidine in particular was synthesized through the procedures by Maggini and Scorrano. Synthesis of the derivative is achieved by the 1,3-cycloaddition of an azomethine ylide on to fullerene C60 or C70, also referred to as the Prado reaction. The addition of a pyrrolidine group makes acid protonation of fullerenes possible. As a result, effects on the fullerene by the addition of protonation are observed through UV-Vis spectroscopy as slight shifts in absorption peaks 325 nm and 432.5 nm. Similar effects can be expected from N-methyl[70]fulleropyrrolidine because of their closely related geometry and properties to N-methyl[60]fulleropyrrolidine.

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Development of Small Chalcone and Analogous Organic Molecules for Apolipoprotein E (apoE) Modulation through A Structure-Activity Relationship (SAR) Study

Apolipoprotein E (apoE) is vital in the transport of essential marcomolecules within the circulatory system. The isomeric dependence of apoE is known to be associated with an increased probability of developing Alzheimer's disease. In previous studies, the screening of a small library of chalcone analogues identified specific structures responsible for apoE modulation in human astrocytoma cell lines. Utilizing the preceding scaffolds, we have synthesized a new series of chalcones for in vitro and in vivo studies with transgenic mice models. Moreover, we hope to further the structure-activity relationship (SAR) study in order to improve efficacy and drug-likeness of the small organic molecules. We hope that this research will contribute to the understanding and possible therapy of the highly complex Alzheimer's disease.

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The Anti-Apoptotic Proteins Bcl-2 and Bcl-Xl Differentially Affect Citrate Synthase Activity, a Mitochondrial Marker of Oxidative Energy Metabolism'

Apoptosis is known to be a programmed cell death which is inhibited during cancer. The Warburg Effect characterizes cancer cells as having a marked decrease in oxidative metabolism and an increase in fermentative metabolism, in order to allow for a rapid multiplication and tumor formation. If the existence of connections between metabolic shifts and cancerogenesis is now widely accepted, that which lies between apoptosis and metabolic regulations remains to be defined. In this context, anti-apoptotic Bcl-2 family proteins , such as Bcl-2 and Bcl-xL, are interesting candidates to fulfill this role because: (i) they are both overexpressed in certain cancers; and (ii) Bcl-2 was also shown to positively affect the cytochrome c oxidase activity of the electron transport chain in isolated mitochondria. In this study, we examined the effect of both Bcl-2 and Bcl-xL on citrate synthase activity, a marker of the citric acid cycle. To this effect, a series of citrate synthase enzymatic assays were performed in pre-lymphocytes over-expressing Bcl-2 or Bcl-xL. Interestingly, citrate synthase activity was significantly increased in Bcl-xL, but not Bcl-2-overexpressing cells. These results suggest that Bcl-2 and Bcl-xL differentially affect citrate synthase activity; and that Bcl-2 may have different effects on the respiratory chain and the citric acid cycle.

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The Effects of BMAA, An Environmental Neurotoxin, on Learning and Memory in Fruit Flies

Beta-methylamino alanine (BMAA) is a non-protein amino acid produced by many species of cyanobacteria. There is a connection between exposure to BMAA, via food, water, and air sources and the neurodegenerative disease, amyotrophic lateral sclerosis-Parkinsonism dementia complex (ALS-PDC). We analyzed the Alzheimer's disease phenotypes of learning and short-term memory deficits using age-matched female fruit flies that were feed BMAA (12.5 and 25 mM) for three consecutive days. Our previous feeding and locomotor studies show BMAA-dependent deficiencies in climbing and flying, supported by electrophysiology recordings. A specially designed T-maze apparatus to test olfactory learning and memory of flies was used. The flies were trained to associate the light chamber with the odor depressant (quinine) within 10 conditioning trials. The short-term memory of flies was then measured after 6 hours of the initial training. Data was analyzed using the chi-square test.

Our experimental results indicate olfactory learning and short-term memory of fruit flies are associated with the higher concentration of BMAA. The control flies (fed no BMAA) had a 78% success rate of associating the light source with the quinine depressant and thus remained in the dark chamber. Fruit flies fed 12.5 mM BMAA had a 43% success rate of associating the light source with the quinine depressant. BMAA flies at a concentration of 25 mM had a 20% success rate of associating light source with quinine depressant. Control flies that previously showed learning success had a 74% success rate of remembering the detrimental effects of quinine-moistened filtered paper. BMAA 12.5 mM flies had a 29% success rate and 25 mM flies a 13% success rate. These results indicate that flies treated with BMAA show a similar pattern of cognitive learning and memory deficits that may reflect a similar pathology in the human disease.

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Poster Board No. 17

Concentrations of Selected Organics and Reactive Oxygen Species Generation from PM 2.5 Extracts

Particulate matter in the atmosphere has been known to cause detrimental health affects and lend itself to climate change. More specifically reactive oxygen species (ROS) in fine particulate matter, with an aerodynamic diameter of 2.5 μm (PM 2.5), are suspected to be a significant contributor to this global problem. My research is an attempt to determine the concentration of these ROS in Fresno, California, and determine possible sources so as to better inform environmental policy. A high-volume PM 2.5 sampler was used to pump ambient air through a Teflon filter of known proportions and collect PM 2.5. The ROS adsorbed to the PM 2.5 were then extracted into an organic solvent, dichloromethane, reconstituted to a known volume, and then ran through gas chromatography with a mass spectrometry detector (GCMS). The gas chromatography separates all the constituents in the sample and the mass spectrometry fragments the constituents into its respective ions, enabling quantification by measuring peak areas from the GCMS spectra and comparing to known standards. Once quantified, ROS back trajectories were calculated using computer models from knowledge of the wind direction and velocity at the sampling site. Preliminary results will be presented graphically as mass loadings of ROS, and via concentration maps indicating sources of ROS generation near the sampling site. The study has been able to conclude a higher level of ROS generation during afternoon hours in Fresno, specifically during Winter months when ROS formation is significant.

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Poster Board No. 18

Improving Nutrition IQ: Results of an Interactive Peer-To-Peer Intervention in a High-School Setting

Purpose of Study: Forty-three percent of fifth, seventh and ninth grade students in Fresno County public schools are either overweight or obese, which can result in serious health problems both now and in the future. Weight gain results from excess calories consumed, including both food and/or beverages. Given that 1) sugar-laden drinks can result in increased amounts of calories consumed, and 2) the average adolescent in California consumes one soda per day, we designed a project to educate students at a large urban high school in Fresno about the amount of sugar contained in commonly consumed beverages

Methods Used: Forty-one students at Fresno High School were asked to rank a group of five beverages (Gatorade, Monster, Pepsi, water, and vitamin water) according to their favorite beverage. Gatorade was ranked the most popular by 37% of students, followed by Pepsi, vitamin water, water, and Monster. Students were then shown the amount of sugar in these beverages, and asked if they wished to re-rank their beverage choices.

Summary of Results: Post-demonstration rankings differed greatly from pre-demonstration rankings, with water ranked the most likely to be consumed by 61% of students, followed by vitamin water, Gatorade, Monster, and Pepsi. Of the drinks ranked, the sugar content was highest in Pepsi, followed by Monster, Gatorade, vitamin water, and water.

Conclusions: These data reveal that an interactive project such as this can result in healthier beverage choices by adolescents. Our hope is that educating adolescents in healthier choices will allow them to make healthier beverage choices so that they not only decrease their risk for obesity and future health problems, but also improve their self-esteem and self-confidence by achieving a more healthy weight.

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Renal Cell Carcinoma: Retrospective Analysis of Outcomes in Patients Treated with Cytoreductive Nephrectomy

Introduction: Renal cell carcinoma (RCC) accounts for 13,000 deaths in the U.S. annually, with estimated 40,250 male and 24,520 female new cases.

Objectives: Describe the functional and physiological renal outcome for patients who received nephrectomy. Determine if cytoreductive nephrectomy improves overall survival.

Methods: A retrospective case study evaluating patients diagnosed with renal cell carcinoma. Inclusion criteria: Patients diagnosed with renal cell carcinoma from 2000-2010 treated with cytoreductive nephrectomy. Exclusion criteria: Patients with end-stage renal disease at time of diagnosis of RCC, patients with prior nephrectomy. Renal outcomes included serum creatinine, EGFR, albumen, calcium, and bilirubin (all measured at six, twelve, and twenty-four months), intrinsic renal disease post-nephrectomy, and number/type of nephrotoxic drugs. Renal cell carcinoma outcomes included Stage of RCC at initial diagnosis, type/complications of nephrectomy, extra-renal spread at time of nephrectomy, pathology, number/type/duration of chemotherapy agent used, use of radiotherapy, survival rates. 317 patients were in the study group (RCC with cytoreductive nephrectomy) with 391 patients in the control group (RCC without cytoreductive nephrectomy). 39 patients in the study group were followed for 12 and 24 months, and 39 patients in the control group were followed for 12 and 24 months.

Results: 23% patients in the study group died after 24 months (9 out of 39 patients), whereas 38% patients in the control group died after 24 months (15 out of 39 patients). Serum creatinine increased 13% from baseline after 24 months in the study group compared to 68% in the control group.

Conclusion: Patients diagnosed with RCC who were treated with cytoreductive nephrectomy had better survival rates and had better renal function compared to patients with RCC without cytoreductive nephrectomy.

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Poster Board No. 20

Self-Reported Reasons Why HIV/AIDS Patients Miss Appointments in a Metropolitan Specialty Clinic

Introduction: It is estimated that 66% of human immunodeficiency virus positive (HIV+) patients receive care; however, only 25% are virally suppressed. These data suggest that even when patients are linked to care, barriers to viral suppression exist. Missed medical appointments can be an obstacle to care. The national no-show rate for HIV+ patients is about 28%, which may challenge disease management. The purpose of this research is to investigate self-reported reasons HIV+ patients miss medical appointments in one metropolitan clinic.

Methods: A cross-sectional survey is being collected for a four-month period from January 2014 to April 2014. The anonymous survey is offered to patients in the clinic waiting room. The brief survey asks if any appointments at that clinic were missed in the last year. Patients have a list of reasons for missing appointments from which they can choose answers or write in their response.

Results: So far, there are 196 participants. Of them, 48% reported missing one or more appointments in the last year. The majority (52%) of the patients said they forgot the appointment was scheduled. The second most common reason (32%) was no transportation. For those who stated they missed an appointment a phone call was the most popular (60%) method for being reminded, followed by a text message (31%).

Conclusion: Forgetting appointments and transportation problems are the two primary reasons HIV+ patients miss appointments at one metropolitan clinic. Improving processes to remind patients of appointments and resolving transportation problems may help alleviate the current no-show rate.

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Comparison of International Normalized Ratio Values to Bleeding and Coagulation-Related Complications in Patients on Warfarin

Introduction: Patients with deep vein thrombosis (DVT) are often prescribed the anti-coagulant warfarin to prevent complications. However, warfarin has its own complications, in particular, the risk of bleeding. The National Consensus Guidelines for antithrombotic therapy published by the American College of Chest Physicians have a target international normalized ratio (INR) of 2.5 with a range from 2 to 3 for patients with either a first episode or recurrent DVT. This study investigates INR levels and bleeding or coagulation-related complications.

Methods: A retrospective chart review of new adult patients to Community Medical Centers Coumadin Clinic from January 1, 2005 to December 31, 2011, who were prescribed warfarin, had at least three clinic visits and INR values in one year beginning from their initial appointment was done. The variables collected were indications for warfarin, INR levels and dates, and any hospitalization or emergency room visits with the admission or visit INR and previous two INRs comprising the three values for each hospitalized patient.

Results: Five hundred thirty-four charts were reviewed. Two hundred fifty-two patients were prescribed warfarin, of whom one died prior to follow up and thirty-eight had insufficient INR values. Two hundred thirteen patients were followed in this study. The average age in years was 52 (SD=14), 51% were male, and the average INR value was 2.2 (SD=0.6) in patients with no known complications, 2.8 (SD=1.7) in those with bleeding complications and 1.8 (SD=0.4) in those with recurrent embolism/thrombosis. The most common indication for warfarin was atrial fibrillation (36%). Twenty-five patients (11%) were hospitalized with complications: eleven (5%) for embolism/thrombosis, fourteen (6%) for bleeding.

Conclusions: INR values were variable. Patients experiencing embolism/thrombosis had sub therapeutic INR values on average. The 5% bleeding rate was lower than the 10-16% incidence of bleeding in patients anti-coagulated with warfarin in current literature.

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Monkeys, Arthritis, and a Case for Movement

Background: Cartilage makes smooth body motion possible by providing a slick surface on the ends of bones in joints. This dense tissue has a poor blood supply, which is necessary for a tissue that is smashed when we jump or run. Compression and expansion helps to maintain mobility as cartilage absorbs fluids in the joint between each compression episode. Large joint excursions, such as long and wide steps, help maintain cartilage growth in peripheral areas of a joint that are not stimulated through normal excursions

Field study: Frequency and degree of leg movement was observed in populations of wild and captive monkeys in the US and Central America.

Laboratory study: Human and monkey pelvic bones were examined to determine ways that various movements cause different contacts within the joint.

Results: Extension and flexion of the leg increases the area of contacts in the femoral-hip joint socket, increasing the likelihood that peripheral cartilage in this joint is stimulated. Extreme flexion, extension and rotational excursions of the leg are significantly more common in wild monkeys compared to those confined in zoos.

Discussion: Large excursions at joints may stimulate full cartilage growth, which may be one reason why wild monkeys rarely develop osteoarthritis.