# 30TH ANNUAL CENTRAL CALIFORNIA RESEARCH SYMPOSIUM

## PROCEEDINGS OF THE 2009 SYMPOSIUM

**Convened on**

**Thursday, April 23, 2009**

**in the**

**University Business Center**

**California State University, Fresno**

# 30th ANNUAL
# CENTRAL CALIFORNIA RESEARCH SYMPOSIUM

# PROCEEDINGS

*Sponsoring Institutions*

**California State University, Fresno**
*Office of Research and Sponsored Programs*

**University of California, San Francisco**
*Fresno Medical Education Program*

**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 23, 2009**

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## PREFACE

Welcome to the *30th Annual Central California Research Symposium.*

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

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

This year *UCSF Fresno* has provided two cash awards for the best symposium presentation by a student--one for an undergraduate student and one for a graduate student. *Alliant International University, Fresno* has provided a cash award for the best poster presentation by a student. The American Chemical Society, San Joaquin Valley Section has sponsored a cash award for best science presentation. The Davin Youngclarke Memorial Award, inaugurated in 2008 and sponsored by the *Office of Research and Sponsored Programs* at *California State University, Fresno,* is awarded to the presenter who best addresses a community issue with use of sophisticated and sound research methods. In addition to providing three cash awards, the *Office of Research and Sponsored Programs* at *California State University, Fresno* has planned and administered the symposium in cooperation with these institutions.

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

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

## PLANNING COMMITTEE

### UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
### FRESNO MEDICAL EDUCATION PROGRAM

Donna Hudson, Ph.D.
*Symposium Co-Chairperson*

Joan Voris, M.D.
Michael Peterson, M.D.
Paul K. Mills, Ph.D.
Kent Yamaguchi, M.D.

### CALIFORNIA STATE UNIVERSITY, FRESNO

Thomas McClanahan, Ph.D.
*Symposium Co-Chairperson*

Mark Arvanigian, Ph.D.
Saeed Attar, Ph.D.
Sharon Benes, Ph.D.
Jason Bush, Ph.D.
Alejandro Calderon-Urrea, Ph.D.
Karen Carey, Ph.D.
Ramakrishna Nunna, Ph.D.
Karl Oswald, Ph.D.
Brian Tsukimura, Ph.D.
Doug Carey

### ALLIANT INTERNATIONAL UNIVERSITY, FRESNO

Siobhan O'Toole, Ph.D.

### FRESNO CITY COLLEGE

Edward Lindley, Ph.D.
Rick Stewart

### EVENT AND PROCEEDINGS COORDINATORS

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

CALIFORNIA
STATE
UNIVERSITY,
FRESNO

April 23, 2009

**MESSAGE TO ALL RESEARCH SYMPOSIUM PARTICIPANTS**

California State University, Fresno is pleased to serve as the host campus for the *30th 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 Community. The program for the symposium reflects our commitment to promoting interdisciplinary research, encouraging scholarly exchange on theoretical and pragmatic topics, and providing an opportunity for both students and research scholars to share common interests. Cooperative efforts such as these benefit the individual institutions involved and ultimately the public that we all serve.

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

Sincerely,

John D. Welty
President

**Office of**
**the President**

Thomas Administration Building, 103
5241 North Maple Ave. M/S TA48
Fresno, CA 93740-8027

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Fresno Medical Education Program

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**UCSF Fresno Center for Medical Education & Research**
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# WELCOME

## 30th Annual Central California Research Symposium
## April 23, 2009

Dear Symposium Participants and Visitors:

It is my pleasure to welcome each of you to the 30th 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 continue to be impressed 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 L. Voris, MD
Associate Dean, UCSF Fresno Medical Education Program
Assistant Clinical Professor of Pediatrics, UCSF

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INTERNATIONAL UNIVERSITY

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One Beach Street
Suite 200
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San Diego | Scripps Ranch
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San Diego, CA
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858.635.4000

San Diego | Cornerstone
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San Diego, CA
92121-3710
858.623.2777

Alliant Mexico
[Universidad
Internacional de
Mexico, A.C.]
Alvaro Obregon #110
Colonia Roma
CP 06700
Mexico City, Mexico
(52.55) 5264.2187

Dear Symposium Participants:

The Fresno campus of Alliant International University, which includes the California School of Professional Psychology, the Marshall Goldsmith School of Management, the Shirley M. Hufstedler School of Education, and the Center for Forensic Studies, is honored to be a sponsor of the 30th annual Central California Research Symposium.

Not only is important research being conducted at the higher educational institutions and hospitals in Central California, but these institutions are also training our next generation of researchers.

By featuring the work of Central California researchers from diverse fields, the symposium provides an exciting view of the broad expanse of research taking place in Central California. We look forward to learning about the research you are conducting.

Respectfully,

Penny Schafer
Director of Campus and Student Services
Alliant International University, Fresno/Sacramento Campus

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

*Office of the President*

April 3, 2009

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

Dear Symposium Participants:

Fresno City College is pleased to be a sponsor of the 30th Annual Central California Research Symposium. This cooperative venture not only advances the frontiers of knowledge but leverages the research resources of each participating institution.

Fresno City College is proud to be a partner in hosting this program and extends best wishes to all participants.

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

Sincerely,

Cynthia E. Azari, Ed.D.

lmw

Plenary Session

University Business Center
Auditorium, Room 191

12:00 Opening Remarks and Welcome

Dr. Thomas McClanahan, California State University, Fresno

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

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

12:10 30th Annual CCRS Symposium Commemorative Remarks
Dr. Maria Pallavicini, Dean, School of Natural Sciences,
University of California, Merced

12:25 ***Variation in Aggressive Behavior within a Clonal Killifish, Kryptolebias marmoratus: Investigations into Gene Expression and Epigenetic Modifications of monoamine oxidase***
Janet M. Campbell, Tania L. Roth, Larry Riley, PhD, Ryan L. Earley, PhD

12:40 ***Father-Daughter Relationships, Self-Image and Resilience***
Kate Higgins, Constance Jones, PhD

12:55 ***An Iterative Strategy Combining Biophysical Criteria and Duration Hidden Markov Models for Structural Predictions of Chlamydia trachomatis σ66 Promoters***
Ronna R. Mallios

1:10-1:30 **Break--University Business Center, Gottschalks Gallery**

Concurrent Session A

University Business Center
Auditorium, Room 191

1:30 ***The Stress Hormone, Cortisol, Alters Ghrelin Signaling in Tilapia***
Whitney Janzen, Larry G. Riley, PhD

1:45 ***Developmental Timing of MF Regulation in the Tadpole Shrimp, Triops longicaudatus***
Michael Gledhill, Nagaraju Kotagiri, Brian Tsukimura, PhD

2:00 ***Species Composition and Temporal Abundance of Brachyuran Larvae in San Francisco Bay***
Vanessa A. Gonzales, Brian Tsukimura, PhD

2:15 ***Effect of Fasting and Re-feeding on Glucokinase Activity in Tilapia (Oreochromis mossambicus)***
Brahmendra Chandu Javvadi, Larry G. Riley, PhD

2:30 ***The Role of Ghrelin in Glucose Metabolism in the Tilapia, Oreochromis mossambicus***
Sara E. Nilmeier-Schwandt, Larry G. Riley, PhD

2:45 ***Protein Expression Profile for Transgenic Nicotiana tabacum Plants Displaying Resistance to Meloidogyne incognita Infections***
Maria Carrizales, Carlos Tristan, Alejandro Calderón-Urrea, PhD

3:00 ***Effects of Methyl Farnesoate on Fecundity and First- Generation Offspring Viability in the Tadpole Shrimp, Triops longicaudatus***
Michael Tran, Brian Tsukimura, PhD

**3:15 Break--University Business Center, Gottschalks Gallery**

**3:30 Concurrent Sessions Resume**

Concurrent Session B

University Business Center
Room 182 A

1:30 ***Urbanization and the Cultural Cost of International Trade***
Iliana Perez and Tamas Forgacs, PhD

1:45 ***Branching Ratios for the Reaction of Hydroperoxy Radicals with Acetyl eroxy and Acetonyl Peroxy Radicals as a Function of Temperature and Pressure***
Sukhdip Singh, Geoff Tyndall, John Orlando, Alam S. Hasson, PhD

2:00 ***Branching Ratios for the Reaction of Selected Carbonyl-Containing Peroxy Radicals with Hydroperoxy Radicals***
Sean Campbell, Sukhdeep Singh, Sam Hernandez, Yesenia Ibarra,
Alam S. Hasson, PhD

2:15 ***Measurements of Smog-Forming Pollutant Emissions from Central California Dairies***
Phillip Alanis, Mark Sorenson, Brian Shamp and Alam S. Hasson, PhD

2:30 ***Introduction to Q-learning in Navigating Mobile Robot Proposed to be Used for Agricultural Harvesting Applications***
Matthew Grewal, N. P. Mahalik, PhD

2:45 ***Analysis of Public Health Interventions in the HIV/AIDS Epidemic***
Moses G. Gaybah Padmore, Danika LeDuc, PhD

3:00 ***Sexism in the Media Coverage of Female Candidates during the Presidential Campaign '08: An Analysis of News Headlines***
Geri Yang, Victoria A. Malko, PhD

**3:15 Break--University Business Center, Gottschalks Gallery**

**3:30 Concurrent Sessions Resume**

Concurrent Session C

University Business Center
Dean's Conference Room

1:30 ***Language Ability and Training in Expatriate Assignments***
Melissa M. Freeman, Julie B. Olson-Buchanan, PhD,
Rudolph J. Sanchez, PhD

1:45 ***Investigating the Effects of Ethnic Diversity in Recruitment Advertising: To Specify or Not to Specify***
Aimee C. McFarland, Brian D. Lyons, PhD, Rudolph J. Sanchez, PhD

2:00 ***Small Calims Court: Essential to Education in Business***
Jessica Nicole Freligh, Deborah Kemp, PhD, Rudolph J. Sanchez, PhD

2:15 ***Impact of Contrast Effect on US Medical Graduates during Residency Interviews***
Setareh Hafezi, MD, A.G. Peters, Jr., MBA, MDiv,
Pamela L. Emeney, MD, Stephanie M. Kong, Pallavi Vishwanath,
Conrad R. Chao, MD, Heather M. Peters, MEd, PhD

2:30 ***Atypical Teratoid/Rhabdoid Tumor and an Unusual Metastasis***
Amy-Lee Bredlau, J.D. Ozeran

2:45 ***Does Disseminated Methicillin Resistant Staphylococcus Aureus (MRSA) Cause Venous Thrombosis? A Case Series and Literature Review***
P. Krishnan, MD, R. Dimand, MD, R. Mignacca, MD, A. Graciano, MD

3:00 ***Barriers in the Adoption of Electronic Health Record Systems in California's San Joaquin Valley: A Qualitative Analysis***
Mohammad A. Rahman

**3:15 Break--University Business Center, Gottschalks Gallery**

**3:30 Concurrent Sessions Resume**

Concurrent Session D

University Business Center
Room 194 AB

1:30 ***Effects of Social Information on Drawn Route Traversals***
Justin L. Matthews, Teenie Matlock, PhD

1:45 ***Reliability Generalization of the Personal Attributes Questionnaire***
Ashley Langeliers, Donna Demanarig, MA, Siobhan O'Toole, PhD

2:00 ***The Decision to Medicate ADHD Children***
Eric Diddy, Constance Jones, PhD, Siobhan O'Toole, PhD

2:15 ***Analysis of Positive Behavior Support Plans: A Comparison between Low and High Quality Positive Behavior Support Plans and Implications for Students***
Steve A. Gonzalez, Susan Tracz, PhD

2:30 ***Electric-Field Induced Modulation of Static and Dynamic Optical Properties and Energy Transfer Rates in Aggregates of Coupled/Self-Organized Quantum Dots***
Y.K. Verma, S.N. Ghosh, C.G.L. Ferri, M. Gallardo, S. Ghosh, PhD

2:45 ***A Simulation of Decoherence in Superconducting Qubits***
Jon Inouye, Lin Tian, PhD

3:00 ***Association of Functional Measures and Fall Status with Balance Self Efficacy in Community Dwelling Older Adults at Risk for Falls***
Rocky Cisceros, PT, MPT, Peggy Trueblood, PT, PhD,
Cheryl Hickey, PT, EdD, Leslie Zarrinkhameh, PT, DPT,
Toni Tyner, PT, MHL

**3:15 Break--University Business Center, Gottschalks Gallery**

**3:30 Concurrent Sessions Resume**

Concurrent Session E

University Business Center
Auditorium, Room 191

3:30 ***Efficient Robot Swarm Movement and Shape Recognition Algorithms in Environments with Obstacles***
Anamika Lal, John Harris, Ming Li, PhD

3:45 ***Location Free Undeployment in Wireless Enabled Robot Swarms***
Nicholas Read, Ming Li, PhD

4:00 ***Synthesis and Characterization of Gd and Nd Nanoparticles***
Dulce G. Romero, Pei-Chun Ho, Saeed Attar, PhD, Dennis Margosan

4:15 ***Protein Structure Classification from NMR Spectra using Data Mining Techniques***
Arun Vignesh Kumaar Aruchamy, Rehana Ferwin Mohamed Ali, Yu Cao, PhD, Krish Krishnan, PhD

4:30 ***Mapping Conserved DNA Markers in the Genome of Capsicum annuum by the Use of a CAPS/dCAPs Protocol***
Dylan Storey, James P. Prince, PhD

4:45 ***QTL Analysis and Candidate Genes for Horticultural Traits in a Recombinant Inbred Line Population of Pepper (Capsicum annuum)***
Chad Jorgensen, James P. Prince, PhD

5:00 ***Intestinal Parasite Prevalence in a Rural Mexican Village in the State of Sinaloa***
Jose Soto, Michael Lynch, MD, Paul R. Crosbie, PhD

5:15 Concluding Address—Alice Peters Auditorium, Room 191
***Assessment of the Pharmaceutical Needs of Underserved Adult Patients at Outpatient Settings in Fresno, California***
N. Rivera, S. Rivas, T. Dixon, O. Molokwu, N. Nkansah
Proceed to Student Awards Presentations and Social Hour

Concurrent Session F

University Business Center
Room 182 A

3:30 ***The Tardigrade pH Paradigm: Is it Real?***
Stephanie Calloway, Carl Johansson, PhD

3:45 ***Tardigrades as a Model Organism for Island Biogeography?***
Erika Boreliz Alvarado, Carl Johansson, PhD

4:00 ***Effects of Grape (Resveratrol) and Pomegranate (Ellagic Acid) Extracts on Random Pattern Skin Flap Survival***
Michael Nies, Daniel Lollar, MD, Saben Kane, MS, Tim Tyner, MS, Kenty Sian, MD, Steven Hafertatan, MD

4:15 ***Marker Addition, Comparative Mapping, and R-Loci Targeting in a C. annuum***
Mitchell Lucas, James P. Prince, PhD

4:30 ***Degradation of Malachite Green in Mycobacterium smegmatis***
Heather Upton, Mamta Rawat, PhD

4:45 ***Fruit Flies as a Model for Parkinson's Disease: The Neurotoxin BMAA Induces Dosage-Dependent Parkinson's Symptoms in Fruit Flies***
Nalong Mekdara, Athena Goodarzi, H.T. Kim, Tina Sakha, Willy Gonzales, Joy Goto, PhD, Ulrike Muller, PhD

5:00 ***Effects of Phenanthrenequinone, a Diesel Exhaust Chemical Derivative, on Reproduction, Development and Behavior in a Mouse Model***
Adam Shinkawa, Cyrus Moon, MD, Saben Kane, MS, Tim Tyner MS, Kent Yamaguchi, MD

5:15 Concluding Address—Alice Peters Auditorium, Room 191
***Assessment of the Pharmaceutical Needs of Underserved Adult Patients at Outpatient Settings in Fresno, California***
N. Rivera, S. Rivas, T. Dixon, O. Molokwu, N. Nkansah
Proceed to Student Awards Presentations and Social Hour

Concurrent Session G

University Business Center
Dean's Conference Room

3:30 ***Dashboard Use as Motivator in Graduate Medical Education***
George Kevly, MD, A.G. Peters, Jr., MBA, MDiv, Michael Ebaugh, MD, Stephanie M. Kong, Pallavi Vishwanath, Conrad R. Chao, MD,
Heather M. Peters, MEd, PhD

3:45 ***Heritage Language and Culture Preservation: Khmer Youth's Critical Reflections on the Khmer Emerging Education Program (KEEP)***
Pamela L. Dungy, EdD

4:00 ***Meta Representational Knowledge, Transfer amd Multiple Embodiments in Linear Algebra***
Lance Burger, PhD

4:15 ***Climate Change Impacts on the Headwaters of San Joaquin River, California***
Zili He, Zhi Wang, John Suen, Xiaoyi Ma

4:30 ***Can Free Airport WiFi Be Offered?***
Ming Li, PhD, Shih-Hsi Liu, Shaen Toner, Yu Cao, Todd Wilson

4:45 ***The Impact of Regulation FD on Institutional Investor Informativeness***
Tian (Lori) Tang

5:00 ***Encoding Opportunity and Eyewitness Accuracy: Memory at Tactical Speeds***
Matthew J. Sharps, PhD, Adam B. Hess, Hilary Casner, Bethany Ranes, Jenna Jones, Stephanie Van Ardsdall, Kirby

5:15 Concluding Address—Alice Peters Auditorium, Room 191
***Assessment of the Pharmaceutical Needs of Underserved Adult Patients at Outpatient Settings in Fresno, California***
N. Rivera, S. Rivas, T. Dixon, O. Molokwu, N. Nkansah
Proceed to Student Awards Presentations and Social Hour

Concurrent Session H

University Business Center
Room 194 AB

3:30 ***Melancholy Mad Working Class: Alienation and Class Conflict in Hard Times***
Miriam Fernandez, Ruth Jenkins, PhD

3:45 ***Born Free: The Polycultural Animal in Madagascar***
Christopher Estep, Richard Hansen, PhD

4:00 ***Acoustic Characteristics of the English Vowel System in California***
Miho Schweizer, C. Golston, PhD, S. Fulop, PhD

4:15 ***Effects of Acoustic Structure on Cross-Modal Speech Information and Audiovisual Gain***
James W. Dias, Lorin Lachs, PhD

4:30 ***The Sierra Nevada Frontal Fault System: Kinematics and Associated Landscape Evolution***
Christopher D. Kemp, John Wakabayashi, PhD

4:45 ***Laboratory-Scale Superconducting Mirrors for Gravitational Microwaves***
Stephen Minter, Raymond Chiao, PhD

5:00 ***An Investigation of the Relationship between Air Pollutants and Lung Function***
Akihiro Ikeda, Dianne Lim, Kennedy Vu, Akiteru Ikeda, Tim Tyner, MS, Jose Joseph, Alam Hasson, PhD

5:15 Concluding Address—Alice Peters Auditorium, Room 191
***Assessment of the Pharmaceutical Needs of Underserved Adult Patients at Outpatient Settings in Fresno, California***
N. Rivera, S. Rivas, T. Dixon, O. Molokwu, N. Nkansah
Proceed to Student Awards Presentations and Social Hour

Poster Session I
1:00 p.m. until 3:00 p.m.

University Business Center
Gottschalks Gallery

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

(1) ***Simultaneous Lipid Production and Reduction of COD Levels by Green Algae Growing in Fruit Industry Waste Water***
Preethi Sarvabhowman, Jagdeesh Yerneni, Alejandro Calderon-Urrea

(2) ***Generation of Transgenic Lines of Caenorhabditis elegans and Meloidogyne incognita Using the Microparticle Bombardment Method***
Venu Polineni, Daniel Ruiz, Alejandro Calderon-Urrea, PhD

(3) ***Analyses of a Bone-Seeking Breast Cancer Cell Line Before and After Treatment with Bisphosphonates***
Guneet Gill, Shaghayegh Morshedian, Cynthia Contreras, Bryan Levay, Jason Bush, PhD

(4) ***Influence of Organochlorine Pesticides on Breast Cancer***
J. Borba, J. Hale, J. Bush, PhD

(5) ***Development of Protocols for Enrichment of Specific Endocytic Vesicles Involved in beta3 Integrin Recycling in a Cell Culture Model System***
Nathan Piestrup, Jinsha Liu, Jason Bush, PhD

(6) ***Standardizing a Protocol for Myosin Protein Extraction from Zebrafish Muscle Tissue***
Christina Benjamin, Ulrike Muller, PhD, Joy Goto, PhD

(7) ***Children's Scientific Learning in Informal Settings: Time-Lapse Photographs***
Diego Lopez, Lara Triona, PhD, Azure Pellegrino

(8) ***Multi-Drug Resistant Ovarian Cancer Cells are Less Susceptible to Orlistat-Induced Cell Death***
Jourdan Ritchey, Brandy Carrillo, Aracelli Villalvazo, Adam Nitido, Nahall Rad, Jason Bush, PhD

(9) ***Analysis of Concomitant Mercury Detoxification and 2,4-D Degradation by Bacteria***
Yaw Anane, Leslie Dominguez, Alice Wright, PhD, Mamta Rawat, PhD

Poster Session I Continued
1:00 p.m. until 3:00 p.m.

University Business Center
Gottschalks Gallery

(10) ***The Relationship between the Neurotoxin BMAA and Protein Levels of Copper-Zinc Superoxide Dismutase***
Y. Wilyana, L. Munjy, L. Crabtree, J.J. Goto, PhD

(11) ***Effect of Viral Infection and Host Genetics on Asthma in the San Joaquin Valley***
Vivian Diep, Melissa Gushiken, Gagandeep Aulakh, Jose Joseph, Tim Tyner, MS, Mamta Rawat, PhD

(12) ***The Protein-Protein Analysis of Alzheimer's Disease-Interacting Protein***
Pranav Bhatt, Michael Harbell, Joy J. Goto, PhD

(13) ***Synthesis of New Chiral P-N Ligands from a Ferrocenyl-Phosphine and L-Amino Acids, and Their Potential Use in the Asymmetric Heck Reaction***
Kurtis Thiesen, Saeed Attar, PhD

(14) ***Characterization of Anterior-Posterior Determinants in Meloidogyne incognita Relative to Free-Living Nematodes***
Khavong Pha, Miguel A. Garcia, Alejandro Calderon-Urrea, PhD

(15) ***The Influence of Western Media on Hmong College Students at California State University, Fresno***
Trang Pham, Tamyra Pierce, PhD

(16) ***Extraction of Hydroxyapatite Crystal Aggregates from Forensic and Archaeological Bone***
Johnny Upshaw, Kevin W. P. Miller, PhD

(17) ***Subcellular Localization of the Tasselseed 2 Protein in Maize***
Christian G. Aguilar, Ivan F. Acostal, Stephen L. Dellaporta, Alejandro Calderon-Urrea,PhD

(18) ***Do Children Think Animals Think?***
Lizbeth Miller, Michelle M. Chouinard, PhD

(19) ***The Progressive Neurodegenerative Effects of the Neurotoxin BMAA on a Fruit Fly Model of Parkinson's Disease***
Guillermo N. Gonzalez, Athena Goodarzi, Nalong Mekdara, Tina Sakha, H.T. Kim, Joy Goto,PhD, Ulrike Muller, PhD

Poster Session I Continued
1:00 p.m. until 3:00 p.m.

University Business Center
Gottschalks Gallery

(20) ***Effects of External Cues on Walking Performance During Single and Dual Tasks in Persons with Parkinson's Disease***
Yoshi Fujii, MPT, Yu-ping Chen, ScD, PT, Peggy R. Trueblood, PhD, PT

(21) ***Research Infrastructure for Minority Institutions (RIMI): Results from Some of the Ongoing Projects***
Julie Jin, Jason Bush, PhD, Alejandro Calderon-Urrea, PhD, Krish Krishnan, PhD

(22) ***Efficacy of Narrative Therapy in a Career Counseling Group: The First-Year College Experience***
Melissa Rhea, MS

(23) ***The Metal Ion Content of Drosophila melanogaster Expressing Copper-Zinc Superoxide Dismutase (CuZnSOD)***
Cindy X. Xiong, Joy J. Goto, PhD

24) ***Effects of Anonymity on Aggressive Behavioral Responses to Anger-Provoking Driving Situations***
Coleman Tuttle, Christine Edmonson, PhD

(25) ***How Do Students Decide When to Stop Studying?***
Corinne Townsend, Evan Heit, PhD

(26) ***Short-Interval Time Perception: An ERP Study***
Philip A. Vieira, Martin Shapiro, PhD

(27) ***Gen Y: An Examination of Intrapersonal Variables and the Likelihood of Whistleblowing***
Kimhong Nguyen, Steve Ugbah, PhD

(28) ***Demand-Withdraw Inter-rater Reliability: Replacing Cronbach's Alpha with Intra-Class Correlation Coefficient***
Brittany Rudd, Amanda Mortimer, PhD

(29) ***Electrochemistry of Au25 Nanoparticle***
Michael On, Akihiro Ikeda, Jai-Pil Choi, PhD

Poster Session I Continued
1:00 p.m. until 3:00 p.m.

University Business Center
Gottschalks Gallery

(30) ***Effects of Presentation Type on Facial Composite Accuracy***
Sarrah McCormack, K.M. Oswald, PhD

(31) ***Enhancing Retention through Distributed Practice***
P.L. Skomsvold, K.M. Oswald, PhD

5:15 Concluding Address—Alice Peters Auditorium, Room 191
***Assessment of the Pharmaceutical Needs of Underserved Adult Patients at Outpatient Settings in Fresno, California***
N. Rivera, S. Rivas, T. Dixon, O. Molokwu, N. Nkansah
Proceed to Student Awards Presentations and Social Hour

Poster Session II
3:15 p.m. until 5:15 p.m.

University Business Center
Gottschalks Gallery

Authors will be available for questions from 3:15 p.m. until 5:15 p.m.

(1) ***Effects of Cigarette Smoke Exposure on Fibrin Architecture and Thrombolysis***
Fridolin Sy, MD, Sundararajan Srikanth, MD, Rajat Barua, MD, PhD, Grace Huang, DO, Usman Javed, MD, John A. Ambrose, MD, FACC

(2) ***Prenatal HIV Testing Experiences among Postpartum Women in a Fresno County Birthing Hospital***
Rebeca A. Lopez, MPH, Roger Mortimer, MD, Saire Casares

(3) ***Treading a Slippery Sloope: Slant Perception in Near and Far Space***
Eric Chiu, Merrit Hoover, Joshua Quan, Bruce Bridgeman

(4) ***Effect of Short-Term Exposure to Gender Stereotypical magazine Advertisements on Implicit Stereotyping and Behavior***
Malgorzata Skorek, Yarrow Dunham, PhD

(5) ***Email Communication***
Ann Snelling, Lisa Weston, PhD

(6) ***Effects on the Parasitic Nematode Meloidogyne incognita of Transgenic Tobacco Plants Expressing an Antisense Construct of the Cell Death Protection ced-9 Gene***
Fumiko Yamamoto, Thihan Padukkavidana, Glenda W. Polack, Alejandro Calderon-Urrea, PhD

(7) ***Estimating Soil Erosion Potential within the Fresno River Watershed Using the RUSLE Model and GIS***
Jorge Baca Jr., Zi Li

(8) ***Residential Irrigation as a Driver of Urban Bird Communities***
Bradley Schleder, Madhusudan Katti, PhD

(9) ***Unmanned Aerial Vehicle for Agriculture and Terrain Mapping***
Nick Simonain, Balaji Sethuramasamyraja, PhD

(10) ***Using a Wiki to Promote Collaboration among Members of the Fresno Cyber Tools Union Catalog Group***
Judith J. Kammerer, MA, MLIS, AHIP

Poster Session II Continued
3:15 p.m. until 5:15 p.m.

University Business Center
Gottschalks Gallery

(11) ***The Creation of a Digital Forensic Faunal Hair Database***
Michael Gonzalez, Korie Faber, Johnny Upshaw, Nicole Cruz, Brian Fischer, K.W.P. Miller, PhD

(12) ***Rare Earth Metal Nanoparticles Grown by Inverse Micelle Method***
Anna Tretyakov, Dulce Romero, Pei-Chun Ho, PhD

(13) ***Influence of Sedimentation on the Distribution of Stream Macroinvertebrates in the Upper Fresno River***
Brett Moore, Steve Blumenshine, PhD, Zhi Wang, Zili He

(14) ***Effect of Chronic L-arginine Supplementation on Oxygen Uptake and Ventilatory Threshold in Trained Cyclists***
Kyle Sunderland, Felicia Greer, Jacobo Morales, Tim Anderson, EdD

(15) ***Sensitive Measurement of Atomic Spin-Dependent Energy Shifts***
Louis Rene Jacome, Derek F. Kimball, PhD, Srikanth Guttikonda, Eric J. Bahr, Lok Fai Chan

(16) ***Atmospheric Chemistry of n-Propanal, n-Butanal and n-Pentanal***
Yesenia Ibarra, Sukhdip Singh, Sean Campbell, Sam Hernandez, Alam S. Hasson, PhD

(17) ***Going Green: Exploring the Effect of Demographics on Consumersâ€™ Consumption of Green Fashion Goods***
Angela Villa, Lizhu Davis, PhD

(18) ***Investigation of Levoglucosan as a Tracer for Wood Smoke Regulation in the San Joaquin Valley***
Kennedy-Kiet Tuan Vu, Akihiro Ikeda, Akiteru Ikeda, Rumi Sakata, Tim Tyner, MS, Alam Hasson, PhD

(19) ***The Promise of Hydrogen Vehicles: An Examination into the Current Problems and Developments (Concentration on Hydrogen Storage)***
John L. Duong, Fred Barez, PhD

(20) ***Mechanical, Thermal, Chemical and Morphological Characterization of the Coconut Fiber***
Christian J. Espinoza-Santos, Guna Selvaduray, PhD

Poster Session II Continued
3:15 p.m. until 5:15 p.m.

University Business Center
Gottschalks Gallery

(21) ***Ethics of Direct-to-Consumer Genetic Test***
Amanda Tout, Andrew Fiala, PhD

(22) ***Increasing Student Achievement and Motivation in the Science Classroom Utilizing Video Production and Video Peer-Review***
D.. Scott Hodges, David Frank, PhD

(23) ***Continuous Measurements of Carbon Dioxide in Suburban Fresno***
Segun Ogunjemiyo, Sam Omolayo

(24) ***APP Proteolytic Processing, Trafficking and Aggregation in the Presence of Cycad Neurotoxin***
Rana Elayyan, Joy Goto, PhD

(25) ***Secretome Analyses from Staged Pancreatic Cancer Cell Lines***
Rowena S. Chu, Steven Miller, David Wells, Chris Sakoda, Julie Jin, Jason Bush, PhD

(26) ***Heterologous Expression and Functional Analysis of a Transcription Factor from Xylella fastidiosa***
Venkata R. Kethanaboyina, Hwan Youn, PhD

(27) ***Visual-Spatial Memory Benefits of Being Bilingual in Preschoolers***
Kandice Soraya Grote, Michelle M. Chouinard, PhD

(28) ***Recommendations for the Standardization of Nomenclature within the Canine Mitochondrial DNA Control Region***
Korie Faber, Kevin W.P. Miller, PhD

(29) ***Las Tapadas Limenas: Islamic-Rooted Influences on the Covered Traditions of Colonial Lima***
Edrina Rashidi, Cynthia C. Rostankowski, PhD

(30) ***Will Adjuvant Commonly Found in Vaccines Inhibit Rabbit Reproduction?***
Roxanne B. Galaviz, Shirley Kovacs, PhD

5:15 Concluding Address—Alice Peters Auditorium, Room 191
***Assessment of the Pharmaceutical Needs of Underserved Adult Patients at Outpatient Settings in Fresno, California***
N. Rivera, S. Rivas, T. Dixon, O. Molokwu, N. Nkansah
Proceed to Student Awards Presentations and Social Hour

**Judges for Undergraduate and Graduate Student Presentations and Poster Presentations:**

| | |
|---|---|
| Dr. Amanda Adams | California State University, Fresno |
| Dr. Loren Alving | University of California, San Francisco |
| Dr. Saeed Attar | California State University, Fresno |
| Dr. Sharon Benes | California State University, Fresno |
| Dr. Jason Bush | California State University, Fresno |
| Dr. Alejandro Calderon-Urrea | California State University, Fresno |
| Dr. Karen Carey | California State University, Fresno |
| Dr. Kathleen Dyer | California State University, Fresno |
| Ms. Marie Fisk | California State University, Fresno |
| Ms. Grace Hatmaker | University of California, San Francisco |
| Dr. Donna Hudson | University of California, San Francisco |
| Dr. Susan Hughes | University of California, San Francisco |
| Ms. Ronna Mallios | University of California, San Francisco |
| Dr. Thomas McClanahan | California State University, Fresno |
| Dr. Paul K. Mills | University of California, San Francisco |
| Dr. Karl Oswald | California State University, Fresno |
| Dr. Miguel Perez | California State University, Fresno |
| Dr. Michael Peterson | University of California, San Francisco |
| Dr. Jim Prince | California State University, Fresno |
| Mr. Chuck Radke | California State University, Fresno |
| Mr. Rick Stewart | Fresno City College |
| Dr. Brian Tsukimura | California State University, Fresno |
| Dr. Lynnette Zelezny | California State University, Fresno |

**Moderators for Oral Presentations:**

| | |
|---|---|
| Mr. Doug Carey | California State University, Fresno |
| Dr. Donna Hudson | University of California, San Francisco |
| Dr. Jim Prince | California State University, Fresno |
| Mr. Chuck Radke | California State University, Fresno |
| Dr. Brian Tsukimura | California State University, Fresno |

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

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

# ORAL PRESENTATION ABSTRACTS

**(IN ALPHABETICAL ORDER BY PRESENTING AUTHOR)**

**Phillip Alanis, Dr. Alam Hasson**
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*Undergraduate Student*

## Measurements of Smog-Forming Pollutant Emissions from Central California Dairies

Dairies are a major source of volatile organic compounds (VOCs) in California's San Joaquin valley; a region that experiences high ozone levels during summer. Short-chain carboxylic acids, or volatile fatty acids (VFAs), are believed to make up a large fraction of VOC emissions from these facilities. However, VFAs are difficult to measure, and emissions of these pollutants from dairies are poorly characterized.

In this work, emissions of six VFAs were measured using solid phase microextraction (SPME) followed by analysis using gas chromatography-mass spectrometry. Samples were taken from six dairies within the San Joaquin Valley over a two year period. The facilities were selected to provide a representative sample of the different dairies found in the region. The dairies range in size from 300 to 3700 animals, and are located between Tulare and Modesto. Maintenance and operational protocols also vary significantly between the dairies.

Acetic acid was found to dominate VFA emissions from all of the dairies tested. Animal feed is the major source of these pollutants. Variations in emissions were observed between dairies, but this may reflect the limited number of samples rather than true differences between the sites. A simple calculation suggests that dairies may be a small, but significant contributor to ozone formation. The data also suggest that simple strategies, such as spraying the feed with water, may mitigate most of these emissions.

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## Protein Structure Classification from NMR Spectra Using Data Mining Techniques

The protein universe, one of the fundamental entities of biotechnology in totality is vast. However, an estimate of the order of magnitude can be made: ~105 sequence families would belong to more than 104 structural families. The long-term goal of our research is to develop an intelligent protein structural class prediction tool to predict protein structures directly from the sequence. These technologies and related software tools will benefit the areas of biology and computer science. Currently, we are focusing on investigating effective and efficient data mining methods for the classification of the protein structure directly from NMR using the chemical shift information.

As a first the stage of this project, we are investigating apposite machine learning algorithms which can be used in the process of determining the secondary structure of proteins from NMR spectra. Our proposed approach includes two steps. The firs step is ¡°data collection¡± and the second step is ¡°data analysis¡±. In the first step (¡°data collection¡± step), we extensively use chemical shift information available in Biological Magnetic Resonance Bank (BMRB) and Protein Data Bank (PDB) database. In the second step (¡°data analysis¡± step), we apply the state of the art machine learning techniques to the test and training datasets generated from the fist step.

In our experiments, we use a data set with 1562 instances. Five machine learning algorithms are applied to this dataset. Results show that the overall performance is encouraging with average accuracy at 72%. Among the algorithms being tested, LMT and Multiclass classifier algorithm are the best performers with average accuracy about 77%.

Our results clearly suggest that data mining approach is a promising solution for understanding the relationship between chemical shifts and specific protein structures. Work is in progress to investigate the LMT and Multiclass classifier algorithms to further improve the protein predication accuracy and development of new feature extraction methods from NMR spectra along with new statistical machine learning methods for protein classification.

* This work was in part supported by an NIH grant: Research Infrastructure for Minority Institutions
P20MD002732

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## Tardigrades as a Model Organism for Island Biogeography?

Tardigrades are microscopic aquatic invertebrates that live in the interstitial water of moss and lichen as well as some marine and fresh water environments. Tardigrades are of particular scientific interest because of their capability to perform cryptobiosis. Virtually all tardigrade research conducted has focused has been on taxonomy, systematics, physiology and distribution. Ecology of these animals has been poorly represented.

Samples were collected, locations documented and were stored in paper bags until processing. Samples were rehydrated and specimens removed with an Irwin's loop. Slide mounts were made. Specimens were identified using Ramazzottius and Mauccii key. Specimens for DNA analysis and SEM photographs were prepared.

An extensive tardigrade survey was conducted by Schuster and Grigarick throughout California from 1965 until 1980, with their research representing nearly all of the tardigrade work previously conducted in California. One of the more interesting collections was conducted in 1970 on Santa Cruz Island, California's largest island off the southern coast. Recordings of samples yielded 14 different species representing 7 different genera. Originally vegetation was monitored with the belief of a tie between habitat and tardigrade species. Habitat fidelity has not been found demonstrated. Since Schuster and Grigaricks sample sites were carefully logged, it became apparent that a repeated survey would give a unique perspective on tardigrade species richness and composition of the island and if any change has occurred over the last 40 years. This would also give an opportunity to test some of the Island Biogeography ideas pioneered by MacArthur and E.O. Wilson.

In the spring of 2007, Fresno City College researchers, in conjunction with Baker University and Brigham Young University, conducted a comparative study on Santa Cruz Island using the original 16 site descriptions. Their sampling yielded 16 species representing 8 genera of which 9 species were not previously recorded on the island.

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## Atypical Teratoid/Rhabdoid Tumor and an Unusual Metastasis

PURPOSE OF STUDY: To report a case of a patient with thoracic metastasis of an Atypical Teratoid/Rhabdoid Tumor (ATRT) and to examine the literature for support of a recommendation to increase long-term surveillance of ATRT survivors.

METHODS USED: Case report and review of the literature.

SUMMARY OF RESULTS: A 2 year old boy presented with new onset headaches and acute ataxia. Imaging showed a right frontal lobe tumor which was confirmed to be an ATRT after biopsy. He was treated according to COG 99701 brain tumor protocol with radiation. He did well for the next two years, undergoing quarterly MRI of the brain without evidence of recurrence or progression. At 4 years of age, however, he was noted to have left flank and abdominal pain. Subsequent imaging showed a large tumor originating in the left chest and displacing his mediastinum, spleen, and stomach. Biopsy of this mass was done and supported a metastasis of his original brain ATRT. Chemotherapy was begun; however, he succumbed to his disease 30 months after his initial diagnosis.

CONCLUSIONS: This case reports one of three known metastatic ATRTs to the thoracic cavity in the absence of a ventriculoperitoneal (VP) shunt. The literature, as well as current COG brain tumor protocols, recommends serial quarterly brain MRIs for surveillance of ATRT survivors but does not recommend for surveillance outside the CNS. As ATRT treatment has improved and patients are surviving longer after initial diagnosis, late metastases outside the CNS are becoming increasingly common. The literature also reveals sporadic intra-abdominal metastases of ATRTs along VP shunt pathways. Therefore, we recommend routine imaging of the chest and abdomen in all ATRT survivors for early identification of extraneural metastases. Further long-term follow-up studies are needed for ATRT survivors.

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## META Representational Knowledge, Transfer, and Multiple Embodiments in Linear Algebra

A common theme in educational research on linear algebra concerns cognitive inflexibility associated with the appropriation of different linear algebra problem settings to similar matrix representations and methods, a consequence of the multiple embodiments of linear algebra concepts (Harel, 1989; Hillel & Mueller, 2006; DeVries & Arnon, 2004; Hillel & Sierpinska, 1994; Dias & Artique, 1995; Dorier, 2000). The study of multiple embodiments in linear algebra is important since students require an ability to establish meaningful links between representational forms in order to "understand the necessity for representing these situations by a general concept," a competence known as representational fluency (Harel, 1987, p.30-31). Informed by methods from experimental psychology, this mixed-methods study reconceived cognitive inflexibility and the role of meta-mathematical information in terms of the transfer of knowledge from familiar to unfamiliar problems settings sharing common abstract problem solving schemas.

Previous research in experimental psychology suggests spontaneous transfer between non-isomorphic problem settings to be rare in the absence of hints concerning the relationships between those settings (Holyoak & Koh, 1987). Two factorial experiments reinforce previous findings that transfer does not significantly occur between dissimilar settings, even when problems share abstract problem solving schemas and representations. A third experiment supports the Indirect Representational Transfer Hypothesis: meta-representational reflection on the meaning of a common abstract representation in relation to diverse mathematical settings induces schema transfer. Over the past several decades, a debate has ensued concerning the theoretical foundations of transfer theory. Rather than judging transfer according to normative, i.e., expert functionalist views, according to Lobato (2003), "actor-oriented transfer is defined as the personal construction of relations of similarity between the activities." In conclusion of this mixed methods study, qualitative interviews uncover evidence of the role of meta-representational thought as part of a larger developmental process of actor-oriented transfer.

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## The Tardigrade pH Paradigm: Is it Real?

A Tardigrade is a microscopic, aquatic invertebrate animal that lives in mosses and lichens. It is capable of cryptobiosis, a condition where metabolism cannot be measured. Phylum Tardigrada remains extremely understudied. In April 2008, samples of moss and lichen were collected in urban and rural environments in Fresno County, Ca. The species suites between the two environments were completely different with the exception of three cosmopolitan species.

Much has been postulated about what determines success of a tardigrade species upon arrival at a site.
Unfortunately, there has been virtually no research on the ecology of tardigrades. Many researchers are proponents of pH, but have not tested it. In our preliminary study, pH was looked at with narrow range pH paper. There seemed to be a significant pattern.

The sites were sampled once again and pH data was recorded with Vernier pH sensors to obtain more accurate readings. Ten mL of water (pH¡Ö 7.00) was used for every gram of sample. Samples were soaked for 30 minutes, and pH was recorded. Specimens were not collected from these samples, but presence or absence was determined. The data was analyzed by matching previously recovered specimens with habitat and substrate.

Urban species occupied a narrower, more neutral pH environment (6.19-7.46), while rural species occupied a broader, more acidic environment (4.20-7.46). There was a gap in the pH of the two environments where tardigrades did not occur. Cosmopolitan species had the largest pH range of all species. While a correlation can be seen between pH and urban and rural tardigrades, the relationship cannot be said to be causal until further research is conducted.

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## Variation in Aggressive Behavior within a Clonal Killifish, Kryptolebias marmoratus: Investigations into Gene Expression and Epigenetic Modifications of Monoamine Oxidase

Aggressive behavior is a means through which animals secure access to limited resources. Within a species, some individuals exhibit more or less aggression, but the ultimate cause of this variation remains a topic of intense scientific scrutiny. We utilized a unique model system, Kryptolebias marmoratus, in an attempt to understand possible mechanisms that might govern aggressive behavior. K. marmoratus is a hermaphroditic self-fertilizing killifish that produces progeny that are genetically identical to each other and to the parent. We show that siblings, despite being genetically identical, exhibited variation in their aggressive behaviors (i.e. strike, approach and display rates) that were exhibited towards their own mirror image. Our results indicate that individuals exhibited repeatable patterns of aggressive behavior.

Changes in aggressive behavior in prior studies have been linked to the ratio between serotonin (5-HT) to its metabolite (5-HIAA). These studies have indicated that lower ratios of 5-HIAA: 5-HT (higher rates of serotonin metabolism) characterize more aggressive subjects. We investigated whether the individual behavior correlated with variation in gene expression patterns and epigenetic factors. Using real-time PCR to detect gene expression we explored monoamine oxidase (MAO), a gene that codes for an enzyme that converts serotonin (5-HT) into its metabolite (5-HIAA). Our results show a significant positive correlation between normalized MAO copy number and latency to approach and strike. This finding is consistent with the literature; less aggressive animals (longer to strike) have higher MAO expression which is characteristic of subordinate, non-aggressive animals.

Environmental factors can attach a methyl group in the promoter region of a gene and render it inactive. Currently, we are investigating the methylation patterns of the promoter region of MAO to see if a correlation exists between methylation patterns, level of gene expression and strike rate. The results from this final test will be presented.

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## Branching Ratios for the Reaction of Selected Carbonyl-Containing Peroxy Radicals with Hydroperoxy Radicals

The photochemical oxidation of organic pollutants in the atmosphere occurs via a complex sequence of reactions involving nitrogen oxides, ozone, hydroxyl radicals, and peroxy radicals. The reaction (R1) between organic peroxy radicals (RO2.) and hydroperoxy radicals (HO2.) is important in this process.
RO2 + HO2 = Products R1Recent studies of two peroxy radicals have shown that reaction R1 may lead to radical recycling, which would result in higher smog levels in the atmosphere. The goal of this work is to better understand the relationship between the products formed and the molecular structure of the peroxy radicals in this reaction.

Mixtures of reactants were prepared in either a 142 L Teflon-lined reaction cell or a 25 L Tedlar bag. The mixture was then exposed to light from 40 W blacklight lamps, which initiated the reactions. Fourier Transform Infra-Red (FTIR) Spectroscopy, Gas Chromatography-Flame Ion Detection (GC-FID), Gas Chromatography-Mass Spectrometry (GC-MS), and High Performance Liquid Chromatography were used to analyze the products.

Product yields were measured for eight organic peroxy radicals. Only chemical species containing a carbonyl group were found to generate radical products. For the carbonyl-containing species, radical yields were measured in the range 15 - 100 %. Based on these experiments, a simple relationship between radical structure and product yields is proposed. Incorporation of these results into atmospheric models may help to reconcile discrepancies between predicted and observed radical concentrations in the lower atmosphere.

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## Protein Expression Profile for Transgenic Nicotiana tabacum Plants Displaying Resistance to Meloidogyne incognita infections

Analysis of tobacco transgenic plants expressing the cell death genes, ced-3 and ced-4 from the nematode
Caenorhabditis elegans led to the discovery that these plants display resistance to the root-knot nematode Meloidogyne incognita. Infections by these root-knot nematodes cause severe damage to crops worldwide. Current treatment, for these infections, relies heavily on pesticide use that can be harmful to human health.
These transgenic lines provide a possible treatment alternative, however further understanding of this acquired resistance is necessary. It was found, after the creation of a gene expression profile using microarrays, that eight genes involved in defense mechanisms (e.g. genes that encode for peroxidases, chitinases, and those involved in basic pathogenic functions) were over-expressed in the transgenic plants compared to wild-type tobacco plants. The next step towards understanding this resistance mechanism was the creation of a protein expression profile. Transgenic and wild-type tobacco plants were grown until they were two months old. Proteins were extracted using the Plant Total Protein Extraction Kit (Sigma). Extracted proteins were separated by both pH and mass using 2-D gel electrophoresis. Gel spots representing differential protein expression were excised and will be identified using MALDI-TOF mass spectrometry. Initial two-dimensional gel electrophoresis results show that various proteins are differentially expressed between the transgenic and the wild-type lines. Analysis of individual differentially expressed proteins has yielded the possible identity of these proteins. Of the proteins found to be differentially expressed between the transgenic and the wild-type line five proteins have been chosen to be identified using mass spectrometry. This new profile will be compared to the existing gene profile to determine whether the genes over-expressed at the genetic level are also over-expressed at the proteomic level. Determining these proteomic differences could potentially help elucidate the mechanism by which these transgenic lines show resistance to parasitic nematodes.

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## Association of Functional Measures and Fall Status with Balance Self Efficacy in Community Dwelling Older Adults at Risk for Falls

Balance self-efficacy measures are used in fall prevention programs to measure confidence during various functional activities. However, the focus of most fall prevention programs is to improve functional performance and education about falls as opposed to improving confidence. The purpose of this retrospective study was to determine if there was a correlation between confidence as measured by the Balance Self-Efficacy Scale (BES) and functional balance and mobility measures. In addition, we compared the mean BES score with those subjects classified at risk or not at risk using functional measures of balance (Fullerton Advanced Balance Scale (FAB)), agility (8 Foot Up & Go), leg strength (Chair Stand), and gait speed (preferred and fast).

Subjects were community-dwelling older adults (N=119) with a mean age of 77 (sd ± 8.52), without known neurological disease. There was a moderate correlation using Spearman Rho between the balance confidence (BES) and balance (FAB), leg strength (Chair Stand), agility (8 Foot Up & Go), and gait speed (r=.49-.59). Mean score on the BES was not statistically significant between fallers and non-fallers using an independent t-test. However, subjects who were classified as low risk or high risk for functional balance, lower extremity strength, fast gait, self-selected gait, and agility did differ for mean BES scores.

In conclusion, the mean BES score did not predict fall vs no falls in our sample of community dwelling older adults. However, there was a significant relationship between our functional balance and mobility measures and mean BES score. More research is required to determine the relevance of these findings for developing fall prevention programs.

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## Reliability Generalization of the Personal Attributes Questionnaire

For years researchers have sought to further understand gender-related and sex role attitudes, preferences, behaviors, and stereotypes within society. Throughout the past 30 years researchers have relied primarily upon two instruments to attain this information: the Bem Sex Role Inventory (BSRI; Bem, 1974) and the Personal Attributes Questionnaire (PAQ; Spence, Helmreich & Stapp, 1974). The current study assesses the reliability of the PAQ over the past 30 years using the technique of reliability generalization.

Reliability Generalization (RG), according to Vacha-Haase, Henson, and Caruso (2002), is a meta-analytic method that examines the variation of score reliability and the possible sources of the variation. The first RG study (Vacha-Hasse, 1998) addressed the reliability of the Bem Sex Role Inventory. Although the reliability of the BEM was fairly stable and consistent with the author's original information, there were sources of variation such as referent and length of form. This type of information can be crucial to researchers who can use it to increase the reliability of the scores in their samples. The impact of the results of any study should be tempered by the reliability of the data upon which the statistics were computed (Wilkinson & The APA Task Force on Statistical Inference, 1999). A daunting yet important conclusion in the Vacha-Haase, Henson, and Caruso (2002) study shows that most empirical studies do not report the reliability of instruments for their specific samples.

The present study examines the reliability of the PAQ. A meta-analysis of studies utilizing the PAQ between 1975 and 2008 was conducted. Out of the 364 articles reviewed, only 86 articles contained the reliability data required to be included in the analysis. The results indicate moderate internal consistency for the Instrumentality and Expressivity scales. Additionally, results indicate that the PAQ maintains its reliability across diverse populations.

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**Effects of Acoustic Structure on Cross-Modal Speech Information and Audiovisual Gain**

Auditory and visual perceptual processes interact during the identification of speech sounds. Some evaluations of this interaction have utilized a comparison of performance on audio and audiovisual word recognition tasks. A measure derived from these data, R, can be used as an index of the perceptual advantage gained due to multimodal sensory stimulation relative to unimodal sensory stimulation. Recent evidence has indicated that cross-modal relationships between the acoustic and optical forms of speech stimuli exist.
Furthermore, this cross-modal information may be used by the perceptual mechanisms responsible for integrating disparate sensory signals. However, very little is known about the ways in which particular acoustic and optic signals carry cross-modal information. In the present experiment, we manipulated the acoustic form of speech in systematic ways that selectively disrupted candidate sources of cross-modal information in the acoustic signal. Participants were then asked to perform a simple word recognition task with the transformed words in either auditory-alone or audiovisual presentation conditions. The results show that audiovisual gain (relative to auditory-alone performance) was high for those transformations in which the relative spacing of formants was preserved, but was relatively non-existent for those transformations that destroy the relative spacing of formants. The results support the idea that perception of speech is dependent on the underlying acoustic structures that carry information regarding articulation.

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## The Decision to Medicate ADHD Children

Attention Deficit/Hyperactivity Disorder (ADHD) is the most commonly treated childhood psychiatric disorder in the United States (American Psychiatric Association, 2006). The singular use of stimulant medication is the most widely used treatment regimen used today for this disorder (Robison et al., 2004), despite recommendations from experts for a comprehensive treatment plan that also includes behavioral therapy and parental coaching (Barkley et al., 2002). The parents of ADHD children are more likely to suffer from depression, anxiety, and ADHD themselves (Barkley, 1998). The current study examined whether mothers who have higher levels of psychological distress differ in their willingness to use particular treatments for ADHD, compared to mothers who are psychologically healthier, when presented with the hypothetical scenario that one of their children is diagnosed with the disorder.

Seventy-six mothers from the Fresno/Clovis area were recruited. All participants were administered a series of psychological tests that measured general tendencies for anxiety and anger, and a test of current depression levels. The participants were then given general information about ADHD and were shown a video of children whose behavior is typical of those with ADHD. Mothers were then asked to rate how willing they would be to use either behavioral or medication treatment if their own child had ADHD. The participants were also asked how frustrating they believe they would find it to have a child with ADHD.

Results showed that mothers with higher levels of psychological distress did not differ in their willingness to use either behavioral or medication treatments compared to mothers who were psychologically healthier. However, mothers who believed that having a child with ADHD would be more frustrating were more willing to use medication therapy. Further research should be conducted with actual mothers of ADHD children to see if frustration level is related to treatment decisions.

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## Heritage Language and Culture Preservation: Khmer Youth's Critical Reflections on the Khmer Emerging Education Program (KEEP)

Communities across the world are faced with large numbers of immigrant youth adjusting to a new culture. Many of them have difficulties with academic achievement, family relationships, heritage cultural identity, loss of heritage language, and self-identity in the midst of another culture.

This research studied the critical reflections of Khmer youth in Fresno, California, regarding language and culture preservation in relation to academic success with school work, positive relationships with family members, participation in the Khmer community, deterring youth violence and gang involvement, and why some Khmer youth do not engage in KEEP and how KEEP could reach out to them.

Photovoice, a participatory research strategy, was used in this study. The participants were named student community researchers, given digital cameras, and asked to answer the 5 research questions by taking photographs. They shared their photographs and rationale individually with the researcher, then with the other student community researchers. Collectively, they selected 40 photographs and wrote rationales that are presented as collective quotes that explain how each photograph answers the research question.

Ten generative themes emerged: (a) respect, (b) cultural awareness and preservation, (c) strong family and community relationships, (d) positive solutions to current reality, (e) future purpose, (f) education, (g) Khmer history, (h) Khmer language and communication, (i) high self-esteem, and (j) gang prevention.

This research could be of interest not only to the academic community, but to a broad spectrum of the general public as well. It could be a catalyst to promote awareness, and social change; and provide insights to educators, students, parents, policy makers, counselors, spiritual leaders, law enforcement officials, judicial leaders, government officials, health care workers, and other groups working with marginalized communities.

The selected photographs and collective responses are displayed in a traveling exhibit of 13 retractable 3 feet by 7 feet banners, which are being shown locally, statewide, nationally, and internationally. A website about this Photovoice research developed by the students can be viewed at

http://www.fresno.k12.ca.us/divdept/keepstudents/home.html.

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**Born Free: The Polycultural Animal in _Madagascar_**

Most twenty-first century scholars accept race and ethnicity as social constructions. However, the realities left behind from the belief in biological racial and ethnic differences—prejudice, discrimination, violence toward "the other"—remain as shadowy presences of the American social fabric. To shed light into the shadows, Vijay Prashad and Jeffrey Partridge offer the critical lens of "polycultural theory," a movement beyond the essentializing nature of multiculturalism and beyond the vacuous dislocation of hybridity theory. In my paper, I analyze polycultural theory as I extend Prashad's and Partridge's work, applying the concepts to analysis of popular cultural production in the cartoon feature film _Madagascar_.

The nuanced polycultural lens reveals the power of the narratives within _Madagascar_ across social and cultural borders. The narratives show that the way of life that all the differing animals know is a collective way of life, grounds for a collective cultural identity that provides the freedom to identify subjectively with several differing groups while remaining tied to their overarching societal culture. The characters share a collective experience as zoo animals, which I read as a collective American experience. In the film, the animals construct their collective identities as New Yorkers rather than "ethnically" or "racially" as lions, zebras, and penguins. Though their past is tied to the wild from prior generations, the wild is not the life they know at all. Rather, as the animals identify with each other as a collective, they actively construct their identities as polycultural New Yorker zoo animals.

Using the polycultural lens, I flesh out the crux of the main character's identity conflict as well as how this central theme relates to cultural interstitiality and the problems surrounding the feeling of not belonging. I then show how the narratives throughout the film, for the most part, help to destabilize master narratives of prescribed origins and prejudice. Yet, at the same time, the polycultural lens also enlightens many moments of reproduction and reification of stereotypes. These moments are equally as important, perhaps even more so when considering that the movie was marketed to a young impressionable audience.

As a result, I find that polycultural theory, which recognizes that each one of us is always becoming, can be applied broadly in scope in order to help eradicate prescriptive determinants of racialization, liberate ownership and construction of individual and collective identities, and promote egalitarian readings of American texts. As Americans we are all polycultural.

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## Melancholy Mad Working Class: Alienation and Class Conflict in Hard Times

Charles Dickens's Hard Times presents the tensions between the upper class and the working class through the use of irony, industrial images and the characters that ultimately embody these conflicts through their representations of fact and fancy. While scholarship in recent years argues there is an amicable relationship between machines and humans in Hard Times, I believe that the machine in this novel illustrates the alienation of the working class. Tamara Ketabgian's "Melancholy Mad Elephants: Affect and the Animal Machine in Hard Times" argues that human organic regularity is similar to the regularity of the steam engine, and concludes that the "melancholy mad elephants" in Dickens's novel expose the common ground between man and machine. However, I argue that the machine referred to as a "melancholy mad elephant" epitomizes the oppression of the working class rather than indicate the common ground Ketabgian suggests.

Ultimately, the "melancholy mad elephant" reveals society's need for change and compromise as the only plausible solution to the alienation of the people. Using Karl Marx's arguments about class conflict and alienation, I show the ways these theories can be applied specifically in the melancholy machine and generally throughout the novel's representation of fact and fancy in order to express the alienation of the melancholy mad working class.

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## Language Ability and Training in Expatriate Assignments

As companies expand their markets overseas, expatriate assignments have taken the spotlight in international business. Expatriation is when a company sends an employee to work in another country (Black, 1988), either for a specified period of time or permanently. Expatriate failure, which includes returning home before the assignment is complete, is costly to companies in terms of time, human capital, and profits. Adjustment to the new location has been identified as a key factor in success rates (Dowling, Welch, & Schuler, 1999), and so we looked at cultural adjustment as a means for success. This study was designed to identify what factors relate to cultural adjustment. These factors include: personality, the ability to use the language of the host country, and training in the language of the host country.

Employed adults were prescreened to indicate whether they had expatriate experience of one month or longer. Of those who were identified as potential participants for the main survey, 61 responded. We used an online survey that measured cultural adjustment, personality, and language fluency using scales adapted from previous research. All scales had sufficient reliability (Î± > 0.79). Cultural adjustment was measured at three levels: general (living conditions), interaction (socializing with host nationals), and work (performance standards and expectations in the workplace). Language training was measured by the amount of hours spent training in the language of the host country.

The first hypothesis was that the Big Five personality traits would be positively related to cultural adjustment. This was partially supported. Agreeableness was positively related to work adjustment ($r = 0.29$, $p < 0.05$), while openness to new experiences was positively related to all three levels of cultural adjustment (r ranged from 0.25 â€“ 0.39; $p < 0.05$). The second hypothesis was that the host country language ability would be positively related to cultural adjustment. It was found that language ability was positively related to all three levels of cultural adjustment (r ranged from 0.22 â€“ 0.32; $p < 0.05$). There was no evidence to support the third hypothesis that stated language training would be positively related to cultural adjustment (r ranged from 0.02 â€“ 0.09; $p > 0.05$). The total amount of hours of language training spent was not related to cultural adjustment on any of the three levels.

Given that previous research has found that cultural adjustment is related to higher expatriate success, personality and language ability may be particularly valuable in a companyâ€™s selection of expatriates. And finally, language training hours were unrelated to cultural adjustment. These results suggest that employers should focus more on selecting expatriates based on personality and language ability rather than spend extensive hours and dollars training employees who may not obtain a high level of language ability.

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## Small Claims Court: Essential to Education in Business

Small claims court (SCC) began in England and eventually spread to the United States of America.
Undergraduate business students must take BA18, a business law class; however, this class does not sufficiently cover SCC. I feel this is an important area that should be covered because I was sued at the age of 20 after I had taken the class.

A survey was conducted of five Business Law classes in the Craig School of Business that measured students' attitudes toward and knowledge of SCC before and after a teaching module. Additionally, students responded to a short knowledge test based on the content of the teaching module.

Student confidence in using small claims court ($t = -16.846$, $p < 0.01$), intention to use ($t = -2.187$, $p < 0.05$), ease of use ($t = -8.682$, $p < 0.01$), and perceived benefit ($t = -7.150$, $p < 0.01$) in SCC all supported the teaching module effectiveness.

After the teaching module, students perceived benefit ($r = .218$, $p < .05$) and their confidence ($r = .550$, $p < .01$) correlated with post-knowledge score. However, student post-awareness was not related to post-knowledge ($r = .018$, $p > .05$). Post-intention to use SCC was inversely related to post-knowledge ($r = -.180$, $p < .01$).

Results indicated that the teaching module was effective in increasing student interest, intention to use, ease of use and perceived benefits of small claims court. Short, applied teaching modules are important when a missing component to a course is noticed. However, student intention to use SCC after the teaching module was inversely related to knowledge of SCC. This means students were less inclined to use SCC after knowing more about it. This goes against California's reputation for being a "sue-happy" state in that if students are more knowledgeable about SCC, they are less inclined to use it.

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## Developmental Timing of MF Regulation in the Tadpole Shrimp, Triops longicaudatus

The putative hormone, methyl farnesoate (MF), appears to have multiple functions in members of Crustacea. First, MF appears to promote juvenile morphology, with low MF levels being necessary for larval development (Abdu et al., 1998). Second, MF appears to enhance reproduction (Laufer and Biggers, 2001). Recently, our lab has shown that treatment of the freshwater tadpole shrimp, Triops longicaudatus, with MF encased in food pellets can delay the production of oocytes (Tsukimura et al., 2006). This suggests that elevated MF levels in the animal cause a delay in sexual maturity. It was not determined at that time if the animals had any ability to resist exogenous MF by increasing the rate of MF degradation in the organism.

MF is degraded by methyl farnesoate esterase (MFE). The purpose of this experiment is to determine if the rate of MFE is influenced by the ingestion of MF. It is hypothesized that MF-treated animals will have a higher MFE rate, corresponding to some degree of resistance to exogenous MF. Enzyme rates will be assayed by using 3H-MF as a substrate incubated with tadpole shrimp tissues to determine the rate of degradation by MFE. Thus far, there has been no difference in the MFE rates between MF and control treated animals indicating that there is a low probability that MF treated animals will develop a resistance to MF. Despite the lack of difference between treatment groups, a distinct pattern has been uncovered. There is an overall decline in MFE rate with age. Sexually immature animals, characterized by a lack of brood sacs containing cysts, have an average MFE rate of 48.4 (pmol MF/mg protein/min) compared with sexually mature animals having a rate of 19.2. The transition between these two rates appears to be rapid, with all observed mature animals having similar rates. At this time, it appears that the rapid decline is occurring before the creation of visible immature oocytes. From this data, a new hypothesis is proposed in which MFE rates fall in order to allow MF levels to rise which is associated with the initiation of oocyte development. More data is being collected in order to help resolve the timing of this regulated transition.

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## Species Composition and Temporal Abundance of Brachyuran Larvae in San Francisco Bay

Brachyuran larvae are commonly found in the zooplankton of San Francisco Bay. To date, little research has been undertaken that describes the trends in temporal abundance and species composition of brachyuran zoeae of San Francisco Bay. Brachyuran larvae were identified and recorded from California Department of Fish and Game (DFG) Clarke-Bumpus plankton tow samples to determine species composition and temporal abundance of brachyuran zoeae in San Francisco Bay. Plankton tows taken monthly from CDFG station D41 during the years of 1998-2007 were analyzed for brachyuran larvae and the monthly CPUE was calculated for every species in every year. Brachyuran zoeae were keyed to species with the use of a dichotomous key (Rice and Tsukimura, 2007). A dichotomous key developed by the authors was used to key brachyuran megalopae found in DFG plankton tow samples to species. Three megalopae of Pyromaia tuberculata and a megalopa from the family Pinnotheridae were collected. The zoeae of ten brachyuran species from 8 families were collected. Species collected are as follows: Cancer gracilis, Cancer productus, Carcinus maenas, Eriocheir sinensis, Hemigrapsus nudus, Hemigrapsus oregonensis, Lophopanopeus bellus, Pachygrapsus crassipes, Pyromaia tuberculata, Rhithropanopeus harrisii, and specimens from the family Pinnotheridae.

The most abundant species in the bay were C. gracilis, P. tuberculata, and E. sinensis. However, the zoeae of invasive species, E. sinensis, has been less abundant in San Francisco Bay during recent years. In 2003, months with peak abundance had a CPUE between 457.9 and 44034.7. E. sinensis zoeae had the lowest abundance in 2006 and 2007. Although E. sinensis zoeae have showed a rapid decline after 2003, their population in San Francisco Bay has not yet reached zero. In 2006 and 2007, months with peak abundance had a CPUE of 9.8 and 8.1, respectively. The zoeae of other invasive species, C. maenas and R. harrisii, have also been found in DFG plankton tow samples. The zoeae of R. harrisii was only found in samples fromJune of 1999 and September of 2003, with a CPUE for these months of 14.0 and 163.5, respectively. C. maenas had the highest monthly zoeae abundance in August of 2002, with a CPUE of 50.2. C. maenas had the lowest abundance in 2006, with a CPUE of 7.4.

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## Analysis of Positive Behavior Support Plans: A Comparison between Low and High Quality Positive Behavior Support Plans and Implications for Students

Behavior plans have become common tools to provide individualized interventions; however, there is little research focusing on outcomes from functional-based assessments and the use of the actual behavior plans used in schools. This study investigated the following questions: (1) Are student outcomes improved for higher quality behavior support plans, (2) Is there a difference in the perceptions about what aids the development between high and low behavior plans, and (3), Is there a difference in the perceptions about barriers to plan implementation between high and low quality behavior support plans?

This research encompassed a mixed methods approach using historical data, surveys, and interviews to provide a dynamic inquiry into the perceptions of behavior support plans from educators. Initially, a measurement tool was utilized to rate the level of plan quality. A total of 35 surveys were submitted and 15 interviews were conducted as part of the data collection process. From the surveys, a series of t-tests and chi square designs were conducted between the independent and dependent variables.

The quantitative data indicated staff motivation as being significantly different for behavior plans rated as adequate (high) ($M = 1.90$) plans versus inadequate ($M = 1.43$) plans. Staff satisfied with the implementation of interventions also observed a significant difference for plans rated as adequate ($M = 1.80$) versus inadequate ($M = 1.64$) plans. The qualitative data provided several broad themes and subthemes were identified based upon the frequency of responses by each subject interviewed. Themes suggest that there is an unequal value in how behavior is addressed in the schools, and if behavior is not addressed in different ways schools will continue to have a difficult time addressing the achievement gap.

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## Introduction to Q-learning in Navigating Mobile Robot Proposed to be used for Agricultural Harvesting Applications

Global competition is pressing farmers in many fronts for which mechanized precision harvesting has been the cornerstone of agricultural activities. Mechanization of harvesting cannot only increase productivity but also provides quality of human life. Recently, applications of robotic systems are found in food and agriculture. While, the progress on development of harvesting robot is not significant but, the research and development trend is constantly growing due to the following reasons – (1) Robotic systems and interfaces are readily available in the technology market place, (2) Robotization can improve health and safety standards while increasing productivity, (3) Scarcity of labor for such type of work, and (4) Requirement of appropriate detection of ripen fruits with application of more on-field automation for achieving product traceability.

The objective of this research was to provide latest information on feasibility study in developing prototype robotic systems for orange harvesting applications. This is a laboratory-based small project which enables us to carry out research study on feasibility of designing the application oriented robotic systems for the greater interest of the scholarly activity in agriculture-based technology-oriented multidisciplinary professional education. Although, the attention is given on reviewing operational flexibility, configurability, information storage capability, and fault-tolerance characteristics, however, we will present the concept of Q-learning, a re-enforcement learning strategy, for the navigation of a small mobile robotic system to be used for agricultural applications. Thus, the focus is only on reviewing the q-learning algorithm. The outcome of the result led us to establish a knowledge-base which can be transferred to the real-world situation.

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## Impact of Contrast Effect on US Medical Graduates during Residency Interviews

Introduction: Prior research in employment interviews describes a "contrast effect", a form of bias resulting from relative comparisons between desirable and less desirable candidates within the same cohort.

Methods: During the interview season for the 2008-09 academic year, applicants were rated on seven behavioral components: communication/non-verbal behavior, decisiveness, response to criticism, motivation, flexibility/adaptability, interest in the institution, and overall. However, the number of UMGs does not change the scores of IMGs"Overall" was a separately rated component. Cohorts consisted of 6+ applicants to the OBGYN residency program interviewing on the same day. An unpaired t-test was preformed on each interview parameter as well as a multiple linear regression between each parameter and the overall score.

Results: On the 9 interview days, 44 (79%) UMGs and 12 (21%) IMGs were interviewed. UMG "overall" score correlated positively with the percentage of IMGs in the interview cohort ($r=0.7$: $p=0.036$). "Overall" and "communication" scores were significantly higher in UMG applicants. In the multiple regression "communication" was the only parameter significantly related to "overall" score ($p<0.001$). This was the case for the entire population in both IMG and UMG subgroups.

Conclusion: An increased percentage of UMGs in the cohort did not decrease IMG scores but the increase in percentage of IMGs in a cohort increased the UMG scores. This means that the contrast effect impacts the UMGs not the IMGs indicating an inflation of less qualified UMG scores when interviewing with IMGs. The bias that emerges is the inflation of the native English speakers ranked above their comparable peers.

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**Father-Daughter Relationships, Self-image, and Resilience**

Fathers play a vital role in their children's, particularly their daughters', healthy psychological and emotional growth, and provide a unique and irreplaceable relationship. Research on daughters and fathers has revealed that healthy, competent fathering is vital to daughters' development in many areas, including gender roles, self- identity, independence and autonomy, academic success, ability to form and maintain romantic relationships, and capacity to relate to men in any role (Geller et al., 2003; Krohn & Bogan, 2001; Nielson, 2006). There are similarities between the effects of poor self-image and a poor father-daughter relationship; a healthy father-daughter relationship may be related to a healthy self-image (Butler & Gasson, 2006). One protective factor in resilience is social support (Bonanno, 2008). While the role of social support has been studied, whether a specific relationship- or a single construct- is connected to a person's resilience has not been determined. This study will examine if daughters with a healthier father-daughter relationship have a healthier self-image and greater resilience.

In this study, three questionnaires--the Father-Daughter Relationship Questionnaire, the Global Self-Image measure, and the Connor-Davidson Resilience Scale--were given to 199 undergraduate women to assess the interrelationships between the quality of their relationship with their father, their self-image, and their resilience.

Using simple linear regressions, father-daughter relationship was found to be a significant predictor of both self-image and resilience in daughters. Content analysis determined that "Time spent together",
"Communication", and "Habitual activities done together" were the most significant father practice and the most often reported component the of daughters' most significant memory with her father. Results contribute to the knowledge of what helps build positive self-image, and what protective factors develop resilience; they also confirm the importance of a healthy father-daughter relationship, and help delineate the qualities of a good father-daughter relationship.

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## An Investigation of the Relationship between Air Pollutants and Lung Function

Particulate Matter (PM) is a form of air pollution consisting of solid and liquid particles suspended in the air. PM has been linked to a range of adverse health effects including asthma. Chemicals called quinones that are present within PM are suspected of being involved in the exacerbation of asthma symptoms. Levels of quinones are high in Fresno, and it is possible that these air pollutants may be responsible for the high incidences of asthma experienced by residents within the region.

To investigate this possible relationship, it is important to know how much of a particular pollutant an individual has been exposed to. One approach to obtain this information is to monitor the levels of the pollutants or their metabolites in the urine or blood of the subject. In this work, the urinary concentrations of ten quinones were measured from nineteen human subjects during the period November 2007 – August 2008.PM mass loadings of atmospheric quinones and polyaromatic hydrocarbons (PAHs) were simultaneously measured at two sites in Fresno.

Three quinones and five PAHs were detected in ambient samples above the limit of quantitation. Four quinones were measured in the urine of the human subjects. Urinary levels of two quinones (phenanthraquinone and anthraquinone) are positively correlated with atmospheric mass loadings of the corresponding quinone and/or PAH. However, no statistically significant relationship is observed for the other quinones monitored. Implications of these results for the use of urinary quinones as exposure markers will be discussed.

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## A Simulation of Decoherence in Superconducting Qubits

The modeling of decoherence in mutiqubit quantum information systems is an open problem. This paper simulates the low-frequency noise in a pair of superconducting Josephson junctions representing a qubit gate,in order to characterize decoherence. Recent experiments have shown that operating qubits at the quantum degeneracy point can effectively reduce decoherence, when the qubits have large energy. An encoded qubit is formed by connecting two superconducting Josephson junctions (the physical qubits). The encoded qubit is protected from noise by the energy gap between states. We numerically simulate the quantum logic gate using the quantum degeneracy scheme in the presence of low-frequency noise. Applying the fidelity metric by Nielsen to our simulation, we demonstrate a high fidelity for the quantum logic gate. Although we assume a 5% inaccuracy due to imperfections in microfabrication, our simulation conclusively demonstrates that the errors due to microfabrication do not affect our scheme.

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## The Stress Hormone, Cortisol, Alters Ghrelin Signaling in Tilapia

Stress has profound effects on how an animal functions. In the struggle to maintain homeostasis during a stressful event, an animal depends on endocrine signals (hormones) to communicate and coordinate the activities between its physiological systems (i.e. stress, immune, growth, and reproduction) in order to re-establish homeostasis. Currently, our understanding of how animals manage to re-establish homeostasis following a stressful event is unclear. Ghrelin, a recently identified gut hormone, has been shown to play a variety of regulatory actions in growth and metabolism in animals. It has been suggested that ghrelin may play a vital role linking the stress axis to growth and metabolism. Studies in rodents have shown that stress and activation of the sympathetic nervous system alter plasma ghrelin levels. However, it is not known how ghrelin acts as an endocrine link between stress and metabolism. The goal of this study is to clarify the effects of cortisol, a stress hormone, on ghrelin signaling and growth in the tilapia (Oreochromis mossambicus), an important aquaculture fish.

To determine how cortisol affects ghrelin signaling, an intraperitoneal injection of cortisol was administered. Twenty four and 48 hours post-injection, tissues were collected and a variety of endocrine and physiological markers related to the stress axis, as well as the growth axis and ghrelin signaling, were measured.. The results of this study demonstrate that injection of exogenous cortisol increases ghrelin mRNA levels in the brain and stomach.

Ghrelin has been shown to have anabolic actions, via the growth axis. In contrast, ghrelin has been suggested to prevent catabolism. An increase in ghrelin mRNA levels following a cortisol injection suggests that ghrelin is acting against the catabolic actions of cortisol and the stress axis to prevent excessive mobilization of energy stores, to maintain homeostasis.

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## Effect of Fasting and Re-feeding on Glucokinase Activity in Tilapia (Oreochromis mossambicus)

The observation that fish are glucose intolerant provides a unique model to study the evolution of glucose metabolism. Blood glucose levels of fish remain elevated for a longer time following a glucose tolerance test (feeding/injecting glucose) than mammals. This peculiarity of fish was hypothesized to the absence of glucokinase (GK), an enzyme catalyzing the first step of glucose metabolism. Although both hexokinase (HK) and GK catalyze conversion of glucose to glucose-6-phosphate, they differ in their affinity to glucose.
Reports indicate that GK is induced in fish fed a high carbohydrate diet and in fish fasted and then re fed.

My project investigated the effects of fasting and re-feeding on HK and GK activity in liver of the tilapia
(Oreochromis mossambicus). First I developed and validated the HK and GK assay in liver tissue in tilapia. For the experiment, 24 fish were divided into three groups, fed, fasted and fasted-fed (Fasted for 10 days and fed for 6 days). Blood and liver tissues were collected on day 16. GK and HK activity was estimated using the validated assay for tilapia, and blood glucose levels were determined.

In contrast to previous reports in other fish fasting and re-feeding did not induce liver GK in tilapia. The absence of GK activity in all the three groups was confirmed by the addition of n-Acetyl glucosamine which suppresses GK activity (if present). Fasting decreased HK activity; refeeding returned HK activity to fed group levels. Blood glucose levels were significantly elevated in the fasted fish when compared to the fed and fasted-fed groups.

These data show that fasting and refeeding does not induce liver GK activity in tilapia, but fasting decreases HK activity and increases blood glucose levels in fasted tilapia. These data provide a possible mechanism for the inability of tilapia to utilize circulating glucose.

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## QTL Analysis and Candidate Genes for Horticultural Traits in a Recombinant Inbred Line Population of Pepper (Capsicum annuum)

Many beneficial agricultural traits in plants are inherited in a quantitative manner, meaning that they are conferred by more than one gene and exhibit continuous phenotypic variation. One method of examining areas of the genome responsible for these traits is through quantitative trait loci (QTL) analysis, performed on a mapping population of plants. A genetic linkage map has been constructed using a recombinant inbred line (RIL) population of pepper (Capsicum annuum), and a variety of DNA markers (amplified fragment length polymorphisms (AFLPs), simple sequence repeats (SSRs), and sequence characterized amplified regions (SCARs)), and QTLs for resistance to Phytophthora capsici were found (Ogundiwin et al. 2005).

In this work, regions of the pepper genome controlling germination rate, germination date, days to first flower, total yield, fruit weight, fruit length, fruit width, fruit shape, plant height, yield and leaf level water use efficiency were analyzed through a QTL approach using the described RIL population and genetic map of pepper. In addition, 36 candidate genes (cloned genes that may explain the QTLs) have been selected for analysis.

This project has identified 19 QTLs controlling the horticultural traits mentioned above; these were mapped to 5 of pepper's 12 chromosomes. The first screen for PCR based polymorphism in the candidate gene markers has not allowed for mapping. The PCR amplicons will be sequenced to utilize derived cleaved amplified polymorphic sequences (dCAPS) to enhance the likelihood of finding polymorphism in the candidate genes.

The QTLs conferring the traits of interest should help plant breeders integrate resistance and agronomic traits in their pepper improvement breeding schemes. The candidate gene markers will be mapped onto the same population to see if they map to the same location as their corresponding QTLs.

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**The Sierra Nevada Frontal Fault System: Kinematics and Associated Landscape Evolution**

The Sierra Nevada Frontal Fault system (FFS) bounds the western Basin and Range province and defines the eastern margin of the Sierra Nevada microplate. The FFS's role in the uplift of the Sierra Nevada, however, remains an unquantified parameter. We present new data that constrains temporal and spatial development of the FFS in the Feather River region of the northern Sierra Nevada, CA. We interpret the high-relief, short wavelength modern landscape as a signature of relatively youthful rock uplift in the northern Sierra that has been accommodated by the FFS; we also posit that uplift, incision and FFS vertical separation have propagated northward during the Late Cenozoic. Previous work by Stock (2005) concludes that rapid incision began at ~3 Ma in the southern Sierra and slowed to a near halt at ~1.5 Ma. In the northern Sierra, south of the North Fork Feather River, unique piercing points of the contact between overlying Miocene-Pliocene Mehrten Formation and an underlying paleochannel were vertically separated across the FFS by more than 700 m between 5 Ma and ~1.2 Ma. Similarly, the North Fork Feather River has incised 713 m below the paleochannel-bottom since ~5 Ma. That relation suggests the FFS plays a critical role in rock uplift of the Sierra Nevada, in addition to its roles of accommodating Basin and Range extension and NW motion of the Sierra Nevada microplate. Farther north, volcanic terraces in the North Fork Feather River and upland-capping 2.8 Ma Yana volcanics reveal incision in the northernmost Sierra that began after 2.8 Ma and reached maximum at 1.2 Ma; incision has slowed very little into the present. In this region, vertical separation across the FFS is more difficult to constrain but is markedly less than that found farther south; however, stream incision has outpaced measurable vertical separation of Late Cenozoic volcanics. Vertical separation rates south of the North Fork Feather River (0.14 mm/yr) are an order of magnitude greater than preliminary estimates from north of the river (~0.06 mm/yr). We thus conclude that the northernmost FFS is an incipient fault zone that has only recently began to accommodate earlier uplift.

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## Dashboard Use as Motivator in Graduate Medical Education

Introduction: Literature indicates that employees in a high task-oriented function will struggle in switching between production tasks like urgent patient care to administrative tasks. Key performance indicators (KPI) and the employee dashboard help focus attention to tasks most important to the organization. The purpose of this study is to record the impact of this method on residents active in an OBGYN residency program.

Method: The study used four KPI that had high organizational value, but low or moderate value from the resident perspective. The KPI used were 1) duty hours, 2) Resident Case Log System (OpLogs), 3) chart delinquency, and 4) credentialing cards. Residents were ranked by a 12-week rolling average of their compliance on these four tasks. The scores were posted to a dashboard on the residents' intranet site. Non-compliant residents were posted by task, and each resident was also ranked by compliance.

Results: Over 40 weeks, the overall compliance for the program improved from 30% to 80%. Quartiles from the 27th week showed the following: Interns (top quartile) joined an established system, maintaining the highest average compliance score. The second quartile is an intrinsically conscientious mix of resident years that preformed at the same level regardless of external tracking. The third and forth quartile both responded to public tracking, but when additional demands were required (credentialing) the fourth could not maintain an acceptable level of compliance until a suitable external reward (moonlighting) was established.

Conclusions: The use of KPI with a posted dashboard results in increased performance. All residents showed improvement at some level – but not uniformly. Unexpectedly, the study results also showed that actual performance as measured by percent compliance differed from anecdotal perceptions for specific residents indicating a possible halo effect.

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**Does Disseminated Methicillin Resistant Staphylococcus Aureus (MRSA) Cause Venous Thrombosis? A case series and literature review**

Purpose: To search for an association between invasive MRSA, venous thrombosis and inherited coagulation disorders.

Methods: This study is a case series of 4 patients in our PICU with disseminated MRSA and venous thromboses with subsequent evaluation of coagulation. In addition, a literature search for other cases of MRSA and thrombosis was done.

Summary of Results:
1) Case 1: 13yo M
Sites of Infection: Blood, RUE myositis, pneumonia, right humerus & left tibia osteomyelitis
Sites of Venous Thrombosis: Right axillary & left cephalic veins
Case 2: 10yo F
Sites of Infection: Blood, urine, left tibia osteomyelitis
Sites of Venous Thrombosis: Left superficial femoral to popliteal veins
Case 3: 4yo M
Sites of Infection: Blood, multiple abscesses in right rectus sheath, left rectus muscle, & bilateral adductor
thigh muscles
Sites of Venous Thrombosis: Left & right popliteal veins
Case 4: 12yo M
Sites of infection: Blood, right thigh cellulitis/myositis, right anterior pelvic abscess, bilateral pulmonary
emboli
Sites of Venous Thrombosis: Right superficial femoral to common femoral veins
2) Further work-up for all 4 cases revealed the following:
Case1 MTHFR C677T heterozygote / negative A1298C (Klinefelter Syndrome)
Case2: MTHFR C677T heterozygote/ A1298C heterozygote
Case3: MTHFR C677T heterozygote / A1298C heterozygote
Case4: MTHFR C677T negative / A1298C heterozygote
Conclusions: In this case series, 3 of the 4 patients were pre-disposed to clotting, and all 4 had mutations in their MTHFR gene. Although mutations in 2 locations is associated with increased clotting risk, a mutation atjust one site is not, despite decreased levels of enzyme activity. Recent literature has revealed other cases of disseminated MRSA with associated venous thrombosis, however the association with MTHFR abnormalities was not described. The question remains whether this pre-disposition needs to be present in order for disseminated MRSA to lead to venous thrombosis, and any possible therapeutic implications.

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## Efficient Robot Swarm Movement and Shape Recognition Algorithms in Environments with Obstacles

A group of robots working together to achieve a common goal is called a robot swarm. The use of robot swarms for achieving tasks is a topic of great interest because it has many advantages such as increased robustness and increased efficiency. For a decentralized swarm to work efficiently, proper communication amongst the members is required. Therefore, constant efforts are being made to find ways of improving swarm communication so that it consumes less power and takes less time thereby reducing the communication overhead.

The handling of obstacles by a swarm is one such issue that needs to be addressed. We present a scenario wherein the obstacle is really big, such as a building or a big vehicle and the robots in the swarm are assigned the task of surrounding the obstacle and then transmitting their coordinates to a remote server which can then carry out shape recognition processes based on the coordinates that have been transmitted. We propose an autonomous distributed algorithm for swarm coordination so that the task is completed fast while consuming less power. In our algorithm the swarm is partitioned into two parts so that the obstacle can be surrounded from two sides thus reducing the time to complete the task. Also, we have ensured that the connectivity of the swarm does not break after it starts moving along the obstacles boundaries.

We have tested our algorithm with the help of simulations done using Java and Visual Basic 6.0 and shown the algorithm is a feasible idea.

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## Can Free Airport WiFi be offered?

With more strict security regulations being enforced, travelers now spend much more time in airports. Despite of many entertainment facilities, many business travelers want to continue their normal activities through Internet. However, to the authors best knowledge, there are only a few major airports provide free WiFi Internet access. In most major airports such as LAX travelers have to purchase hourly, daily, or monthly accounts at a rate varying from 5 to 20 dollars from Internet Service Providers (ISPs) such as T-Mobile, AT&T, and Sprint.

Basically, this service model discourages travelers from using WiFi Internet due to the following reasons: (i) The service is only suitable for very frequent business travelers. (ii) Going through the registration page to create account name, password, and entering credit card numbers make most travelers feel uncomfortable. Therefore, very few travelers are willing to purchase airport WiFi, leading to more of wasted time in airports and low revenue for ISPs. Obviously, this is a lose-lose situation.

To resolve the above problem, we propose a business to business (B2B) web based system where airline companies work together with ISPs to offer free Internet access to travelers through WiFi account sharing. The B2B system is implemented at the ISP website and is transparent to airline companies, i.e., the ISP handles all tasks such as purchasing new accounts and managing passenger Internet access permission and activities. In this system, at the time of checking-in, a passenger will be given an ID to login the ISP website. Upon request of login, the airline company either reuses an existing account or purchases a new account from the associated ISP.

Using probabilistic analysis, we found that the proposed system is remarkably efficient and achieves a very low per passenger cost ($0.1 to $0.5) for airport WiFi access.

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## Marker Addition, Comparative Mapping, and R-Loci Targeting in C. annuum

A subset of single-copy conserved orthologous sequences (COSII) have been screened against an intra-specific C.annuum mapping population for polymorphism. These "universal" PCR-based molecular markers have been mapped and annotated in multiple Solanaceae species and the model plant Arabidopsis. They have recently been used for comparative mapping and map integration among different plant taxa.

Many of the markers investigated herein were chosen based on their distribution in Arabidopsis and tomato; others were selected for their tight linkage to pathogen resistance in closely related organisms and will redefine quantitative trait and disease resistance loci in the genetic linkage maps produced by our lab. The sequence homogeneity maintained in this cross and the monomorphic nature of these highly conserved markers have led to creative polymorphism detection strategies.

180 COSII markers have been screened for size polymorphism against the parents of our mapping population. Eighty-four of these have been screened using a panel of restriction enzymes or the CEL1 single-nucleotide polymorphism detection strategy. Three COSII markers show a detectable polymorphism and will be mapped onto our previously reported linkage map. The Derived Cleaved Amplified Polymorphic Sequences (dCAPS) protocol has a good probability of detecting all remaining sequence polymorphisms that can be utilized for genetic linkage mapping by exploiting differential restriction sites.

These DNA markers will allow for the comparison and integration of our pepper map to previously reported genetic linkage maps and facilitate comparison of the orthology of disease resistant loci.

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## An Iterative Strategy Combining Biophysical Criteria and Duration Hidden Markov Models for Structural Predictions of Chlamydia Trachomatis ó66 promoters

Promoter identification is a first step in the quest to explain gene regulation in bacteria. It has been
demonstrated that the initiation of bacterial transcription depends upon the stability and topology of DNA in the promoter region as well as the binding affinity between the RNA polymerase ó-factor and promoter. However, promoter prediction algorithms to date have not explicitly used an ensemble of these factors as predictors. In addition, most promoter models have been trained on data from Escherichia coli. Although it has been shown that transcriptional mechanisms are similar among various bacteria, it is quite possible that the differences between Escherichia coli and Chlamydia trachomatis are large enough to recommend an organism-specific modeling effort.

This study presents an iterative stochastic model building procedure that combines such biophysical metrics as DNA stability, curvature, twist and stress-induced DNA duplex destabilization along with Duration Hidden Markov Model parameters to model Chlamydia trachomatis ó66 promoters from 29 experimentally verified sequences. Initially, iterative Duration Hidden Markov Modeling of the training set sequences provides a scoring algorithm for Chlamydia trachomatis ó66 RNA polymerase/DNA binding. Subsequently, an iterative application of Stepwise Binary Logistic Regression selects multiple promoter predictors and deletes/replaces training set sequences to determine an optimal training set.

The resulting model predicts the final training set with a high degree of accuracy and provides insights into the structure of the promoter region. Model based genome-wide predictions are provided so that optimal promoter candidates can be experimentally evaluated, and refined models developed. Consensus predictions with three other algorithms are also supplied to enhance reliability.

This strategy and resulting model support the conjecture that measures of DNA biophysical criteria along with measures of RNA polymerase/DNA binding collaboratively contribute to a sequence's ability to promote transcription. This work provides a baseline model that can evolve as new Chlamydia trachomatis ó66 promoters are identified with assistance from the provided genome-wide predictions. The proposed methodology is ideal for organisms with few identified promoters and relatively small genomes.

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## Effects of Social Information on Drawn Route Traversals

Why do people use spatial language to describe social relationships? To what extent do they anchor their thoughts about social relationships in terms of space? In this study, we used a drawing task to further explore the conceptual structure of social distance. Participants read a short narrative about passing through an environment that included stick figures that represented either friends or strangers, and then drew a line that represented the route. On average, people drew paths that were closer to the stick figures when they had read about friends versus strangers, critically, even though no interaction was stated. These preliminary results support the idea that the conceptual structure of social relationships is linked to thought about space.

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## Investigating the Effects of Ethnic Diversity in Recruitment Advertising: To Specify or Not to Specify

Organizations are increasingly including diversity information in employment recruitment advertisements attempting to increase effectiveness in hiring practices. Research shows that minority groups, including women, place differing values on certain characteristics than do white men when evaluating potential employers (Freeman, 2003; Thomas & Wise, 1999), suggesting the difficulty organizations experience trying to attract such individuals.

The purpose of this study was to examine applicants' reactions to differing specificity levels regarding diversity practices and consequential results. In addition, applicants' level of ethnic identity and attitude toward diversity were also measured to determine if they were related to the applicants' level of attraction. Although studies regarding inclusion, an idea similar to diversity but suggesting a higher level of commitment and appreciation of employee differences are relatively new, this study also measured inclusion perceptions. Participants were 399 business students who completed an online survey for extra credit.

Results indicate that supplying diversity information does not affect organizational attraction [$t(64.57) = -.65$, $p > .05$] with both White and non-White applicants. In addition, supportive of existing literature, non-White applicants have a higher level of ethnic identity [$t(393) = 4.53$, $p < .01$] and positive attitude toward diversity [$t(281.99) = 5.44$, $p < .01$] than White applicants. Finally, applicants perceive inclusion when diversity is mentioned in a recruitment advertisement [$t(65.70) = -4.38$, $p < .01$] suggesting that inclusion is somewhat related to diversity.

This study provides further evidence of the difficulty in determining how to attract applicants. The differences between levels of ethnic identity and diversity attitudes suggest that further research should be conducted in order to determine which additional factors will affect applicant attraction.

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## Fruit flies as a Model for Parkison's Disease: The Neurotoxin BMAA Induces Dosage-Dependent Parkison's Symptoms in Fruit Flies

What does it mean to have Parkinson's disease, and what kind of effects would it have on the behavior of an individual suffering from Parkinson's? A chemical known as beta-methylamino alanine, (BMAA), extracted from cycad seeds, can cause symptoms that resemble Parkinson's disease in humans and animals. In this study we conducted experiments on adult fruit flies, which were fed BMAA in three different concentrations: 12.5mM, 25mM or 50mM, and no BMAA (control). We fed 10 fruit flies for 3 consecutive days and each day, we transferred the flies to a Petri dish for 1 hour to record their behavior. We observed that in the control flies and at 12.5 mM BMAA the survival rate was 100%; it was well above 90% at 25mM and dropped to 40% at 50mM. Compared with the control, all treated fruit flies showed hyperactive behaviors: they spent much more time engaged in locomotory activities and much less time standing still or grooming. All treated flies, irrespective of dosage, had a tendency to lose their footing while trying to walk on the ceiling of the Petri dish. We also observe increasing incidence of shaking as BMAA dosage increases.
Only the flies treated with the highest dose show 'motion freezing'. This behavior consists of a long period of complete catatonia followed by a sudden brief burst of hyperactivity. These observations show that BMAA cause the flies to lose motor control. We hypothesize that the flies are less able to coordinate and inhibit muscle activation. At low dosage, low inhibition manifests as hyperactivity. At high dosage, the lack of inhibition leads to coactivation of agonist-antagonist muscle pairs, which causes shaking and freezing up.

Our experiments show that the effects of BMAA-induced Parkinson's have a great toll on the normal functions of individuals.

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## Laboratory-Scale Superconducting Mirrors for Gravitational Microwaves

Thin superconducting films are predicted to be highly reflective mirrors for gravitational waves at microwave frequencies. The radical delocalization of the negatively charged Cooper pairs, which is due to the Uncertainty Principle, causes them to undergo non-geodesic motion relative to the geodesic motion of the positively charged ions in the lattice, which is due to the Equivalence Principle. The charge separation that ensues from the electrical supercurrents induced in the film by an incident gravitational wave leads to a virtual plasma excitation inside the superconductor. An enormous enhancement of the strength of the interaction of a gravitational wave with a superconductor relative to that of a neutral superfluid is produced, so that the wave will be specularly reflected, even if the film itself is thinner than the London penetration depth. This result is demonstrated using the BCS theory of superconductivity and a superconducting plasma model.

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## Effects of Grape (Resveratrol) and Pomegranate (Ellagic Acid) Extracts on Random Pattern Skin Flap Survival

Background: The aim of this study was to identify potential interventions to reduce necrosis of random pattern skin flaps. Skin flaps are commonly used in plastic and reconstructive surgery. A problem often occurs with the distal portion of the flap, where reduced blood flow (ischemia) can result in tissue death (necrosis). Reactive oxygen species (ROS) are thought to be one of the primary causes of ischemia-related flap necrosis. Our study examined the effects of two naturally-occurring anti-oxidants, resveratrol (from grapes) and ellagic acid (from pomegranates). We hypothesized that these supplements might reduce ROS-mediated necrosis resulting in enhanced skin flap survival.

Method: This study was a randomized control trial using male Sprague-Dawley rats as subjects. We tested the effects of resveratrol and ellagic acid on young (Group A: 3 months old) and older (Group B: 6+ months old) rats. Each Group included four subgroups with 10 animals per subgroup. The four subgroups included [1] controls, [2] resvertrol (20 mg/kg/d), [3] ellagic acid (20 mg/kg/d) and [4] resveratrol + ellagic acid (20 mg/kg/d each). Antioxidant supplements were mixed with standard rat chow and fed daily for two weeks prior to flap elevation and ten days post-surgery, after which flaps were photographed and analyzed for necrosis.

Results: Younger rats (Group A), displayed significantly better flap survival than older rats (Group B). However, there was no significant difference between the controls and any of the diet supplemented subgroups.

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## The Role of Ghrelin in Glucose Metabolism in the Tilapia, Oreochromis Mossambicus

Ghrelin, a stomach hormone, was recently discovered as a natural ligand for the growth hormone secretagogue receptor (GHSR). Aside from its primary functions in stimulating growth hormone release and its role in appetite, it has been suggested that ghrelin also plays a role in glucose metabolism. Ghrelin stimulates glucose release from cultured rat and pig liver cells and, in humans, has been shown to induce hyperglycemia. The uptake and release of glucose from cells is mediated by a group of facilitative glucose transporters (GLUTs). GLUT4 is an insulin-responsive GLUT and is recruited to the plasma membrane in response to insulin binding to its receptor. This study was conducted to investigate the effects of ghrelin on various aspects of glucose metabolism in the tilapia, Oreochromis mossambicus. First, I identified and cloned a partial sequence of the GLUT4 gene in the tilapia, having 74% sequence homology with several fish GLUT4 sequences. Tissue distributions were characterized for both GLUT4 and the insulin receptor (IR). Of all tissues analyzed (muscle, kidney, liver, adipose, brain, stomach and spleen), GLUT4 expression was highest in the stomach and IR expression highest in adipose. I then investigated the effect of ghrelin on plasma glucose and GLUT4 and IR mRNA levels. Two doses of ghrelin (1 and 10 ng/g) were administered and blood and tissue samples collected at various time points following injection. While an increase in plasma glucose levels was only seen at 4 and 8 hours post-injection with ghrelin C8 (1ng/g), GLUT4 and IR mRNA expression were both suppressed at 2 hours post-injection. These data suggest that ghrelin may elevate plasma glucose levels by reducing glucose uptake in cells by suppressing expression of the IR and GLUT4.

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## Analysis of Public Health Interventions in the HIV/AIDS Epidemic

HIV has been a major public health crisis since its emergence in the late 1970 to the early 1980. It was first discovered in homosexual's patients in California and New York, and later in intravenous drug users. These patients – especially the homosexual men - were dying from infections that were known to be nonfatal or extremely rare. The public responded to the outbreak by playing the blame game, labeling the infections as "Homosexual Plague". Public health officials and medical research scientists failed to launch an immediate investigation into the outbreak; instead, they spend their time and money convincing the public that the infection was not going to spread beyond the homosexual population. In fact, they claimed that the disease was going to become pandemic in homosexuals and intravenous drug users, therefore there were no need to panic or even invest money, energy, and time in conducting more research. By the time Public health and the medical community began actively researching HIV thousands of people were already dead and millions were already infected. And this motivation was spurred by the fact that more heterosexuals were being diagnosed with the infection.

Having said that, this analysis seeks to elucidate the underlining reasons HIV/AIDS is an epidemic by evaluating the failure of the massive public educations in conjunction with the current propagation of the disease.

In doing so, I am analyzing historical and scientific literature to develop a thesis as to how cultural and biological factors uniquely interacted to foster the HIV/AIDS pandemic.

Although this analysis is not yet concluded, I have found that the lack of immediate investigation in HIV cases served as a vector that enabled the infection to become a pandemic.

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## Urbanization and the Cultural Cost of International Trade

In this paper we present a trade model in which the cultural and physical costs of trade are considered separately. It is a two-country model where learning the culture of the trading partner can eliminate a fraction
of the cultural cost of trade. We stipulated that countries with higher levels of urbanization would be the ones most likely to do so based on a economies of scale argument.

We formulated our problem in a game theoretical framework. Certain parameters in the model reflect the relative levels of urbanization of a country. Finding the equilibrium of the game determines the relative share of learners in each country. It is through this model that we explain how urbanization and the cultural costs of international trade are related. The methods used include mathematical modeling, game theory and utility maximization.

We found that the country whose relative level of urbanization exceeds its relative size would be more likely to invest in learning the culture of the other country. We also found that equilibrium amount of learning may be large or small dependant on the optimal amount of learning relative to the measure of urbanization of the trading partner. Policy that would subsidize migration to the cities could be welfare enhancing for both countries if the cost of migrating is sufficiently small or if the country not implementing the policy has a relative low level of urbanization.

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## Barriers in the Adoption of Electronic Health Record Systems in California's San Joaquin Valley: a Qualitative Analysis

Healthcare providers of San Joaquin Valley in central California has been reluctant to adopt electronic health record (EHR) system despite its potential to eliminate disparities in healthcare access and provision, a major challenge in this rural region. There is a lack of understanding regarding the reasons behind this phenomenon.

The objective of this study was to understand the barriers - financial, technological, regulatory, reimbursement and others - in EHR adoption by the healthcare providers in this region and to suggest possible ways in which it can improve healthcare for the underserved.

A qualitative iterative strategy was undertaken to analyze data obtained through in-depth interviews of healthcare managers and practitioners. In total, 7 health care organizations in this rural region were identified and 12 administrators and 8 physicians were interviewed. The interview transcripts and field notes were read to extract common impression and preliminary categorizations. After the interview contents were classified in respect to those categories, the emerging patterns and themes were identified. Finally, the analyses were compared and adjusted after a thorough final review.

Several factors were identified as major barriers to adoption of EHR systems. It was found among others
that uncertainty about its benefits and potential financial returns as opposed to higher upfront investment and lack of clarity of existing regulations, act as major disincentives to rural providers. Another barrier pertinent to this issue is the unique contractual arrangement among part-time specialist physicians and the managementin some facilities, which makes it harder for implementing such innovative projects.

A number of non-traditional methods have been suggested to enhance EHR acceptance among health service providers so that it improves access to the underprivileged rural patients. Lessons can be drawn from this research to understand ways in which adoption of EHR systems can be enhanced in similar environments.

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## Location Free Undeployment in Wireless Enabled Robot Swarms

Robot swarms have gained lots of attention in the past a few years. Despite of many complicated artificial intelligent algorithms proposed to improve the correctness and efficiency of decision making of a single robot, using a team of robots has many advantages such as fault tolerance and flexibility. With the cost of robots being significantly reduced to several hundred dollars, dispatching multiple robots (known as robot swarms) is becoming a feasible scenario for a broader set of potential users.

One of the issues in robot swarms is maintaining continuous communication among robots within a swarm while they are moving. The key challenge of coordination is how to ensure swarm connectivity without the prior knowledge about robot mobility pattern and exam swarm locations. In this work, we have investigated the challenging issue of maintaining connectivity during a swarm undeployment with and without robots knowing the location information of each other.

Our proposed solution is as follows. For the situation with location information, robots are attracted towards each other by moving along a direction calculated through location information of neighboring robots. The moving speed depends on the distance, which is also available through location information. A longer distance yields a faster movement and vice versa. For the situation without location information, robots decide their moving based on the perceived signal strength from neighboring robots. To consider the fact that it is impossible to know the approximate location of neighbors solely by signal strength, robots move around slowly to determine the direction it should move towards each other. In addition, a special case such as bottleneck is identified and addressed. Results show that the proposed algorithm works well with and/or without location information.

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## Assessment of the Pharmaceutical Needs of Underserved Adult Patients at Outpatient Settings in Fresno, California

Introduction/Objectives: Inadequate access to health care and pharmaceutical services continues to be a problem for underserved populations. Further assessment of pharmaceutical needs can help to ensure that comprehensive pharmaceutical services are developed to meet the stated needs of these patients. The objectives of this study are to understand the demographics of this population, determine the self-reported prevalence of chronic disease states, determine knowledge of the role of a pharmacist, and identify barriers to access of pharmaceutical services. In addition, the survey will evaluate this population's perception of current pharmacy services compared to services they would like to have in the future.

Study design: An anonymous cross-sectional survey was distributed in two outpatient centers which offer pharmacy services and serve underserved patients in Fresno, California. In total, 212 surveys were collected; 133 and 79 surveys from Community Health Center-Cedar Outpatient Pharmacy (COP) and Sierra Adult Clinic, respectively. The surveys were analyzed using descriptive statistics.

Results: Overall, the majority of patients who completed the survey expressed a desire to see improvements in COP and Sierra Adult Clinic (79% and 71%, respectively). Both patients at COP and Sierra Adult Clinic were also interested in working with a pharmacist in managing medications and chronic health conditions (67% and 55%, respectively). The majority of patients who completed the survey were more likely to describe the dispensing roles of the pharmacist (76%); far fewer correctly identified the clinical roles of a pharmacist.

Conclusion: This is the first study to assess the pharmaceutical needs of an undeserved patient population in an outpatient setting. The identified results of this study and proposed suggestions may help pharmacy and clinic administrators target possible areas of growth for pharmacy services in ambulatory care and outpatient pharmacy settings.

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## Synthesis and Characterization of Gd and Nd Nanoparticles

Nanoparticles exhibit physical properties that differ from the bulk material due to the reduction in size. In magnetic materials, the nanoparticles have been observed to show superparamagnetic behavior [1-3]. The magnetic materials have numerous applications in biomedical, optical, and electronic fields.

Rare-earth nano-clusters have been synthesized using the inverse micelle method [4]. Diododecyldimethylammonium bromide (DDAB) was used as the surfactant to form the micelles. The surfactant provides with a coating to the formed nanoparticles which prevents them from oxidation and aggregation. The Gd and Nd nano-clusters were characterized using the X-ray diffraction, electron scanning microscope, and the energy-dispersive x-ray spectroscopy techniques.

Our results show the production of Gd and Nd nano-clusters with sizes ranging from 800ìm and over. The composition of the nano-clusters is found to be non-homogenous. From the chemical composition analysis, we found large amounts of DDAB and other by products. The growth temperature seems to play an important role in the size at which the nano-clusters are formed.

By using the inverse micelle method, we were able to synthesize nano-clusters containing very little amount of Gd and Nd. We believe the inverse micelle method is a promising method to synthesize rare-earth nanoparticles. We will work in the improvement of our synthesis procedures, as well as the characterization of future samples.

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**Acoustic characteristics of the English vowel system in California**

This paper is an analysis of the acoustic characteristics of the English vowel system as spoken by natives of California and a comparison of those characteristics with those found in Standard English. Gender based differences in acoustic characteristics were also compared for the California natives since the study utilizes speech data from an equal number of both males and females.

Participants in the study consisted of seven male and seven female native English speakers, most of whom have lived in California their entire life. Audio recordings were made of speakers reading a short story containing eight vowels in the same environment ( /hVd/). Two acoustic measures were calculated for each of the 32 vowel tokens obtained from each of the 14 speakers: the first and second formant frequencies at the thirty percent point from the beginning of the vowel, for a total of 448 tokens.

An overall analysis of the speech data shows that while in Standard Spoken English each vowel is distinguishable, this is not the case for Californian speakers. The speech data also clearly shows less variation in values among males than females. Statistical analysis using a T-test revealed significant differences in formant frequencies due to gender. Male speakers produced significantly more pronounced raised and backed vowels when compared to females. Three front vowels were significantly different in that male speakers produced these front vowels more raised than females.

These acoustic characteristics show how native Californians speak differently when their speech is compared to Standard English. The data also shows gender differences. This study not only gives us a better understanding of the California English vowel system, it also provides useful

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## Encoding Opportunity and Eyewitness Accuracy: Memory at Tactical Speeds

Past research has addressed the influence of diminished exposure times on eyewitness memory, but generally for relatively long observation periods ranging from 5 to 30 seconds. There has been little to no research on eyewitness phenomena when the opportunity to view a given crime is diminished to tactical speeds, between one-half and two seconds' duration. This is critically important because many real-world crime situations, especially violent crimes and shootings, actually involve such limited viewing opportunities, and it is crucial to understand and model witness performance under these conditions. Also, these speeds bracket the transition between memory processing in sensory memory and in working memory, systems with different cognitive processing characteristics. Building on our recent work on eyewitness identification at slower speeds, the present research addressed memory for the standardized crime scenes used in our recent publications at tactical and at longer nontactical exposure times. These scenes, which vary systematically in complexity and other pertinent factors, depict armed assailants confronting victims, or unarmed individuals holding innocuous objects such as power tools. The scenes are based on scenarios currently used in SWAT training. Data were collected by means modeled on police interviews. Factors such as perpetrator height, requiring relatively feature-intensive analysis, were more influenced by reduced encoding times and greater reliance on sensory memory processes than were more gestalt factors such as perpetrator race. Also, the pattern and types of errors observed were also influenced by tactical speeds: shorter exposure times resulted in more errors on issues requiring feature-intensive processing during exposure, such as which individual was holding a weapon, but had less influence on issues which relied more on cognitive processing after the initial perception. These findings yielded a complex but theoretically consistent and predictable characterization of the influence of very short exposure times on eyewitness memory.

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## Effects of Phenanthrenequinone, a Diesel Exhaust Chemical Derivative, on Reproduction, Development and Behavior in a Mouse Model

Background: A major concern in Fresno and the Central Valley is poor air quality. Of particular significance are diesel emissions, which include a variety of noxious pollutants. Diesel exhaust chemicals have been linked to the exacerbation of many health conditions, including heart and respiratory diseases. Some constituents of diesel exhaust have been found in higher concentrations in Fresno than in any other part of the country. Previous studies in our lab examined the effects of a highly reactive diesel exhaust chemical, phenanthrenequinone (PQ), on chronic wound healing in a diabetic mouse model. During these studies, observation of heterozygous, nondiabetic mice suggested reproduction, development and behavior may be impacted by chronic exposure to PQ. Our current study examined the effects of chronic PQ exposure on fertility, infant mortality and aggression in wild-type C57/B6 mice.

Methods: Briefly, chronic (in utero, lifetime PQ exposure) and subchronic (adult PQ exposure) breeding pairs were assigned to one of three dosage groups: non-PQ (0.0 mg PQ/g chow), low-dose PQ (0.5 mg PQ/g chow), or high-dose PQ (1.0 mg PQ/g chow). Over a fixed breeding period (10 weeks), reproductive patterns and infant mortality rates were assessed. In addition, male mice were evaluated for behavioral differences (aggression) utilizing a standard Resident-Intruder (RI) assay. Finally, mouse serum was analyzed by gas chromatography-mass spectrometry (GC-MS) for the presence of PQ and rates of clearance were determined.

Results: There was no significant difference in reproductive patterns or infant mortality rates in the subchronic PQ exposed breeders. In contrast, chronically exposed F1 breeders demonstrated significant reductions in reproductive capacity (decrease in number and size of litters) and offspring survival (increase in infant mortality rates).

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## Branching Ratios for the Reaction of Hydroperoxy Radicals with Acetyl Peroxy and Acetonyl Peroxy Radicals as a Function of Temperature and Pressure

The degradation of most pollutants in the atmosphere proceeds via a series of reactions involving oxides of nitrogen (NOx = NO + NO2), ozone (O3), hydroxyl radicals (OH.) and organic peroxy radicals (RO2.). The reaction between organic peroxy radicals (RO2.) and hydroperoxy radicals (HO2., Reaction R1) is important in this process, especially when levels of NOx are low.

RO2. + HO2. = Products (R1)

The temperature and pressure of the lower atmosphere are in the range 230 – 300 K and 150 – 760 Torr, respectively. However, Reaction R1 is typically studied at 298 K and 760 Torr only. The goal of this study was to investigate Reaction R1 as a function of temperature and pressure for two RO2. species: acetyl and acetonyl peroxy radicals. These measurements enable the product distributions from these reactions to be extrapolated to atmospheric conditions.

Experiments were carried out using a 47 L stainless steel, evacuable reaction cell. Mixtures containing aldehydes, alcohols, chlorine, nitrogen and oxygen were introduced to the chamber. A filtered Xe lamp, which generates light in the near ultraviolet region of the electromagnetic spectrum, was placed in front of the cell to initiate reactions. The cell is aligned with a Fourier Transform Infra-Red (FTIR) Spectrometer, which is used to measure the chemical composition of the compounds inside the cell as they change with exposure to the light.

The pressure dependence of the branching ratios for acetyl peroxy and acetonyl peroxy radicals were measured between 100 and 800 torr. No pressure dependence is observed over this range for either reactant. However, product yields for both reactions vary with temperature. The implications of these results will be discussed.

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## Intestinal Parasite Prevalence in a Rural Mexican Village in the State of Sinaloa

Intestinal parasitism is a public health problem of global proportions. The purposes of this study were to 1) evaluate the prevalence of common intestinal parasites within a rural Mexican community; 2) recommend measures to reduce parasite transmission, and 3) assess the genetic sequence variability present in the most prevalent species of the helminth parasites, and to compare that variability with previously sequenced isolates of the same parasite.

Fecal samples were collected on a voluntary basis from participants attending a monthly clinic operated by the Fresno, California Chapter of La Liga, The Flying Doctors of Mercy, in Ocaroni, Sinaloa, Mexico. Both preserved and fresh samples were collected. Fecal samples were tested by direct fecal smear, fecal flotation, IFA, and ELISA for the presence of Giardia intestinalis, Cryptosporidium parvum, Entamoeba histolytica, Ascaris lumbricoides, and taenid tapeworms. Samples and analysis were conducted on two separate occasions several months apart, separated by an antiparasitic treatment regime. The most prevalent single parasite species (Ascaris lumbricoides) was evaluated for genetic differences based on DNA sequence divergence.

Pre-treatment prevalence rates for each of the parasites were, respectively for the five species or groups of parasites above, 17.3%, 14.7%, 0%, 6.7%, and 13.3%, with n = 75, and an overall prevalence rate (at least one parasite present) of 40%. Post-treatment analysis is pending.

Ascaris lumbricoides genetic variability was assessed at three separate nuclear loci, ITS-1, ITS-2, and 5.8S rDNA. All three loci were successfully amplified by PCR, and sequence analysis by Maximum Parsimony, Bayesian and Maximum Likelihood methods is in progress.

We conclude that in rural settings lacking adequate access to clean water, coupled with intimate unhygienic contact with domestic livestock, intestinal protozoal and helminth infection remains a persistent problem. We recommended methods of behavioral, dietary and husbandry change to diminish parasite transmission rates.

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## Mapping Conserved DNA Markers in the Genome of Capsicum Anuum by the Use of a CAPS/dCAPs Protocol

In order to compare genetic linkage maps of pepper made in our laboratory with those made by other researchers, a series of CAPS DNA markers are being mapped onto a segregating population of pepper. A total of 59 CAPS primer pairs have been obtained based on previously sequenced and mapped tomato RFLP lones, chosen because of their even distribution throughout the genome of tomato, and thus their potentially even distribution throughout the genome of pepper. These CAPS markers have been surveyed for polymorphism between the two parents of our mapping population, and polymorphic CAPS are being mapped by screening them on that population. Of the 59 CAPS primer pairs, 18 have been shown so far to be olymorphic between both parents either in size or in sequence (based on presence/absence of restriction sites). DNA markers that have not shown polymorphism either in size or in restriction sites will be investigated by the cloning and sequencing of monomorphic amplicons, followed by the in silico design of CAPS, dCAPS, and allele-specific PCR reactions, in order to try to detect mappable polymorphism. To date, 7 of the 16 markers have been successfully screened on the mapping population in order to determine placement of the markers onto a genetic linkage map previously reported by our lab (Ogundiwin et al 2005).
Two of these markers (TG 83 and TG 252 ) map onto Linkage Group 1 of our map and will allow for integration of that linkage group with maps from other labs by a mathematical algorithm. These CAPS and dCAPS markers will serve in the future as more informative genetic loci than those currently on the map (dueto their ability to distinguish heterozygous loci). While the ability to detect heterozygous loci in an advancedRIL population is superfluous, having the information of marker placement and linkage to traits of interest is prudent for future breeding projects. With the increased knowledge of common DNA markers and the ability to distinguish what linkage groups correspond to specific chromosomes, comparing the genetic structure of traits between populations and even genera will become much more fruitful.

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## The Impact of Regulation FD on Institutional Investor Informativeness

Regulation Fair Disclosure (Reg FD), effective on October 23, 2000, was motivated by the Securities and Exchange Commission's concern that important non-public information was being selectively disclosed to securities analysts and institutional investors. We analyze the impact of Reg FD on institutional investors' informativeness around the Seasoned Equity offering (SEO) date, an event characterized by a high degree of information disclosure. Using a sample of 2958 SEO firms during the pre-Reg FD period 1990-1999 and 2194 SEO firms during the post-Reg FD period 2001-2006, we find that institutional investors, on average, sharply increase their investments in SEO firms around the offer date in both pre- and post- Reg sample periods. However, although stocks selected by institutional investors perform better in the pre-Reg FD sample period, the time in which they have access to selective disclosure, their stock selections in the post-Reg FD sample period do not display superior performance. We document superior performance in the pre-Reg FD period using group returns, a pooling regression model, and a calendar regression model. Applying a robustness check, a size effect does not appear to drive our results. Further investigation reveals that there is no change in institutional ownership around seasoned offer dates for shelf-registered firms. In addition, we find differential investment results for the pre- vs. post-Reg FD periods around filing dates for those firms where filing and offering dates are in different quarters. We discover that institutions' use of public information has shifted so that post-Reg FD institutional investors are more aggressive, investing in firms with higher price momentum in exchange for prudence and liquidity concerns.

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**Effects of Methyl Farnesoate on Fecundity and First-Generation Offspring Viability in the Tadpole Shrimp, Triops longicaudatus**

The putative hormone methyl farnesoate (MF) is the precursor to the Juvenile Hormone III (JH III) in the biosynthetic pathway. Since its discovery, it has been identified in 30 crustacean species and further analysis has revealed that MF is a juvenilizing factor in juveniles (Laufer et al., 1987; Laufer and Biggers, 2001; Borst et al., 2001). Specifically in tadpole shrimps, MF occurs naturally within these organisms and appears to suppress and delay ovary development in 5-day old juveniles (Tsukimura et al., 2006). This study aims to further investigate the effects of MF on ovary development by looking at the number of eggs produced daily, and in total, during one life cycle of the organism, particularly under MF treatment. Furthermore, we will determine the viability of the eggs produced by MF-treated individuals in order to see if future generations are adversely affected.

Animals will be hatched in communal bins and then isolated in individual containers for easier monitoring, feeding, and egg collecting. Individuals will also be separated into two dietary groups: a control group lacking MF and a treatment group subjected to a concentration of 10 ppm MF pellets. Eggs from all individuals will be collected and counted daily. The eggs will be processed and hatched. The viability of the eggs will be determined by calculating the percentage of MF-treated eggs hatched compared to that of the control eggs.

Prior to the egg collection experiment, the Tsukimura et. al (2006) experiment was reproduced in order to test the viability of a new pellet formula being used for the egg collection experiment. At day 6, MF treatment decreased the number of oocytes from a mean of 63.4±10.5 SEM oocytes (n=10) in controls to 22.8±7.6 SEM oocytes (n=13) in the treatment group. Data from this experiment remains consistent with thatof Tsukimura's; therefore, the new pellet formulation is viable. Preliminary data of the egg collection shows a decrease in average daily cyst production in individuals that survive beyond 5 days of oviposition. Within these animals, MF treatment decreased the number of cysts produced from a mean of 160.3±20.8 SEM cysts (n=4) in controls to 127.6±16.5 SEM cysts (n=8) in the treatment group. Animals from both groups did not show any variance in carapace length (CL) on the first day of oviposition. Controls had a mean CL of 12.9±0.22 SEM mm (n=15), similarly, the treatment group had a mean CL of 12.6±0.26 SEM mm (n=11).

The preliminary data shows promise that MF may decrease cyst production through its suppression of ovary development. However, somatic growth does not seem to be affected as the animals begin producing cysts at nearly identical carapace lengths. The experiment on first generation offspring viability has been initiated but no data has been collected. Future experiments will also include additional treatment groups with varying MF concentrations.

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## Degradation of Malachite Green in Mycobacterium smegmatis

Malachite green, a toxic triphenylmethane dye, is a cause of concern as an industrial pollutant for its high stability and solubility in water leading to continuing efforts to develop an efficient strategy to manage dye waste. Mycobacterium smegmatis, a non-pathogenic, soil-dwelling Actinomycete, is able to degrade and decolorize this dye. We have shown previously that fbiC and MSMEG_2392, genes coding for enzymes involved in the biosynthesis of coenzyme F420, are essential for the degradation of triphenylmethane dyes. In this study, we screened additional transposon mutants for growth on malachite green to identify genes involved in its degradation.

A commercially available EZ:Tn transposome kit was used to generate a M. smegmatis transposon mutant library. The mutants were screened on LB agar supplemented with malachite green to isolate mutants unable to decolorize or grow on the dye. Restriction enzyme digest, followed by self-ligation and PCR amplification of the ligated products with primers complementary to the transposon were used to clone the genomic DNA flanking the transposon. Gene identity was determined using BLAST analysis of the flanking genomic sequence. The Minimum Inhibitory Concentration (MIC) and Minimum Concentration with No Decolorization (MCND) of malachite green were determined for each mutant unable to decolorize the dye.

Numerous mutants unable to degrade malachite green have been isolated from the library. Mutants disrupted in fbiC and MSMEG_2392, genes coding for proteins of the cell wall, MSMEG_1931, a MiaE superfamily protein with sequence similarity to a phenylacetic acid degradation-related protein in Deinococcus; and MSMEG_3071, a protein involved in the biosynthesis of flavin that is an integral component of coenzyme F420, have been identified. These mutants have lower MICs for malachite green than the wild-type parent strain indicating involvement in the degradative pathway of the dye.

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## Electric-field Induced Modulation of Static and Dynamic Optical Properties and Energy Transfer Rates in Aggregates of Coupled/Self-Organized Quantum Dots

A system of coupled quantum dots (QDs) provides pathways for efficient and controlled energy transfer. In such a system, electronic excitations get delocalized over the several QDs and leads to the creation of macroscopic electronic states arising from superposition of individual QDs. Such inter-dot coupling and communication occurs through incoherent long-range dipolar interactions via Förster energy transfer (ET) mechanisms. Of the various techniques available for fabrication of QDs, chemically synthesized ones are particularly promising candidates for designing large-scale nano-assemblies. The primary drawback concerning potential applications of colloidal QDs in this area has been the difficulty in achieving high degree of structural order over macroscopic scales to facilitate and augment inter-dot interactions. We present a novel way to get around this problem by embedding colloidal QDs in a matrix of liquid-crystal(LC) molecules. We report our results for the technique which allows us to promote aggregation over length scales of hundreds of microns, of chemically synthesized, disk-shaped GaSe QDs suspended in a nematic LC (NLC) matrix. We also describe methods for optical and structural manipulation of this matrix at room temperature using electric fields. Static and time-resolved optical spectroscopy techniques are combined with high-resolution scanning polarized confocal microscopy to investigate these systems.
Photoluminescence (PL) from the QD-NLC mixture exhibits large red-shift (~200 meV) in the emission spectrum implying the formation of strongly coupled QD aggregates. Dynamic Light Scattering measurements on isolated and QD-NLC matrix reveal the aggregates to be composed of several tens of QDs, while PL measurements show that PL emission from these 'aggregated' states is highly anisotropic and strongly polarized along their long axes. The aggregate structures can further be spatially re-aligned in situ without destroying the inter-dot coupling by application of an in-plane electric field. The applied field continuously rotates the aggregates by almost 90° resulting in a commensurate variation in the axis of the emission polarization. The degree of this re-orientation is found to be a function of the strength of coupling between the aggregated QDs. Time-resolved PL reveals a faster (about five times) excitonic recombination in the aggregates in comparison to that in the isolated QDs which is attributed to facile energy transfer processes along the QDs. The aggregate recombination rate is determined to be linearly enhanced with increasing electric field which we infer is a result of the selective re-orientation mentioned above.

Our result is a significant step towards the possibility of forming and electrically manipulating large-scale ordered structures using chemically synthesized QDs.

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## Climate Change Impacts on the Headwaters of San Joaquin River, California

In order to quantify the local impacts of global climate change on water resources availability in the Central Valley of California, five representative headwater basins in the snow-dominated upper San Joaquin River Watershed were selected for hydrologic simulations using a watershed simulator HSPF (Hydrological Simulation Program-FORTRAN). A specified set of the projected climate change scenarios by the IPCC (Intergovernmental Panel on Climate Change) was adopted to delineate the hydrologic responses of the Sierra Nevada watersheds to future climate changes. Results indicate that the projected global climate change scenarios would lead to a significant annual variation and redistribution of the streamflow in the watershed. The precipitation variations due to climate change will cause the total volume of annual streamflow to vary between -39% to +18% as compared to the control year without climate change. A significantly larger portion of the streamflow will occur earlier in the year due to temperature increases. The center of flow mass (or center timing, CT) will move ahead 13-52 days, causing earlier-than-expected floods in the wet season and more serious water shortages in the dry season. Base on these findings, different management practices are proposed for the watershed to cope with changes in water production.

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## Sexism in the Media Coverage of Female Candidates during the Presidential Campaign '08: An Analysis of News Headlines

Do the media play a role in how we view our female politicians? How much of the media's coverage of female candidates is based on gender over political substance? Is there systematic evidence of media's sexist scrutiny? The United States' political arena, specifically the executive political arena, has traditionally been an "old boys' club." Very few women have been able to join this political club, but those who have, have had to go through great media and public scrutiny. America has never had a female President or Vice President, but last year we came so close to it that gender became a daily media and political conversation.

This study examined the media coverage of female candidates in the 2008 Presidential race, focusing on former Senator Hillary Rodham Clinton and Governor Sarah Palin. It compared and contrasted how the media viewed the female contenders in campaign debates and on media headlines based on the "lipstick watch" of female contenders. A feminist critical discourse analysis was employed in determining the portrayal of each candidate and the type of reporting in newspapers, websites, blogs, videos, news shows, and weeklies.

It was found that the media play a critical role in how female politicians are viewed, due to the sexist coverage and double standard scrutiny over political substance. It was also found that sexism is institutionalized and systematic in the political media coverage. If a large percentage of the media coverage is about "lipstick watch" and very little about ability and experience for the role, female candidates are at a huge disadvantage. The media play such a large role in our lives to inform and entertain us that we cannot say they have no effect on how we view our female candidates.

# POSTER PRESENTATION ABSTRACTS

(IN NUMERICAL ORDER BY POSTER BOARD NUMBER)

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**Poster Session I**
**Poster Board No. 1**

## Simultaneous Lipid Production and Reduction of COD Levels by Green Algae Growing in Fruit Industry Waste Water

Microalgae have attracted the attention of many scientists to investigate their potential as a source of biodiesel. The depletion of fossil fuels and production of large amounts of carbon-di-oxide causing pollution has led to the decrease in the use of fossil fuels and increased importance of biodiesel. Biodiesel commercially been extracted from soybean, rapeseed and the other plants does not fulfill the demand for diesel and also compete with the crop lands. Microalgae, a potential alternative, are unicellular photosynthetic organisms having the capacity to accumulate oil in the form of triacyl glycerol under nitrogen stressed conditions.

This study was focused on oil accumulating capacity of algae grown in waste water and its simultaneous effect on the reduction of COD of waste water. The effect of the different concentrations of waste water in the growth and lipid producing efficiency of the algae was studied. Two species of algae, Nannochloris oculata and Scenedesmus dimorphus, were investigated.

It was found that Nannochloris oculata was capable of accumulating lipid in lower concentrations (25%) of fruit industry waste water, though a higher growth rate was achieved in 50% of waste water. It was also observed that the 100% waste water did not support the growth of Nannochloris oculata. However, Scenedesmus dimorphus was capable of producing a large biomass coupled to increased production of lipid in higher concentration of waste water; however it had a decreased growth after 180 hours. It was also found to reduce 60% COD from the waste water.

Scenedesmus dimorphus and Nannochloris oculata are the two potential algae capable of growing and producing lipid in wastewater also simultaneously reducing the COD content in wastewater.

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**Poster Session I**
**Poster Board No. 2**

## Generation of Transgenic Lines of Caenorhabditis Elegans and Meloidogyne Incognita using the Microparticle Bombardment Method

Meloidogyne incognita (Mi) is the most widely spread Root-knot-nematode (RKN) in tropical and sub tropical regions. Plant-parasitic nematodes are responsible for major crop losses across the world. The genus Meloidogyne is specific to root-knot-nematodes and is a group of major plant pathogens. Caenorhabditis elegans (C.elegans) PCD genes might be useful to combat this nematode efficiently. A major obstacle in applying this strategy more broadly is that we know very little about the early development of plant parasitic nematodes in general and about Mi in particular. Our research attempts to address this by developing the foundation for the study of development in Mi as a model for plant parasitic nematodes. The Specific objectives of our research are to establish transformation protocols for C. elegans using the gene-gun to generate transgenic lines expressing green fluorescent protein (GFP) in different cell lineages. And to develop transformation protocols for Mi using the gene-gun to generate transgenic lines expressing GFP in different cell lineages. We will focus on promoters driving expression in muscle cells.

Microparticle bombardment is presently being carried out in attempts to generate transgenic lines of C.elegans. A plasmid with a muscle specific promoter, myo-3 which expresses GFP in the muscle cytoplasm and a plasmid with unc-54 promoter that expresses GFP in the nucleus of the muscle cells are adhered to gold microcarrier particles, 1.0 μm in diameter. Microcarriers are first mixed in a 1:1 ratio with spermidine. 200 μl supercoiled DNA is added to the mixture and Tefzel tubing is used to make cartridges for the gene gun. Cartridges will be shot from a distance of 3cm at a helium pressure of 300psi. Gene gun has been proven to be an efficient transforming tool in generating transgenic species of various organisms. GFP expressing genes will be used as the markers to create transgenic lines of C.elegans and Mi.

Conclusions reached: Transformation protocol for the gene gun should be modified to suit the requirements of the lab and the organism in question. Helium pressure, the distance from which cartridges are shot and number of cartridges to be shot must be modified to obtain desired expression. Screening of organisms can be tough in case of autofluorescence.

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**Poster Session I**
**Poster Board No. 3**

## Analyses of a Bone-seeking Breast Cancer Cell Line Before and After Treatment with Bisphosphonates

Breast cancer is one of the most common cancers among women in the United States, second only to skin cancer. One in eight female cancer patients suffer from breast cancer. Studies have shown that most breast cancers are invasive and spread to other parts of body such as bones and brain. Of those women who progress to an advanced stage of the disease, over 80% will develop bone metastases. Currently, bisphosphonate drugs are used for the treatment of metastatic bone disease because they effectively relieve pain, prevent pathological fractures, and treat hypercalcemia of malignancy. Recent studies indicate that bisphosphonates can directly act on breast cancer cells, inhibiting proliferation and inducing cell death. The present studies focused on the effect of two bisphosphonates, Ibandronate (IB) and Zoledronic acid (ZA), on the proteins of the breast cancer cell line (MDA-MB-231P) and two clones that preferentially home to bone (MDA-MB-231BO) or brain (MDA-MB-231BR). Initially, cell death assays were completed to optimize the most effective concentration of bisphosphonates and calcium on the cell lines. Our results indicate a concentration of 200μM of IB and ZA induced a strong cell death reaction in 70-80 cells within 48 hrs.

Cells were then treated for 48 hrs and the whole protein lysate was extracted from both treated and non-treated cell lines. Extracted proteins were separated by 1- and 2-dimensional gel electrophoresis. Noticeable differences in protein patterns between treated and untreated cells were observed. We are currently attempting to identify the unknown but differentially-expressed proteins using a proteomic workflow.

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**Poster Session I**
**Poster Board No. 4**

## Influence of Organochlorine Pesticides on Breast Cancer

Many pesticides are organochlorines and can act as xenoestrogens by disrupting endocrine function. Methoxychlor and Toxaphene are two organochlorine pesticides that have been widely used in the California and statistical data suggest that past use of these pesticides has a positive association with age-adjusted incidence of breast cancer in Hispanic women in Central California. In this study these trends will be further analyzed in a population-based study at the county level within the central valley. Initial data analysis has highlighted trends with pesticide use and breast cancer incidence in Hispanic women, however, due to the limited number of data sets the significance has not been demonstrated. Further interpretation and possible expansion of these data sets may reveal stronger correlations. The study will also delve into the cellular mechanisms that may be affected and/or induced by exposure to these pesticides through a differential analysis of cellular proteins present in pesticide exposed cells versus non-exposed cells. The proteome of two breast cancer cell lines (MCF-7 and MDA-MB-231) will be used as a model for evaluating the differences of the cell lines in response to treatment with the two pesticides. In addition, a non-cancerous breast cell line will also be used to evaluate the effects of both Methoxychlor and Toxaphene on normal tissue to better understand their role in the development of cancer. It is of interest that the MCF-7 cell line expresses an estrogen receptor (ER) while the MDA-MB-231 cell line does not. Cytotoxicity studies have been performed which demonstrated that the sensitivities of two cancerous cell lines to the pesticides are different. Furthermore, pesticide-resistant clones of MCF-7 and MDA-MB-231 have been established and resistant clones of non-cancerous cell lines will be generated as well. The proteome of pesticide-resistant cells will be compared to that of control cells. An evaluation of the differential protein expression may lead to mechanistic insights into the cellular effects of these pesticides.

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**Poster Session I**
**Poster Board No. 5**

## Development of Protocols for Enrichment of Specific Endocytic Vesicles Involved in beta3 Integrin Recycling in a Cell Culture Model System

Integrins are transmembrane glycoproteins consisting of alpha/beta-heterodimer that mediates cell-cell, cell-extracellular matrix, and cell-pathogen interactions. Integrins directly influence cell signaling which, in normal cells, affects cell migration, proliferation, differentiation, and survival. The alphav beta3 integrin is a particularly important heterodimer involved in metastatic cancer and tumor progression. Integrins are thought to be recycled from the membrane to the interior of the cell by two different mechanisms—clathrin coated vesicles (CCV) and caveolae vesicles; however, the specific pathway that alphav beta3 integrin follows is still a matter of controversy. Our objective is to determine the exact route of endocytosis utilized for alphav beta3 integrin recycling/internalization. To accomplish this, we are using a three cell line system: beta3/293, beta5/293, and HEK/293. These cells have differing levels of beta3 integrin which will facilitate our analyses. To date, we have tested various protocols for enrichment of caveolae vesicles and CCVs by centrifugation from the pelleted cultures. The resulting enrichment schemes have been verified with immunoblotting for beta3 integrin. Current findings suggest an increased expression of integrin in beta3/293 and beta5/293 from caveolae vesicle enrichment. Clathrin coated vesicle enrichment has not produced the desired enrichment results. Reverse transcriptase polymerase chain reaction (RT-PCR) experiments for caveoin-1 and caveolin-2 (two components of the caveolae structures), and clathrin heavy chain have demonstrated increased expression of caveolin-1 and caveolin-2 in the beta3/293 and HEK/293 cell lines. Taken together, our preliminary results indicate that we can modestly enrich for caveolae but that a more effective protocol is also needed for CCV enrichment. Furthermore, investigation of the caveolin isoforms is underway.

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**Poster Session I**
**Poster Board No. 6**

## Standardizing a Protocol for Myosin Protein Extraction from Zebrafish Muscle Tissue

Myosin constitutes 50% of total muscle proteins in skeletal muscles and its heavy chain component is an important determinant of muscle contraction speed. In mammals, we know of four main myosin isoforms, and even more isoforms have been reported in fish. In fish, muscle contraction speed determines tail beat frequency. We also know that tail beat frequency drops sharply during ontogenetic development. Hence we hypothesize that fish larvae will have 'faster' myosin than adult fish. The presented work attempts to identify and validate existing protocols for extracting myosin.

We extracted total protein from zebrafish using two different buffers: SDS sample buffer and protein extraction buffer along with necessary protease inhibitors. The concentration of both the samples was determined using BCA assay. The samples were prepared for SDS-PAGE. A gradient 7.5% resolving gel was used since myosin has a high molecular weight. The SDS gel was then stained with Coomassie blue R-250 dyed to visualize the protein bands.

The total protein concentration of an adult male zebrafish (total body mass 0.35 g) as determined by BCA assay was found to be 87.25μg/μl for the SDS buffer sample and 19μg/μl for the protein extraction buffers sample. The stained gels with SDS sample buffer showed a remarkable amount of protein, which made it impossible to identify myosin bands. The gel with protein buffer samples displayed distinct bands, and there were no bands corresponding to myosin.

Our preliminary results suggest both of these buffers might not be suitable for myosin extraction. Our observation suggests this might be caused by the absence of high ionic strength or pyrophosphate in the buffer to solubilize myosin. We are in the process of identifying and validated several other buffers with the above mentioned properties for myosin extraction.

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**Poster Session I**
**Poster Board No. 7**

## Children's Scientific Learning in Informal Settings: Time-Lapse Photographs

A. Previous studies have shown that children not only learn about science through their schooling but also from experiences from informal settings, such as extra curricular activities, recreational parks, and museums (Fender & Crowley, 2007). Our study aims to investigate how families learn about science in informal settings. We are examining how the family physically manipulates a museum exhibit and the explanations that adults give to children.

B. Our study was a naturalistic videotaped observation that took place in a children's museum. Parents who chose to participate placed a sticker on their child(ren) that indicated the child's age. The one to twelve year-old children were both males and females of various ethnic backgrounds. Video camcorders were setup at several museum exhibits and turned on as children with stickers approached the exhibit. The current study is focusing on the Spinning Pictures exhibit.

At this exhibit visitors could take time-lapse photographs of objects as they spun around a turntable. There was a large turntable that could spin in either direction and on it was a smaller turntable that could also spin in either direction regardless of which direction the large turntable was spinning. The exhibit also contained multiple magnets that had colored reflective tape. A camera was mounted pointing down at the turntables and when activated by a visitor with a button it would take a two second time-lapse photo and display it on an LCD screen.

C. The tapes of video collected was segmented into separate interactions. An interaction began when a child approached the exhibit and began manipulating its components. The interaction ended when the child left the exhibit. Three categories of variables were coded for each interaction: demographics, physical manipulations, and verbal interactions. Physical manipulations included coding of parents proximity to the child, number of manipulations, who initiated moving the exhibit and who moved the turntables. Verbal interactions included any explanations or aesthetics made about the photos. Two coders were used for a subset of the coding to ensure good interrater reliability resulting in a percentage agreement for physical manipulations of 73.7% (16 interactions) and verbal interactions of 83.5% (11interactions).

D. Our coding scheme has allowed us to systematically observe how families influence each other when encountering an exhibit at a museum. These influences will allow us to determine how children further expand their knowledge and learning of their environment.

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**Poster Session I**
**Poster Board No. 8**

## Multi-drug Resistant Ovarian Cancer Cells are Less Susceptible to Orlistat-Induced Cell Death

In the United States, there will be over 21,000 new cases and more than 15,000 deaths from ovarian cancer in 2008. With a 70% death rate within one year of diagnosis, ovarian cancer is righteously coined the 'silent killer'. Multi-drug resistance (MDR) and the lack of effective alternate drug treatments pose further serious dilemmas to ovarian cancer patients. Current research indicates that orlistat preferentially destroys cancer cells via an apoptotic mechanism; however, the exact pathway of orlistat-induced tumor cell death is unclear. Orlistat, an anti-obesity drug, functions by inhibiting fatty acid synthase (FASN), an enzyme up-regulated in approximately 50% of cancers. Our objective is to elucidate the basic mechanism of orlistat-induced cell death so that an emerging class of new drugs FASN inhibitors can be better tailored to treat ovarian cancer patients. The ovarian cancer lines OVCAR-8 and NCI/ADR (OVCAR-8 drug-resistant) were treated with increasing concentrations of orlistat over a period of 96 hrs. We hypothesized that the MDR cells will undergo less cell death compared to the sensitive ovarian cancer cells with orlistat. Using a combination of three different cell proliferation/death assays, it was determined that MDR cells are more robust and have increased proliferative capacity compared to the OVCAR-8 cells under equivalent conditions of orlistat treatment. Furthermore, orlistat can induce an endoplasmic reticulum stress-response by up-regulating GRP78/BiP. Taken together, our data demonstrates that MDR ovarian cancer cells are not as susceptible to orlistat-induced cell death despite increased FASN and this suggests that alternative stress-response or survival pathways may be active.

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**Poster Session I**
**Poster Board No. 9**

## Analysis of Concomitant Mercury Detoxification and 2,4-D Degradation by Bacteria

Introduction: Forty percent of hazardous waste sites in the United States are co-contaminated with organic and metal pollutants. Soils contaminated with both metals, such as mercuric chloride, and organics, such as 2,4 dichlorophenoxyacetic acid (2-4D), are difficult to remediate because of the divergent nature of the two contaminants. Biodegradation to harmless end products like carbon dioxide, cell mass, water etc is an emerging technology that has the potential to be robust, efficient and cost-effective.

Methods: Cupriavidus necator JMP134 and Arthrobacter fluorescens DL-1 were cultured on solid and liquid chemically defined minimal media and the media was supplemented with either 2, 4-D, HgCl2, or both to determine the minimum inhibitory concentration (MIC), the concentration with no evidence of growth. Freshly grown strains were transferred into broth containing 5μM of mercury chloride with glucose as carbon source, 2.4-D or both. Broth was collected over time, filtered and analyzed for residual mercury and 2,4-D. An HPLC with a U.V. detector was used for analyzing 2,4-D levels, while an inductively coupled plasma at 253.7nm was used to detect the residual mercury levels in the media.

Results: The MICs determined in solid 2,4-D media were 10mM for strain JMP134, and 9mM for strain DL-1. For media supplemented with HgCl2, the MICs were 16μM as for strain JMP134 and 20μM for strain DL-1. In media containing the combined HgCl2 and 2,4-D, the MICs were 8mM 2,4-D and 10μM HgCl2 for strain JMP134; and 6mM 2,4-D and 8μM HgCl2 for strain DL-1. The MIC level for JMP134 in liquid media is 15mM. The strain JMP134 culture was able to remove 71% of mercuric chloride within the first 8 hours of incubation and 82% over 40 hours. It was also able to remove 86% of 2,4-D after 40 hours of incubation. Strain DL-1 however, was able to remove 73% HgCl2 within the first 8hours and 83% over 40 hours. It removed 60% of 2,4-D after 40 hours of incubation. In media containing the combined HgCl2 and 2,4-D, JMP134 was able to remove 2.5um of mercuric chloride completely and 79% of 2,4-D after 40 hours. Strain DL-1 however was able to remove HgCl2 completely after 40 hours of incubation and 55% of 2,4-D.

Conclusions: Overall these results show that the bacteria are able to concomitantly detoxify both HgCl2 and 2, 4-D. However; when both mercury chloride and 2,4-D are combined, the MIC appears lower than the MIC for the individual toxins. The findings highlight the importance of bacterial degradation and will be useful in the understanding of biological removal of mercury and 2, 4-D from contaminated environments.

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**Poster Session I**
**Poster Board No. 10**

## The Relationship between the Neurotoxin BMAA and Protein levels of Copper-Zinc Superoxide Dismutase

The neurotoxin beta methyl amino alanine, also known as BMAA is found on the island of Guam and used as a food staple among the Chamorro people. Studies have shown that BMAA is produced by endosymbiotic cyanobacteria living in the roots of the cycad trees. BMAA is a non-protein amino acid that has been hypothesized to be a causal agent in neurodegenerative and degenerative locomotor diseases, with loss of motor neurons in the cortex and in behavioral dysfunctions. The neurotoxin is consumed by the Chamorro people through the flour made from the cycad seeds and the flying foxes as one of their sources of protein.
The relationship of BMAA with the accelerated rates of amyotrophic lateral sclerosis associated with a dementia like complex (ALS- PDC), found in the Chamorro people of Guam, has been a topic of great study and research, and is the basis of this current study.

In order to establish a relationship between BMAA and neurodegenerative stress, the fruit flies, (Drosophila melanogaster), were provided with nutrients containing the neurotoxin.
Following 24 and 48-hour periods, a locomotor assay was performed to detect the initial symptoms of ALS such as impaired use of limbs and twitching. Protein extracts from age-matched male and virgin female fruit flies were then examined by protein electrophoresis and Western Blot techniques to identify the levels of the antioxidant copper-zinc superoxide dismutase.

BMAA is shown to induce locomotor disabilities in fruit flies. On the cellular level, increased levels of superoxide dismutase indicate abnormal levels of oxidative stress, which may correlate with the levels of toxin being administered to the fruit flies. Higher levels of superoxide dismutase will support the hypothesis that BMAA is a component in neurodegenerative diseases.

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**Poster Session I**
**Poster Board No. 11**

## Effect of Viral Infection and Host Genetics on Asthma in the San Joaquin Valley

In Fresno County, one-fifth of the population has been diagnosed with asthma and in the US approximately 20 million people have asthma, a chronic respiratory disease characterized by inflammation of the airway.
Once the airway becomes swollen and inflamed it becomes narrower which results in symptoms such as wheezing, coughing, chest tightness, and trouble breathing. Triggers for asthma include air pollution and viral infection. In asthmatics, up to 80% of asthma exacerbations are associated with upper respiratory infections. To determine if infection with rhinovirus, the causative agent of the common cold, was a factor in asthma exacerbation, nasal aspirates were collected every other day from 19 subjects during winter 2007 and viral genomic material was extracted from a total of 290 samples. This was followed by reverse transcriptase and PCR amplification using primers specific for rhinovirus. Another factor that may increase predisposition to asthma is likely to be host genetics since asthma is known to run in families. Mutations in genes involved in detoxification of xenobiotics have been implicated in susceptibility to asthma. To ascertain whether particular genetic polymorphisms were associated with asthma, blood samples were collected from the same subjects and RFLP was performed on host DNA to detect polymorphisms in the detoxification enzymes, glutathione S-transferase and epoxide hydrolase, and genes coding for filaggrin, a cell junction protein whose disruption may affect the integrity of the epithelial lining of the lungs and CD14, a component of the innate immune system. We present data on the prevalence of rhinovirus infections among asthmatics and non-asthmatics in Fresno County and indicate whether incidence of rhinovirus infection is associated with asthma exacerbation. We also present our findings on host genotype and asthma.

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**Poster Session I**
**Poster Board No. 12**

## The Protein-Protein Analysis of Alzheimer's Disease-Interacting Proteins

Alzheimer's disease (AD) affects the central nervous system and occurs when neurons in the brain cortex degenerate. The loss of nerve cells results in memory loss and difficulty in accomplishing every day activities in patients. The Amyloid Cascade Hypothesis suggests the disease occurs via a sequence of events stimulated by proteolytic processing of the amyloid precursor protein (APP), though no direct correlation between AD and the amount of beta amyloid plaque (APP-processing product) deposited in brain tissue has been observed.

The NTera 2/cl.D1 (NT2) cell line, cloned from human testicular embryonal carcinoma, was used due to its pluripotent characteristics. The cells endogenously express APP and were transiently transfected with the myc-tagged X11/MINT constructs. MINTs are a family of neuronal adaptor proteins that suppress the generation of beta amyloid peptide via sequestration of APP. APP and three X11 isoforms were co-immunoprecipitated and the results were confirmed using Western blot techniques.
It was found that the cell lines used were in fact transiently transfected with APP and X11 and that APP co-IP'd with X11 and vice-versa, showing a relationship between the two proteins of interest.

Confirmation of the interaction between APP and members of the X11/Mint family inhibiting will lead the way to further studies on suppressing the cleavage of APP into the deleterious β-amyloid peptides. One of the future goals is to use FRET analysis to further confirm the protein-protein interaction between APP and X11.

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**Poster Session I**
**Poster Board No. 13**

## Synthesis of New Chiral P-N Ligands from a Ferrocenyl-Phosphine and L-Amino Acids, and Their Potential Use in the Asymmetric Heck Reaction

The Heck reaction is an example of a Pd-catalyzed C-C bond making (coupling) reaction, and is arguably the most useful palladium-catalyzed coupling reaction available to synthetic organic chemists. The asymmetric version of this reaction is of particular importance, as its products are useful intermediates in the synthesis of chiral drugs and other biologically-important compounds. In this regard, ferrocene-based chiral compounds with both P and N donor atoms have been shown to be very effective ligands.

Our idea for this project was to use the existing chirality in L-amino acids, available inexpensively through the "chiral pool," coupled with the steric bulk of the ferrocene unit of a ferrocenyl-phosphine, to synthesize new P-N ligands for the Pd-catalyzed asymmetric Heck reaction. Herein, we would like to report the synthesis of two new ferrocenyl-phosphino amino acid ester ligands (1 and 2), synthesized via an 8-step process starting with ferrocenecarboxaldehyde. The synthetic pathway and spectroscopic characterization of compounds 1 and 2 will be presented.

Future work will include the use of these new P-N ligands in an asymmetric Heck reaction wherein an aryl halide is coupled with an alkene. The significance of this work lies in the fact that it will make available to synthetic chemists new ligands, drawn from inexpensive L-amino acids, for use in the aforementioned context.

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**Poster Session I**
**Poster Board No. 14**

## Characterization of Anterior-Posterior Determinants in Meloidogyne incognita Relative to Free-Living Nematodes

Meloidogyne incognita (MI) is an obligate endoparasite that infects the root tissues in a wide host range of important agricultural plants leaving it susceptible to secondary infections. This plant-parasitic nematode reproduces through parthenogenesis allowing it to rapidly propagate under optimal conditions without having to find a mate for reproduction. With the current band of toxic pesticides used in the agricultural industry, there needs to be a better understanding of how this plant parasite initiates and undergoes development during its early stages to better develop effective biological ways of controlling this plant parasite. Previous experiments have confirmed that the cytoskeletal structure in MI operates in the same manner relative to that of Caenorhabditis elegans, a well-studied, free-living nematode, by cross-reacting monoclonal antibodies developed against C. elegans' á-tubulin proteins on MI. The purpose of this experiment is to further investigate how MI eggs initiate early development by detecting the protein, p-granules, which is localized in the posterior region of C. elegans' embryo. Embryos were extracted followed by freeze-cracking and an immunohistochemistry assay was done. Multiple dilutions of the primary and secondary antibodies were done for the immunostaining process to obtain an optimal diluted sample of the antibodies. Slides are then analyzed through confocal microscopy for fluorescent detection. P-granules detection was confirmed to be localized in the posterior region of C. elegans' embryo during the early developmental stages. Currently, the localization of p-granules is being analyzed in Pristionchus pacificus, another free-living nematode, and in MI. In conclusion, P-granules localization can be used as a target for the posterior region as well as orienting other early developmental proteins (i.e. partitioning defective proteins) which is crucial in generating anterior-posterior axes in C. elegans, and potentially, in other nematodes such as MI.

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**Poster Session I**
**Poster Board No. 15**

## The Influence of Western Media on Hmong College Students in California State University, Fresno

The study's objectives are to examine characteristics of the media Hmong students watch/ listen/ read, their media use, and acculturation.

The researcher uses quantitative method in the study. One hundred and five Hmong participants completed and returned the questionnaires on the campus. The statistical software SPSS 16 was used to analyze the collected data to answer seven research questions (RQ).

RQ1 asks about the characteristics of the media Hmong students primarily consume. The results show that 64% of the participants primarily consume media in English while only 12% tremendously consume media in Hmong. RQ2 asks if Hmong students think the Western media help them better integrate in American society. Hmong participants appear to believe media consumption in English partly helped them integrate in the society. RQ3 and RQ4 ask if there is a relation between number of hours of consuming media in English or in Hmong, and having an overwhelming attachment to American or Hmong culture respectively. Results show that there is significant low positive correlation between the time Hmong spend on English media and their ties to American culture, and between the time the participants spend on Hmong media and their ties to Hmong culture. RQ5 asks if there is a relation between English proficiency and feeling strong bonds toward American culture. Findings suggest that there is a significant low positive correlation between participants reported English proficiency and this feeling. RQ6 asks if there is the same relation between Hmong proficiency and feeling strong ties toward Hmong culture. A significant low positive correlation is also found in response to RQ6. RQ7 asks if there is a difference in exercising authority between male and female students. Findings show that there is no significant difference between the two groups in exercising authority, which suggests Hmong youth has assimilated into American culture of gender equality.

These findings provide more empirical evidence to design effective integration facilitation programs for immigrants in the U.S.

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**Poster Board No. 16**

## Extraction of Hydroxyapatite Crystal Aggregates from Forensic and Archaeological Bone

Standard techniques for the extraction of DNA from calcified tissues recovered from forensic and archaeological contexts call for whole sample digestion. However, contaminating DNA is often co-extracted from compromised and highly degraded tissues, resulting in the failure to obtain true genetic profiles from the questioned samples. Hydroxyapatite crystal aggregates (HCAs) found within bone have recently been reported to contain DNA within their capsules. Thus, extraction of this "protected DNA" from bone may yield authentic DNA sequences more consistently and reliably than the standard methods currently used. The isolation of HCAs from bone presented here is the initial phase of a three part research project currently being conducted to examine HCAs as a potential source of authentic DNA.

Hydroxyapatite crystal aggregates were attained from forensic and archeological bone samples by first isolating a small portion and removing the collagen matrix with bleach. Following disaggregation, the monomeric and crystal aggregate types were separated by weight in ethanol saturated with hydroxyapatite. The presence of aggregates was confirmed with scanning electron microscopy.

Here we demonstrate a relatively fast and convenient method to attain HCAs from bone. The antiseptic nature of the disaggregation process greatly reduces the potential for contamination, thus increasing the probability of obtaining authentic DNA profiles from highly degraded tissues.

We are continuing our studies of HCAs by next examining the indicators of DNA preservation in bone, namely collagen and aspartic acid, and later by examining the DNA recovered from the HCAs themselves. The decreased contamination and inherent preservation capabilities of HCAs will hopefully prove to become a superior extraction method over the whole sample digestion procedures currently used.

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**Poster Session I**
**Poster Board No. 17**

## Subcellular Localization of the Tasselseed 2 Protein in Maize

The process of sexual determination in Zea mays is controlled by various genes which enable the transition from bisexual to unisexual floral primorida via the programmed organ arrest pathway. Specifically, the tasselseed genes (ts1 and ts2), help to initiate developmental abortion of the pistil primordium within the spikelet pairs of the inflorescence and alternatively assist in the developmental maturity of the stamen primordia. Previous studies suggest the proteins encoded by the ts genes also participate in the biosynthetic pathway for the hormone jasmonic acid (JA), occurring within a sequence of oxidative reactions beginning in plant plastids and terminating in plant peroxisomes. The identity of the TS2 protein suggests an involvement in these reactions, however exact localization of the protein is necessary in order to further validate the proteins role in this pathway.
Transient transformations of chimeric protein construct containing a fusion of the TS2 protein to the Green Fluorescent Protein have been conducted alongside control constructs with known peroxisomal localization, and expressed within onion epidermal cell layers, utilizing the Helios Gene Gun Bioparticle Delivery System.

Transformations of the LacS7::YFP control constructs in onion cells have shown successful localization of fluorescent signals expressed within the plant peroxisomes, thus providing validity for a reliable control. Experimental constructs containing the TS2 protein, however, have yet to be transformed onto onion epidermal cell layers.

While preliminary results suggest peroxisomal localization of TS2::GFP fusion constructs, further trials must be conducted. Future results from these experiments should provide additional support for the hypothesis that TS2 is involved in the biosynthesis of JA and could perhaps suggest a relationship between JA biosynthesis and programmed organ arrest.

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**Poster Session I**
**Poster Board No. 18**

## Do Children Think Animals Think?

The development of children's theory of human minds has been a popular area of research, but Children's theory of animal minds has received less attention. Existing research suggests that children anthropomorphize animals, giving them human-like intentions and emotions (Barrett, Richert, & Driesenga, 2001). This is consistent with the anthropocentric reasoning reported in Carey (1985), who found that children use humans as prototypes when making biological attributions; projecting human mental phenomena onto animals could follow from this, if their tendency to use humans as prototypes leads to attribution of human mental states to animals.

Previous research in our lab suggests that conversation may be an important part of why children reason anthropocentrically; parents highlight the ways that animals and humans are alike, and this may lead children to reason anthropocentrically. To investigate this, we analyzed data from 36 2-, 3-, and 4-year-olds as they walked through a small children's zoo with a parent. Results indicate that parent-child conversation about animals uses mental state terms in the same way that conversation about humans does; conversation with 2- and 3-year-olds contains significantly more talk about feelings and desires than talk about cognitions, which increases in conversations with 4-year-olds. Our results suggest that conversation with parents plays an important role in this development, because parents are the ones who initiate these topics, because they do so more with younger children who know less about Theory of Mind. The data suggest that these conversations may be helping to fuel children's theory of animal minds rather than just reflecting how children think about animal minds. Accordingly, this research supports the growing body of evidence that suggests conversation with parents is an important part of Theory of Mind development, and further highlights the importance of conversation for cognitive development in general.

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**Poster Session I**
**Poster Board No. 19**

## The Progressive Neurodegenerative Effects of the Neurotoxin BMAA on a Fruit Fly Model of Parkinson's Disease

â-methylamino-l-alanine (BMAA) is a non-proteinogenic amino acid that may be produced by a majority of the known taxa of cyanobacteria. The BMAA produced by symbiont cyanobacteria in the roots of Cycas micronesica might be the cause of amyotrophic lateral sclerosis - Parkinsonism dementia complex (ALS-PDC) in the Chamorro people of Guam. An unknown source of BMAA has also been linked to the onset of Alzheimer's Disease and ALS in North America. The neurodegenerative effects of BMAA also manifests in Drosophila melanogaster, making these flies a model system for future therapies for Parkinson's Disease. In our study, we focus on how Parkinson's symptoms progress over time: we quantify the behavioral changes in wild type Drosophila when exposed to 12.5 mM, 25 mM and 50 mM concentrations of BMAA in their food over a period of three days. On the first day after treatment, the 12.5 and 25 mM dosage flies showed hyperactivity - they spent a high proportion of their time walking and jumping rather than standing and grooming. At the lowest dose of 12.5 mM, we observed a mild progression from mainly hyperactivity to some shaking and twitching by day 3. At the medium dose, we observed a progression from hyperactivity on day 1 over twitching on day 2 to severe shaking on day 3. At the highest dose, we observed a strong progression. Beginning with day 1, locomotor activity is suppressed compared with the control group and the flies show twitching and shaking; on day 2, the flies shake severely and can no longer right themselves when falling over; on day 3, 40% of the flies have died, the surviving flies spend most of their time in a catatonia. Based on our observations, we hypothesize that the progression from hyperactivity to catatonia is caused by an increasing motor activation, which ultimately leads to the simultaneous activation of all musculature and hence total catatonia.

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**Poster Session I**
**Poster Board No. 20**

## Effects of External Cues on Walking Performance during Single and Dual Tasks in Persons with Parkinson fs Disease

Objectives:
The purpose of this study was to examine the immediate effects of visual cue (VC) and auditory cue (AC) on gait during single and dual tasks in persons with PD.

Participants:
A total of 15 subjects with idiopathic PD (mean age of 66.7yrs) were recruited from a local Parkinson fs Support Group. The subjects had an average estimated Hoehn and Yahr rating of 1.8 (range stage 1-3) and an average disease duration of 5.9 years (range 1-13yrs).

Interventions:
The subjects walked along a 12-foot walkway (Gaitrite, CIR Systems, Inc. Havertown, PA) under 3 cueing conditions: NC, VC (tape placed transversely at 46cm intervals along the walkway), and AC (metronome with frequency set at 100 clicks/min). The subjects were asked to match step length to the tape for VC and tostep with the beat for AC. They were tested during single task (ST; walking alone), dual cognitive task (DCT; walking while subtracting numbers) and dual motor task (DMT; walking while carrying a 5 lb grocery bag). The gait parameters measured were: gait velocity, cadence, step time, cycle time, swing time, stance time, single support time, double support time, step length, stride length, and base of support.

Results and Conclusion:
Adding a DMT showed minimal difference compared to ST in most cueing conditions; however, adding a DCT adversely affected all gait parameters. The effect of external cues was different based on walking conditions. Under ST and DMT conditions, AC improved subjects to have fewer steps and spent longer time in each step even though the step length did not improve; whereas, VC seemed to decline gait parameters as the step lengths became shorter. However, under DCT condition, AC did not have any effect on the gait parameters while VC showed decline in walking performance.

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**Poster Session I**
**Poster Board No. 21**

## Research Infrastructure for Minority Institutions (RIMI): Results from Some of the Ongoing Projects

RIMI is a NIH funded, Shared Research Resources established to serve state-of-the-art biomedical and life sciences research instrumentation to Fresno State faculty and students and California Central Valley researchers to enable cutting-edge research pertinent to public health. Toward the mission, work is in progress including facility renovation and planned acquisition and install of major instrumentation.

The three independent projects under the RIMI auspices that focus on biomedical/behavioral research needs of Central California are: cancer proteomics and the relevance to pesticide exposure in Hispanic farm workers; inter-relationship between levels of air pollution, viral infection and asthma in Central Valley; and cultural differences in marital care giving interactions in Alzheimer's disease. In addition, the RIMI Shared Research Resources also supports new and seasoned investigators in establishing and advancing their research programs in biomedical and life sciences.

Facility capabilities are highlighted in the four key areas including Functional Genomics: cell imaging, Laser Capture Micro-dissection; Proteomics: mass spectrometers including ESI-IonTrap/ETD, MALDI-TOF/TOF and QqTOF; Metabolomics: mass spectrometers shared with proteomics as well as High-End Computational Facility to support the informatics needs.

This poster will serve as an introduction to various shared resources to the research community and will also present results from many of the ongoing projects.

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**Poster Session I**
**Poster Board No. 22**

## Efficacy of Narrative Therapy in a Career Counseling Group: The First Year College Experience

A career counseling group with foundations of the narrative therapeutic framework and the StrengthsQuest student development program was implemented for students in the Educational Opportunity Program (EOP) at CSU, Fresno (i.e., first-generation, low-income students from an educationally disadvantaged background) to enhance services associated with identity and major/career development. The expected learning outcomes were: 1) Knowledge/understanding of processes associated with identity development with regard to major/career exploration; 2) Knowledge of career development process; 3) Discovering personal Strengths and building on talents; 4) Identifying majors/careers that coincide with students' Strengths; 5) Development of changed attitudes and awareness involving feelings associated with social support, others' cultures and their own, being a new student to campus and commitment to self and others; 6) Development of critical thinking skills; 7) Development of group counseling processes skills; 8) Enhancement of social skills; 9) Available campus and community resources; 10) Action steps to follow after completion of the course. All seven participants were first-time freshman EOP students enrolled in the same University 1 course at CSU, Fresno. Participants participated in all phases (i.e., initial session, workshops 1-4 and follow-up interview).

There were significant results found. First, we found significance of all expected learning outcomes with the exception of available campus and community resources. Second, there was a significant increase of participants whom have decided on a major after the completion of the study as compared to the beginning of the study. Third, the majority of participants felt this study alleviated stress associated with deciding on a major. Lastly, 100% of participants felt this study needed to continue to be apart of EOP. Therefore, it was concluded that this career counseling group needed to continue, but with some revisions to the curriculum to enhance our learning outcomes and to also serve additional special population groups within EOP.

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## The Metal Ion Content of Drosophila melanogaster expressing Copper-Zinc Superoxide Dismutase (CuZnSOD)

The familial form of the motor neuron degenerative disease, fALS (familial amyotrophic lateral sclerosis), is related to 130 point mutations in the antioxidant protein, copper-zinc superoxide dismutase (CuZnSOD).
The point mutations occur throughout the protein and several mutations occur near the copper and zinc active site of the enzyme. We are developing methods to study the metal ion content (copper, zinc, iron and manganese) using Drosophila melanogaster (fruit flies) as a model to focus on metals homeostasis and oxidative stress. Wildtype CuZnSOD-expressing flies were digested with nitric acid then analyzed for metal ion concentration using inductive coupled plasma-mass spectrometry (ICP-MS). Whole flies were extracted for SOD protein and enzyme activity was measured using the Nitro Blue Tetrazolium (NBT) native gel assay. An increased in metal ion content were observe with age progression. NBT gel assay display white SOD bands in range 47-85 kDa, which native SOD develop at 32 kDa. Further characterization may provide insight linking abnormal SOD molecular range and increasing concentration in metal ion.

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## Effects of Anonymity on Aggressive Behavioral Responses to Anger-Provoking Driving Situations

The present study investigated the effects of anonymity on aggressive driving behavior. Participants imagined that they were either driving a convertible with the top down (identifiable) or an enclosed vehicle with tinted windows (anonymous). Participants rated their feelings of anonymity, frustration, and likelihood of exhibiting aggressive driving behaviors in a neutral situation, a situation in which they are behind a slow driver and one where they are the subject of another driver's aggressive behavior. Results did not support the hypothesis that participants in an anonymous condition would engage in more aggressive driving behavior than participants in the identifiable condition. Across conditions frustration was significantly correlated with participants' anger and aggressive driving behavior. Implications for both deindividuation and frustration – aggression theory are discussed.

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## How do students decide when to stop studying?

How do students decide when to stop studying? Two possibilities have been proposed: a judgment of learning rate (the learner stops when the rate of learning drops to an unacceptable low; see Metcalfe & Kornell, 2003), and a judgment of learning compared to a desired goal (the learner stops when they feel they will meet their goal; see Thiede & Dunlosky, 1999). In these experiments, we investigated the accuracy of judgments of improvement, and performance relative to an assigned goal.

In Experiment 1, we investigated judgments of improvement by asking students to make predictions of future learning (predictive JOI) or assessments of how much they improved on the previous trial (postdictive JOI). Judgments were made on either a percentage scale (X % more of the words have/will be learned) or numerical scale (X many more words have/will be learned). Participants studied a list of Swahili-English word pairs, and made JOIs for six study – test cycles. In each condition, judgments of improvement were not correlated with actual improvement, with average correlations between .045 and .106, $p > .05$ for all.

In Experiment 2, performance relative to a goal was investigated, as a popular assumption in the metamemory literature is that individuals will study until their judged learning matches their goal for the material (the discrepancy reduction hypothesis). There were two goal conditions, learn 11 of 15 or 4 of 15 words. In each condition there were three lists, to investigate potential benefits of task experience. Overall, there was no evidence to suggest that performance relative to goals improved with experience.

Results strongly suggest that judgments of learning rate are inaccurate, and performance relative to assigned goals indicates students may not be capable of accurately assessing learning for a list of items, underestimating performance under lower goals, and overestimating their performance on higher goals. Implications for improving student performance will be discussed.

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## Short-Interval Time Perception: An ERP Study

The study of human time perception has rarely been conducted using modern neuroimaging techniques. In this ERP study, we investigated short-interval time perception using an oddball paradigm based on small differences in time. While recording a continuous EEG, participants were presented with visual stimuli that indicated the duration of the time interval (the number 10, for 10 seconds). 80% of the trials were actually that duration, while 20% of the trials (the oddball trials) were slightly shorter or longer intervals. After each trial, participants were then asked to guess whether the trial was actually the indicated duration or not.
Post experiment surveys were taken to account for the possibility of counting during the experiment and other confounds. We found that there was a significant difference in the ERPs between oddball and sample trials, occurring around 300 ms poststimulus (the P300), especially over the parietal electrode sites. Most participants indicated that they rarely counted throughout the experiment. These results correlate with theories that humans possess an innate faculty for short interval time perception.

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**Poster Board No. 27**

## Gen Y: An Examination of Intrapersonal Variables and the Likelihood of Whistleblowing

Researchers have looked at unethical business practices and whistleblowing from different stand points. Prior research has shown certain intrapersonal variables affecting the decision of workers blowing the whistle. No studies, however, have explored the relationship between intrapersonal variables of Generation Y and the likelihood of whistleblowing. This developing study tries to examine the extent to which satisfaction, whistleblowing intentions, organizational commitment, and demographic characteristics have a significant correlation with Generation Y. Using regression analysis and inferential statistical tests on over 300 quota samples, the findings in this study indicates support and contradiction with previous research. This study is part of a growing field of business ethics and will contribute to future research.

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## Demand-Withdraw Inter-rater Reliability: Replacing Cronbach's Alpha with Intra-class Correlation Coefficient

Couples' communication is often studied due to its implications for marital satisfaction. A subset of couples'communication is the demand-withdraw pattern, in which one member of the couple demands, nags, and criticizes, while the other withdraws, avoids confrontation, and remains silent (Eldridge, Jones, Sevier, Atkins, & Christensen, 2007). To analyze the data, judges rate the behavior of participants. The important measurement of agreement, or reliability, of the observations made by the judges is typically assessed through Cronbach's alpha (Eldridge, Jones, Sevier, Atkins, & Christensen, 2007; Christensen et al., 2007). Although Cronbach's alpha is often used, it is more statistically appropriate to analyze these data with the intra-class correlations coefficient (I-CCC). We analyzed our data with both methods to explore the comparative outputs.

To mirror other laboratories conducting demand-withdraw research, four judges rated video data collected by the Rehman Marital Interaction Laboratory in Ontario, Canada. The interactions captured two different discussions between couples in counterbalanced order – one of particular interest to the husband and one of particular interest to the wife. The judges rated the husband and wife for each discussion, coding for blame, pressure for change, withdrawal, avoidance, and discussion (for a more detailed description of the procedure see Christensen, Sevier, & Simpson). The I-CCC (ICC [2,1] =.86) was lower than Cronbach's alpha (α=.96); it appears to be a less biased estimate of inter-rater reliability.

The reason that the I-CCC is less biased is because it takes into account the variance in the judges where Cronbach's alpha does not; therefore, ignoring the randomized error, which results in the appearance of higher reliability. Because the I-CCC does account for this error, it should be the standardized method for inter-rater reliability for demand-withdraw data collected by judges who are analyzing couples' communication.

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## Electrochemistry of Au25 Nanoparticle

The physical and chemical properties of nanometer-sized clusters, so called nanoparticles (NPs), have become popular research topics for the development of new materials that can be utilized in potential sensor and catalyst applications. Among those NPs, a few nanometer-sized gold (Au) NPs have attracted more attention over a past decade owing to their synthetic feasibility and relatively ease of size-tuning. A number of methods to prepare and isolate mono-dispersed Au NPs have been developed and their fundamental properties (e.g. electron transport, electrochemical charging, UV-Vis absorption, photoluminescence, etc.) have been well studied as a function of the NP size. In contrast, it is relatively less studied how NP surroundings affect the fundamental properties of NPs. Here, note that NP surroundings denote surface protecting ligands (also called surface-capping agents or surface stabilizers), solvents, and electrolytes.

In this study, we report the electrochemical and electron transport properties of Au25 NPs (~ 1.1 nm averagediameter) having different ligand lengths. These NPs were prepared by ligand exchange reactions and approximately 50 % of the original phenylethanethiolates were replaced with various chain lengths of alkylthiolates, up to C12. Cyclic voltammograms (CV) and differential pulse voltammograms (DPVs) of un-exchanged NP and ligand exchanged NPs were measured at the platinum disk electrode and microelectrode in 0.1 M (TBA)ClO4/CH2Cl2 (TBA = tetrabutylammonium). Alkylthiol-exchanged Au25 NPs also show two reversible oxidations in CVs. For example, each oxidation of Au25(SC2Ph)18 occurs by one electron transfer and corresponds to Au25(1-/0) and Au25(0/1+) couples. However, their peak potentials shift to more positive values as the ligand length increases. About a 100 mV difference was observed in the first oxidations of both Au25 and Au25-C12. The heterogeneous electron transfer rate constants were estimated from steady-state currents measured at the ultramicroelectrode.

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## Effects of Presentation Type on Facial Composite Accuracy

This study examines the effects of presentation type on facial composite accuracy. Previous research indicates that composites created from memory of a photograph using current computer composite programs are not particularly accurate. Related research shows that face memory is enhanced by real-world exposure (with motion) relative to still photographs. This study directly compares the difference between accuracy of facial composites created from memory of a video and memory of a photograph. We predicted that memory of video will result in more accurate facial composites than memory of picture. In Phase One, participants were first trained on the composite software system FACES 3.0, followed by creation of a face composite from seeing a 60-second video or photographic image. During the second phase of the study these composites will be judged for accuracy by a separate set of participants using a list of rating questions. The ratings given will be used to determine the difference in accuracy between facial composites created from video and still image. If the results of the study are as predicted, the accuracy ratings of composites created from memory of video will be significantly greater than the accuracy ratings of those created from still pictures. This would indicate that previous research on facial composite software systems may underestimate the actual utility of the software, since much of the research employs still images during composite creation.

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## Enhancing Retention through Distributed Practice

The spacing effect is a robust phenomenon referring to observations that memory of stimuli will be facilitated if encountered upon two spaced occasions rather than one massed occasion. The present study further investigated the application of this effect on reading comprehension tasks by having participants read a page of text twice, in immediate succession or separated by two intervening pages of text. Each repeated page was either separated or accompanied by two additional pages of the same (Toucans) or a differing (The Big Bang; Hong Kong) semantic category as the repeated passage. A preliminary analysis of current data is supportive of the encoding variability hypothesis, suggesting that a greater spacing effect can occur if a stimulus is separated by stimuli of a different category than if separated by stimuli of the same category.

Applications to real-world learning environments are discussed.

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**Poster Board No. 1**

## Effects of Cigarette Smoke Exposure on Fibrin Architecture and Thrombolysis

Introduction: Studies have shown lower mortality in smokers with STEMI possibly related to enhanced thrombolysis after t-PA; the so-called "smoker's paradox." Studies also suggest a relationship between thrombolysis and fibrin architecture. In this study we tested the concept of smoker's paradox and its association with fibrin structure.

Methods: Clot lysis was examined from healthy non-smokers (NS; n=23) and from smokers before and after 2 cigarettes (SM; n=23) using thromboelastography (TEG). At maximum clot strength in TEG, t-PA was added and the percentage clot lysis after 60 min was noted.20 uL platelet poor plasma from NS (n=14) and SM (n=17) were mixed with 20 uL thrombin to generate fibrin clots that were examined under an electron microscope (EM). Fiber thickness and average density per image area were quantified using Image J software.
Results: Fibrinogen levels and platelet counts were similar. Post-smoking clots (15.6 ± 1.2 %; $P<0.05$) had lower lysis compared to pre-smoking (19.9 ± 1.3 %) as well as NS (20.5 ± 1.5 %) clots. On EM, post-smoking clots had thinner fibrin fibers and denser fibrin structure vs pre-smoking and NS clots (Table 1).

Table 1. Fibrin thickness and average number of fibrin strands per 1 μm2 area of non-smokers and smokers.

| | Non-smoker (n=14) | Pre-smoking (n=17) | Post-smoking (n=17) |
|---|---|---|---|
| Fibrin thickness | 95 ± 7 nm | 83 ± 8 nm | 67 ± 5 nm |
| Average number of fiber strands per field | 12.98 ± 1.06 fiber strands/ μm2 | 14.69 ± 5.96 fiber strands/ μm2 | 17.89 ± 6.99 fiber strands/ μm2 |

Conclusions: Acute cigarette exposure changes fibrin architecture and increases resistance to thrombolysis. These findings in part may explain enhanced thrombogenicity with cigarette smoking but contradict the concept of "smoker's paradox."

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**Poster Board No. 2**

## Prenatal HIV Testing Experiences among Postpartum Women in a Fresno County Birthing Hospital

In 2008, California Assembly Bill 682 mandated routine "opt-out" human immunodeficiency virus (HIV) testing during prenatal care. This study assessed the prenatal HIV testing experiences of postpartum women in a Fresno County birthing hospital.

A convenience sample of 183 postpartum mothers awaiting discharge from the largest birthing hospital in Fresno County was surveyed between August and September 2008. Data consisted of responses to a 24-item self-administered questionnaire. Survey questions asked recall of prenatal care, including: did a woman receive HIV test counseling, was she offered HIV testing, did she accept or refuse testing and the reasons why.

Almost 70% of women reported receiving HIV test counseling during prenatal care (n = 126). Seventy-four percent (n = 136) reported receiving prenatal HIV testing. The primary reason participants agreed to prenatal HIV testing was for the health of their baby. The primary reason for not getting tested was not being offered the test. HIV test counseling was significantly associated with agreeing to HIV testing. A woman who received prenatal HIV test counseling was 14 times more likely to agree to prenatal HIV testing than a woman who did not receive counseling.

The majority of postpartum women awaiting discharge from the largest birthing hospital in Fresno County received prenatal HIV testing. Routine opt-out prenatal HIV test counseling and testing may not be the reality for all pregnant Fresno County women and warrants further study and discussion among prenatal care providers.

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**Poster Board No. 3**

## Treading a Slippery Slope: Slant Perception In Near and Far Space

Hills are judged to be steeper with a verbal measure than with a motor measure. Traditionally, studies of slope estimation have used relatively long distances (Proffitt, Creem, & Zosh, 2001). More recently, studies found verbal estimates greatly overestimated slopes and these overestimates fit a log function as a function of increased distance. Based on these initial findings with regard to the role of distance in slope estimation, the current study was interested in further examining the relation of slope perceptual sensitivity across predetermined distances.

Participants reported their measures in counterbalanced order in a 2 (measure) x 4 (distance) repeated measures design. Subjects were randomly assigned to one of two slightly different conditions. In condition 1 for each segment subjects reported their haptic judgments first and their verbal judgments second. In condition 2 for each segment subjects reported their verbal judgments first and their haptic judgments second. Prior to making slope judgments, participants were instructed on both the verbal and motor measures. Participants were instructed to gaze directly at the segment of hill between two tilted cones. For each hill, the subjects were asked to judge the angle of inclination of the hill with respect to the horizontal, reporting their judgments on the two measures, verbal and haptic.

The study replicated the effects of distance and type of measure on predetermined logarithmic distances but did not reproduce the interaction effect. Consistent with previous work, motor estimates were more accurate at all ranges. These results can be interpreted as modulation of the individual's implicit slope by depth cues available at near distances that are not available at further distances. We conclude that geometric layout of the world interacts with effort required for interacting with the world? (Proffitt, Bhalla, Gossweiler, & Midgett, 1995), but more strongly for verbal than for motor measures.

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## Effect of Short-Term Exposure to Gender Stereotypical Magazine Advertisements on Implicit Stereotyping and Behavior

Advertising is believed to be very powerful in shaping people's beliefs and attitudes, yet very little research exists investigating immediate effects of viewing stereotypical ads on implicit processes and behavior.

In this experiment we have investigated whether brief exposure to gender dominance stereotypes presented in magazine advertisements can lead to an activation of a given stereotype and hence to gender-biased behavior.

Fifty-eight undergraduate students participated in a three-stage experiment. First, in a priming task, five full-sized magazine ads were presented, embedded in two magazine articles in a computer slideshow. Ads were pre-rated as belonging to one of the three conditions: man-dominant, woman-dominant and control (equality). Afterwards, activation of an implicit stereotype of gender dominance was measured using a standard gender-stereotype Implicit Association Test. Finally, gender-biased behavior was measured in an exercise in which participants had to rate how likely each of ten male and female applicants for a managerial job is likely to be hired.

The findings revealed that men showed a stronger association of the concept of dominance with men than did women, but women showed a larger hiring bias towards male applicants than did men. There were, however, no effects of advertisement type on either implicit stereotype activation or job evaluations, which may be an indication that ads are complex visual stimuli that do not automatically activate stereotypes. Follow-up work will be necessary to rule-out the possibility that design features worked against a positive finding; alternative methods for this future research are discussed.

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**Poster Board No. 5**

## Email Communication

This project was based on research concerning email communication problems in a professional environment. Initial literature review determined the most common problems found in previous studies. Additional literature review suggested that engineering companies were more likely to experience problems relating to communication than others. Based on this research, a survey was created to test how often those problems presented themselves in selected subject companies. The survey was sent out by email, and received a 95% response. Using the response data, additional questions were created to address new areas of interest, and a cluster sampling was used to determine appropriate interviewees.

The results from the survey and interviews substantiated what was found in the literature review. The author found that employees in a professional setting double check their outgoing email for errors 89% more often than they do for emails going to fellow employees. The majority of employees also feel that they understand email functions very well, but indicated that they feel their co-workers do not know how to use those same functions as well. The discrepancy here signified that misunderstandings were hindering efficiency. The results from this study allowed the author to isolate specific items that prevented effective communication within the office.

A workshop was then created to target and improve the most common behaviors preventing effective communication. After presentation of that workshop to a focus group, over 60% of participants claimed to have learned something about professional email communication as a result, and indicated that the workshop will improve their efficiency as an office. Future results gathered 6 months afterwards will determine the long term effects of such training on communication efficiency.

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**Poster Board No. 6**

## Effects on the Parasitic Nematode Meloidogyne Incognita of Transgenic Tobacco Plants Expressing an Antisense Construct of the Cell Death Protection ced-9 gene

Damage caused by nematodes to crops is a serious problem in the US, and methyl bromide has been used effectively to control plant parasitic nematodes. However, methyl bromide causes great environmental hazards. Instead, we are exploring the use of transgenic plant expressing programmed cell death gene regulators, such as the ced-9 gene from C. elegans, to manage plant parasitic nematodes. Depending on the ced-9 sequence orientation present in the transgenic plants, two predictions can be made. First, plants containing a forward (sense) ced-9 gene will protect against nematode infection by enhancing the ¡°immune¡± response of the plant. In fact, previous work showed that over-expression of ced-9 leads to the protection against virus and fungi infections. Second, plants containing a reverse (antisense) ced-9 gene would enhance the programmed cell death pathway in the nematodes, and act just as a ced-9 (lf) mutation. The second hypothesis assumes that there is a ced-9-like sequence in Meloidogyne incognita (Root-Knot Nematode-RKN), which is the target of the ced-9 antisense gene. We have data supporting theses predictions.

We generated homozygous transgenic tobacco plants expressing either ced-9-F (ced-9 gene clones in the sense orientation) or ced-9-R (ced-9 gene cloned in the antisense orientation). The expression levels of the ced-9-F and ced-9-R genes in transgenic plant were determined by competitive RT-PCR. Selected ced-9-R and ced-9-F transgenic tobacco lines, both expressing high levels of the transgene and having no other phenotypic effect, were tested for resistance to M. incognita by measuring numbers of galls formed (invasion ability), sizes of galls, and J2 hatching ratios (reproduction ability).

The number of galls formed was significantly reduced (p ¡Ü 0.05: post-hoc t-test) in the ced-9-R hemizygous tobacco plant line as compared with both hemizygous and homozygous ced-9-F lines or untransformed wild type tobacco plants. There was no significant difference in gall weight among the transgenic lines when compared with untransformed wild type tobacco. We also observed a significant difference in hatching ratios of collected embryos from ced-9-R #6-6 homozygous and hemizygous, and ced-9-F hemizygo transgenic plants when compared to untransformed controls. We speculate that hatching prevention in the ced-9-R expressing plants is due to the action on similar nematode sequences to a ced-9 during embryogenesis of M. incognita taking place in the transgenic plant.

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## Estimating Soil Erosion Potential within the Fresno River Watershed using the RUSLE Modeland GIS

Our study seeks to evaluate soil erosion within the Upper Fresno River Watershed by estimating the amount of soil loss and assessing the amount and types of sediments entering the surface waters of the watershed. Sediments entering surface waters are considered the number one pollutant by the Environmental Protection Agency. Sediments pollute surface waters by transporting pesticides, excess nutrients, bacteria, and by disrupting aquatic habitat.

Our first step in the project was to collect sediment samples from sections along streams and rivers within the watershed. These soil samples were analyzed for particle size analysis. Results indicate that finer sediments enter at lower elevations within the watershed, suggesting a relationship with soil types or an accumulation of finer sediments transported from higher elevations of the watershed.

We are in the processes of gathering data to use computer modeling combined with empirical modeling. We have selected ArcGIS and the Revised Universal Soil Loss Equation (RUSLE) empirical model to estimate the amount of soil loss within the watershed. RUSLE estimates soil loss from rill and sheet erosion. For estimating channel and gully erosion, we set up sediment fences along select locations. These sediment fences will be fully evaluated at the end of the 2008-2009 rainy season. Inspections of the sediments fences during field activities indicate that a large percentage of soil loss occurs during large storm events.

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## Residential Irrigation as a Driver of Urban Bird Communities

The demand for fresh water has largely outpaced supply both globally and locally with current water management policies unable to meet the needs of urban, agricultural, and industrial activities. Irrigation is one of the many anthropogenic uses of water and is arguably the most important maintenance factor in a landscape. This is particularly true in an arid climate, such as the Central Valley of California. Urban residents' decisions about the design and maintenance of their landscapes affect bird species richness.
Published research indicates that these decisions are also affected by the residents' socioeconomic status.
However, the driver of this relationship remains unknown. This paper uses data from the Fresno Bird Count, a volunteer citizen science organization, to test the hypothesis that neighborhood socioeconomic status influences residential irrigation regimes, which influences plant cover, in turn influencing bird diversity and abundance. A random sampling grid containing 460 points are used as locations for five minute point counts for the Fresno Bird Count (fresnobirds.org). Socioeconomic data has been obtained from the U.S. Census and irrigation regimes from the city of Fresno. Aerial imagery and ground sampling on point count locations are used for characterizing habitat. Preliminary analysis of the first year of data (2008) supports this hypothesis and reveals a north/south gradient of bird diversity paralleling the socioeconomic gradient of Fresno. This paper will present results and analysis of preliminary data including the spring 2009 bird census.

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## Unmanned Aerial Vehicle for Agriculture and Terrain Mapping

The application of aerial vehicles and specifically, unmanned aerial vehicles (UAV) has widely increased in agriculture and natural resources. Site-specific management of cropping systems and range management could directly benefit from the sensory data collected utilizing a UAV system. A lightweight 5 foot wingspan electric UAV system has been developed and built (4 lb with no pay load) that has the capability to carry semi-autonomous and autonomous flight paths with a pay load (digital camera and/or video recorder up to 1 lb.). In addition to using an autopilot, a Global Positioning Satellite (GPS) receiver and fight stabilization sensors were utilized for UAV system stability during and guidance with unmanned flights.

Several test flight studies were successfully conducted with satisfactory performance from both the aircraft and the autonomous navigation system on board. With that, the UAV was tested over a user set waypoint path on fields, facilities/properties, and urban locales, altitude ranging 100 ft to 400 ft, speed between 25 and 60 mph, and maneuvers like straight paths, turns, and banks. An autonomous photo collection system was developed that captures images and videos from onboard sensors at specified time, frequency and coverage area, which enabled automatic creation of high resolution (4") mosaics from the digital images captured and relayed by the UAV system. The developed autonomous navigation systems have proven to be reliable and effective for guiding the UAV while maintaining intended flight path parameters within 10 feet spatial position error and 3 mph airspeed variance. Autonomous photo collection shows encouraging results and the data provided mosaic images that could be used to guide management decisions.
Further testing of autonomous photo collection could improve image overlap and mosaic image quality.

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## Using a Wiki to Promote Collaboration among Members of the Fresno CyberTools Union Catalog Group

There are 5 medical libraries in Fresno, CA, that share a union catalog developed by CyberTools for Libraries (Children's Hospital, UCSF-Fresno, Community Regional Medical Center, St. Agnes, and the VA Hospital). Union catalogs require a collaborative effort in several areas. It is important to agree on the scope of the shared electronic resource component so that it meets each member's needs. Certain cataloging issues unique to union catalogs must be understood. Each librarian has different areas of cataloging expertise.

A group meeting was held on August 25, 2008, which resulted in a shared enthusiasm for the vision of substantially improving our individual catalogs with the collaborative potential of our union catalog. One outcome of that meeting was the "Fresno Union Catalog" wiki that we set up using Wetpaint.com. It was created solely for the 5 members of the shared CyberTools union catalog in Fresno. The purpose of this wiki is to allow members to discuss issues related to the catalog, post "how-to's," and troubleshoot problems. New posts are automatically emailed to each member which serve as a good reminder that the wiki is there for us to support one another.

Three of the ten advantages that were discovered in using a wiki for this collaboration included: (1) Librarians having worked with CyberTools Support to find a solution to a problem can post a synopsis that will save others time and trouble, (2) Newly discovered useful applications can be shared as tips, (3) Wiki can serve as depository of informal documents created by librarians to remember the steps for infrequently-used cataloging tasks. Seven additional advantages and two disadvantages will also be listed in the poster.

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## The Creation of a Digital Forensic Faunal Hair Database

Poaching comprises a four billion dollar black market, second only to narcotics, in the world [1]. Standard hair reference materials are of great importance to forensic scientists who investigate these crimes against animals. Using a mammalian hair database as a source of reference, many conclusions, such as species of origin, can be drawn based on the morphological features of the hair in question.

A digital database using the microscopic images of the guard hair, which has been found to be more complex than underfur and more significant for identification purposes [2], of multiple species of mammals has been compiled using mounting media using refractive indices close to that of hair. Using a refractive index near that of hair produces a greater chance that the microscopic images obtained will be free from shadow and contrast [3]. The hair from the nape of the neck was chosen to standardize the collection and hair type for the database. Using information from the image collection, which includes macroscopic characteristics as well as microscopic characteristics, one can distinguish if the hair came from a particular species [3].

This database will aid investigators by giving them a ready and reliable reference for the structure of mammalian hairs, such as traits of the hair root, shaft and tip, permitting them to properly evaluate the mammalian hair as evidence in crimes against animals. By allowing access via the Internet and the option of adding specimens to the database, the information will remain relevant and up to date. The mammalian specimen collection from California State University Fresno was used as a serviceable base, which includes 9 orders and over 190 different species throughout the animal kingdom. Over time, with the addition of more specimens, this database will become a truly valuable resource to researchers and investigators of crimes against animals.

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## Rare Earth Metal Nanoparticles Grown by Inverse Micelle Method

Rare-earth metals possess magnetic properties as well as other unique characteristics. When the metal gets to a very small size, for instance, on a nanoscale, it gets more interesting properties, such as increased magnetism and an increased magnetic resistance to temperature rising. The critical temperature that the metal can still be magnetic at, increases, as the particle size decreases.
The nanoparticles were made from gadolinium and neodymium rare-earth metals. Due to the fact that they get easily oxidized in air, the metals were made by the inverse micelle technique, which enabled the particles to be formed inside a micelle structure, and to not be oxidized. Therefore, the nanoparticles consisted of pure gadolinium or neodymium. The micelle structures formed from DDAB, a cationic surfactant.

In our research, we have made gadolinium and neodymium particles using the inverse micelle technique of DDAB surfactant. A medium-sized vacuum chamber was used to grow the particles. After they were made, they were filtered. They were analyzed using X-Ray diffractometer, a microscope, and also several times we used SEM (Scanning Electron Microscope). It was found that the temperature affects the size of the growing particles, and also that there was excess of DDAB.
We are still trying to manipulate the growth conditions and amounts of substances we use, so that we can get the optimal particles. Our main goal is to optimize the size of the particles, and to find a filtering method, so that we can obtain the particles without the excess DDAB surfactant. Then we will analyze the sizes, magnetic properties, and make larger amounts of the nanoparticles for further research.

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## Influence of Sedimentation on the Distribution of Stream Macroinvertebrates in the Upper Fresno River

Land use change commonly leads to sedimentation of streams, which alters the structure and quality of habitat for stream biota. Impacts of sedimentation are often accompanied by responses in stream biota that result in species assemblage changes and loss of biodiversity. We are monitoring the upper Fresno River in Madera County, California to examine the relationships among landscape factors, hydrology, and stream biota in a system undergoing increasing land use change. This collaborative project is unique in that it couples ecological principles with modern approaches in hydrology and sedimentology. For example, we are quantifying particle size distributions of the fine sediment (1-250ìm) using a laser particle analyzer.

Sediment analyses show that sites below the most intensive land use contain on average 14% lower organic matter content than sites above. Also, 76 aquatic macroinvertebrate genera have been identified and show differences in taxa richness and diversity among sites. Environmental, temporal, and stressor variables along the longitudinal watershed gradient are also being measured to identify the variables that best predict macroinvertebrate assemblages, and to distinguish phenological assemblage changes from those due to habitat variables. Manipulative field experiments will be conducted to determine whether fine sediment composition influences stream macroinvertebrate distributions. Heterogeneous substrates containing different fine sediment compositions from sample sites along the stream gradient will be reciprocally transplanted and imbedded into stream riffles to allow macroinvertebrate colonization. Results may imply that the composition of fine sediment is an important factor to stream macroinvertebrate distributions, potentially providing valuable information towards the formulation of a macroinvertebrate tolerance index to sedimentation, and increasing the predictive power and accuracy of stream bioassessments.

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## Effect of Chronic L-Arginine Supplementation on Oxygen Uptake and Ventilatory Threshold in Trained Cyclists

Recently, L-arginine has been studied as a potential ergogenic aid. The majority of investigations on L-
arginine supplementation have been conducted on special populations with limited research examining its effects on healthy subjects during sports performance. The purpose of this study was to examine the effect of chronic oral supplementation of L-arginine during a graded exercise test in trained male cyclists. Eighteen volunteers were randomly assigned to one of two groups in a double-blind design: L-arginine supplementation (4 weeks at 12 grams•day-1) or placebo (cornstarch). During each graded exercise test VO2max and ventilatory threshold (VT) were measured. A baseline test was conducted after which pre-packed supplements (12g•d-1) were given to the subjects to ingest for four weeks. Following the supplementation period subjects then reported back to the lab for another graded exercise test at which time identical measures were taken. VO2max was not significantly increased ($p > 0.05$) following the 4 weeks of L-arginine supplementation. No significant increase ($p > 0.05$) in VT was found following the supplementation protocol. To our knowledge, this is the first to study the ergogenic effects of arginine on trained cyclists. This study adds to the body of literature which suggests that supplementing with arginine does not have an ergogenic effect on endurance exercise.

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## Sensitive Measurement of Atomic Spin-dependent Energy Shifts

The experiment underway at California State University East Bay, headed by Dr. Derek F. Kimball is primarily concerned with precision measurements of spin-dependent energy level shifts of atomic systems.

Such measurements allow us to set the measurement of particular fundamental constants to a new level of accuracy, as well as to test Einstein's Theory of General Relativity at the atomic scale by looking for a spin-gravity coupling.

The basis of the experimental apparatus is the technique of nonlinear magneto-optical rotation with frequency modulated light. In basic terms, the experimental apparatus measures the change in polarization of light incident on a vapor of atoms subject to a magnetic field. The rate of change of light polarization is then proportional to the spin-precession frequency (Larmor frequency) of the atoms which is proportional to the shift in energy levels of the atoms. The sensitivity of our apparatus to the measure of the Larmor frequency is improved by a combination of the use of parraffin-coated cells, magnetic field control and shielding (from Earth and other sources), and operation of our polarimeter (light gathering and analysis hardware) at a noise level limited only by quantum uncertainty.

Recently, measurements and analysis of the response of the apparatus' sensitivity to changes in cell temperature, and changes to characteristic laser settings (power, detuning, and modulation amplitude) have been completed. Carrying out such analysis brings us much closer to placing a new level of accuracy on fundamental constants associated with the atoms in our experiment, specifically Rubidium 85 and Rubidium 87 and their corresponding g-factors.

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## Atmospheric Chemistry of n-Propanal, n-Butanal and n-Pentanal

Aldehydes (such as propanal, butanal and pentanal) are important organic pollutants that are both directly emitted into the atmosphere and are intermediates formed in the atmospheric degradation of many organics. The complex sequence of chemical reactions these organic compounds undergo enable the uild-up of smog in the atmosphere and their products may affect the ability to form clouds. Understanding the atmospheric chemistry of organics will help improve our knowledge of air pollution and the implications for climate change.

Initial experiments worked with mixtures containing butanal (or pentanal), chlorine and nitrogen that were photolyzed in a 142-L, Teflon-lined smog chamber. The kinetics and mechanism of the reactions were monitored using Fourier Transform Infra-Red (FTIR) spectroscopy. Relative rate experiments were also carried out using isopropanol and ethene as the reference compounds to determine the rate coefficients for Cl+ butanal and Cl + pentanal. Additional experiments were then performed to investigate product yields from the reactions of Cl + propanal, Cl + butanal and Cl + pentanal in the presence of hydroperoxy radicals (an important atmospheric constituent).

High yields of acid chloride products (76 % and 69 % for butanal and pentanal, respectively) show that the chlorine atom predominantly abstracts a hydrogen atom from the acyl carbon atom. The relative rate measurements reveal that the rate coefficient for the aldehyde + chlorine atom reaction lies at the lower end of the published literature values. By combining these results with the product yields measured in the presence of hydroperoxy radicals, it is apparent that the atmospheric reactions of propanal, butanal and pentanal are similar. Implications of these results will be discussed.

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## Going Green: Exploring the Effect of Demographics on Consumers Consumption of Green Fashion Goods

Because of increased concerns over such issues as global warming, more consumers begin to pay attention to the impact of the products and services they purchase on the environment (Haanpaa, 2007; Tanner & Kast, 2003). Because of this trend, green fashion which is defined as clothing, accessories, and shoes made out of organic materials, natural fibers, recycled materials, and reused items (Belli, 2007) has become popular in the consumer market. To understand this consumer trend better, this study intended to explore the environment awareness of consumers living in the South Central Valley and their willingness to purchase green fashion goods.

For the purpose of the research, a survey study was conducted in fall 2008. Employees from the City of Visalia, including city police, fire, and finance officers participated in the study. All together one hundred usable questionnaires were collected. Of the 100 participants 50 were female and 50 were male.
The findings reveal that majority of the participants were aware of the environment issues. Local air pollution was ranked as the most important environment issue, which is followed by the concern of global warming and climate change. However, participantsâ€™ awareness of environment issues does not transfer to the adoption of eco-friendly products. Majority of participants (76%) claimed that they would focus on price and quality and product availability rather than eco-friendliness. Sixty percent (65%) claimed that they would not wear green fashion goods at all. Furthermore, more female participants were aware of ecological imbalance and willing to consume eco-friendly products than males.
The findings suggest that it is very important for fashion industry to educate consumers of green fashion goods, from quality, choices, and availability to its impact on environment and health issues. However, because of the small sample size and the feature of convenient sample, the findings cannot be generalized.

Further studies are needed.

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## Investigation of Levoglucosan as a Tracer for Wood Smoke Regulation in the San Joaquin Valley

Wood burning is a major source of particulate matter air pollution (PM) in the Central Valley. Epidemiological studies have linked particulate matter with increases in adverse health effects such as cardiovascular disease and asthma. The San Joaquin Valley Air Pollution Control District changed its wood burning regulations in 2008 to reduce wood burning activities during high PM pollution episodes. The ultimate goal of this work is to evaluate the effect of the new "no burn" rule on PM levels.Levoglucosan is a partial combustion product of cellulose that is widely used as a tracer for particulate matter originating from biomass burning. In this work, a method was developed to quantify levoglucosan levels in PM. Samples were collected on Teflon filters over 24-hour periods at two sites (Fresno and Clovis) by the air district during 2007 and 2008. Levoglucosan present on the filters were extracted by sonication with dichloromethane and then concentrated by solvent evaporation. Levoglucosan levels were measured by gas chromatography/mass spectroscopy, and were compared to daily and hourly PM mass loadings measured at the two collection sites.

Samples collected during summer 2008 show negligible levels of levoglucosan, except during periods when forest fires led to high PM levels in the San Joaquin valley. Measurements during winter 2007-8 show that spikes in levoglucosan always coincide with PM pollution events. However, levoglucosan levels remain low during certain events where PM levels are high, indicating other sources of particles dominate these pollution episodes. Samples collected during winter 2008-9 will be analyzed to evaluate the impact of the new air district regulations.

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## The Promise of Hydrogen Vehicles: An Examination into the Current Problems and Developments (Concentration on Hydrogen Storage)

The year is 2009 and by now, some people are expecting to see flying cars. Although we may not see flying cars in our lifetime besides in the movie Back to the Future, alternative vehicles seem years or decades away from being a reality. With electric vehicles having its own problems, hydrogen vehicles are mainly faced with the challenges of producing hydrogen gas in an eco-friendly way and storing it for mobile applications. Researchers are looking into alternative energy such as wind and solar that is generating power around the world, but there is still a need in research before these sources can be used effectively to produce hydrogen gas by electrolysis. Ideally, alternative energy would be the source to generating electricity, which would be apply in generating hydrogen gas from water that will power hydrogen vehicles.
In addition to these challenges, storing hydrogen gas, which could be as safe as gasoline, is being research to find the most efficient and cost effective methods for such application. With further developments, hydrogen cars may become the next big thing, while flying cars may just be a fantasy for some time.

The methods in researching is to examine potential ways to store hydrogen gas for mobile applications. Three primary storage forms are liquid hydrogen, compressed hydrogen, and metal hydrides which are carefully examine through research.

One benefit to compressed hydrogen, unlike liquid hydrogen, is the fewer amount of carbon dioxide production because it uses less electricity. Liquid hydrogen, on the other hand, can takes up less storage space than compressed hydrogen gas. Metal hydrides have specific advantages and disadvantages. Some metal hydrides requires higher temperature than others to break its bonds between hydrogen and the metal atoms.

Hydrogen vehicles are on the right track to be a successor in the future for automotive industry. With developments in alternative energy and the need for the climate challenges, hydrogen vehicles will at least be a factor to the solution.

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## Mechanical, Thermal, Chemical, and Morphological Characterization of the Coconut Fiber

The purpose of this work is to characterize the coconut fiber and find a feasible process to make a composite. In a recent survey, it was found that coconut production in the world is about 118 billion pounds in 92 countries. As a result the coconut plant produces 600 million pounds of fibers which are considered biomass waste. This abundance of the natural fibers engenders an opportunity for developing countries with tropical climates to reduce waste while also producing fibers which can be used in composite materials.

The first part of this work presents a general background of natural fibers such as their demand on the global market, their chemical composition, their properties, reasons coconut fibers could be considered for engineering applications and advantages as well as constraints. In addition, this work describes steps for extracting fiber from the coconut shell as well as fiber treatment as found in the literature.

The second part of this work shows the mechanical, thermal, chemical and morphological characterization results of the coconut fiber using the Digital Spring Scale (RapalaÂ®), TGA (NETZSH FTA-409), FTIR (spectrometer Spectrum 2000 Perkin Elmer), and Optical/SEM (FEI Quanta 200). It was found that the coconut fiber showed low density and fracture strength when compared to synthetic fiber. However, the coconut fiber could be used for specific reinforcement applications where high fracture strength is not needed but low density is required. Also, the moisture content value of the coconut fiber was less than the value found in the literature.

Added to the fact that coconut trees grow with inexhaustible supplies due to year-round harvesting, the potential of coconut fibers offers great opportunities to replace expensive and environmentally destructive synthetic fibers often derived from finite supplies of petroleum. Some of the future work is to make a composite with coconut fiber. The coconut industry is particularly important in some areas of developing world where more reliable materials are needed from less dependable materials like cardboard and tarp to build houses in rural areas.

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## Ethics of Direct-to-Consumer Genetic Test

Facebook mindset meets medical science – this is what emerging companies such as deCODEme, 23andMe and Navigenetics are proposing as the future of personalized medicine. Genetic profiling, once reserved to research scientist and the extremely wealthy, are now available to the mainstream through direct-to-consumer genetic testing. At-home DNA kits that use single nucleotide polymorphisms (SNPs) are used to profile one's risk for a myriad of genetically related diseases. A Facebook-esque platform is used to relay results to consumers, form "communities" for various genetic mutations/disorders, as well as recruit volunteers for clinical research.

This road to direct-to-consumer (DTC) genetic testing was paved by human natures insatiable desire to control the outcome of our lives. Landmark developments such as human genome mapping, the Human Genome Organization (HUGO), and the discovery of parallels between particular diseases and genetic variation have given us the ability to reshape life. So, here we are at the beginning of the twenty-first century with a myriad of technologies that have the ability to reveal disorders and offer us a chance to intervene and perhaps improve the outcome of our lives.

The current study is examining the ethics and "value" of (DTC) genetic testing to patients and public health. If you are told you have a certain gene variant, can you believe the results? Not yet, it's too early in the game. The FDA is not regulating the test and there is a lack of oversight. The SNPs that have been identified indicate a small, but statistically significant, increase in developing a disease but make no improvement in the prediction accuracy. Direct-to-consumer genetic test are powerful tools, but without the proper education they can also be dangerous.

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## Increasing Student Achievement and Motivation in the Science Classroom Utilizing Video Production and Video Peer-Review

There are numerous obstacles that hinder the learning process and test achievement of chemistry students at the high school level. These challenges range from the rigor of the core concepts to a lack of interest in the presentation of the curriculum. One challenge that is commonly proposed to high school chemistry instructors is presenting the core chemistry concepts utilizing methods that engage students and create enthusiasm within the learning process.

The primary objective of the thesis research is to create increased understanding and motivation in the chemistry core curriculum through a unique modality of multimedia; specifically video production and video peer-review. A secondary purpose of the research is to extend the classroom learning time through a motivational special project of video production and peer-review.

The experimental methods utilized consisted of an experimental group and a control group. Each group was taught the curriculum of "Gases and Their Properties" utilizing the traditional method of lecture and lab approach. After the traditional teaching occurred, a special project was assigned to both groups to complete outside of class time. The experimental group received a video production project including a video peer-review. The control group was assigned a traditional written report. Both groups were given content examinations before and after the special projects were completed. Both groups also completed a survey that measured their motivation level toward the completed special project.

The initial results indicate an increased level of student achievement and possibly more important an increased level of motivation towards learning the subject of chemistry.

The conclusion reached during the initial stage of the research is that utilizing a novel special project of video production and peer-review student achievement and student motivation increases. A critical next step is to extend the research to include students of all academic levels.

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## Continuous Measurements of Carbon Dioxide in Suburban Fresno

As part of the efforts to characterize turbulent exchange of carbon dioxide, heat and water vapor in a suburban landscape, continuous measurements of the scalars using an Eddy Covariance system was initiated in July 2007. Data were collected from a 10 m tower on the roof of the Industrial Technology Building, located on the campus of California State University, Fresno. The variables measured include temperature, wind speed and direction, net radiation, water and carbon dioxide mixing ratios. One year of carbon dioxide data were analyzed for this study. The results showed a strong link between the annual cycle of carbon dioxide in suburban Fresno to regional changes in emission and uptake rate. Highest concentrations of carbon dioxide were observed in winter, and the difference between winter and spring values was more pronounced than the difference between spring and summer values. The observed high concentrations in winter could be attributed to increased anthropogenic emission during the period. With relatively cold temperatures in winter months gas central heating use increases and the biosphere absorbs less carbon dioxide leading to an increase in atmospheric mixing ratio. The results also highlight the significance of mechanical turbulence and evolution of the boundary layer in the dispersion of carbon dioxide in a suburban landscape.

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## APP Proteolytic Processing, Trafficking and Aggregation in the Presence of Cycad Neurotoxin

Alzheimer's disease (AD), the most common cause of dementia, is pathologically characterized by the formation of amyloid-â senile plaques and neurofibrillary tangles (NFTs) with neuronal degeneration. Amyloid-â (Aâ) is a product of amyloid precursor protein (APP) proteolytic processing which involves sequential cleavages of APP by â or á- secretases followed by ã-secreatse. The neurotoxin â-methylamino-L-alanine (BMAA)was first reported in the literature as a toxic substance presents in cycad seeds which were used to produce tortilla flour on Guam Island. BMAA has been anticipated to contribute to the pathology of Amyotrophic Lateral Sclerosis-Parkinson Dementia Complex (ALS-PDC). BMAA has been recently detected at high concentration in the brain tissue of patients with AD. The NFTs, neuronal loss and tau protein pathological hallmarks of ALS-PDC are similar to the ones observed in AD. This study aims to show how BMAA affects the proteolytic processing of APP and its role in the development of alzheimer's disease.BMAA has been proposed to increase the formation of Aâ through multiple mechanisms: BMAA increases the APP proteolytic processing by the activation of â-secretase or BMAA enhances the trafficking of APP in the TGN (Trans-Golgi Network), BMAA increases the cleavage of APP to produce Aâ42 by the activation of ã-secretase.We will represent the results of Western blot assay and immunoprecipitation method using several anti-APP antibodiesin the presence of BMAA using NT2 and NT2N neuronal human cell lines. First APP C-terminal fragments will be tested in the presence of BMAA; if their levels increase,then secreated-APP will be tested to study á- secretase activity. On the other hand, if Aâ level is increased with an increase of AICD or p3-peptide, this indicates the activation of ã-secretase.

At a conclusion, if these anticipated results have been proved, this will support the hypothesis that BMAA affects the APP proteolytic processing, trafficking and aggregation with the actual mechanism or the null hypothesis that APP proteolytic processing, trafficking and aggregation are not affected by the presence of BMAA.

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## Secretome Analyses from Staged Pancreatic Cancer Cell Lines

Pancreatic ductal adenocarcinoma has the lowest 5-year survival of any cancer; its aggressive nature and late onset of physical symptoms lead to poor prognoses. Pancreatic cancer primarily occurs in the exocrine portion of the organ, with fewer occurrences in the endocrine section. Approximately 95% of cancerous exocrine tumors are derived from ductal cells, while a smaller fraction of tumors are from acinar cells. Recognition of biomarkers is clearly an imperative undertaking for the disease. To tackle this problem, we are attempting to evaluate the secreted protein profile of pancreatic cancer cell lines derived from different stages. Critical to the success of this workflow is the derivation of cells that are sustainable without overt morphological changes in peptide- and protein-free media conditions or dramatic necrosis over a 72 hr profile. We have successfully adapted ten human pancreatic cancer cell lines into low serum environments and pursue collection of conditioned media by a combination of ultracentrifugation, molecular weight cutoff, protein precipitation, gel-based separation, and tryptic digestion followed by MALDI-ToF-MS protein identification. Preliminary data suggested significant cellular autolysis that liberated cytosolic proteins suchas beta-actin. Therefore, to minimize cytosolic contamination, cell lines were subsequently cultured from low-serum conditions to synthetic basement membranes in a serum-free media to phenocopy the ductal environment typical for these cells. Consistent with cancer progression models and increased secretory function, earlier-stage pancreatic cancer cell lines showed generally lower protein secretion while later stage cell lines showed generally increased secretion. A catalog of proteins is being compiled in ProteinScape (Bruker Daltonics) and validated biochemically including positive identifications for Glutathione S-Transferase pi (GSTP1), Galectin-3 (GAL3), and Palladin (PALLD)â€"three proteins that have been correlated with tumor secretions from prostate, breast, and pancreatic cancer, respectively. Taken together, our reproducible workflow demonstrates the utility of assessing the secretome fraction from cultured cancer cells.

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## Heterologous Expression and Functional Analysis of a Transcription Factor from Xylella fastidiosa

Xylella fastidiosa Temecula 1 causes a deadly disease called Pierce's disease in grapes and quickly kills
the vineyards. The full genome sequence of the bacterium has been completed and a Blast search resulted in a transcriptional activator in X. fastidiosa similar to CLP of Xanthomonas campestris pv. Campestri, a known virulence factor. Here, in order to test if the X. fastidiosa homolog, termed XfCLP, is indeed a transcriptional activator capable of positively regulating virulence genes in the bacterium, we cloned the clp gene of X. fastidiosa in a plasmid and heterologously expressed the protein in HYC7, an E. coli strain lacking cAMP receptor protein (CRP). Compared to HYC7 strain containing only plasmid vector, XfCLP-containing HYC7 grew much faster, suggesting that XfCLP can complement at least one function of E. coli CRP, the contribution to optimal E. coli growth. In the strain background of HYC4 that cannot produce cAMP, XfCLP however did not improve the growth of the parental strain, suggesting cAMP is required for the function of XfCLP like E. coli CRP. This study is consistent with XfCLP being a transcriptional activator and further research is required to address its relevance to X. fastidiosa virulence in grapes.

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## Visual-Spatial Memory Benefits of Being Bilingual in Preschoolers

This research seeks to better understand the potential non-linguistic benefits associated with bilingualism. A sizeable literature shows that balanced bilinguals, who are equally proficient in their first and second language, display several cognitive advantages (Bialystok, 2001; Hamers & Blanc, 1989). These cognitive advantages include higher levels of performance on visual-spatial recognition (Hamers & Blanc, 1989) and memory tasks (Kormi-Nouri, R. et al, 2003) when compared to monolinguals. The following studies will investigate a possible visual-spatial memory advantage among bilingual preschool aged children in the Central Valley.

Data will be obtained through two visual-spatial memory games. Both studies will involve both monolingual and bilingual populations. In the first study, participants will be asked to complete a game of concentration (memory) in a 4x4 card grid. Participants will be asked find all matches, relying on visual-spatial skills. Study 2 will further investigate a possible visual-spatial memory advantage by presenting children a task involving Colorforms. In this study, children will be presented with sets that feature bright shapes. Shapes will be removed from the sets, and children will be asked to identify if any shapes are missing and if so, recall the location of missing shapes. In this task, children will have to rely on the remaining shapes as visual spatial cues to recall where the missing shapes were located.

The results will indicate whether a cognitive advantage exists, and will have implications for future studies of bilingual populations. We predict that these findings will indicate whether or not there is a visual-spatial memory advantage among bilingual populations. The results of these studies may gather support for the pursuit of bilingual preschool education and highlight the importance of bilingualism for cognitive development. Lastly, these findings may give important information regarding existing misconceptions and biases surrounding bilingualism and bilingual programs.

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## Recommendations for the Standardization of Nomenclature within the Canine Mitochondrial DNA Control Region

Canine mitochondrial DNA (mtDNA) profiles, developed from trace evidence recovered from the scenes of violent crimes, can be very useful to criminal investigations. Canine mtDNA can be helpful because it can generate information for the investigation when other evidence recovered does not yield any biological data that could be beneficial in the pursuit of a suspect. Once a profile is developed, nucleotide sequence data is compared to a reference sequence. However, if the calls being made regarding the observed differences are not the same across the forensic DNA community, then matches are nearly impossible to make. And, we are going to miss important information that could have generated the intended investigative leads.

In order to increase the potential usefulness of canine mtDNA evidence, nomenclature for identifying substitutions, insertions and deletions within the control region is needed. A single reference sequence must also be identified that can be used in forensic cases in which canine mtDNA is discovered. To accomplish this, we compared canine mtDNA literature to observe what anomalies existed in the calling of the nomenclature. We then noted these differences while performing sequence alignments of all canine mtDNA sequences published to date.

Here, we developed guidelines for describing any differences when comparing unknown samples to the reference sequence. We also suggest that these guidelines should be implemented across the forensic DNA community to allow forensic investigators to include more canine mtDNA testing in their investigations.

Once these guidelines are applied to canine mtDNA literature and forensic casework, the discrepancies in the calling of the nomenclature will have a standard to follow. This will ultimately improve the vast possibilities that canine mtDNA can provide in criminal investigations.

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## Las Tapadas Limeñas: Islamic-rooted Influences on the Covered Traditions of Colonial Lima

This research examines the Islamic traditions which reached Peru and transformed Lima's jfashion and architectural preferences during the colonial period. This will be done by investigating how the attire of the tapadas, or the upper-class women who veiled themselves in sixteenth through nineteenth century Lima, was an adaptation of the Islamic hejaab. Close readings and analysis of anecdotal histories by Ricardo Palma, in addition to travel logs by George Squier, Flora Tristán and a number of other Europeans who came to the Andes during the seventeenth through nineteenth centuries will explore the shifting roles of women and interpretations of their apparel. Through a comparison of reactions to Islamic-rooted traditions in Lima to those in Iberia and the Middle East on the Islamic hejaab, the implications of veiling are analyzed to show, first, that Islamic traditions did travel to Lima through colonialism, and second, to show how these customs changed as they reached Peru. In addition, a bridge between veiled women and artistically covered baroque balconies with mudéjar, that is, Iberian Gothic-Muslim, origins will be used as a lens to analyze how women in Lima viewed and participated in city life, actively and passively, through a covered surveillance in addition to the opinions of this power and freedom.

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## Will Adjuvant commonly Found in Vaccines Inhibit Rabbit Reproduction?

Rabbit breeding is straightforward, there's no gimmick or hard procedures to follow, it's simply putting two rabbits together and letting them do what nature intended for them to do. Problems do come about however, e.g. from disinterest or seasonal and temperature changes. Female rabbits are induced ovulators, which means that the female does not ovulate any eggs (oocytes) until breeding has occurred. The act of breeding somehow stimulates hormonal events and the female ovulates; hopefully conception follows.

In our research we have experimented with New Zealand laboratory rabbits that had been inoculated with FIA (Freund's Incomplete adjuvant), an immune system enhancer used to boost immunizations, i.e. leading to higher levels of persistent antibodies. The FIA-injected rabbits have apparent increased blood viscosity when compared to rabbits injected with saline. So the purpose of this experiment was to determine whether FIA inhibited rabbit reproduction.

Two year old Buck rabbits, one previously injected with FIA and one previously injected with saline, were bred with either FIA- or saline-injected 10 month-old Does. Our saline Buck lacked interest in either of the Does and therefore was not a reliable participant. Our FIA Buck was both willing and fertile, successfully breeding with both saline and FIA Does—thirty days later 17 kits total were born, 10 to the FIA Doe and 7 to the Saline Doe.

Thus, FIA has not deterred the rabbits in our experiment from reproducing successfully. The sample size has necessarily been small; further experimentation is necessary for statistically-significant results. However, given the recent interests within the Biotechnology Industry in developing rabbit monoclonal antibodies, and given the need for large numbers of rabbits to achieve this goal, it is good to know that vaccinations, which may be required for rabbits in close quarter housing conditions, will not likely impair their reproduction.