24TH ANNUAL CENTRAL CALIFORNIA RESEARCH SYMPOSIUM

PROCEEDINGS OF THE 2003 SYMPOSIUM

Convened on
Thursday, April 17, 2003
in the
University Business Center
California State University, Fresno

TWENTY-FOURTH ANNUAL CENTRAL CALIFORNIA RESEARCH SYMPOSIUM

PROCEEDINGS

Sponsoring Institutions

California State University, Fresno
University Grants and Research Office

University of California, San Francisco
Fresno Medical Education Program

Alliant International University, Fresno

Fresno City College

Fresno County Health Services Agency

United States Department of Agriculture
Agricultural Research Service

Children's Hospital Central California
Research Projects and Administration

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

California State University, Fresno

Thursday, April 17, 2003

TABLE OF CONTENTS

PREFACE

Welcome to the *24th 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 them.

Abstracts for this year's event were reviewed and selected for presentation by the Symposium Planning 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. The *Grants and Research Office of 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 student awards, which will be held in the University Business Center Gallery.

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
Malcolm F. Anderson, M.D.
Sean Shafer, M.D.
Deborah Stewart, M.D.
Joan Voris, M.D.
Kent Yamaguchi, M.D.
Davin Youngclarke

CALIFORNIA STATE UNIVERSITY, FRESNO
Thomas McClanahan, Ph.D.
Symposium Co-Chairperson
Andrew Alvarado, Ph.D.
Saeed Attar, Ph.D.
Sharon Benes, Ph.D.
Alejandro Calderon-Urrea, Ph.D.
Amir Huda, Ph.D.
Pamela Lackie, Ph.D.
Karl Oswald, Ph.D.
Brian Tsukimura, Ph.D.
Doug Carey

ALLIANT UNIVERSITY, FRESNO
Merle Canfield, Ph.D.
Greg Timberlake

FRESNO CITY COLLEGE
Edward Lindley, Ph.D.
Rick Stewart

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
Cynthia Eayre, Ph.D.
Joseph Smilanick, Ph.D.

CHILDREN'S HOSPITAL CENTRAL CALIFORNIA
Robert Wells, Ph.D.

EVENT AND PROCEEDINGS COORDINATORS
Millie C. Byers & Barbara Hopkinson
California State University, Fresno

CALIFORNIA
STATE
UNIVERSITY,
FRESNO

April 2003

MESSAGE TO ALL RESEARCH SYMPOSIUM PARTICIPANTS

California State University, Fresno is pleased to serve as the host campus for the *Twenty-Fourth 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 the ultimate goals of 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

559.278.2324
Fax 559.278.4715

University of California
San Francisco

UCSF

Fresno Medical Education Program

Office of the
Associate Dean

Medical Education Building
2615 East Clinton Avenue
Fresno, CA 93703

tel: 559-224-3235
SF tel: 415-476-3882
fax: 559-228-6926

email:
dean@ucsfresno.edu

WELCOME
to the 24th Annual
Central California Research Symposium

Dear Symposium Participants:

As I begin my tenure as Associate Dean of the UCSF Fresno Medical Education Program, I am honored to have my first opportunity to welcome you to the 2003 Central California Research Symposium! This event is the exciting culmination of the collaborative efforts among several of the Central Valley's academic institutions. Today you will have the privilege of viewing stimulating research that demonstrates the dedication of both students and faculty, and expands our thinking into new areas. I trust you will find this year's Symposium to be both challenging and enlightening. Welcome!

Sincerely,

Joan L. Voris, M.D.
Associate Dean / Assistant Clinical Professor of Pediatrics
UCSF Fresno Medical Education Program

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

Office of the President

April 4, 2003

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

Dear Symposium Participants:

Fresno City College is pleased, once again, to be a sponsor of the Annual Central California Research Symposium. This cooperative venture not only advances the frontiers of knowledge but also 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 that April 17 will be both an informative and enjoyable day for you.

Sincerely,

Ned Doffoney
President

mr

USDA

United States Department of Agriculture
Research, Education and Economics
Agricultural Research Service

April 17, 2003

Symposium Participants
24th Annual Central California Research Symposium
Fresno, California

Greetings,

On behalf of the USDA, ARS, San Joaquin Valley Agricultural Sciences Center located in Parlier, I would like to extend a welcome to you for the 24th Annual Central California Research Symposium. Fresno has a large research community that includes scientists from state, university, and federal institutions covering a multitude of disciplines (i.e., biological and physical sciences, agriculture, medicine). This Symposium provides an opportunity to share and exchange recent research information in various fields among scientists, students and the general public. I am confident that your participation in this Symposium will provide you with the avenue to gain knowledge of current research being conducted in your area.

I expect that your attendance and participation will open new perspectives and provide new opportunities for you and your parent organization. If we can be of any assistance to you on agricultural matters, please do not hesitate to contact us.

Again, welcome to the Symposium and may your scientific endeavors and horizons increase in the future.

With best regards,

E L Civerolo

Edwin L. Civerolo
Acting Location Coordinator
Supervisory Research Plant Pathologist.

ars

Pacific West Area
Exotic and Invasive Diseases and Pests Research
San Joaquin Valley Agricultural Sciences Center
9611 So. Riverbend Ave.
Parlier, CA 93648
Tel: 559-596-2920 Fax: 559-596-2921
E-mail: eciverolo@fresno.ars.usda.gov

Alliant
International University

5130 East Clinton Wy.
Fresno, CA 93727
T 559/456-2777
F 559/253-2267

March 10, 2003

Dear Symposium Participants:

The Fresno campus of Alliant International University, which includes the California School of Professional Psychology, the California School of Organizational Studies, the Graduate School of Education and the School of Social and Policy Studies, is honored to be a sponsor of the 24th 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 the Central Valley. We look forward to presenting research findings from some of our faculty and students and we look forward to learning about the work of our colleagues in other settings.

With Respect,

Gregory Timberlake
Assistant Vice President, Fresno

9300 Valley Children's Place
Madera, California 93638-8762
T: 559.353.3000
www.childrenscentralcal.org

March 14, 2003

Symposium Participants
23rd Annual Central California Research Symposium
California State University, Fresno
University Grants & Research Office
Fresno, CA 93726-1852

Dear Symposium Participants:

The mission of Children's Hospital Central California is to provide high quality, comprehensive health care services to nearly one million children in Central California. Children's Hospital is dedicated to supporting research that benefits our children and their families.

On behalf of all the physicians, staff, and volunteers at Children's Hospital Central California, we are proud to be a sponsor of the 24th Annual Central California Research Symposium which will be held April 17, 2003 at California State University, Fresno. This multi-disciplinary forum serves as an excellent example of institutional cooperation, student participation, and community involvement that results in enriched training for our community of scientists.

We extend our best wishes to all participants.

Sincerely,

Jessie Hudgins
Chief Operating Officer

v

Plenary Session

University Business Center
Auditorium, Room 191

12:30 Opening Remarks

Dr. Michael Ortiz, California State University, Fresno

Dr. Thomas McClanahan, California State University, Fresno

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

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

12:40 ***Health Status in the San Joaquin Valley: A Comparison of California by Regions***
Veronica Rivera, B.S., Alvaro Garza, M.D., M.P.H.

12:55 ***An Assessment of the Economic Feasibility of Using Raisins as an Ethanol Feedstock***
Kristen Callens, Ellen Burnes, Ph.D.

1:10 ***Disease and Danger in Greek Poleis: How the Ancient Greeks Interpreted Physical and Abstract Diseases***
Xay Lee, B.A., Pamela Lackie, Ph.D.

1:25 ***Characterization and Transposon Mutagenesis of Propargyl Bromide Degraders***
Holly Ramage, B.S., Alice Wright, Ph.D.

1:40-2:00 **Break--University Business Center, Gottschalks Gallery**

Moderator: Dr. Donna Hudson

Concurrent Session A

University Business Center
Auditorium, Room 191

2:00 ***Natural Law in the Holy Sonnets of John Donne***
Edward J. Garcia, Ruth Jenkins, Ph.D.

2:12 ***Literacy: Decontextualization, and Social Situation***
Christina Harralson, Rick Hansen, Ph.D.

2:24 ***Hysteria in Eliza Haywood's The British Recluse***
Laura Holden

2:36 ***The New Sparta: How the Events of the Fifth Century B.C.E. Changed Spartan Society***
Skyler Nielsen, Pamela Lackie, Ph.D.

2:48 ***World War II and its Social Effect on the Family***
Denise Best, Pamela Lackie, Ph.D.

3:00 ***Legal Controversies Related to Brown v. Board of Education***
Alicia Rivera, Malik Simba, Ph.D.

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

3:25 **Concurrent Sessions Resume**

Concurrent Session B

University Business Center
Room 192

2:00 ***Regular Flow-Direction-Switching Increased Elimination Capacity in a Vapor-Phase Biofilter During Transient Loading Events***
William F. Wright, Ph.D., Edward D. Schroeder, Ph.D., Daniel P.Y. Chang, Ph.D.

2:12 ***The Evolution of Cognitive Predispositions: Hunting Adaptations***
Matthew J. Sharps, Ph.D., Sarah Van Valkenburgh, Heather Stahl

2:24 ***Does Water Flow Become Unstable in All Soils?***
Zhi Wang, Ph.D., Willaim A. Jury, Ph.D., Atac Tuli, Ph.D.

2:36 ***Genetic Variation in Trifolium bolanderi A. Gray Compared with Trifolium longipes Nutt.***
Renee Denton, M.S., Ethelynda Harding, Ph.D.

2:48 ***Control of Nutrients in Agricultural Runoff Water by Barrier Plantings***
Morton S. Rothberg

3:00 ***Recent Air Quality Research Related to Dairy Operations in the San Joaquin Valley***
Charles Krauter, Ph.D., Dave Goorahoo, Ph.D., Matt Beene

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

3:25 **Concurrent Sessions Resume**

Concurrent Session C

University Business Center
Room 193

2:00 ***The Stability of Severe Mental Illness: A Longitudinal Study of Mexican Americans***
Alma Garcia, Rebeka Radcliff, Christina Alejo-Garcia, Sergio Aguilar-Gaxiola, Ph.D.

2:12 ***Group Size Effect for Positive, Negative and Neutral Events***
Andrew R. Smith, Paul C. Price, Ph.D.

2:24 ***Interfering Effects of Music on Retention***
Adam B. Hess, Melissa J. Boyd, Keo Mo, Karl Oswarld, Ph.D

2:36 ***Laboratory Investigations on Behaviors of Grassiella sp. (Thysanura: Nicoletiidae: Atelurinae) a Nest Associate of Solenopsis invicta Buren (Hymenoptera: Formicidae: Myrmecinae)***
Christopher A. Hamm, Robert R. Baldridge, Fred E. Schreiber, Ph.D.

2:48 ***Effects of Lipoic Acid and Diet-Induced Stress on Survival of Random Pattern Skin Flaps in an Animal Model***
Saben Kane, Randy Shahbazian, M.D., Jared Nakashima, Kent Yamaguchi, M.D., Tim Tyner, M.D.

3:00 ***Factors Affecting Incomplete Excision of Cutaneous Squamous Cell Carcinoma***
Bahram Sohrabi, Abdolkarim Nasrabadi

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

3:25 **Concurrent Sessions Resume**

Concurrent Session D

University Business Center
Room 194AB

2:00 ***Beneficial Effects of Propofol Anesthesia in Reconstructive Surgery: Survival Study of Random Pattern Skin Flaps in an Animal Model***
Jared Nakashima, Randy Shahbazian, M.D., Saben Kane, Kent Yamaguchi, M.D., Tim Tyner, M.D.

2:12 ***Potential Organic Control of the Invasive Riceland Tadpole Shrimp Triops longicaudatus Using Methyl Farnesoate***
William K. Nelson, Brian Tsukimura, Ph.D.

2:24 ***Addition of Surfactants to Improve Irrigation Efficiency in Commercial Turf Systems***
Genett Carstensen, Dave Goorahoo, Ph.D.

2:36 ***Object Relations in the Dynamics of Spiritual and Psychological Well-Being***
Leda L. Smith, M.A.

2:48 ***Virtual Counseling: A Validation Study of Academic Counseling Via Internet Facilities***
Yury Kostin, Ron Unruh, Ph.D.

3:00 ***Voter Registration as a Predictor of Jury Bias***
Petra Smith, Shelby Palmer

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

3:25 **Concurrent Sessions Resume**

Concurrent Session E

University Business Center
Auditorium, Room 191

3:25 ***Petrarch's Advice and What This Means to Humanists***
Staci Grunau, Pamela D. Lackie, Ph.D.

3:37 ***Pompey's Sole Consulship in 52 BC: The Proverbial Last Straw***
Jeffery S. McMullen, Pamela D. Lackie, Ph.D.

3:49 ***A Novel Random-Walk Algorithm for the Solution of Time-Harmonic Helmholtz Equation at Multiple Wavelength Length Scales***
Paul Matos, Kausik Chatterjee, Ph.D., Y.L. Le Coz, N.Y. Troy

4:01 ***Synthesis of Rotenone Derivatives: Mitochondrial Electron Transport Chain (ETC) Complex I Probes***
Linda Xiong, Henry Vanbrocklin, Nandanan Erathodiyil

4:13 ***Intelligent Facilitation Agent: Automating Group Meeting Facilitation***
Ivan Kurniawan, Ojoung Kwon, Ph.D., Karen Dill Bowerman, Ph.D

4:50 **Conclusion--University Business Center, Gottschalks Gallery**
Proceed to Students Awards and Social Hour

Concurrent Session F

University Business Center
Room 192

3:25 ***Environmental Effects on the Lifecycle of the Chinese Mitten Crab, Eriocheir sinensis***
Daniel K. Bauer, Brian Tsukimura, Ph.D.

3:37 ***Effects of Methyl Farnesaote in the Regulation of Gonadal Development in the Ridgeback Shrimp, Sicyonia ingentis***
Isidro Fierro, Brian Tsukimura, Ph.D.

3:49 ***Progress in the Phylogeny of the Dasycladales (Ulvophyceae, Chlorophyta): A Multi-Gene Approach***
M.P. Ashworth, F.W. Zechman, Ph.D.

4:01 ***Induction of PCD in Caenorhabditis elegans by Targeting Ced-9 Using RNA Interference: Potential to Control Plant Pathogenic Nematodes***
Robert T. Gaeta, Alejandro Calderon-Urrea, Ph.D.

4:13 ***Survival of Escherichia Coli (ATCC 25922) and Natural Microflora Populations on Avocado After Exposure***
JiaJia Chen, Erin Dormedy, Ph.D., Joseph Smilanick, Ph.D.

4:25 ***Microbial Gene Regulation of 2,4-D Degradation***
Jovita M. Diaz, Alice D. Wright, Ph.D.

4:37 ***Molecular Phylogeny of the Caulerpales Based on rbcL Gene Sequence Variations***
Daryl W. Lam, Frederick W. Zechman, Ph.D.

4:50 **Conclusion--University Business Center, Gottschalks Gallery**
Proceed to Students Awards and Social Hour

Concurrent Session G

University Business Center
Room 193

3:25 ***A Needs Assessment for a Multicultural Center at the Campus of California State University, Fresno***
Rebecca Aleman

3:37 ***Eyewitness Identification of Forensically Relevant Inanimate Objects: Vehicles***
Amy Boothby Villegas, Matthew J. Sharps, Ph.D., Brianna Satterthwaite, Sarah Chisholm

3:49 ***Development of a Method to Detect Water-Soluble Accelerantsin Arson Debris for Forensic Laboratories***
Julie Rodriguez, Jarrad Wagner, Ph.D.

4:01 ***Fathers and Breastfeeding: A Study of Partners of Low-Income Women***
Mimi Mott-Smith, F.N.P.

4:13 ***Cognition, Adult ADHD, and Substance Abuse***
Jana L. Price-Sharps, Matthew J. Sharps, Ph.D., Sandy Schulte Day, Amy Boothby-Villegas, Michael A. Nunes

4:25 ***Nutrition Network for Healthy, Active Families: Program Description, Process Evaluation, and Outcome Evaluation***
Theresa Leveque, Stacy Mele, Debra M. Harris, Ph.D.

4:50 **Conclusion--University Business Center, Gottschalks Gallery**
Proceed to Students Awards and Social Hour

Concurrent Session H

University Business Center
Room 194AB

3:25 ***Processes and Experiences Associated with Secondary Conditions***
Virginia R. Hernandez, Ph.D., M.S.W.

3:37 ***Tobacco Use and Environmental Tobacco Exposure in a Southeast Asian Population: Norms, Networks and Behaviors***
Deborah Helsel, Ph.D., Judith Calvo, Ph.D.

3:49 ***A Comparative Study of Tuberculosis Coming From Vietnam, the Philippines and Cambodia***
Dominic Dizon, M.D.

4:01 ***Size and Scope of Managed Medi-Cal in Fresno County***
Susan Hughes, M.S., Sean Schafer, M.D., Lydia Herrera-Mata, M.D., Norman Hearst, M.D., M.P.H.

4:13 ***Serotonin Transporter Promoter Polymorphism Genotype Is Associated with Behavioral Disinhibition and Negative Affect in Children of Alcoholics***
Geoff R. Twitchell, Ph.D., G.L. Hanna, E.H. Cook, H.E. Fitzgerald, R.A. Zucker

4:25 ***Medical Residents Fatigue with Traditional Call and Night Float Call***
Jim Phanucharas, L. Kerr, K. Van Gundy

4:37 ***Profile of San Joaquin Valley Nursing Students***
Sean Schafer, M.D., Andrew Alvarado, Ed.D, Lupe Vargas, Jean A. Seago, Ph.D., R.N., Dennis Keane, M.P.H.,Kevin Grumback, M.D.

4:50 **Conclusion--University Business Center, Gottschalks Gallery**
Proceed to Students Awards and Social Hour

Poster Session I
12:00 p.m. until 2:00 p.m.

University Business Center
Gottschalks Gallery and
Room 194 C

Authors will be available for questions from 12:00 p.m. until 2:00 p.m.

(1) ***Seasonal Ammonia Emissions From Crops in the San Joaquin Valley, California***
Matt Beene, C. Krauter, Ph.D., D. Goorahoo, Ph.D.

(2) ***Evidence for the Lack of Evolutionary Conservation of Cell Death Pathways Between Plants and Animals***
Tesha Boado, Robert T. Gaeta, Denise K. Case, Glenda W. Polack, Alejandro Calderon-Urrea, Ph.D.

(3) ***An Investigation into the Pinus sabiniana Range Discontinuity in the Kings, Kaweah, and Tule Watersheds***
Robin A. Brake, Ruth A. Kern, Ph.D.

(4) ***Assessing the Impacts of Food-Processing Effluent Land Application on Subsurface Water Quality***
Florence Cassel, Ph.D., Mary McClanahan, Shankar Sharmasarkar, Dave Goorahoo, Ph.D.

(5) ***Chest X-Ray Interpretation: An Educational Module***
Michael Comerford, R.N.

(6) ***Promoter Activity of tfdR***
Michelle Davison, Alice Wright, Ph.D.

(7) ***Dynamic Instabilities in Tropospheric Chemical Reactions: A Modeling Study***
Rhon E. Manor, Alam Hasson, Ph.D.

(8) ***Application of the Spacing Effect to a Classroom Setting***
Keo Mo, Adam B. Hess, Karl M. Oswald, Ph.D.

(9) ***Analysis of Changes in PSA Levels with Reference to Recurrence of Prostate Cancer***
Uma Mohanasundaram, M.D., Atsuko Shibata, M.D., Ph.D.

(10) ***Wound Management: A Teaching Module for Nurse Practitioners***
Steven T. Garrard, R.N.

Poster Session I Continued
12:00 p.m. until 2:00 p.m.

University Business Center
Gottschalks Gallery and
Room 194 C

Authors will be available for questions from 12:00 p.m. until 2:00 p.m.

(11) ***Riparian Vegetation Composition and Organic Matter Inputs on Headwater Streams of the Sierra Nevada***
Dana K. Nagy, Ruth A. Kern, Ph.D., Carolyn T. Hunsaker

(12) ***Management of Hepatitis C Among Inmate Population***
Isabel Mathos

(13) ***Fresno State's New Campus Observatory***
F.A. Ringwald, S.J. White, A.I. Cowley, G.E. Morgan, J.W. Prigge, S.S. Endler, H.D. Guenther, B.K. Bellis, E.D. Cardoza, G. Reyna, J.D. Rorabaugh, R.W. Severson, Jr.

(14) ***Preventing Teen Pregnancy: Teenagers' Opinions Regarding Sex Education***
Nancy Ramirez

(15) ***Molecular Systematics of the Cladophorales Based on rbcL and 26SrRNA***
Wendy Holmes, Rick Zechman, Ph.D.

(16) ***Persuasion and Advertising: Teaching Resistance to Unhealthy Food Choice***
Sarah Horton, Robert Levine, Ph.D.

(17) ***Gender Differences and Hunger Status on Self-Esteem and Anxiety: A Quasi-Experiemental Study***
Tee Jane Teh, Lynnette Zelezny, Ph.D.

(18) ***Remarkable Luminescence Behavior of Two-Coordinate Gold (I) Complexes: Correlation of Structure and Spectroscopy***
Daniel Rios, Saeed Attar, Ph.D., Matthias Stender, Ph.D., Rochelle L. White-Morris, Ph.D., Alan L. Balch, Ph.D.

(19) ***Sequence Diversity in the tfdR Regulatory Gene for the 2,4-D Catabolic Pathway***
Kurt R. Sterling, Alice Wright, Ph.D.

(20) ***A Preliminary Study of the Relationship Between E-Coli, Total Suspended Solids and Ammonium in Dairy Lagoon Effluent***
Genett Carstensen, Dave Goorahoo, Ph.D.

Poster Session II
3:00 p.m. until 5:00 p.m.

University Business Center
Gottschalks Gallery and
Room 194 C

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

(1) ***A Cross Sectional View of a Volcanic Plumbing System: Constraints Based on Mineral Chemistry***
Keith Putirka, Ph.D., Christopher D. Condit

(2) ***The Effects of List Segregation on Directed Forgetting***
Nicole Moon, Danielle Hester, Mitchel Casados, Kazuko Suzuki

(3) ***Paired Watershed Study in the Forests of the Sierra Nevada***
Marie Lynch

(4) ***Foster Children's Attachment Behaviors in Visitations with Non-Custodial Parents***
Brandy Lucas, Carolyn W. Graham, Ph.D.

(5) ***Fire Intensity and Shrub Cover Effects on Microclimate and Tree Regeneration in Sierra Nevada Forests***
Ryan P. Lopez, Ruth A. Kern, Ph.D.

(6) ***Isolation and Characterization of Organisms Capable of Degrading Pesticide Alternatives to Methyl Bromide***
Paphavee Lertsethtakarn, Archana Mohan, Joy Mombourquette, Alice Wright, Ph.D.

(7) ***Combating Phytophthora Disease in Pepper (Capsicum Annum)***
B.R. Glosier, L.M. Donnelly, V.M. Gomes, E.A. Ogundiwin, G. Sidhu, J. P. Prince, Ph.D.

(8) ***Gay Identity and Anger in Homosexual Relationships***
Ryan Gonzalez, Christine Edmondson, Ph.D.

(9) ***Familial Mediterranean Fever in a Pediatric Hispanic Population***
Michael Henrickson, M.D.

(10) ***Improving Empathy, Knowledge, and Helping Behavior Towards the Hungry: Evaluating the Interactive Seminar, Hunger 101***
Amanda Knapp, Lisa Winters

Poster Session II Continued
3:00 p.m. until 5:00 p.m.

University Business Center
Gottschalks Gallery and
Room 194 C

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

(11) ***The Effects of Logging and Prescribed Fire on Fecundity and Seed Dispersal of Sierran Conifers***
Ruth A. Kern, Ph.D.

(12) ***Cancer in the South Asian Population of California***
Ratnali V. Jain, Paul K. Mills, Ph.D.

(13) ***A Comparison of Academic Success in Two Groups of Students: Those Who Participate in the Doctor's Academy Versus Those Who Follow a Traditional High School Curriculum***
Lydia Herrera-Mata, Andrew Alvarado, Ed.D., Sean Schafer, M.D.

(14) ***Identification and Characterization of Rhizobium Infecting California Native Clover***
Jennifer Turner, Ethelynda Harding, Ph.D.

(15) ***Synthesis and Characterization of a New Chiral Ligand: N,N-bis (ferrocenylidene)-trans-(1S,2S)-diaminocyclohexane***
Angela G. Thornton, Saeed Attar, Ph.D., Matthias Stender, Ph.D.

(16) ***Metabolic Syndrome is Highly Prevalent in Patients with Coronary Artery Disease***
Nini Thomas, Prakash Deewania, M.D.

(17) ***1-Ferrocenyl-3-phenyl-2-propen-1-one and 3-Ferrocenyl-1-phenyl-2-propen-1-one as Potential Nematicidal Agents***
Zachary J. O'Brien, Saeed Attar, Ph.D., Alejandro Calderon-Urrea, Ph.D., Robert T. Gaeta, Parameswar Hari, Ph.D.

(18) ***Host Associations of Bradyrhizobium From Paired Plants of Lupinus bicolor and Lotus purshianus***
Leigh Schmidt, Ethelynda Harding, Ph.D.

(19) ***Online Data Collection of Secondary Agricultural Education Data***
Michael Spiess

Judges for Undergraduate and Graduate Student Presentations and Poster Presentations:

Mr. Perry Angle	California State University, Fresno
Dr. Saeed Attar	California State University, Fresno
Dr. Sharon Benes	California State University, Fresno
Dr. Kathryn Bumpass	California State University, Fresno
Dr. Alejandro Calderon-Urrea	California State University, Fresno
Dr. Merle Canfield	Alliant International University, Fresno
Dr. Jerry Davoli	California State University, Fresno
Dr. Cynthia Earye	United States Deparment of Agriculture
Dr. Amir Huda	California State University, Fresno
Dr. Donna Hudson	University of California, San Francisco
Dr. Pamela Lackie	California State University, Fresno
Dr. Thomas McClanahan	California State University, Fresno
Dr. Howard Ono	California State University, Fresno
Dr. Karl Oswald	California State University, Fresno
Mr. Rick Stewart	Fresno City College
Dr. Robert Wells	Children's Hospital Central California
Dr. Alice Wright	California State University, Fresno
Mr. Davin Youngclarke	University of California, San Francisco

Moderators for Oral Presentations:

Mr. Doug Carey	California State University, Fresno
Ms. Marie Fisk	California State University, Fresno
Ms. Susan Hogue	California State University, Fresno
Dr. Donna Hudson	University of California, San Francisco
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)

Rebecca Aleman
California State University, Fresno
Graduate Student Presenter

A Needs Assessment for a Multicultural Center at the Campus of California State University, Fresno

A Needs Assessment for a Multicultural Center at the campus of California State University, Fresno Rebecca Alemán California State University, Fresno is comprised of over 21,240 students and currently represents a vast diversity of students reflective of the population in the San Joaquin Valley. Even still, with trends of increasing minority student enrollment, the number of minority graduates continues to pale in comparison to that of the White majority ethnic group. One effort to decrease this disparity would be the creation of a multicultural center that by virtue of the services provided would increase the level of social integration students have with the university and improve the likelihood of persisting and succeeding through college. Therefore, the objective of this study is to determine the need for the creation of a multicultural center based on the opinions of students who have been identified as formal and informal leaders on the Fresno State campus.

A purposive sample of forty-five students who attended a three-day Cross Cultural Retreat for Student Leaders was given self-administered questionnaires on the final day of the retreat. Each rated how important they felt specific items were to them as a student at California State University, Fresno. Participants ranged in age from nineteen to forty-eight years old, varied in ethnic background and majored in a cross section of disciplines offered on campus. A return rate of 97% was received. Analysis of the questionnaires produced supporting evidence that the need to address issues of multiculturalism continues to exist on the Fresno State campus. Of the campus issues that were most telling, 80% of the participants rated "Dealing with racism on the campus at Fresno State" and "Leaning about other cultures" as "very important." "Interacting with people outside of my own race" received a rating as "very important" from 84% and "Developing skills to confront prejudice" was very important to 81% of the respondents. When asked what they would most certainly use if made available, 93% indicated aspects of the proposed multicultural center. The development of a multicultural center is supported through the attitudes and beliefs of recognized student leaders on the Fresno State campus. Because the primary importance of any university is in developing the leaders of future generations, creating a learning environment that integrates diversity and acceptance is advantageous in the struggle to end the perpetuation of oppression. As such, the creation of a multicultural center in an effort to help students preserve their sense of cultural identity and grow beyond experiences of isolation, segregation, and alienation, will promote social integration, improve institutional climate and encourage persistence through college among minority students

M. P. Ashworth
F. W. Zechman, Ph.D.
California State University, Fresno
Department of Biology
Graduate Student Presenter

Progress In The Phylogeny Of The Dasycladales (Ulvophyceae, Chlorophyta): A Multi-Gene Approach

Introduction: The Dasycladales is an ancient order of tropical marine green algae, unique in their radially arranged siphonous thalli. Calcification of dasyclads has resulted in well-preserved fossil records, capturing the interest of phycologists, evolutionary biologists and paleontologists, who use these algal fossils as indicators of ancient marine habitats. Therefore, the inference of an accurate phylogeny for the Dasycladales is important to better understand stratigraphy, character evolution, and classification. Although previous DNA-based phylogenies of these algae have been proposed, earlier attempts have yielded conflicting relationships within and among genera of two currently accepted families: the Dasycladaceae and Acetabulariaceae. Both analyses suggest that the Acetabulariaceae is a natural monophyletic group, but that the Dasycladaceae is not. However, the two data sets disagree regarding genus- and species-level relationships within the Acetabulariaceae. Given the conflicting results of these previous analyses, the current project will examine a third highly conserved gene, 26S rRNA. It is hypothesized that a multi-gene approach will achieve a more resolved evolutionary history of these living fossils. Methods: DNA from extant dasycladalean species was extracted, and the 26S rRNA gene amplified via PCR. Both strands of the amplified 2.5 -3Kb template are being sequenced with a battery of primers prior to fragment assembly and multiple alignment. Aligned 26S sequences will be analyzed phylogenetically (both separately and in combination with 18S and rbcL sequences) using parsimony and model-based methods.

Results and Conclusions: Previous studies conducted using 18S rRNA and chloroplast-encoded rbcL sequences have yielded conflicting results. It is anticipated that the 26S rRNA data will agree with one of the previously determined phylogenies; thus far, only the position of the two families can be assessed, and they agree with the previous studies. In either case, the multi-gene phylogeny will be given the most credence. This study will help to cast new light on the taxonomic relationships, elucidate molecular and morphological character evolution, and provide new insights into the fossil record of this green algal order.

Supported by NSF grant DEB-0128977

Daniel Kenneth Bauer, Brian Tsukimura, Ph.D.
California State University, Fresno
Department of Biology
Graduate Student Presenter

Environmental Effects on the Lifecycle of the Chinese Mitten Crab, *Eriocheir sinensis*.

Species that migrate to complete their reproductive cycles are thought to use environmental stimuli to trigger physiological and behavioral changes that lead to initiation of reproduction and larval survival. Environmental triggers such as changing temperature, changing day length, lunar cycles or a combination of these factors initiate physiological changes that may include reproduction. We used the Chinese mitten crab, *Eriocheir sinensis* to investigate these triggers. Juvenile crab blood was monitored for changes in a reproductive protein (vitellin) (by the use of an ELISA (Enzyme-linked immunosorbent assay)) that would indicate a change in reproduction. To investigate changes in reproductive status, juvenile mitten crabs were exposed to increasing daylength changes or decreasing temperature in environmental chambers (representing a change to summer conditions) in an attempt to cause development of reproductive organs. Neither temperature nor daylength changed ovarian growth or vitellin blood levels in the mitten crabs. The crabs used in the daylength and temperature experiments were smaller than those reported in literature to become adults. This indicates that we used a size class of crabs below which reproduction can occur, These data allow modeling for year class based on size. This will cause our future experiments to include larger crabs in the experiment. Chinese mitten crab larva in Europe have been reported to be unable to survive at temperatures below 12° C. To investigate larval survival at temperatures above 10° C, environmental chambers were set at 10, 12 and 14° C and larval survivorship monitored. Larval survivorship was inconclusive in the small trials and need to be repeated to investigate the issue fully.

Denise Best
California State University, Fresno
Department of History
Graduate Student Presenter

World War II and its Social Effect on the Family

This year marks the sixty-second anniversary of the attack on Pearl Harbor. That day, December 7, 1941, the country changed. We realized that we were not as detached from the war as we had once thought ourselves to be. It became *our* problem, instead of *their* problem. We realized we were not immune to the violence of war. Few people who experienced the changes that happened to America that day are still alive today, and those who are, are quite old. Thus, a major source for understanding these changes is quickly disappearing. What changes did the average American family have to face while the war raged on? How did the war affect the home front?

Magazine articles and advertisements from the war years help us gain a better understanding of the feelings experienced at home. Propaganda posters and postcards also give a visual clue to the atmosphere during this period. Personal letters written during the war are an invaluable source of information. Likewise, interviews provide first-hand information on the changes that the American people faced during the war.

With the onset of World War II the American home front faced many social changes. These changes included a heightened patriotism, adjustments to inflation, rationing of goods and food, and a greater mobility for women.

At the conclusion of the war many of these social changes were no longer an issue. However, changes in women's roles during World War II led to the women's liberation movement that followed. During the war women proved that they could be a viable asset to the community and no longer felt satisfied being 'housewives.' Therefore, an everlasting change in the American social structure came out of World War II.

Amy Boothby-Villegas, Matthew J. Sharps, Ph.D.
Brianna Satterthwaite, and Sarah Chisholm
California State University, Fresno
Department of Psychology
Graduate Student Presenter

Eyewitness Identification of Forensically Relevant Inanimate Objects: Vehicles

A great deal is known about the ability of eyewitnesses to identify the faces of individuals involved in crimes. Recent research has also addressed the eyewitness identification of weapons of different types under different forensically-relevant circumstances. However, the ability of eyewitnesses to recognize vehicles involved in crimes, frequently a critical point of evidence in court, has been virtually ignored in forensic and experimental psychology.

This ability was assessed under idealized conditions. Fifty young adult respondents were shown color photographic slides of model vehicles, in profile, which varied systematically with regard to type, shape, and color. Respondents were asked to indicate which they had seen from among distracters which were systematically varied along the same dimensions. Identification performance was relatively poor; the majority of respondents were unable to make a correct vehicular identification., even under idealized lighting and viewing conditions used in this study. Interestingly, most respondents who failed to make a correct identification did not remember having seen either the target vehicle or any of the distracter vehicles at all. Those who erroneously identified a distracter vehicle tended to make the misidentification based upon color, rather than upon shape or vehicle type.

Results indicate that eyewitness identification of vehicles in forensic settings should be viewed with extreme caution. This is especially true in real crime situations, which typically present witnesses with conditions which are far worse for identification accuracy than the relatively idealized conditions used in the present research

Kristen E. Callens, Ellen Burnes, Ph.D.
California State University, Fresno
Department of Agricultural Economics
Undergraduate Student Presenter

An Assessment of the Economic Feasibility of Using Raisins as an Ethanol Feedstock

As the 2003 Raisin vines begin to bud, a year's supply of raisins still remains in storage at a price of $250/ton – an eight-year low price. One suggestion has been made to use the raisins in reserve as ethanol feedstocks. In addition to its use in the beverage industry, ethanol is also an oxygenate used in gasoline. California has mandated that ethanol be used in place of MTBE (Methyl Tertiary Butyl Ether) by January 1, 2004. It is estimated that 900 million gallons of ethanol will be required to meet California fuel demands. Among California crops with ethanol feedstock potential, raisins have the highest ethanol yield per ton. Each year the raisin industry determines what percentage of the crop goes to food markets and what percentage is diverted to storage. In this paper, we analyze raisin prices, look at the level of production and allocation between market and storage, and determine possible returns raisins would bring if converted to ethanol. We compare these values to those of raisins sold from storage to food markets. We note that storage is $11/ton/month. This implies a calculable breakeven point where it is optimal to convert raisins to ethanol, than to store for later distribution to the food sector. While our research shows that it is not optimal to divert raisins to ethanol every year, in six years between 1991 and 2000 a California ethanol industry could have been beneficial to raisin growers.

The information discovered through this project may benefit the raisin industry as well as California as a whole. A California-based ethanol industry would provide potentially beneficial economic opportunities for local agricultural producers and communities. The contribution of this research is the systematic approach that we develop to evaluate the conditions of economic feasibility for converting raisins into ethanol.

Genett Carstensen, Dave Goorahoo, Ph.D.
California State University, Fresno
Center for Irrigation Technology
Undergraduate Student Presenter

Addition of Surfactants to Improve Irrigation Efficiency in Commercial Turf Systems

The projected increase of 15 million in California's population by the year 2020 will result in further competition among various agricultural sectors for the state's limited water supply. In an effort to deal with this competition, the Turfgrass industry has been adopting management practices in order to enhance water use efficiency and thereby ensure its sustainability. The goal of this research was to evaluate the systematic application of surfactants as a management strategy for commercial turf systems such as golf courses. The impacts of three non-ionic surfactant formulations, applied at two rates, on steady rate infiltration, turf quality, soil salinity and water storage in the root zone were investigated. Treatments comprised of a control (no surfactant), two commercially available surfactants (Infiltrx® and Dispatch®) and an experimental formulation ('1858®). Infiltration and turf quality measurements were taken before, during and four months after surfactant application. Surfactants significantly affected infiltration rates, with Dispatch® resulting in the highest infiltration at the low application rates and both Dispatch® and the '1858'® formulation significantly increasing infiltration at the high rates. Generally, there were improvements in color, growth vigor and overall quality of the turf as result of surfactant addition. There were no observable differences in the soil electrical conductivity (EC) and sodium absorption ratio (SAR) values obtained for either the treated or non-treated plots, thereby suggesting that there were no adverse soil salinity effects of the surfactant additions. For the low application rates, Dispatch® indicated the potential for maximum water use efficiency. For the high application rates, water loss from the root zone for the surfactant treated plots were either greater than or equal to that from the control plots. It is suggested that surfactant formulation 1858® applied once a month at a rate of 250mls per 100m2 can be used on plots that are of relatively high quality to ensure maximum water use efficiency. For plots of relatively poor turf quality and reduced infiltration rates, at least one application of Dispatch® or 1858®, and possibly up to a maximum of three consecutive monthly applications, at the rates used in the current study can be used to increase infiltration rates. More than three rounds of applications in consecutive months may result in water percolating pass the turfgrass root zone.

JiaJia Chen, Erin Dormedy, Ph.D.
California State University, Fresno
Department of Food Science
J. Smilanick, Ph.D.
U.S. Department of Agriculture, ARS
Graduate Student Presenter

Survival Of *Escherichia Coli* (Atcc 25922) And Natural Microflora Populations On Avocado After Exposure

Antimicrobial effect of ozone was evaluated in this study. Ozone gas was applied to whole fresh avocados in a closed chamber. *Escherichia coli* (ATCC 25922) was cultured on to nutrient agar and applied to the surface of each avocado. After ozone treatment and shaking, the solution was plated and incubated for different periods to detect and quantify *E. coli*, natural populations of aerobic mesophilic bacteria, and natural yeast and mold populations.

Ozone reduced *E. coli* populations to the minimum detection limit. Natural microbe populations were low and more resistant to ozone treatment. Reduction in these populations by ozone was one log or less. *E. coli* populations applied to the surface of the fruit were eliminated by ozone at relatively low doses, while natural microbe populations, particularly fungi, were much more resistant.

Renee Denton, MS
Forestry Sciences Lab
Ethelynda Harding, Ph.D.
Department of Biology

Genetic Variation in *Trifolium bolanderi* A. Gray Compared with *Trifolium longipes* Nutt.

Bolander's clover (*Trifolium bolanderi* A. Gray), is a narrow endemic, restricted to wet meadows of the central Sierra Nevada extending from Yosemite National Park south across the Sierra National Forest to north of the King's River. It occurs only within a narrow elevational band from 2130 m to 2165 m. *T. bolanderi* is categorized as a Forest Service Region 5 'sensitive plant', defined as rare.

Relatively low genetic diversity is believed to have potentially adverse effects on the ability of a species to adapt to environmental change. Within populations, genetic diversity tends to be less for rare plants. Objectives of the study were to elucidate the genetic variation within and among populations of *T. bolanderi*, and to compare and contrast this variation with that of a common, sympatric, native congener, longstalk clover (*Trifolium longipes* Nutt).

Ten montane meadow populations in the Sierra Nevada were sampled for both taxa. Sixteen putative loci were resolved by electrophoresing nondenatured plant protein through starch gels under three electrophoretic systems.

Mean expected heterozygosity (H_e) within populations of *T. bolanderi* (0.17) was lower than within populations of *T. longipes* (0.24) as expected when comparing spatial data for other rare and widespread congeners. Percentage of polymorphic loci (%P) for *T. bolanderi* (43.13) was also lower than for *T. longipes* (56.88) at the population level. Interpopulation level heterozygosity for *T. bolanderi*, 0.20, did not exceed that of *T. longipes*, 0.29, as expected.

Surprisingly high polymorphism was detected for both species. For *T. bolanderi,* diversity parameters met or exceeded those for many widespread species. High interpopulation variation of *T. bolanderi* might lead to the assumption that loss of any one population may not be as critical for survival of the species. However, in view of the high number of fixed or partially fixed phenotypes, the metapopulation should be at least protected at the group level identified based upon genetic distance.

Jovita M. Diaz, Alice D. Wright, Ph.D.
California State University, Fresno
Department of Biology
Graduate Student Presenter

Microbial Gene Regulation of 2,4-D Degradation

This investigates promoter regions of genes tfdA, tfdB, and tfdC. These genes code for enzymes that catalyze initial steps in the degradation of 2,4-dichlorophenoxyacetic acid (2,4-D). 2,4-D is a synthetic compound used extensively over the past five decades as an herbicide. It is subject to rapid biological degradation by soil bacteria found naturally in the environment. Studies have shown bacteria capable of degrading 2,4-D have been able to assemble the pathway by obtaining genes from different sources and coordinately regulating them – a process not completely understood. Promoter regions of the genes were cloned into a plasmid with a promoterless lacZ gene. b-galactosidase was used to quantitate promoter function. The plasmid was mobilized into different bacterial strains by patch mating to determine the extent of promoter –lacZ fusions function in those bacteria. Promoters were cloned from Ralstonia eutropha JMP134 and Burkholderia sp. RASC, two 2,4-D degraders that contain significant differences in the DNA sequences of the enzymes and have different gene organization in the pathway. We cloned a SalI / BamHI restriction endonuclease fragment derived from a region of the chromosome of strain RASC that codes for the first enzyme of the 2,4-D pathway. We are also cloned EcoRI / BamHI and HindIII / BamHI restriction endonuclease fragments from strain JMP134. These represent the putative promoter regions of tfdA and tfdB, respectively. The aim of this project is to study how catabolic pathways evolve, specifically the evolution of regulatory elements. Using 2,4-D metabolism as a model system we are determining promoter function in a collection of 2,4-D degrading organisms that have been characterized with respect to the genes encoding the enzymes of the pathway. Expression of specific promoters varies as much as twenty fold depending on the source of promoter and the strain that expression is tested in. The significant variation in promoter function that we observe suggests that there are multiple evolutionary origins for these promoters. These studies may further our understanding of the assembly of pathways in response to other xenobiotic compound

Dominic Dizon, MD
UCSF Fresno

A Comparative Study of Tuberculosis Coming From Vietnam, the Philippines and Cambodia

The picture of active tuberculosis cases in California is changing in that majority of cases (71%) are now coming from the foreign-born. Here in Fresno county, although the most number of cases is among patients born in Mexico, the highest incidence rates are occurring among the Cambodians, Laotians (including Hmong and Hmien), Filipinos and Vietnamese. Fresno now has the 5th highest incidence rate in the state of California. This study compares the various case-finding, diagnosis and treatment strategies employed by the three highest incidence countries in southeast asia, namely Cambodia, Vietnam and the Philippines. This is a retrospective comparative analysis dating from 1995-2002 using relevant medical literature via MEDLINE and PUBMED as well internet searches using Google. This is supplemented by actual interviews of key medical personnel from the University Medical School in Hue, Vietnam as well as public health officials from the Regional Institute for Tropical Medicine in Alabang, Philippines. In Vietnam, the use of specific case-finding units called district treatment units had tremendously improved case-finding and treatment success and led to a reduction in annual incidence rates from 283 per 100,000 to 152 per 100,000 in 7 years. This is coupled by the use of DOTS (Directly Observed Therapy Short Course) by government agencies whereby the medications are provided free of charge by the government. In the Philippines, although case-finding is improved by DOTS, patients prefer to buy the medications privately and end up taking these only until their symptoms improve. This had contributed to high drug-resistant cases. Moreover, because the government can only provide free medications to a third of patients infected, most patients end up being under-treated. This has led to continuing high incidence rates of 327 per 100,000. In Cambodia, the genetic susceptibility of Cambodians to infection tuberculosis suggested by genetic studies as well as high HIV rate in the country has led to the high incidence rates in southeast asia 537 per 100,000 and the second highest rate in the world. This is despite the fact that the communist regime also provides free medications to the population. Although strides in case-detection and treatment success had been reached by some of the high-burden countries in southeast asia, the fact remains that the battle against tuberculosis in this region has yet to reach favorable outcomes. Tuberculosis still remains as the leading infectious cause of death from a single organism in the world, and especially in this region. As a significant portion of the population in the Central San Joaquin Valley is from this region, it is important that we understand and are educated on the efforts being made to diagnose, treat and control tuberculosis from Southeast Asia.

Isidro Fierro, Brian Tsukimura, Ph.D.
California State University, Fresno
Department of Biology
Graduate Student Presenter

Effects of Methyl Farnesaote in the Regulation of Gonadal Development in the Ridgeback Shrimp, *Sicyonia ingentis*

The single largest problem that worldwide shrimp aquaculture faces is the inability to stimulate reproduction for the continuous year-round production. The ability to stimulate ovarian development and vitellogenesis would be extremely useful for shrimp husbandry because it would provide a consistent supply of viable eggs throughout the year. Vitellogenin (Vg), the precursor of vitellin (Vn), is transported through the hemolymph to developing oocytes where it is modified into Vn, thus can be used as an indicator of female reproduction. The family of juvenile hormones, to which Methyl Farnesoate (MF) belongs, regulates the development and reproduction of several insects groups. Similarly, MF has been implicated in shrimp reproduction. The ridgeback shrimp, Sicyonia ingentis, was used as a model organism for this study in reproduction of penaeiods. During the shrimp reproductive season (June-November) the role of MF in vitellogenesis was examined by injecting 1μg of MF into S.ingentis. Long-term effects of short and long MF exposures were examined. Enzyme-linked immunosorbant assay (ELISA) was used to measure Vg levels in the hemolymph of shrimp. Levels of Vg decreased after MF injections from 9 +/- 2.2 mg (n=22) to 2 +/- 1.5 mg (n=22) into shrimp compare to controls from 10 +/- 1.7mg (n=23) to 8 +/- 1.3 (n=23). In addition, MF treatments decreased total protein levels from 58.2 +/- 6.72 mg/ml (n=22) to 17.6 +/- 4.56 mg/ml (n=22) compared to controls from 60.1 +/- 5.55 mg/ml (n=23) to 56.3 +/- 4.67 mg/ml (n=23), suggesting that 1 μg MF might act as a stress hormone, or show a toxic effect. Therefore, current trials added 0.1 ug MF injections to determine effects of lower concentrations. Stress hormones in other organisms redirect proteins from the blood into affected cells. Eventually, this research might contribute to shrimp industry offering new alternatives to increasing its yield and production.

Robert T. Gaeta
Alejandro Calderon-Urrea, Ph.D.
California State University, Fresno
Department of Biology
Graduate Student Presenter

Induction of PCD in *Caenorhabditis elegans* by Targeting *Ced-9* Using RNA Interference: Potential to Control Plant Pathogenic Nematodes

Introduction: Worldwide, pathogenic nematodes cause an estimated loss in agriculture of 100 billion dollars a year. In an attempt to develop new strategies to control pathogenic nematodes and to circumvent the need for pesticides such as methyl bromide, we decided to target genes involved in the nematode's Programmed cell death (PCD) pathways. PCD is an important process in the development and homeostasis of multicellular organisms. *Ced9* is required for protecting cells from cell death in the nematode *Caenorhabditis elegans*. *Ced9* loss-of-function (*lf*) mutations lead to increased cell death, maternal-effect lethality, and sterility. Targeting *Ced9* function would likely stimulate the cell death pathway, and produce a phenotype similar to *ced9 lf* mutations. RNA interference (RNAi) has been used to induce a premature loss of a specific targeted endogenous RNA. We hypothesize that the feeding or soaking of double stranded (ds) *ced9* RNA to *C. elegans* will interfere with the endogenous *ced9* gene causing a loss in function.

Methods: Cloning of a cDNA of *ced9* from *C. elegans* was conducted using standard molecular techniques. The *ced9* cDNA was cloned into vectors capable of producing RNAi molecules. The construct was transformed into *E. coli* for feeding experiments. We have been able to show that our *E. coli* strain containing construct is able to generate double stranded (ds) *ced9* RNA. Likewise, constructs have been used successfully to generate ds *ced9* RNA *in vitro*. We are currently testing these constructs and strains in soaking and feeding experiments on wild type, *ced3(lf)*, and *ced4(lf)* hermaphrodites to determine if the endogenous *Ced9* is susceptible to dsRNAi. Likewise, we cloned a *gfp* reporter gene into plitmus28i, and are using dsGFP RNA to silence expression in a GFP transgenic nematode line.

Results: Preliminary results have revealed a 30% decrease in fecundity in wild type worms treated with *Ced9* dsRNA. Likewise, GFP transgenic nematodes that have been treated with dsGFP-RNA show a drastic reduction in GFP expression when viewed by fluorescent microscopy.

Conclusions: The results of this research would provide valuable information regarding the feasibility of such molecular approaches to pest prevention, and would set the foundation for developing plants with RNAi "weapondry" for combating their associated nematode pests.

Alma García, Rebecca Radcliff
Christina Alejo-García, Sergio Aguilar-Gaxiola, Ph.D.
California State University, Fresno
Department of Psychology
Undergraduate Student Presenters

The Stability Of Severe Mental Illness: A Longitudinal Study Of Mexican Americans

Millions of Americans suffer from severe, persistent, and disabling mental disorders that have a negative impact on their quality of life, and their families. Because of the nature of severe mental illnesses, individuals suffering from them often struggle to cope with tasks of daily living. This study addresses the diagnostic stability of Mexican Americans with severe mental disorders, a population group for whom there is very limited research. Data from the present study comes from the Mexican American Prevalence and Services Survey (MAPSS; Vega et al., 1998), the largest probabilistic mental health study conducted to date on Mexican Americans in the U.S.

Findings showed that out of 3012 participants, 280 qualified as severely mentally ill (SMI). SMI was defined as meeting diagnostic criteria for mood, anxiety, and/or substance abuse disorders and showing signs of functional impairment. The purpose of this preliminary study is to examine the mental health status of participants identified as SMI in the initial interview conducted in 1995-1996 compared with their status in a follow-up interview five years later. Participants were compared at three diagnostic levels: (1) whether they had overall improvement, deterioration, or remained the same, by diagnosis, from the first to the second interview, (2) whether there are differences by diagnostic categories, (e.g., anxiety or mood disorders), (3) whether there are differences by specific diagnoses within diagnostic categories (e.g., major depression, panic disorders). Information on substance abuse disorders was excluded in the present report. Out of the 280 participants, only 52 cases are reported in this study. Preliminary findings indicate that 67.3% of participants demonstrated instability of condition (defined as a change in diagnosis). Only 32.7% of the participants maintained the same mental health status from the first to the second interview. Based on these preliminary results, the overarching theme is that diagnostic instability is normative for this population. Future studies should examine trends in the relationship of the course of severe mental illness to treatment seeking and to day-to-day functioning.

Edward J. Garcia, Ruth Jenkins, Ph.D.
California State University, Fresno
Department of English
Graduate Student Presenter

Natural Law in the Holy Sonnets of John Donne

Natural Law in the Holy Sonnets of John Donne Edward Garcia Department of English John Donne's use of the natural law is influenced by many factors. He was born during the time of the English reformation to a family rooted in the Catholic religion. The theological debates between Protestants and Catholics surrounding John Donne as a young man stayed with him his entire life. Although John Donne was ordained in the Anglican Church, Donne still had a strong affinity to the Catholic Church and the years leading up to his ordination were troubling. This vexation is expressed in his Holy Sonnets. The Holy Sonnets depict, at times, a soul excusing itself from participation in the eternal laws of God. Since Donne's interest rested in theology and law, it seems expected that his Holy Sonnets would take the form of spiritual meditations in the contexts of legal proceedings. The rule of law, in these legal proceedings, is the natural law. I intend to show that the natural law stands at the center of John Donne's spirituality almost by necessity, and his use of the natural law may not always be deliberate but it is precise.

Staci Grunau, Pamela Lackie, Ph.D.
California State University, Fresno
Department of History
Undergraduate Student Presenter

Petrarch's Advice and What This Means to Humanists

At the onset of the Renaissance in Italy the "father of humanism" was becoming well known throughout the state for his rhetoric. What is important, however, was what he was doing with his talent and subsequent fame. It is Petrarch's drive to influence others to do good and make something better of this world that was new to Renaissance thinkers. Previously, focus of philosophy had been solely on the heavenly realm of Christianity. During this time Petrarch began a chain of thought later termed humanism that said it was acceptable, even virtuous, to contemplate the here and now. Petrarch advocated that God put men on the earth with talents that they may use them for his glory; this included living a good life and spurring others to do the same. In How a Ruler Ought to Govern His State Petrarch wrote to the lord of Padua, Carrera, in order to advise him on the path his work in government should rightfully take. His letter reflects the style of the times and the social system of patronage that was prevalent in the fourteenth century. He opened with grand praise of the recipient and gave all of his advice with the addendum that he was sure Carrera already ruled in the manner he was describing. It was appropriate for Petrarch to write this way because he was addressing a man of status. In addition, he may have been trying to instill a pride in Carrera so that future actions would be stirred by a desire to live up to the letter's praise. In my paper I evaluate the advice given by Petrarch to Carrera as well as the manner in which it was done. It is vital to the study of the Italian Renaissance to examine these things because of the place Petrarch holds in history's School of Humanities.

Christopher A. Hamm
Robert R. Baldridge, Fred E. Schreiber, Ph.D.
California State University, Fresno
Department of Biology
Undergraduate Student Presenter

Laboratory Investigations on Behaviors of *Grassiella* sp. (Thysanura: Nicoletiidae: Atelurinae) a Nest Associate of *Solenopsis invicta* Buren (Hymenoptera: Formicidae: Myrmecinae)

Behavioral interactions of the myrmecophile, *Grassiella* sp. (Thysanura: Nicoletiidae: Atelurinae), with the red imported fire ant, *Solenopsis invicta* Buren (Hymenoptera: Formicidae: Myrmicinae) were studied under laboratory conditions. *Grassiella* responded to but did not follow recruitment trails deposited by workers. *Grassiella* responded to and did follow trails deposited by workers transporting brood of *S. invicta*. In 'choice' tests, *Grassiella* showed strongest responses to sites that held workers tending brood compared to sites holding workers or brood only or to the 'control' site. *S. invicta* flooding 'rafts' did not contain *Grassiella* after flooding of laboratory nests. *Grassiella* floated immobile on the surface of the water with no seeming response to the flooded workers. *Grassiella* survived prolonged periods of floating on water surface. Other behaviors of *Grassiella* and *S. invicta* during the above interactive situations are reported. Gross morphology of *Grassiella*, viewed using a scanning electron microscope, is reported. Hypotheses relating selected morphologies and behaviors in the laboratory are presented.

Christina Harralson, Rick Hanson, Ph.D.
California State University, Fresno
Department of English
Graduate Student Presenter

Literacy: Decontextualization, and Social Situation

The term literacy carries many implications, and has been used to mean many different things. Because of this, the way the term gets used often hides more than it illuminates. I have traced the use of the term "literacy" through a few seminal articles to illustrate that what counts as literacy is socially situated, even when the author presents the terms as being socially neutral. This project is a qualitative analysis that tracks the use of the term "literacy." In the 1930's, E. L. Thorndike used literate to denote prescriptions for socially acceptable discourse, all of which focus on decontextualized features of reading and writing. In 1968, Jack Goody and Ian Watt's "The Consequences of Literacy" suggests a Great Divide theory, which is a dichotomy that ignores context and history. The theories of Brian Street and Mike Rose to illustrate the need for understanding the context for the performance of literacy. In fact, literacy is a context specific performance that is embedded in social practices that are specific to that performance. Although much scholarship discusses it as though it is a neutral term, it is not because what is valued and assumed about literacy changes in both time and place. The context of literacy is important and often overlooked. The context of the researcher/author is equally important and overlooked even more often, which ultimately serves to impede understanding of the literacy practice

Deborah Helsel, Ph.D.,
Judith Calvo, Ph.D.
California State University, Fresno
Department of Sociology

Tobacco Use and Environmental Tobacco Exposure in a Southeast Asian Population: Norms, Networks and Behaviors

Tobacco use norms were explored in this study of 301 young adolescent and adult Southeast Asian men and women in California's Central Valley. Respondents from ages 16 to 65 were asked about personal tobacco use, secondhand smoke exposure, perceptions of self-efficacy in quitting tobacco use, refusing tobacco promotional items and influencing others to do so. They were also asked about willingness to take action against secondhand smoke. Findings indicated a relatively high rate of secondhand smoke exposure, an early age of smoking initiation (younger than 10 in some cases), high prior and current smoking quantity per day and large networks of family and friends who smoke, which could present a considerable barrier to smoking cessation and outreach efforts within this group. About one-third of the respondents currently takes no action to prevent secondhand smoke exposure, although many others reported a willingness to do so.

The risk of the negative health consequences associated with exposure to secondhand smoke is compounded by the fact that this population has already been identified as being at increased risk for a number of chronic conditions, including hypertension, diabetes, asthma, and chronic obstructive pulmonary disease (Johnson, 1995). Many of these conditions could be triggered or exacerbated by personal tobacco use and/or environmental tobacco exposure. Population norms and behaviors identified by this research can be valuable in designing strategies to address educational intervention programs.

Virginia Rondero Hernandez, Ph. D., MSW
California State University, Fresno
Department of Social Work Education

Processes and Experiences Associated with Secondary Conditions

This presentation features the results of focus group research with family members and service providers of children with developmental disabilities. The objective of this research was to assess consumer and provider perceptions about processes and experiences associated with the occurrence of secondary conditions that are psychosocial in nature among this young population. In order to conduct the study, five focus groups were convened across a large Southwestern state using a snowball sampling strategy. Three of the groups were composed of family members of children, adolescents, and young adults with developmental disabilities. Two were composed of professionals who provided school-based and agency-based services to this same population. The guiding research question for each group was "What does the term secondary conditions mean to you?" Responses to this exploratory question led to extended discussions about the experience of disability and service provision for this population. These sessions produced approximately 12 hours of taped recordings, which were transcribed and subjected to content analysis using an inductive process to detect dominant themes that emerged from group discussions. Three central themes emerged from this analysis: 1) securing a diagnosis, treatment, and services is a complicated and arduous process for families; 2) negative and positive psychosocial experiences are associated with the processes of diagnosis, treatment, and services; and 3) there is an observed relationship between psychosocial experiences and the occurrence of secondary conditions. Each of these themes was related to a number of decision-making, service-provision and psychosocial factors thought to prompt the occurrence of secondary conditions. Specific suggestions about the merits of family-centered care and service planning as a strategy for discouraging the occurrence of secondary conditions are also reported in.

Adam B. Hess, Melissa J. Boyd,
Keo Mo, and Karl Oswald, Ph.D.
California State University, Fresno
Department of Psychology
Undergraduate Student Presenter

Interfering Effects of Music on Retention

Previous research suggests that unattended music during study negatively affects short-term memory recall, provided the music contains lyrics (e.g., Salame & Baddley, 1989). However, the effects of studying with various types of music on long-term retention remain unclear. Two experiments investigated interfering effects of familiar and unfamiliar music on free recall. Experiment 1 manipulated familiarity of the song played during encoding within-subjects: words were studied in silence, in the presence of familiar music (i.e., "The Lion Sleeps Tonight"), or in the presence of unfamiliar music. Participants (n=72) then free-recalled the words following a short retention interval. Experiment 2 (n=55) followed the same procedure, manipulating the familiarity of song version: familiar and unfamiliar versions of the same song (i.e., "Every Breath You Take). Results of experiment 1 indicated no recall differences between silence and familiar music. However, recall in the unfamiliar-music encoding condition was significantly lower than either the silence or familiar-music conditions. Results of experiment 2 showed equal recall across all conditions. Together, these findings suggest that studying with music is only detrimental when the music is unfamiliar. This seems to be the case only when the song itself is unfamiliar rather than an unfamiliar version of a familiar song. Implications on the unattended speech effect and applications to the learning environment are discussed.

Laura Holden
California State University, Fresno
Department of English
Graduate Student Presenter

Hysteria in Eliza Haywood's *The British Recluse*

The study will examine hysteria within Eliza Haywood's eighteenth century text, "The British Recluse". Several concepts will be discussed, including the parallels between Laconian theory and the plot, hysteria within the text, and the role of hysteria as system of communication. I will be using a feminist psychoanalytic approach, drawing from Helene Cixous and Catherine Clement's work "La Jeune Nee", as well as from Lacon. I will demonstrate the almost uncanny representation of Lanonian theory within the text, as well as suggest the meaning of such a representation. Also, the verbal explanation of non-verbal communication will be discussed. Haywood's text contains a twentieth century theoretical pattern, which suggests a gender based communication style that attempts to avert phallocentric dominance

Sean Schafer, MD; Susan Hughes, MS;
Lydia Herrera-Mata, MD;
Norman Hearst, MD, MPH
UCSF-Fresno Latino Center for Medical Education & Research

Size and Scope of Managed Medi-Cal in Fresno County

Introduction: To limit costs and encourage use of primary health services, California's Department of Health Services (DHS) shifted the majority of Medi-Cal beneficiaries to managed care in the early 1990s. By 2000, well over half of Medi-Cal beneficiaries statewide were enrolled in managed care plans.

Methods: This is a descriptive analysis of eligibility and claims data created and maintained by DHS and derived from reports submitted by each private health plan contracted to provide services in Fresno County. The sample population consists of Medi-Cal managed care beneficiaries enrolled between January and June 2001.

Results: There were 244,319 unique managed Medi-Cal beneficiaries in Fresno County between January and June of 2001. This represents 70% of the total beneficiaries (the remainder are in fee-for-service Medi-Cal) and 30% of Fresno County's estimated population during 2001. Median eligibility was 6 months (per 6 month period). Hispanic beneficiaries were 52% of the total, African-Americans 9%, Asians 17%, and Whites 18%. This compares with an overall distribution in Fresno County in 2000 of 44% Hispanic, 5% African American, 8% Asian, and 40% White. Claims made for services in this same 6-month period totaled 1,553,460. Outpatient visits to physicians were 12% of the claims, hospitalizations and inpatient care, 3%, drug costs, 46%, lab claims, 14% and supplies, 13%.

Conclusions: Use of fee for service claims data in health services and epidemiological research is commonplace. Although managed Medi-Cal now serves the majority of Medicaid beneficiaries in California, claims data from this system have not yet been utilized for such purposes. This is partly because of concerns about the validity and reliability of claims reports not directly linked to payment. The descriptive analyses described here are precursors to comparisons of service utilization by ethnicity. Methodological aspects of secondary analysis of California DHS managed care data will be discussed.

Saben Kane*, Randy Shahbazian,**
Jared Nakashima*, Kent Yamaguchi,**
Tim Tyner**
**California State University, Fresno*
Department of Biology
***UCSF-Fresno, Surgery Department*
Undergraduate Student Presenter

Effects of Lipoic Acid and Diet-Induced Stress on Survival of Random Pattern Skin Flaps in an Animal Model

Skin flaps are used in a variety of surgical disciplines and problems associated with ischemia and inflammation can contribute to impaired flap viability. The present study proposes that free radicals are a primary cause of tissue degradation in ischemic flaps. We therefore examined the effects of lipoic acid, a potent biological antioxidant and free radical scavenger, on skin flap survival. As a derivative of our initial investigation, we also studied the effects of tissue pre-conditioning (dietary-stress) on flap survival. Lipoic acid has been demonstrated as being capable of inhibiting lipid peroxidation. Because of it's low redox potential and metal chelating capacity, lipoic acid is able to scavenge a number of different free radical species, as well as regenerate itself and other endogenous antioxidants. Animals under stress (environmental or physical) display elevated levels of plasma glucocorticoids. Along with their metabolic effects, glucocorticoids can increase the number of circulating neutrophils, yet the accumulation and activation of these leukocytes at sites of inflammation is repressed. Thus, as neutrophils are believed to play a significant role in promoting flap necrosis through their release of reactive oxygen species, elevated glucocorticoids in diet-stressed animals may help alleviate free radical-induce flap necrosis. Sprague Dawley rats were used for our experiments. Animals were preconditioned by dietary manipulation for one week prior to flap elevation, after which animals were anesthetized, and a dorsal, random pattern skin flap was elevated and replaced. Animals were studied for flap viability 10 days post-op. Additional studies were conducted in diet-stressed animals to determine flap neutrophil activity. Our results indicate that lipoic acid and dietary stress are independently capable of increasing flap survival. The improved viability of the diet-stressed animals is correlated with a decrease in neutrophil activity. The combination of lipoic acid and restricted diet demonstrated the most significant enhancement of flap survival.

Yury Kostin, Ron Unruh, Ph.D
JDPEL, California State University, Fresno /
University of California, Davis
Doctoral Student Presenter

Virtual Counseling: A Validation Study of the Academic Counseling Via Internet Facilities

While face-to-face academic counseling is still the primary method of service, with the growing popularity of electronic communication, on-line counseling or "Cyber Counseling" is increasingly considered to be a useful supplement or alternative to traditional one. This research was designed to investigate effectiveness of and comparison among counseling techniques involving dynamic aspects of Internet technologies implemented in academic counseling services on the postsecondary level of education. The primary purpose of this research was to determine to what extent an academic advising enhanced by integrated technologies can satisfy academic needs of students and provide assistance as students pursue their college education? After each academic advising session the questionnaire surveys, developed by Evaluation Survey Service (ESS) for American College Testing (ACT), had been administered to students who received regular counseling services offered to three counseling groups implementing videoconference, chat-room, and face-to-face counseling sessions. The findings of this study suggested that the Internet technologies were adequately instrumental in helping students get necessary information satisfying their academic needs. Although the results look bipolar because the traditional face-to-face counseling service was still the most popular (T-67%, V-73%, C-76%) the majority of students have preferred to use Internet technologies for academic advising purposes which they believe can satisfy their academic needs. Video conferencing participants were stronger supporters of virtual academic advising (T-79%, V-97%, C-76%) than other groups. Students participated in chat room session indicated that virtual academic counseling would be best serving for quick simple questions. The bipolarity of participants' rating responses leads to conclusion that the applied digital technologies have a dividing effect on technology users. The majority of students who have experienced academic counseling via Internet technologies speak favorably of it. Students found the video conferencing and chat room interactivity easy and fun for both saving time and getting necessary academic advising.

Charles Krauter, Ph.D. Dave Goorahoo, Ph.D.
Matt Beene
Center for Irrigation Technology,
California State University, Fresno

Recent Air Quality Research Related to Dairy Operations in the San Joaquin Valley

California will be required to submit State Implementation Plans (SIP) to the federal EPA to reduce the levels of ozone and particulate matter (PM10) in the very near future. No part of the San Joaquin Valley is now in compliance with ozone and PM10 regulations. Another sub-category of particulate matter that may soon be regulated is PM2.5. These are particles small enough (2.5 microns) that they do not settle out of the air and are not filtered by the human respiratory system, so they penetrate deep into the lungs and contribute to a number of serious health hazards. Nitrogen and sulfur oxides come from combustion sources, such as engines and fireplaces. Ammonia, which can combine with these oxides to form particles, comes primarily from various agricultural activities along with natural, or biogenic, sources. Therefore, reducing ammonia may be necessary to meet particulate matter standards now and in the future. CSU Fresno research has focused on ammonia from fertilizer applications and other crop production practices since 1998. Recently, the effort has been expanded to include the ammonia emissions from dairy operations and the crops grown around the dairy for liquid waste disposal. The project will select five different dairies and sample ammonia from them at several times of the year. The first of those sampling programs was completed at a large dairy near Hanford in October, 2002. The results from that single sampling program have shown that air samples at the downwind edge of the dairy all indicate a large increase in ammonia compared to the upwind samples. More importantly, it appears that an active crop may be able to absorb a significant amount of ammonia from the air and that it may be possible for the dairy industry to show that the crops commonly grown around a dairy to recycle liquid and solid waste are also effective in dealing with some air quality problems. Because of its relation to ozone formation, reactive organic gases (ROG) are the 2nd major air pollutants being researched at by the Center for Irrigation Technology. Ozone, an irritant to the respiratory system, has been linked to asthma and other serious health problems. Ozone forms when oxides of nitrogen (NOx) react with various complex organic gasses and sunlight. ROG measurements were included in the ammonia sampling program at the dairy near Hanford in October, 2002. The ROG results do show a higher level at the downwind edge of the operation so it is likely that the dairy is responsible for measurable ROG emissions. Comparison of the measured ROG levels with the methane in the sample did not agree with the old, laboratory studies upon which the current estimates are based. Several more dairies must be sampled in each season of the year before conclusive results will be available but it does appear that the method of estimating ROG from methane is unreliable.

Ivan Kurniawan, Ojoung Kwon, Karen Dill Bowerman Ph.D.
California State University, Fresno
Department of Management
Undergraduate Student Presenter

Intelligent Facilitation Agent: Automating Group Meeting Facilitation

Complex and rapidly changing business environment has made people work in groups more than ever before. Group Decision Support System (GDSS) is a software that is designed to assist groups to make optimal decisions. Even though GDSS, such as CyberCollaboratory, has improved the quality of group decisions, it is still manually facilitated which potentially causes two problems—the success of a group is too dependent on how well its facilitator conduct group meetings, and excessive control exercised by a facilitator may inhibit group creativity and thus group performance. Intelligent Facilitation Agent (IFA) has been developed and implemented on CyberCollaboratory to solve these problems by automating group meeting facilitations. IFA is developed on Lotus Notes/Domino R5 and designed to facilitate asynchronous web-based group meetings. Four meeting flavors were also created to ease IFA setup for group meetings. To evaluate the effectiveness of IFA as a facilitator, sixty Craig School of Business students volunteered to participate in IFA testing. They were asked to participate in group discussions for two weeks and fill out the survey at the end of their discussions. Many of them indicated IFA as a facilitator did a good job. They enjoyed their group discussions and felt increases in their group work productivity and efficiency

Daryl W. Lam , Frederick W. Zechman, Ph.D.
California State University, Fresno
Department of Biology
Graduate Student Presenter

Molecular Phylogeny of the Caulerpales Based On rbcL Gene Sequence Variations

The order Caulerpales is comprised primarily of green macroscopic marine algae. The organisms that make up the order are both beautiful and diverse. Despite their relatively large size, caulerpalean algae are essentially singled celled organisms due to their siphonous construction. In a review of caulerpalean taxonomy, Hillis-Colinvaux (1984) recognized two suborders (Bryopsidineae and Halimedineae) on the basis of anatomical, physiological, and habitat characteristics. The Bryopsidineae (including the taxa Bryopsis, Derbesia, and Codium) are primarily widespread with heterocarpic reproduction and are homoplastic, while the Halimedineae (including Caulerpa, Halimeda, and Udotea) are primarily tropical or subtropical with holocarpic reproduction and are heteroplastic. A preliminary phylogenetic tree (Vroom et al, 1998) was created using computer based cladistics on morphological and ecological characters. This data shows that the Halimedineae and Bryopsidineae do not form separate monophyletic groups. The family Codiaceae is shown as a basal taxon to monophyletic group formed by the rest of the Halimedineae. The goal of this study is to find out if the Caulerpales contain two clear monophyletic suborders and to clearify the placement of the Codiaceae. DNA sequence data from the plastid encoded gene rbcL was obtained from representative members of all families within the Caulerpales. Parsimony, Neighbor Joining, and Maximum Likelihood trees were created with PAUP 4.0 (Swofford 2000). The Bayesian inference tree was created with the program MrBayes (Huelsenbeck and Ronquist 2000). Phylogenetic tree topology shows that two distinct monophyletic groups separate the Caulerpales. One clade contains members of the Derbesiaceae and Bryopsidaceae. The other clade includes taxa for the Caulerpaceae, Udoteaceae, Dichotomosiphonaceae and Codiaceae. This data supports Vroom's results that the Codiaceae is the basal taxon for Halimedineae. This data is part of a collaborative effort to determine the phylogeny of the Divison Chlorophyta.

This research was supported by a grant from the National Science Foundation (DEB-0128977).

Xay Lee, Pamela Lackie, Ph.D.
California State University, Fresno
Department of History
Graduate Student Presenter

Disease and Danger in Greek Poleis: How the Ancient Greeks Interpreted Physical and Abstract Diseases

A study into the phenomenon of "disease" within Greek poleis (city-states) can offer insights to how the Ancient Greeks interpreted disease and from where they believed it originated. Moreover, a polis that suffers from physical diseases can also easily suffer from abstract diseases that are caused by "stasis" or political and civil strife. A type of physical disease is the plague that caused the Greeks in Athens in 430 B.C. to be attacked by "violent heats in the head, and redness and inflammation in the eyes" (Thucydides, 2.49.2). The objective of this study is to examine how the Greeks distinguished between physical and abstract diseases and how they rid themselves of these pollutants from Greek society. Since the portrayal of human action in Greek poleis is described by authors such as Solon, Theognis, Aeschylus, and Plato, my study must rely on Greek literature that depicts medical and political imagery to illustrate the realities that can literally "plague" a people and society. Because much of Greek literature alludes to historical events, it is also necessary to examine works from historians such as Herodotus and Thucydides. My study will show that in both Greek literature and Greek history, the purity of a polis, be it purity from physical or abstract diseases, will depend upon the kind of rulers in power as well as the actions of a people. While physical diseases include plagues that strike a people as well as crops and abstract "diseases" include politicians ruthlessly vying for power, what is most interesting is the correlation between these two diseases. In other words, it can be inferred that in Greek society, physical diseases cause abstract ones while abstract diseases lead to the overall sickness of a polis.

Debra M. Harris,Ph.D., Teresa Leveque
California State University, Fresno
Department of Social Work
Stacy Mele
Department of Nutrition
Graduate Student Presenter

Nutrition Network For Healthy, Active Families: Program Description, Process Evaluation, and Outcome Evaluation

The Nutrition Network for Healthy, Active Families at California State University, Fresno is a grant funded by the United States Department of Agriculture and the California Department of Health Services. It has several goals and objectives. These are aimed at influencing a variety of people living in Fresno County to improve health related behaviors in the areas of healthier eating and exercising more. The ultimate goal is to decrease obesity in Californians. This is directly related to a variety of illnesses, particularly cancer, diabetes, hypertension, and heart disease.

One of the specific goals of this grant is to increase nutrition and physical activity knowledge with Foster Care Parent Providers. A collaborative effort between the Foster Care Training Program at CSU, Fresno and this grant has provided training sessions this year with three groups of foster parents.

First, this session will describe the program provided to foster parents as developed through this grant.

Second, a process evaluation has illustrated the level of knowledge each individual possess in these areas. This evaluation illustrates foster parent's lack knowledge regarding these behaviors. However, they are actively engaged in the learning process and their satisfaction with the training has been positive.

Third an outcome evaluation is planned to assess the change in the individual's behavior as a result of the training within 3 and 6 month intervals. The consent of the foster parents to receive follow up surveys regarding the training has been positive.

P. Matos, K. Chatterjee, Ph.D.
California State University, Fresno
Department of Electrical and Computer Engineering
Y.L. Le Coz
Department of Electrical, Computer, and Systems Engineering
Rensselaer Polytechnic Institute
N.Y. Troy
Undergraduate Student Presenter

A Novel Random-Walk Algorithm for the Solution of Time-Harmonic Helmholtz Equation at Multiple Wavelength Length Scales

The electrical properties of IC interconnects at multi-GHz frequencies must be described with Maxwell's equations. We have created an entirely new floating random-walk (RW) algorithm to solve the time-harmonic Maxwell-Helmholtz equations. Traditional RW algorithms for Maxwell-Helmholtz equations are constrained to length scales that are less than a quarter-wavelength. This is because of the problem of resonance in finite-domain Green's function for Helmholtz equation at multiple quarter-wavelength length scales. In this paper, we report the major discovery of extending our floating RW algorithm beyond a quarter-wavelength. The problem of Green's function resonance has been eliminated by the use of an infinite-domain Green's function. In this work, we formulate this algorithm and describe its successful application to homogeneous and heterogeneous 1D problems and homogeneous 2D problems. We believe, that with additional work, this RW algorithm will prove useful in the development of CAD tools for electromagnetic analysis of IC interconnect systems. It can be noted that the algorithm exhibits full parallelism, requiring minimal interprocessor communication. Thus, significant performance enhancement can be expected in any future parallel software or hardware implementation.

Jeffrey McMullen, Pamela Lackie, Ph.D.
California State University, Fresno
Department of History
Undergraduate Student Presenter

Pompey's Sole Consulship in 52 BC: The Proverbial Last Straw

The so-called "First Triumvirate" formed in 60 BC by Gnaeus Pompeius Magnus, Gaius Julius Caesar, and Marcus Licinius Crassus was successful at monopolizing political authority in Rome and virtually superseding the power of the Senate and the people. Nevertheless, it was a precarious alliance that nearly ended in 58 BC over the exile of Cicero. While the triumvirate was reestablished during the conference at Luca in 56 BC, more troubling obstacles lay in wait for the coalition. The deaths of Julia in 54 BC and Crassus in 53 BC weakened the lasting pact between Pompey and Caesar. However, what remained of their cooperative enterprise did not end until 52 BC. The presentation will be based on some secondary sources for a general knowledge of Roman political institutions and governmental structures, but will rely more heavily on primary sources for contemporary reports and interpretations. The presentation will be organized chronologically, highlighting the major events that precipitated the end of the "First Triumvirate". There is a great deal of primary and secondary information that deal with this period in Roman history. However, most secondary sources claim that Crassus' death in 53 BC marked the end of the so-called "First Triumvirate". These sources minimize the significant role played by Caesar's political opponents in manipulating Pompey. The main tool of manipulation was allowing Pompey the unprecedented position of sole consul in 52 BC. Thereafter, Pompey and Caesar become pitted against each other in a war that tore the Roman Republic apart. The sole consulship of Pompey in 52 BC was the proverbial last straw that ended the "First Triumvirate". From that point on, Pompey was arrogant and overconfident. Thereafter he was easily manipulated by Caesar's opponents in Rome, ultimately culminating with the Civil War and the end of the Roman Republic.

Mimi Mott-Smith
California State University, Fresno
Department of Health Science
UCSF-Fresno Family Medicine
Graduate Student Presenter

Fathers & Breastfeeding: A Study of Partners of Low-income Women

The purpose of this study was to investigate perceptions, feelings, knowledge, experience, and attitudes about breastfeeding among the partners of low-income women, using qualitative research methodology. Previous research has documented low breastfeeding rates among low-income women, and suggested that fathers play an important role in the decision to breastfeed. Twenty-one men aged 18-52 were interviewed at agencies serving low-income families, using a semi-structured interview protocol. Transcribed interviews were analyzed for salient concepts and categories using NUDIST 4 software. Subjects' responses were grouped into 10 categories: initial responses, the breastfeeding decision, benefits and disadvantages of breastfeeding, experience, knowledge, the father's role, the couple relationship, inclusion, privacy, and barriers to breastfeeding. Most fathers demonstrated positive attitudes towards breastfeeding and wanted to be part of the feeding decision. Most had little knowledge or experience with breastfeeding, although several knew that infant formula was much more expensive. When asked about their role in breastfeeding, most fathers strongly expressed the notion of being there for the mother and child, and were hyper-aware of the phenomenon of absent fathers. Fathers also commented about such issues as jealousy, changes in their relationship with their partners, public breastfeeding, and feelings of exclusion versus inclusion. A few fathers said breastfed babies cried more and this made them harder to care for while the mother was working. Based on the fathers' comments and observations, suggestions are made for public health policy, clinical practice, and further research.

Jared Nakashima*, Randy Shahbazian, Saben Kane*,**
Kent Yamaguchi & Tim Tyner****
**California State University, Fresno*
Department of Biology
***UCSF-Fresno Surgery Department*
Graduate Student Presenter

Beneficial Effects of Propofol Anesthesia in Reconstructive Surgery: Survival Study of Random Pattern Skin Flaps in an Animal Model

Random pattern skin flaps have long been an important tool in reconstructive surgery. However, problems associated with their survivability have continued to challenge surgeons. The present study proposes that neutrophils are a significant source of free radicals and thus contribute to tissue degradation. It is hypothesized that antioxidant or anti-inflammatory interventions may be able to counteract some of the damaging conditions contributing to the necrosis of flap tissue. This study was conducted to examine the effects of propofol, an anesthetic with reported antioxidant and anti-inflammatory properties, on skin flap survival. Propofol (2, 5-diisopropylphenol) is a commonly used anesthetic. It has previously been shown to terminate free radical reactions by forming a stable phenoxyl radical at the cell membrane surface. Several studies have documented propofol's ability as an antioxidant to reduce lipid peroxidation in various human and animal tissues in vivo, however, supraclinical doses were required to obtain such results. Neutrophils are believed to play a role in tissue destruction through their release of reactive oxygen species (ROS), a principal source of free radicals contributing to lipid peroxidation and subsequently, loss of cell membrane integrity. Effects of propofol on leukocyte function in vitro have been reported and indicate that it can inhibit chemotaxis, diapedesis, cytokine release and ROS production. Sprague Dawley rats were used for our experiments. Briefly, following anesthesia with either propofol or ketamine (control), a dorsal, random pattern skin flap was elevated and replaced. Animals were divided into six groups and flap studies were conducted to determine neutrophil activity and tissue viability. Our results indicate that propofol is capable of reducing neutrophil activity and increasing flap survival. We propose that propofol's primary means of enhancing viability is via neutrophil inhibition, rather than direct scavenging of free radicals, as clinically relevant doses of propofol were capable of improving flap survival.

William K. Nelson, Brian Tsukimura, Ph.D.
California State University, Fresno
Department of Biology
Graduate Student Presenter

Potential Organic Control of the Invasive Riceland Tadpole Shrimp Triops longicaudatus Using Methyl Farnesoate

We have tested the effects of the crustacean hormone methyl farnesoate (MF) on the invasive tadpole shrimp species Triops longicaudatus, which infests rice fields in California's central valley. The shrimp dislodge growing rice cotyledons while foraging, reducing crop yields. After field inundation encysted tadpole shrimp eggs in the soil hatch, releasing larvae. It is believed that MF acts as a juvenilizing hormone in the shrimp, inhibiting gonadal development. If this is the case, the use of MF on the rice fields could drastically reduce population sizes in successive years. We produced pellets in two MF concentrations (0.0001 and 0.001 % by weight) as a delivery system, along with a control pellet with no MF. Two methods of MF incorporation were used: pellets were coated with MF in tween 20 (binding agent), and MF was incorporated into liposomes which were added to the pellets during production. These pellets were tested both in lab and field trials (rice checks for the study were donated by Koda Farms). At day 5 half the shrimp from each group were collected, dissected, and analyzed for ovarian production. At day 10 the remaining shrimp were collected and analyzed. The results from both lab and field trials in which the MF-coated pellets were used showed MF had significantly reduced ovary development in treated individuals. Preliminary data from lab trials testing the MF liposome feed showed a significant decrease in ovary development at the 0.001% concentration. To determine the effect of MF on adult tadpole shrimp the 0.0001% MF-coated pellets were administered days 6 -10 after hatch. No significant difference was found between the delayed exposure group and controls, suggesting MF has no inhibitory effect on reproduction in adults. These data suggest MF inhibits ovarian development in juveniles, supporting the contention that MF has juvenilizing activities.

Skyler Nielsen, Pamela Lackie, Ph.D.
California State University, Fresno
Department of History
Graduate Student Presenter

The New Sparta: How the Events of the Fifth Century B.C.E. Changed Spartan Society

This paper will show how the Spartan's strict social system prevented them from dealing with the chall. This paper will show how the Spartan's strict social system prevented them from dealing with the challenges that the events between five hundred and four hundred B.C presented. This was due to certain assumptions held by the Spartans. Thus this paper will show two things: one how these assumptions were integral to Spartan society, and two, how these same beliefs worked against the Spartans because they were inadaptable to flux. By an examination of four institutions essential to Spartan society I will show how the society changed during the fifth century B.C.E. by citing both ancient and contemporary sources. These institutions are the use of Helots (conquered people bound to the land and forced to work it for the Spartans), the concept of victory versus defeat, the introverted worldview of the Spartans and finally the strict practices concerning birth and population in Sparta. Spartan citizens assumed that they would always be able to control the Helots. Thus when Sparta was being pressed by Athens and the Helots became more rebellious, the Spartans had to release Helots as well as divert troops that could have been used against Athens. The Spartans were so confident in their military system that they did not believe they could be defeated. Even when defeat was an obvious possibility they believed that the military would be able to rebound from the defeat with little trouble. Corruption was a problem that Spartans were not prepared for as they never envisioned a time when their people would confront the complications of wealth and power that the normally secluded Spartan polis was not supposed come into contact with. This paper will show how the Spartans assumed that there would always be enough men to fill the ranks of the Spartan military machine. When this did not happen in the fifth century, it was devastating to the Spartan social system.

Jim Phanucharas, L. Kerr, K. Van Gundy
UCSF Fresno

Medical Residents Fatigue With Traditional Call and Night Float Call

For years, medical training programs have utilized a traditional call system requiring residents to work 24-36 continuous hours. Blame regarding medical errors, car accidents, physical, and emotional well-being has been attributed to lack of sleep and extended working hours by resident physicians. In response to these concerns, the American College of Graduate Medical Education (ACGME) has posted new requirements of training programs mandating hours of work to not exceed 30 continuous hours. Many programs have responded to these requirements by adopting a night float system for coverage. However, limited data exists regarding resident physician call schedules and its effects on performance. We compare both call schedules, traditional call (24-30 continuous work hours) versus night float (12-14 continuous overnight hours with sleep scheduled during daylight hours), to assess if a difference exists in level of alertness. Performance vigilance testing in conjunction with the Epworth Sleepiness Scale and Stanford Sleep Scale was used pre- and post-call for both call systems. Preliminary results for residents performing traditional call have shown a statistically significant difference between pre- call (mean 222.4 msec, SD 30.4) and post-call (mean 242.4 msec, SD 45.5) response times (p 0.017, n=9). Insufficient subject numbers have been enrolled in this ongoing study to determine if a statistically significant difference exists between night float and traditional call. Although this data already shows that there is significant fatigue after traditional call. Currently, not statistically significant yet, there is a large difference between traditional call and the night float system, with the night float call not showing evidence of fatigue as compared to the rested residents.

Jana L. Price-Sharps, Matthew J. Sharps, Ph.D.
Sandy Schulte Day, Amy Boothby-Villegas
Michael A. Nunes
California State University, Fresno
Department of Psychology
Graduate Student Presenter

Cognition, Adult ADHD, and Substance Abuse

Attention deficit hyperactive disorder (ADHD) is associated with elevated levels of substance abuse, but the cognitive linkages involved have been little explored. Previous research in the authors' laboratory has indicated that a primary cognitive difficulty in ADHD lies in the realm of contextual reasoning. This is the ability to incorporate and integrate information from the context of a decision (such as potential risks, benefits, and consequences) into the reasoning process itself. Since individuals with ADHD appear to have more difficulty with this type of reasoning than those without the condition, it may be a failure of contextual reasoning, a failure to consider the full spectrum of risks and conseqences of substance abuse, which underlies the link between ADHD and substance abuse behavior. The present study used the Brown ADD Scales, the Six-Way Paragraphs, and the Substance Abuse Subtle Screening Inventory to investigate this issue and these relationships. The results were consistent with the hypotheses advanced. Regression analyses were used to find that the ability to sustain attention is necessary to formulate an understanding of the most important aspects of any given piece of information, and that the diminished ability to sustain attention associated with ADHD tends to impair the type of cognition under consideration, contextual reasoning, in the active decision-making processes involved in substance abuse. These cognitive tendencies in turn were shown to be associated with elevated levels of substance abuse. The results show the importance of developing an understanding of the cognitive processes involved in substance abuse behavior, and of cognitive linkages between substance abuse and conditions such as ADHD.

Holly Ramage, Alice D. Wright, Ph.D.
California State University, Fresno
Department of Biology
Graduate Student Presenter

Characterization and Transposon Mutagenesis of Propargyl Bromide Degraders

The primary pesticide used by farmers since the 1960s is a soil fumigant called methyl bromide. It is a very effective fumigant, however, there are concerns about the effects of methyl bromide on the ozone layer. As a result, methyl bromide is being phased out and alternative pesticides are being analyzed. This research will involve the isolation and characterize of organisms able to use an alternative pesticide, propargyl bromide, as a sole carbon source. Using enrichment culture techniques at ambient conditions we have isolated 10 organisms that degrade propargyl bromide from California soils with a history of fumigation with this pesticide. We are identifying these organisms using traditional biochemical analysis and by determining the DNA sequence of the small ribosomal subunit and comparing these sequences to a database of sequences from known organisms. Organisms that have lost the ability to degrade propargyl bromide are generated by transposon mutagenesis. All strains isolated are able to grow using propargyl bromide as a sole carbon source. Biochemical analyses have been inconclusive, however some strains have been tentatively identified, and include many strains of Pseudomonas. DNA sequences compared to the ribosomal database have identified some organisms as Pseudomonas and Bacillus species. We have screened approximately 200 colonies that have been mutated, and our currently determining those that are no longer able to degrade propargyl bromide. Our research has shown that there are a wide variety of organisms able to degrade propargyl bromide. However, the scope of this research is limited in that all species isolated must be able to grow at ambient temperatures. Further studies include examining the rate of degradation using gas chromatography.

Alicia J. Rivera, Malik Simba, Ph.D.
California State University, Fresno
Department of History
Graduate Student Presenter

Legal Controversies Related to *Brown v. Board of Education*

Objective: Following the Brown v. Board of Education landmark decision, Charles L. Black, who was professor of Jurisprudence at Yale University for thirty years, wrote in his essay: "The Lawfulness of the Segregation Decisions": "If the cases outlawing segregation were wrongly decided, then they ought to be overruled." The objective of this study is to present the legal controversy that arose following the Brown v. Board of Education decision. Following the decision, the media and the legal community called the ruling a "psychological ruling" because of its wording, which had strong psychological undertones. This gave way to the controversy of whether *Brown* was a decision based on the law or based on psychology? Does the law have the right to borrow knowledge from other disciplines? Finally, if Brown was not a decision based on the law; should it be invalidated?

Summary of Method: This research consulted an array of primary sources among which is the book *Argument*, which offers a word by word account of the Court proceedings in the Brown case. I also consulted several books by the best known authorities on Brown such as Richard Kluger's *Simple Justice*. I also analyzed legal scholastic journals which presented the controversy such as Annual Survey of American Law and contemporary newspapers such as the New York Times.

Conclusion: This paper concludes that the controversy arose mainly because the legal system was not accustomed to the cooperation of other disciplines in legal proceedings. Consequently, the legal community advocated a discourse of legal orthodoxy. Within this context the marriage of law with other disciplines such as psychology and sociology represented a very innovative concept within the legal community of 1954.

Veronica R. Rivera , Alvaro Garza, MD, MPH
UCSF-Fresno Latino Center for Medical Education and Research
Doctoral Student Presenter

Health Status in the San Joaquin Valley: A Comparison of California by Regions

Objectives: To develop a regional health report of the San Joaquin Valley considering selected major health indicators. To compare the Valley's health status to the rest of the state and to national health objectives in an effort to identify areas that need improvement.

Methods: Data were obtained from the California Department of Health Services. Age-adjusted death rates were calculated for selected causes by using the 2000 census county population distributions and the 2000 standard population data. Age-adjusted rates for causes of death (10 indicators) are for the year 2001, and morbidity (5 indicators), infant death, and natality (4 indicators) are 3-year averages. The 58 counties of California were divided into 8 regions: San Joaquin Valley, Bay Area, Border, Central Coast, Los Angeles, Mountain, North Coast, and Sacramento Valley.

Results: Compared to the other regions in the state, the Valley has significantly greater mortality rates with respect to coronary heart disease (230.2/100,000), cerebrovascular disease (72.3), diabetes (30.8), and motor vehicle injuries (22.2). The Valley also has higher rates for infant deaths (7.2/1,000 live births), births among adolescents aged 15-19 years (76.6/1,000), chlamydia incidence (313.8/100,000), and syphilis incidence (1.6). Additionally, the percent of children in poverty (27.5%) is also higher in the Valley. AIDS and TB incidence rates are lower in the Valley than the state as a whole. The Valley is behind other regions in meeting the Healthy People 2010 objectives for most of the health indicators reviewed.

Conclusions: The San Joaquin valley experiences higher mortality and morbidity for most indicators than the rest of the state. The areas with the greatest disparities, and that should be monitored, studied, and given priority attention include mortality in the general population from coronary heart disease, cerebrovascular disease, diabetes, and motor vehicle injuries. Other indicators that require attention include infant deaths, births to adolescents, poverty among children, chlamydia, and syphilis incidence.

Julie Rodriguez, Jarrad Wagner, Ph.D.
California State University, Fresno
Department of Chemistry
Graduate Student Presenter

Development of a Method to Detect Water-Soluble Accelerants in Arson Debris for Forensic Laboratories

A method to detect water-soluble accelerants in arson debris was needed by the California Department of Justice (CAL DOJ) Fresno Regional Crime Laboratory for the examination of evidence from fire scenes. In collaboration with criminalists from CAL DOJ and professors from California State University, Fresno, a method was developed that would give reliable results and could be practically implemented. The operational parameters of a Gas Chromatography-Mass Spectrometry (GC-MS) instrument, including oven temperature, column flow rate and split ratio were adjusted so that a mixture of methanol, ethanol, acetone and iso-propanol (the accelerants of interest) were separated. A method for extracting these analytes from arson debris was developed and tested for interferences and effectiveness with real-world samples. The accelerants were extracted from the samples by suspending a carbon strip in a sealed paint can over the sample and heating it for twenty to twenty five minutes. After heating, N-propanol was used to rinse the carbon strip in order to get the accelerants into a solution for analysis by GC-MS. There was an absence of interference with accelerant extraction from burned or unburned carpet, wood and drywall. However, there was significant interference with the analysis of acetone when moisture (in the form of water) was added to the samples. A mixture of all the accelerants was used to ignite controlled fires and each accelerant was detected on the resulting charred carpet, wood and dry-wall samples. This method is useful to the crime laboratory because it will enable them to prove the presence of water-soluble accelerants in arson cases where they have been used. In addition, the newly developed method is easily implemented as it is compatible with existing equipment in its current configuration.

Morton S. Rothberg, BS
Tropical Agronomist
Consulbrass Co.
CATI-ARI
University of California, Davis

Control of Nutrients in Agricultural Runoff Water by Barrier Plantings

Introduction: The objectives of this study are to determine the water consumption of the proposed barrier crop and its ability to remove nitrogen from the soil.

Methodology: A perennial, highly nutritious forage grass clone (Pennisetum Sp.) denominated Promor A has demonstrated its characteristic to absorb significant quantities of noxious nutrients from the soil, which originate from agricultural runoff water, confined animal feeding operations and food processing wastewater.

An experimental trial located at the Center for Irrigation Technology employs four treatments levels of water with four replications of field plots. Drip tubing was used for irrigation. The four treatment levels are based on coefficient factors applied to the daily Cimis evaporation data from Fresno State. The treatment coefficient levels (0.4, 0.8, 1.2 and 1.6) were calculated to establish consumption curves and application ratios verses mass weights. Harvest data included weights of field plots, forage analysis, and total nitrogen content. Three harvests were conducted during the crop year 2002. Six harvests are contemplated for 2003.

Summary: Statistical analysis of yields in tons of green mass per acre verses irrigation coefficient levels indicates that under the conditions of the experiment the maximum yields of this grass were obtained at approximately 80 to 100% of the daily reported Cimis evaporation data. In comparison the recommended application for alfalfa for the San Joaquin Valley is 120% of the Cimis data. Yields calculated on tons of hay per acre ranged from 0.55 to 0.87 per inch of applied water. Total nitrogen absorbed by the grass from the four treatments varied in a straight line relationship to irrigation application levels and mass yields ranging from 750 pounds to 3000 pounds per acre. During the period of the three harvests 360 pounds of nitrogen per acre was applied. Forage data indicated that the nutrient status of the grass was within acceptable standard values.

Conclusions: (1) Promor A absorbs significant amounts of nitrogen and is a potential candidate for barrier crop applications. (2)The grass is an efficient user of water. (3) Promor A has demonstrated value for animal feeding applications.

Sean Schafer, MD*; Andrew Alvarado, EdD*; Lupe Vargas,*
Jean Ann Seago, Ph.D., RN; Dennis Keane, MPH,****
Kevin Grumbach, MD**
**UCSF-Fresno Latino Center for Medical Education*
& Research
***UCSF Institute for Health Policy Studies*

Profile of San Joaquin Valley Nursing Students

Introduction: Limited diversity compounds an ongoing nursing shortage. In contrast to prevailing demographics, 93% of California nurses are female, and 70% white. A new California Endowment Initiative will employ financial aid, capacity building at six nursing schools, government policy advocacy, marketing, and cultural competency assistance to increase diversity among nursing students and graduates. The present study represents a baseline description of nursing students and their attitudes and circumstances preceding implementation.

Methods: This was a cross sectional survey, using in-classroom questionnaires, at 6 San Joaquin Valley nursing schools that will implement new diversity programs. Results Questionnaires were completed by 787 nursing students. Response rate was approximately two thirds of all nursing students on these campuses. Among respondents, 50% were white, 22% Hispanic, and 14% Asian (including 2% Hmong); 21% were born outside the U.S. The majority (56%) were married or in similar relationships with employed partners (90%). Nearly half (44%) had dependent children and 72% were employed. The median household income was $25,000 - $35,000. Over 75% reported some difficulty affording college. Almost all (96%) had supportive families, but 69% said home and family responsibilities sometimes interfered with schoolwork. Commute times were less than 30 minutes for 74%. Once on campus, majorities found their campuses safe and their classes convenient to schedule. Most (84%) felt they needed financial assistance, and 72% received some aid; however, the median amount was less than $2000. Anatomy was the most difficult subject: 14% had repeated this class. On various items, most respondents appeared at least somewhat satisfied with the quality of instruction and interaction with peers.

Conclusions: These descriptive results will serve as a baseline for program evaluation after implementation of diversity initiatives. Program administrators hope to observe increases in nursing student diversity and perceptions of accessibility of nursing training among ethnic minority students.

Matthew J. Sharps, Ph.D.
Sarah Van Valkenburgh
Heather Stahl
California State University, Fresno
Department of Psychology

The Evolution of Cognitive Predispositions: Hunting Adapations

For most of humanity's time on Earth, people lived as hunter-gatherers. It therefore seems probable that natural selection would have resulted in at least some cognitive specializations for this way of life. Our recent research has provided a strong experimental demonstration of this. Persons with no interest or experience in hunting or tracking nevertheless retained a significantly enhanced ability to remember and process animal tracks relative to other unfamiliar stimuli. The most parsimonious explanation of this finding lies in the idea of an evolutionary cognitive predisposition, useful to the hunter-gatherers of the ancient world, which has survived evolutionary time. If human beings possess such predispositions, especially in the realm of hunting-gathering (HG) behaviors, evidence of a continuing preoccupation with such behaviors should be evident in the art of peoples as they made the transition from HG to agrarian lifestyles. Native American peoples of the Ancient Southwest form the best sample to address this question, as they among world cultures made this transition relatively recently and left an abundance of superb rock art to document their preoccupations. To explore this suggestion, all available panels of rock art were photographed at six ancient, predominantly agrarian sites in Arizona and Utah, and the figures and abstractions analyzed. Results were consistent with these suggestions: human figures and game animals were the most common elements depicted, with no other figures or abstractions approaching these in number. No agricultural scenes or elements were depicted at all. Results indicate that a very strong interest in animals and hunting, at least in terms of recorded preoccupations, survived the transition from HG to the agrarian world for centuries, consistent, at this preliminary level, with the idea of the survival of HG-related cognitive predispositions. Results are considered in terms of the current trend toward increasingly sophisticated models in evolutionary psychology.

Andrew R. Smith , Paul C. Price, Ph.D.
California State University, Fresno
Department of Psychology
Undergraduate Student Presenter

Group Size Effect for Positive, Negative and Neutral Events

People are often required to make judgments about themselves and others in relation to the chances that a particular event will happen. Accurately judging the average risk of a group of people for getting a heart attack can help a manager determine the type of health care he should offer his employees. One must accurately estimate the likelihood they will own a house at some time in the future in order to takes steps towards achieving this goal. Understanding the factors that influence such judgments may lead to making better decisions about such events. This study will look at how the size of the group being judged affects the perceived likelihood that a particular positive, negative or neutral event will happen. Undergraduate psychology students at California State University, Fresno were asked to make judgments about the chance that a particular event would happen to the average person in a group. Each participant saw three pictures of people arranged into different size groups. These groups consisted of five, ten, or fifteen people. The students made judgments about positive, negative, or neutral future life events using a 7 point scale (1 = extremely low chance and 7 = extremely high chance) for the average person in each group. Each participant also judged the likelihood they would experience each event. The data suggest there is a significant group size effect for positive, negative, and neutral future life event. In other words, likelihood ratings increased for the average person in a group as the number of people in the group increased. Also, the participants demonstrated unrealistic optimism by, on average, judging the chance a positive event would happen to them as more likely than other people while also judging the chance a negative event would happen to them as less likely than other people.

Leda L. Smith
Alliant International University, Fresno
Doctoral Student Presenter

Object Relations in the Dynamics of Spiritual and Psychological Well-Being

Object relations theory is the first psychoanalytic perspective to recognize relationships as primary motivation for human development. This has taken Freud's psychoanalysis down a recently conceived and underdeveloped path toward integration with the concept of human spirituality. That psychoanalytic theory and spirituality would one day converge seems contradictory to the basic assumptions of both paradigms. Freud thought that science would eventually dissolve the pathological need for belief in God, and replace religion with a rational morality. Instead, the evolution of psychoanalysis has shifted from a view of libidinal-driven energy, which spurs human growth, to more of a relational-driven energy. This has opened new doors for the integration of spiritual principles, especially Christianity, which is at its core relational. Now Christian psychology, though once rejecting of Freud's atheism, can embrace the more modern advancement of his theory. Object relations theory proposes that early childhood relationships affect other relationships throughout life – relationships with others and with God. The first hypothesis of this study attempts to add further validity to prior research, which concludes that quality of relationship with others is highly correlated to quality of relationship with God. It is also hypothesized that the quality of relationship with others, as well as quality of relationship with God, has a significant influence on the perceived feeling of psychological well-being. Self-report inventories were administered to college students at a private university to measure quality of relationship with others (Bell Object Relations Inventory), quality of relationship with God (Spiritual Assessment Inventory), and psychological well being (Schwarz Outcome Scale – 10). A confirmatory factor analysis revealed that relationship with God and relationships with others are highly correlated. It was also found that the influence of relationships on psychological well-being is significant

Petra Smith, Shelby Palmer
Alliant International University, Fresno
Doctoral Student Presenters

Voter Registration as a Predictor of Jury Bias

In California the current draw for some counties' federal court juries (e.g., Fresno County) uses only voter registration lists. Using only voter registration as a source for juror candidates is often standard practice in selecting juries; yet, voter registration roles do not include all jury-eligible members of a community. This study examined whether the use of only voter registration lists contributes to a degree of bias in the current makeup of the jury in federal cases. This study utilized the pretrial jury bias questionnaire to assessed participants' possible juror bias in terms of reasonable doubt, legal confidence, legal cynicism, racial attitudes, privilege, and belief in innate criminality. In order to evaluate the relationship between voter registration and juror bias several statistical test were conducted. Statistical tests indicated that registered and nonregistered voters have dissimilar beliefs on the pretrial jury bias questionnaire. There was a significant relationship between voter registration and pretrial juror bias ($p < .05$). Of the individual subscales, legal cynicism, privilege, and racial attitudes had a significant relationship with voter registration. Statistical tests also indicated that age is a significant predictor of voter registration ($p < .01$). Results suggest that court circuits/district, which use only voter registration lists to draw potential jurors, are contributing to a biased jury. Registered and nonregistered voters appear to have dissimilar ideologies regarding crime, justice, and punitive measures. Results also suggest that age is a significant predictor of voter registration. Younger persons may have different ideologies regarding crime, justice, and punitive measures. Different ideologies may have an effect on, not only a person's individual decision on the jury, but also on their persuasion of other jurors' opinions. If young people are not making it into the jury pool due to their failure to register to vote, then their ideologies are not making it into the deliberation process.

Bahram Sohrabi
Clovis West High School
Abdolkarim Nasrabadi
VAMC Fresno

Factors Affecting Incomplete Excision of Cutaneous Squamous Cell Carcinoma

A. Cutaneous Squamous Cell Carcinoma (S.C.C.) is the second most common cancer amongst human beings. Incomplete excision of S.C.C. leads to recurrence which is difficult to treat. B. We reviewed the pathology reports of patients with cutaneous S.C.C. who had excision of their legion during 1991-2000. Data regarding the size, site, grade margins of the S.C.C. and the surgeon who performed the excision were compared for both groups of complete vs incomplete excisions. C. From 147 cases of cutaneous S.C.C. 115 cases had complete excision and 37 had incomplete excision. Site, size, grade of S.C.C. and the surgeon who performed the operation were not significantly different in either group. The only factor that was significantly different were the lateral margins. The average margin for completely a excised specimen was 3 mm or more. D. In order to avoid recurrence of cutaneous S.C.C., it should be excised with at least a lateral margin of 3 mm.

Geoff R.Twitchell, Ph.D., G.L. Hanna
E.H. Cook, H.E. Fitzgerald, R.A. Zucker
VA Central California Healthcare System, Michigan State University, University of Michigan, University of Chicago

Serotonin Transporter Promoter Polymorphism Genotype Is Associated With Behavioral Disinhibition and Negative Affect in Children of Alcoholics

Background: Serotonergic (5-HT) dysfunction has been implicated in the etiology of both behavioral disinhibition (BD) and negative affect (NA). This work extends our previous finding of relationships between whole blood 5-HT and both BD and NA in pubescent, but not prepubescent, children of alcoholics and continues examination of a hypothesized role of 5-HT dysfunction in alcoholism risk. The long and short (L and S) variants of the 5-HT transporter gene-linked polymorphic region (5-HTTLPR) are responsible for differing transcriptional efficiencies in 5-HT uptake. Although associations have been found between the SS 5-HTTLPR genotype and severe alcoholism and neuroticism, recent reports describe relationships between the LL genotype and both low level of response to alcohol and alcoholism diagnosis and a predominance of the LL genotype in early-onset alcoholics.

Methods: This report is from an ongoing prospective study of the development of risk for alcoholism and other problematic outcomes in a sample of families classified by father's alcoholism subtype. This study examines relationships between 5-HTTLPR genotype and both child BD (Child Behavior Checklist Aggressive Behavior) and NA (Child Behavior Checklist Anxious/Depressed) in offspring from 47 families.

Results: Results showed significantly higher levels of BD and NA in the 16 children with the LL genotype than the 46 SS or SL children. Conclusions: Behaviors of undercontrol, which occur at increased rates in children of alcoholics, may be genetically influenced through the regulation of the 5-HT transporter. Due to the small sample size and the preliminary nature of our findings, replication is necessary.

Zhi Wang, Ph.D ,
Department of Earth and Environmental Sciences
California State University, Fresno
William A. Jury, Ph.D. , Atac Tuli, Ph.D.
Department of Environmental Sciences,
University of California, Riverside (ES)

Does Water Flow Become Unstable in All Soils?

Our laboratory and field experiments show that one of the most common occurrences in soil--the redistribution of water in the soil profile after irrigation or rainfall stops--will cause the infiltrating water to form narrow channels called fingers that can move much deeper than the rest of the water in the soil profile. Laboratory 2-Dimensional and 3-D experiments and plot experiments in the filed were conducted to investigate the effects of unstable flow on water and contaminant transport in the subsurface. Uniform sands and agricultural soils were irrigated using various depths (3-25 cm, 1.2-10 inches) of water application. After the cessation infiltration, the water was allowed to redistribute for up to 30 days. The water front movements in the processes were recorded using photography, freezing and molding, and trench facing. Experiments in a sandy soil showed that as little as 5 cm (2 inches) of water added to a dry soil would create fingers that could move more than 1 m (3.2 ft) during redistribution. In addition, the wetted pathways formed by the fingers persisted in soil for long periods of time, and were able to channel subsequent water applications as long as a month later. Experiments in the agricultural sandy and loamy soils showed that the wetting front became uneven during redistribution, producing wetted patches in the deeper layers of soil. The degree of instability decreased with the increase of soil fineness. Based on the observations, we created a conceptual mathematical model that describes the final position of the fingers as a function of measurable soil retention and hydraulic functions, plus relationships describing finger size and spatial frequency. The model predicts that all soils are unstable during redistribution, but shows that only coarse-textured soils containing a lot of sand will form fingers capable of moving more than a few inches deeper than the rest of the infiltrating water. "These findings help explain field observations of deep chemical movement in soils without cracks or holes that have baffled other scientists and myself for over 20 years" said co-author William Jury (Distinguished Professor of Soil Physics in the Department of Environmental sciences at UC Riverside). The research discovery has serious implications for agricultural water management in coarse-textured soils. Fingering can move water and agricultural chemicals below the crop root zone, which is costly and inefficient, and can increase the possibility of ground water contamination. Detailed experimentation and modeling results are reported in two articles published in the February 2003 issue of Vadose Zone Journal (http://www.vadosezonejournal.org/): 1. Zhi Wang, Atac Tuli, and William A. Jury, 2003. Unstable flow during redistribution in homogeneous soil, VZJ, 2: 52-60. 2. William A. Jury, Zhi Wang, and Atac Tuli, 2003. A Conceptual Model of Unstable Flow in Unsaturated Soil during Redistribution, VZJ, 2: 61-67.

William F. Wright Ph.D.
California State University, Fresno
Department of Civil Engineering,
Edward D. Schroeder, Ph.D.
University of California, Davis, Emeritus Professor
Daniel P.Y. Chang, Ph.D
University of California, Davis
Department of Civil and Environmental Engineering

Regular Flow-Direction-Switching Increased Elimination Capacity In A Vapor-Phase Biofilter During Transient Loading Events

Transient loading of vapor-phase biofilters may result in exceedence of the local reaction or mass transfer capacity of the inlet region. In such cases higher concentrations of contaminants are carried deeper into the bed and, in some cases, breakthrough of contaminants may occur. The primary objective of this study was to test the hypothesis that periodic reversal of the flow direction would result in improved transient loading response. The hypothesis was tested by applying step function increases in contaminant concentration to conventional unidirectional flow and experimental flow-direction-switching laboratory reactors (150 mm I.D.) operated in parallel at a nominal (baseline) contaminant concentration of 107 ppmv, air flow rate of 0.018 m3/minute, and empty-bed residence time of 1.0 minute. Contaminant concentration was monitored at several points along the packed bed length prior to and during transient loading events. Toluene was used as the model contaminant compound and volumetric flowrate was held constant throughout the study. The primary hypothesis of the study was supported when reaction capacity increased by up to 85-percent and breakthrough of untreated contaminant was eliminated or reduced during transient loading events as a result of periodic flow-direction-switching. Relative to unidirectional mode of operation, periodic flow reversal produced a more uniform distribution of biomass and of cell-mediated reaction capacity along the length of the packed bed which effectively increased active biofilm-vapor interfacial area, and potential mass transfer rates. Development of operating strategies to minimize breakthrough will allow more extensive application of vapor-phase biofiltration technology. Moreover, information developed in this study should provide a more complete basis for establishing monitoring regulations for vapor-phase biofiltration systems.

Linda Xiong,
University of California, Los Angeles,
Henry Vanbrocklin, Nandanan Erathodiyil
Lawrence Berkeley National Laboratory
Undergraduate Student Presenter

Synthesis of Rotenone Derivatives: Mitochondrial Electron Transport Chain (ETC) Complex I Probes

The overall objective of the Department of Nuclear Medicine and Functional Imaging at LBNL is to develop efficient methods to help diagnose diseases and monitor treatment. The goal of this project was to produce new rotenone derivatives, compounds known to be potent inhibitors of the mitochondrial electron transport chain, which will be labeled with carbon-11 or fluorine-18 for PET (Positron EmissionTomography) imaging. These rotenone derivatives are potential imaging agents for cardiac diseases. Commercially available rotenone was converted into different analogs using various synthetic chemistry procedures. After each successful reaction step the product was purified and fully characterized. These compounds will be further converted to imaging agents in the radiochemistry laboratory or will be used to confirm the identity of the new radiolabeled compounds. Continuing the research towards finding new radiolabeled tracers will lead to better and more efficient means of identifying disease in the human body.

POSTER PRESENTATION ABSTRACTS

(IN NUMERICAL ORDER BY POSTER BOARD NUMBER)

M.Beene, C. Krauter, Ph.D., D. Goorahoo, Ph.D.
California State University, Fresno
Department of Plant Science
Center for Irrigation Technology
Graduate Student Presenter
Poster Session I, Poster Board No. 1

Seasonal Ammonia Emissions From Crops in the San Joaquin Valley, California

Air quality in California is a matter of increasing concern. The State Air Resources Board is completing an inventory of atmospheric constituents that may contribute to air quality problems. Among those constituents is ammonia (NH3) that has been shown to form secondary particulates (PM2.5) when combined with oxides of N and S from combustion. Ammonia, the dominant gaseous base in the atmosphere and a principal neutralizing agent, remains one of the most poorly characterized atmospheric trace compounds. Among the factors influencing ammonia emissions are the capacity of soils, organic matter, and vegetation to act as both sources and sinks for atmospheric ammonia, and the variability in nitrogen fertilizer management practices. The objective of the current study, funded by the California Air Resources Board, was to characterize NH3 emissions in the Central Valley of California from crops and natural vegetation through their entire seasons. The study will continue through 2004. An active sampling technique was used with denuders and anemometers co-located at four heights.NH3 concentrations were measured at 0.5m, 1.0m, 2.0m, 4.0m and 10.0m along with wind speed and wind direction. A barley crop grown to be green chopped for dairy forage was sampled in January 2002.The NH3 values were relatively low due to high humidity and low temperatures. A low elevation (300m), annual grass range was sampled on dates that were similar to the barley/silage corn field. The NH3 flux profiles were considerably lower than those in the barley measured at about the same time. Two preliminary conclusions that are beginning to emerge are that there is a clear diurnal difference in NH3 emmissions with more being found in the day than at night and a vertical flux gradient occuring with higher concentrations at the higher sampling heights and lower concentrations at the lower sampling heights.

Tesha Boado, Robert T. Gaeta, Denise K. Case, Glenda W. Polack
Alejandro Calderón-Urrea, Ph.D.
California State University, Fresno
Department of Biology
Undergraduate Student Presenter
Poster Session I, Poster Board No. 2

Evidence for the Lack of Evolutionary Conservation of Cell Death Pathways Between Plants and Animals

Introduction: Programmed cell death (PCD) is a genetically regulated process that rids plants and animals of unneeded or damaged cells during development, disease and homeostasis. It is believed that PCD mechanisms have evolved from unicellular organisms a view supported by the existence of similar molecular elements of PCD in both plants and animals. The best-studied PCD models in animals are the nematode *Caenorhabditis elegans* and the fruit fly *Drosophila melanogaster*. Several genes in these organisms have been identified that are responsible for inducing cell death in a caspase-dependent pathway, i.e. *grim*, *rpr*, and *hid* in the fly and *ced3*, *ced4*, and *egl1* in the nematode. We reason that if animal PCD genes are able to induce PCD in plant cells, this indicates the presence of evolutionarily conserved factors shared by these two groups.

Methods: Animal PCD genes were cloned using standard molecular techniques. Expression of the animal genes in plants was detected using the technique of RT-PCR. Tobacco plants were grown in growth chambers under controlled conditions.

Results: We expressed *rpr*, *hid*, *ced3*, and *ced4* in *Nicotiana tabacum* (tobacco) cells using an *Agrobacterium*-mediated transient expression system to deliver the genes into fully expanded leaves. Transient expression of *rpr*, *hid*, *ced3*, and *ced4* in tobacco leaves did not elicit a PCD response after 72 hours post-inoculation. We confirmed expression in plant cells of the introduced genes using RT-PCR. Although transgenic tobacco plants containing *ced3* and *ced4* appeared normal we detect high mRNA levels of the introduced genes

Conclusions: Our results indicate that the *rpr* and *hid* genes from *D. melanogaster*, and *ced3* and *ced4* from *C. elegans* are unable to induce PCD in *N tabacum*. This suggests that similar caspase-dependent PCD pathways are not shared by plants and animals.

Robin Ann Brake, Ruth Ann Kern, Ph.D
California State University, Fresno
Department of Biology
Graduate Student Presenter
Poster Session I, Poster Board No. 3

An Investigation into the *Pinus sabiniana* Range Discontinuity in the Kings, Kaweah, and Tule Watersheds

Blue oak woodlands are California's most common hardwood forest, covering nearly three million acres. These woodlands are endangered due to increasing blue oak senescence, as well as environmental stresses related to pollution, suburban expansion, rural building, firewood harvesting, and agricultural/ranching enterprises. *Pinus sabiniana* is a dominant endemic species of the valley and foothill woodlands surrounding the San Joaquin Valley in California. *P. sabiniana*, or gray pine, is inexplicably missing in a fifty-five mile segment on the southeastern portion of its potential range. This study hypothesized that *P. sabiniana* does not grow in the gap due to an environmental gradient established by slope and aspect compared to those areas that do support the species. Field sampling was conducted in foothill woodland research sites situated north, south, and within the range gap at 15 locales in Fresno, Tulare, and Kern counties. Data was collected for 900 point samples during the spring/summer season 2002 and 2003. All tree and shrub species within each point sample were identified and recorded along with the environmental variables of slope, aspect, potential radiation, topographic position, slope configuration, elevation, and the nature and degree of disturbance. Data will be examined using Canonical Correspondence Analysis (CCA) and analysis of covariance to describe the relationship between *P. sabiniana* distribution and physical site factors. This study is significant in providing much needed research into a historically under-studied community. Because the gray pine is a major associate in the blue oak foothill woodland community, solving the *P. sabiniana* range discontinuity mystery will add one more piece of information required to sustain the community in a scientifically appropriate manner.

Florence Cassel, Ph.D., Mary McClanahan,
California State University, Fresno
California Water Institute
Dave Goorahoo , Ph.D.
Shankar Sharmasarkar
Water Management Research Laboratory, USDA, Parlier, CA
Ronald Crites, Jordan Smith
Brown and Caldwell, Sacramento, CA
Jo Anne Kipps, and Stephen Klein
California Regional Water Quality Control Board
Central Valley Region
Poster Session I, Poster Board No. 4

Assessing The Impacts Of Food-Processing Effluent Land Application On Subsurface Water Quality

Land application of food-processing effluent water is a common practice in irrigated agriculture. Such disposal method reduces agricultural demand for fresh water and allows recycling of organic matter and nutrients for plant growth. However, over-application of these effluents, containing high amounts of organics and minerals, can affect subsurface and ground water quality. The objective of this project was to conduct a three-month observational study to monitor subsurface water quality in a corn field receiving tomato-processing effluent water applied at various organic loading rates through surface irrigation. The study site was located in Lemoore in the Central Valley of California. Three organic loading treatment rates, characterized as biological oxygen demand (BOD), were selected for this field investigation: canal water (CONTROL), tomato processing effluent water (STRAIGHT), and a combination of canal water and tomato-processing effluent water (MIXED). Suction lysimeters installed at 2 ft depth were used to collect percolate water samples following effluent application. Water sampling was conducted twice for each organic loading treatment during the processing season. Results of this study showed that removal of organics and nitrogen occur following effluent water application. High levels of TDS, Cl, SO_4, NO_3-N, Mn, and Fe were observed in percolate waters below the root zone. Application of higher BOD loading rates resulted in increased alkalinity and reduced TDS, TKN and nitrate concentrations of the percolate waters. Such findings support the carbon dioxide dissolution during the aerobic decomposition of organics and show the role of BOD in the denitrification process of the applied total nitrogen. Additionally, the field investigation indicated that the oxygen demand generated from the BOD loadings was taking place over several days. Overall, the results of this observation study showed that tomato-processing effluent water applied at high loading rates could potentially leach into and contaminate the groundwater.

Michael Comerford
California State University, Fresno
Department of Nursing
Graduate Student Presenter
Poster Session I, Poster Board No. 5

Chest X-Ray Interpretation: An Educational Module

The objective of this project is to provide the Advanced Practice Nurse (APN) with basic skill in chest x-ray interpretation through a standardized approach. The purpose is to train the APN in utilizing a logical, systematic, and thorough method of evaluating a chest x-ray. The significance is to promote accuracy and reduce errors for optimum patient outcomes. The method of instruction is a power point presentation of educational material, chest x-ray slides, and demonstration of a check-sheet assessment tool. Through this instructional program, the APN will develop skill in identifying normal and abnormal findings and be able to identify twelve common disease abnormalities. Theories from Knowles and Watson were applied as guiding principals in providing this APN training.

Michelle Davison , Alice Wright, Ph. D
California State University, Fresno
Department of Biology
Undergraduate Student Presenter
Poster Session I, Poster Board No. 6

Promoter Activity of *tfdR*

For many years, synthetic chemicals enabled farmers to produce healthier, more profitable crops. 2,4-dichlorophenoxyacetic acid (2,4-D) an effective herbicide used to control broadleaf plants, is extensively used. Many herbicides accumulate in the soil, posing serious health concerns. Fortunately, many soil microbes have evolved intricate pathways and means of exploiting harmful herbicide chemicals, such as 2,4-D, into innocuous carbon dioxide and water. It is of vital importance that these bacteria be more extensively studied. This project will investigate the promoter activity of the regulatory genes, *tfdR* and *tfdS* in *Ralstonia eutropha* JMP134, to further knowledge of how dangerous chemicals can be removed safely and efficiently from our environment.

Research Plan Objectives:
1. Designing of primers to amplify the promoter regions *tfdR/S*, by using the Polymerase Chain Reaction (PCR).
2. Cloning of amplified promoter regions into a plasmid vector by means of a TOPO kit.
3. Use of restriction enzymes to digest the TOPO plasmid, and insertion of the promoter genes into the pKRZ1 plasmid engineered with a promoter-less *lacZ* gene.
4. Analysis of the activity of the promoter under induced and uninduced conditions by means of the Beta-Galactosidase Assay. o-Nitrophenyl-Beta-D-Galactopyranoside (ONPG) reacts with Beta-Galactosidase to produce a bright yellow color, the intensity of which can be quantified using a spectrophotometer, and converted into Miller units for comparison.

DNA has successfully been extracted from strain JMP134 bacteria and verified by electrophoresis in a 0.8% agarose gel with a lambda DNA ladder.

As the research progresses and more data is obtained, conclusions will be drawn as to the promoter activity of *tfdR* and whether it is inducible or uninducible.

Rhon E Manor, Alam Hasson Ph. D.
California State University, Fresno
Department of Chemistry
Graduate Student Presenter
Poster Session I, Poster Board No. 7

Dynamic Instabilities in Tropospheric Chemical Reactions: A Modeling Study

This study examines the factors affecting the stability of various atmospheric chemical systems. This work describes computer simulations that were performed to investigate the kinetic behavior of various atmospheric reactions common to air pollution mechanisms. The impacts of four chemical families on the stability of atmospheric pollutants were investigated using an atmospheric computer-modeling program. Specifically, this study was designed to answer the following questions: 1. Under what conditions do the species within a chemical model exhibit behavior conducive to change (instability)? 2. If the system exhibits this type of behavior, how long are the periods of instability? 3. Is this type of behavior likely to be observed under ambient (natural) conditions? A chemical mechanism was constructed that included all of the important atmospheric reactions. A computer program was then used to calculate the evolution of the chemical concentrations over a period of time. This data was used to construct 3-dimensional models to represent these regions of instability. Points within these regions were selected and compared to typical concentrations that have been measured in different regions of the atmosphere to evaluate the probability that these regions of instability may occur in nature. The methodology used in this study was validated using current research. Comparison of this model to ambient pollutant concentrations showed that instabilities in the earth's atmosphere might occur for three of the four systems studied. However, the regions in which instabilities are likely to occur varied from model to model. Factors such as timescales and atmospheric conditions may significantly perturb the concentrations of key chemical constituents. A more sophisticated chemical model is now under construction that will take these effects into account. The results of this study improves our understanding of the conditions required for the onset of chemical instability, which in turn enables us to evaluate the usefulness of chemical models as a tool for predicting trends in air quality.

Keo Mo, Adam B. Hess, Karl M. Oswald Ph. D.
California State University, Fresno
Department of Psychology
Undergraduate Student Presenter
Poster Session I, Poster Board No. 8

Application of the Spacing Effect to a Classroom Setting

The spacing effect refers to the benefit in retention by distributed practice (versus massed practice). This significant, yet simple, technique often enhances retention by 30% (see Dempster, 1996). Although the effect is robust and ubiquitous, research on the application of distributed practice techniques in applied settings such as the classroom is lacking. The current experiment investigated the spacing effect in an academic setting by manipulating the interval between taking notes from a videotaped lecture and reviewing those notes. To investigate this issue, the single independent variable of interval between note taking and review was manipulated between subjects, creating three groups: immediate review, review after a 10-minute interval, and a review after a 20-minute interval. The dependent variable was performance on a multiple-choice test administered 20 minutes after reviewing notes. Participants first viewed a 15-minute taped lecture and took notes during the session. After the lecture, participants reviewed their notes either immediately, after a 10-minute filled interval, or after a 20-minute filled interval. After reviewing their notes for two minutes, participants were shown an unrelated video for 20 minutes. Following the unrelated video, participants completed an 11-item multiple-choice test on material presented in the lecture. Results indicated that multiple-choice test performance was significantly higher for both the 10- and 20-minute delay conditions relative to the immediate (no delay) condition. There was no significant difference between the 10- and 20-minute delay conditions. Most importantly, this study replicated the spacing effect (i.e., mnemonic benefits from distributed practice relative to massed practice). Specifically, the current experiment demonstrated that 10- and 20-minute intervals between note-taking and note-studying significantly enhance retention relative to an immediate-study condition. This finding extends the spacing effect by demonstrating its practical application to classroom settings and its boundary conditions.

Uma Mohanasundaram, MD
Atsuko Shibata, MD, Ph.D.
UCSF Fresno
Poster Session I, Poster Board No. 9

Analysis of Changes in PSA Levels with Reference to Recurrence of Prostate Cancer

Objectives: Prostate cancer screening detects tumors that would never have reached the symptomatic stage resulting in controversies about management. This study is conducted to determine if there is any change in both PSA and grading of cancer between biopsy and surgery and to examine recurrence rate of PSA during the years of follow up after radical prostatectomy among the groups with different levels of PSA and grade change.

Methods: This study includes 151 patients diagnosed with prostate cancer and who had undergone radical prostatectomy from VA Palo Alto. Changes in the level of PSA and Gleason grading sum of prostate cancer between the time of biopsy and surgery were considered as the variables of interest with PSA recurrence after radical prostatectomy as the outcome.

Results: There is significant change in PSA level between biopsy and surgery (P-0.01) and a significant change in sum of grading between biopsy and surgery (P<0.0001). A model Chi square test statistic provided a p value of 0.0040 showing that there is significant association between change in PSA and PSA recurrence after radical prostatectomy and a chi square test p value of 0.7487 showed that there is no significant associaton between change in grading and PSA recurrence after surgery. After a follow up period of 3.2 years, the esimated odds ratio of 1.248 with 95%CI of (1.064,1.465) showed that the odds of PSA recurrence increased by 4.8% for each unit change in PSA level between biopsy and prostatectomy. The esimated odds ratio of 1.019 with 95%CI of (0.907,1.146) showed that the odds of PSA recurrence increased by 1.9% for each unit change in grading between biopsy and prostatectomy. The esimated odds ratio of 1.1.249 with 95%CI of (1.065,1.466) for change in PSA and 1.026 with 95% CI of (0.910,1.158) for change in grading showed that the odds of PSA recurrence increased by 4.9% for each unit change in PSA level between biopsy and prostatectomy and increased by 2.6% for each unit change in grading when both the variables are used in the model.

Conclusions: There is significant change in the level of PSA and grading sum of cancer between biopsy and surgery. There is an association between changes in PSA levels and PSA recurrence after radical prostatectomy. No association observed between changes in grading sum of cancer and PSA recurrence after radical prostatectomy.

Steven T. Garrard
California State University, Fresno
Department of Health and Human Services
Graduate Student Presenter
Poster Session I, Poster Board No. 10

Wound Management: A Teaching Module For Nurse Practitioners

Health care resources are being stretched, with higher levels of outcome expected. Likewise the role of the nurse practitioner continues to be taxed with new responsibilities to provide patients with the same increasingly raised standards of care that would have otherwise been delivered by a physician. Lacking the benefit of a standard twelve week surgical rotation to acquire assessment and management skills of traumatic wounds, the nurse practitioner is in need of a learning module which offers practices based off of research from the various disciplines of medicine that handle traumatic and surgical wounds.

The purpose of this project was to develop a wound management-training module for nurse practitioners that focuses on wound closure skills. To complete and actuate this educational module an extensive literature review on algorithms, protocols, teaching methods, and wound closure skills was conducted. An integrated module including Power Point presentation and practice session was developed.

Family nurse practitioner students completed the module and revisions were made according to the feedback received by way of their evaluations. An overwhelming finding was that students wanted more time devoted to the psychomotor skills which would give them the confidence to perform wound explorations and closures at their clinical sites.

As nurse practitioners continue to perform the duties historically only performed by physicians, teaching modules like this developed with current research based practices will give the nurse practitioners a firm foundation to fulfill their role.

Dana K. Nagy, Ruth Ann Kern, Ph. D.,
Carolyn T. Hunsaker
California State University, Fresno
Department of Biology
Graduate Student Presenter
Poster Session I, Poster Board No. 11

Riparian Vegetation Composition and Organic Matter Inputs on Headwater Streams of the Sierra Nevada

Riparian vegetation composition and organic stream inputs will be quantified to assess variation of inputs to montane headwater streams due to compositional differences within the physical template. Riparian vegetation composition will be quantified using a combination of small vegetation monitoring plots located in the riparian zone of each stream and line-transects set up perpendicular to the direction of stream flow. Organic matter will be collected, using litter traps, accounting for both vertical and lateral inputs. Physical measurements, including slope, aspect, elevation, lithology, and stream dimensions will be recorded for each stream segment. In addition, the microhabitat of each stream segment will be characterized using soil moisture, soil temperature, air temperature, stream temperature, and humidity as well as canopy cover and light availability. Fieldwork will be conducted on eight headwater streams, one each on eight small watersheds within two basins on the Kings River Experimental Watershed (KREW), Sierra National Forest. The role of headwater streams is integral to the function and health of riverine systems within the Sierra Nevada. The results of this study will increase our understanding of the role of riparian vegetation for the Sierra Nevada and it's importance as a link between lotic and upland systems.

Isabel Mathos
California State University, Fresno
Graduate Student Presenter
Poster Session I, Poster Board No. 12

Management of Hepatitis C Among Inmate Population

Treatment of patients with chronic hepatitis C with recombinant interferon alfa(rIFN-a) can cause a decrease serum transaminase and hepatitis C virus (HCV) RNA. Recent trials evaluating combination therapy of IFN-a and ribavirin suggested a potential synergistic effect. From serial measurements of serum HCV RNA concentrations following treatment-induced perturbation of the balance between virus production and clearance, The antiviral efficacy of both IFN-a alone and IFN-in combination with ribavirin were compared. Chronically HCV- infected patients were treated with either 3x3 MU or 3x6 Mu rIFN- per week 0r 3x6 MU rIFN-a plus 14 mg/kg of body weight ribavirin per day.

The time dependent HCV RNA concentrations during antiviral treatment were by iterative least square regression. After initiation of antiviral therapy, HCV RNA declined exponentially below the detection limit of the reverse-transcription polymerase chain reaction assay (1,000 HCV RNA molecules per milliliter) in 10 of 26 (39%, 10 of 19(53%), and 10 of 18 patients (56%) treated with 3 x3 MU, 3x6 MU rIFN-a without and with ribavirin, respectively.

Viral clearance from serum was faster in patients treated with 3x6 MU rIFN-a (tl/2-0.23+0.15) compared with patients treated with 3x3 MU rIFN-a per week (0.67= 0.36 days) ($p<.004$). However, half-lives of viral clearance were similar in patients treated with rIFN-a plus ribavirin.

The data of this treatment indicate that higher rIFN-a doses accelerate viral clearance from serum. Ribavirin (14 mg/kg/d), however, lacks synergistic antiviral effect in the treatment of chronic hepatitis C with 3x6 MU, rIFN-a per week.

F.A. Ringwald, Ph.D.
S. J. White, A. I. Cowley, J. W. Prigge, S. S. Endler, B. K. Bellis, E. D. Cardoza, G. Reyna, J. D. Rorabaugh, R. W. Severson, Jr.,
California State University, Fresno
Department of Physics
G. E. Morgan
Central Valley Astronomers
H. D. Guenther
Biola University
Poster Session I, Poster Board No. 13

Fresno State's New Campus Observatory

Fresno State's new Campus Observatory became operational behind the Downing Planetarium in 2002 May. The 16-inch Meade LX-200 telescope's current instruments are all used at Schmidt-Cassegrain focus at f/10, and include a digital SBIG ST-8 CCD camera, an AO-7 Adaptive Optics System for correcting the effect of turbulence in Earth's atmosphere, and a Self-Guiding Spectrograph for analyzing starlight with its own dedicated SBIG ST-7XE CCD camera. We also have a Meade f/3.3 focal reducer, for wide-field imaging with the ST-8. The telescope's image resolution, or smallest detail it can discern, is between 1-2 arcseconds for 80% of the time, excellent for a facility not on a mountaintop. This is probably because of the observatory's small size, unpainted aluminum skin, and being surrounded by grass, all good for thermal properties. Despite being on campus (and convenient for students to use), it routinely images 19th magnitude stars (100,000 times fainter than the unaided eye can see) in short (1-2-minute) exposures, despite Fresno's bright urban sky. Current science programs include (1) Target-of-opportunity observations of the nuclear-powered eruptions of classical novae, by Greg Morgan; (2) Searches for stellar variability, particularly from hot, high-gravity stars that heat cool companions that have undergone common envelope evolution, by Scott Endler; and (3) Searches for transits of extrasolar planets, by Jesse Rorabaugh and John Prigge. Proposed programs include (a) Searches for black holes; (b) Campaigns with the Center for Backyard Astrophysics, a global network of small telescopes, dedicated to observing cataclysmic variable stars and their outbursts; and (c) A campaign in support of NASA's Deep Impact spacecraft, which is scheduled to make a crater in Comet Tempel 1 on July 4, 2005. On most projects we collaborate with the Cental Valley Astronomers, Fresno's amateur club, who are a huge help. We also thank the College of Science and Mathematics at California State University, Fresno, for their support.

Nancy Ramirez
California State University, Fresno
Undergraduate Student Presenter
Poster Session I, Poster Board No. 14

Preventing Teen Pregnancy: Teenagers' Opinions Regarding Sex Education

While teen pregnancy has declined in the United States in recent years, the United States still has the highest rate of teen pregnancies of any industrialized nation. In 2000, the birth rate for teenagers 15-19 years in the United States and California was 48.5 per 1,000. However, the national birth rate for Hispanic teenagers 15-19 years was 94.4 per 1,000 for the same year. Within Fresno and Madera counties of California an area with a large Hispanic population the adolescent (15-19 years) birth rate was 73.1 and 74.2 per 1,000 females (15-19 years) in 2000. The purpose of the current study was to discover what adolescents want and need regarding of sex education, thus leading to the development of programs that will reduce the teen pregnancy and birth rate in the San Joaquin Valley. The hypothesis of the current study was that teens want a comprehensive sex education program over an abstinence only program. It was also predicted that Hispanics would want to learn more about contraceptives than Caucasians because of the high teenage birth rates among this group. Data are currently being collected from 700 hundred teenagers from a high school in Fresno County, California who volunteered for this study. This study was an observational study investigating the beliefs and attitudes of teens regarding pregnancy and pregnancy prevention. The instrument used was an adapted version of a survey by Hacker, Amare, Strunk, and Horst (2000) used to measure teens' perspectives on teen pregnancy and issues related to teen pregnancy, including sex education. This revised survey consisted of 20 questions. Results will be available April 4, 2003. A pilot study conducted on college students indicated no statistically significant differences in participants' preference of comprehensive sex education over abstinence.

Wendy Holmes, Rick Zechman, Ph. D.
California State University, Fresno
Department of Biology
Graduate Student Presenter
Poster Session I, Poster Board No. 15

Molecular Systematics of the Cladophorales Based on rbcL and 26SrRNA

The Cladophorales is an order of green algae in the class Ulvophyceae. This study looks at the phylogeny of different species with in the 3 families of the Cladophorales. The family Cladophoraceae includes marine, brackish and fresh water species. The families Siphonocladaceae and Valoniaceae have tropical marine species. DNA is extracted from species that are representative of the different families. Primers for rbcL and 26S rRNA are used to amplify specific portions of the genes. PCR products are purified with a QIAquick PCR purification kit and sequenced by using the Big Dye terminator cycle sequencing kit. Sequences from various species will be aligned with Custal X and then imported in PAUP for Phylogenetic analysis. Phylogenetic analysis will include establishing trees from both parsimony and maximum likely hood. The goal of this study is to determine if three families of the Cladophorales, including various genera, are monophyletic. Previous studies with 18S rRNA could not clearly resolve phylogenetic relationships within the Cladophorales. At present, DNA sequences are being obtained for both 26S rRNA and rbcL for the taxa of interest. Phylogentic analysis will begin after DNA sequencing has been completed.

Sarah Horton, Robert Levine, Ph. D.
California State University, Fresno
Department of Psychology
Undergraduate Student Presenter
Poster Session I, Poster Board No. 16

Persuasion and Advertising: Teaching Resistance to Unhealthy Food Choice

The current study focuses on teaching resistance to persuasion in advertising, specifically with concern to nutrition and food choice behavior. The hypothesis of the study is that participants who have had their illusion of invulnerability dispelled will rate food advertisements as less persuasive than a control group who has not. The concept of dispelling the illusion of invulnerability was proposed by researchers who found that most people believe they are not susceptible to persuasion used in advertising while also believing that others are. These researchers found that dispelling the illusion leads to less susceptibility to persuasion in subsequent advertisements. However, specific domains of advertising have not been tested . Previous research has not examined whether this effect holds true for food advertisements. The specific methodology involved three conditions: a control condition, a passive treatment condition, and an active treatment condition. All conditions were given three example food advertisements. The control condition read an irrelevant article. Both the active and passive treatment conditions entailed reading an article which asked probing questions meant to show participants that they had been duped by the persuasion of the advertisements. The active treatment involved providing written responses to the questions. Following this, all participants were given three additional food advertisements and were asked to rate how persuasive they found the advertisements to be. The mean persuasiveness for each condition was calculated and a one-way analysis of variance was conducted. No significant differences were found between the conditions. These results may indicate that persuasion in food advertising functions somewhat differently from persuasion used in other domains. If this is the case, further research is warranted on exactly how persuasion in food advertising does function.

Tee Jane Teh, Lynnette Zelezny, Ph. D.
California State University, Fresno
Department of Psychology
Undergraduate Student Presenter
Poster Session I, Poster Board No. 17

Gender Differences and Hunger Status on Self-Esteem, and Anxiety: A Quasi-Experimental Study

This study aimed to examine the interaction between gender and hunger status on self-esteem, and anxiety. California State University, Fresno students (N=39) were given four questionnaires to assess hunger as measured by a self-designed hunger scale, self-esteem as measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965), anxiety as measured by the Spielberger State Anxiety Inventory (Spielberger, 1983), and demographics as measured by a self-designed questionnaire. It was hypothesized that there would be an interaction between gender and hunger on self-esteem, and anxiety. Using a 2x2 factorial ANOVA, no significant interaction was found between gender and hunger status on self-esteem, $F(1, 35) = .144$, $p = .706$. Moreover, there were no significant gender differences on self-esteem, $F(1, 35) = .003$, $p = .958$, and no significant differences between levels of hunger on self-esteem, $F(1, 35) = .163$, $p = .689$. Similarly, there was no significant interaction between gender and hunger status on anxiety, $F(1, 35) = .412$, $p = .525$, and no significant gender differences on anxiety, $F(1, 35) = .588$, $p = .448$. However, significant differences between levels of hunger and anxiety was approaching statistical significance, $F(1, 35) = 3.978$, $p = .054$. In addition, exploratory post hoc analysis found a significant interaction between gender, ethnicity and anxiety, $F(1, 21) = 4.346$, $p = .049$.

Daniel Rios , Saeed Attar, Ph.D.,
California State University, Fresno
Matthias Stender, Ph.D.
Rochelle L. White-Morris, Ph.D., Alan L. Balch, Ph.D
University of California, Davis
Department of Chemistry
Undergraduate Student Presenter
Poster Session I, Poster Board No. 18

Remarkable Luminescence Behavior of Two-Coordinate Gold(I) Complexes: Correlation of Structure and Spectroscopy

Introduction: Attractive interactions between closed-shell gold(I) centers are important in determining the structures of many gold(I) complexes. Such *aurophilic* interactions are found whenever adjacent Au···Au contacts are less than the van der Waals separation of *ca* 3.6 Å. As a consequence of such aurophilic attractions, many two-coordinate gold(I) complexes self-associate into dimers, trimers, and extended chains that are connected exclusively through Au···Au contacts. Two-coordinate gold(I) complexes typically are colorless but may display strong luminescence in the visible region of the electromagnetic spectrum depending upon the ligands present and on the state of supra-molecular aggregation. Since these luminescent properties are readily detected, they have potential applications as sensors. However, the physical basis for the phenomena needs to be understood first and the range of materials that participate in such luminescence needs to be discovered. Thus, the long-range goal of this study is to provide models for the types of aggregation that two-coordinate gold(I) complex can undergo. To that end, we have undertaken structural and spectroscopic studies of a series of neutral complexes of the type, (RNC)Au^{I}CN, where RNC is an isocyanide ligand.

Methods: The three new, colorless complexes (CyNC)Au^{I}CN, *n*-BuNC)Au^{I}CN, and (*i*-PrNC)Au^{I}CN were prepared by the addition of the appropriate isocyanide ligand to a suspension of AuCN in chloroform. The product was precipitated by the addition of petroleum ether. The X-ray crystal structures of these three complexes were determined. In addition, each complex was characterized by IR, UV-Vis, and luminescence spectroscopy. The structural results were compared with those of (MeNC)Au^{I}CN and (*t*-BuNC)Au^{I}CN, which had been previously reported.

Results & Conclusions: These linear molecules are all organized through aurophilic interactions into three structural classes in the solid state: *simple chains* [seen in (CyNC)Au^{I}CN and (*t*-BuNC)Au^{I}CN], *side-by side chains* in which two strands make pair-wise Au···Au contact with each other [seen in (*n*-BuNC)Au^{I}CN], and *nets* in which multiple aurophilic interactions produce layers of gold(I) centers [seen in (*i*-PrNC)Au^{I}CN and (MeNC)Au^{I}CN]. All of these five solids dissolve to produce colorless, non luminescent solutions with similar UV-Vis spectra. However, each of the solids displays a unique luminescence profile with emissions maxima occurring in the range 371 to 430 nm.

Kurt R. Sterling, Alice Wright, Ph. D.
California State University, Fresno
Department of Biology
Graduate Student Presenter
Poster Session I, Poster Board No. 19

Sequence Diversity in the tfdR Regulatory Gene for the 2,4-D Catabolic Pathway

2,4-dichlorophenoxyacetic acid (2,4-D) is a man-made herbicide that has been widely used since 1945 to control dicotyledoneous weeds and is rapidly mineralized by soil bacteria. Bacteria have spontaneously developed the ability to degrade 2,4-D by assembling the genes for each of the pathway enzymes from different sources, developing unique degradative pathways. However, little is known about the regulation of these pathways. In this study we used PCR amplification and DNA sequencing to study the diversity of regulatory genes in 2,4-D degrading organisms. Our initial goal was to develop PCR primers that would amplify tfdR gene sequences in all of our 2,4-D degrading bacteria. Primers were developed from a comparison of published tfdR sequences and conserved regions within the DNA sequences were selected. Two sets of primers have been developed and tested with sixteen 2,4-D degrading strains. The initial set of primers (KS1&2) amplified strong bands in nine strains, a weak band in a two others and five strains did not amplify at all. A second set of primers (KS3&4) had limited success, only amplifying a single strain, while giving multiple banding patterns in five others, leading to questions of primer specificity. Of note is a single strain (TfT34) that was not amplified by either set of primers. These results suggest that the tfdR genes in these organisms are not as similar as expected. Apparently the DNA sequences of the tfdR genes in the different degraders are too divergent to allow amplification by a single set of primers. Nine of the amplified fragments have been sequenced and initial analysis indicates that the fragments, while similar, have many differences.

Genett Carstensen, Dave Goorahoo Ph. D.
California State University, Fresno
Center for Irrigation Technology
Graduate Student Presenter
Poster Session I, Poster Board No. 20

A Preliminary Study of Relationship Between E-Coli, Total Suspended Solids and Ammonium in Dairy Lagoon Effluent

California is the number one dairy state, producing 20% of the nations milk supply. California's 2,150 dairy families house 1.55 million milk cows. Approximately one out of every six dairy cows in the U.S. lives in California. While the growth of this industry results in significant economic returns for the region, there is the issue of effective manure management. In dairy operations, manure is commonly handled as an effluent stream of liquid or slurry manure by means of hydraulic flushing - lagoon storage - irrigation system. In the process of flushing to the fields a series of cross contaminations have been known to occur that effect human health and water supply. Other major problems associated with the manure management are high solids and nutrient contents of the effluent stream, along with the bacterial contamination. While bacteria helps breakdown solids in the effluent stream, it can also be a major concern to dairymen in the form of sick cows and lost production. For this study the effluent streams from two dairies were examined at several different locations around the dairy. These dairies differed in both sizes and management practices. For example, on the smaller dairy (approximately 500 head herd size) the effluent was periodically aerated prior to pumping to fields. On the larger dairy (1500 head herd size), there was no aeration and the effluent was generally stored for longer periods in multi-stage lagoons. Samples were collected and were tested to determine the Total Suspended Solids (TSS), pH, Electrical Conductivity (EC), Ammonium (NH4) concentration and E-coli present. The major objective was to investigate if there is any correlation between E-coli levels and the relatively easily measurable parameters such as TSS, pH, EC and NH4. There was no observable trend between E-coli and either Total Suspended Solids and NH4. However, the interaction of Total Suspended Solids and Ammonium showed a significantly positive ($p=0.001$) effect on e-coli population. On the small dairy, E-Coli counts decreased as the pH dropped from around 8.0 to 6.5 in flush lines and in both the primary and secondary lagoons. Furthermore, Total Suspended Solids, Ammonium and Ecoli showed a statistical difference between dairies. This indicates that dairy management practices may be the key to a less polluting dairy. Further work will focus on identification of specific management practices and their effect the various parameters measured in this study.

Keith Putirka, Ph.D.
California State University, Fresno
Department of Earth & Environmental Sciences
Christopher D. Condit
University of Mass., Amherst
Poster Session II, Poster Board No. 1

A Cross Sectional View of a Volcanic Plumbing System: Constraints Based on Mineral Chemistry

Volcanic eruptions are responsible for creating everything that we see at Earth's surface: the continental and ocean crusts, the oceans, and the atmosphere. Nonetheless, there is considerable controversy regarding how volcanic plumbing systems evolve. We attempt to resolve these controversies by examining the depths at which magma chambers form. It is often presumed that magmas pool at the base of low-density continental crust; in this model, volcanic eruptions occur after magma has been partially crystallized and become less dense. In contrast, some models of magma chamber development emphasize rock strength: Since magmas are transported to the surface within magma filled fractures, if a dike tip is sharp, it can cut through overlying rock and lead to an eruption. But if a dike tip blunted, due to the imposition of a weak rock layer, the fracture could fail to propagate. These models can be distinguished because they yield very different predictions about the depths at which magmas pond and partially crystallize. To test ideas of magma transport we investigate the plumbing system of the Springerville Volcanic Field, AZ. Crystallization depths are calculated using mineral composition-based barometers and thermometers. While these calculations show that crystallization occurs at a range of depths, magmas do not pond at the base of the crust (40 km). Moreover, our calculations show a coincidence of low crystallization temperatures, low magma densities and high K2O, K /Ti, and SiO2 values at 5 and 27 km. Magmas thus appear to stall at a 'soft' layer at the middle/lower crust boundary (27 km), and at a density contrast within the upper crust (5 km). In particular, elevated values of K2O, K /Ti, and SiO2, at these depths show that magmas undergo significant liquid evolution at 5 and 27 km – signifying that these depths represent sites of prolonged magma stagnation.

Nicole Moon, Danielle Hester,
Mitchel Casados & Kazuko Suzuki
California State University, Fresno
Department of Psychology
Undergraduate Student Presenter
Poster Session II, Poster Board No. 2

The Effects of List Segregation on Directed Forgetting

The effect of instructing a participant to forget list 1 before studying list 2 is poorer recall of the first list (directed forgetting "costs") but better recall of the second list (directed forgetting "benefits"). Performance of the participants given the forget (F) instruction is compared to performance of participants given a remember (R) instruction. Sahakyan, Delaney & Kelley (in press) suggested that the costs are due to change in mental context and the benefits are due to the adoption of a more effective encoding strategy elicited by personal evaluation. In the present experiment, we investigated the effects of list segregation and test separation; recall was tested for both lists in a combined test or for each of the lists in separate tests. R-instructed groups were told either to integrate or segregate the two lists. F-instructed groups were given lists segregated by the forget instruction. The results were that for both R and F instructions list segregation and test separation reduced list 1 recall. For F-instructed groups, test separation reduced list 2 recall. The results of this experiment show that separation of lists during study and recall influence the costs and benefits of directed forgetting. These findings suggest that the effects reported by Sahakyan, Delaney & Kelley were due not to a change in encoding strategy that followed self evaluation, but from the resulting segregation of the two lists.

Marie Lynch
USDA Forest Service
Poster Session II, Poster Board No. 3

Paired Watershed Study in the Forests of the Sierra Nevada

Paired watershed studies have been employed world wide to determine the effects of land management changes on various ecosystems. Results from past studies have offered a wealth of resources to developing models, justifying various treatments while placing scientifically defensible limits on others. Little data exists, however, on the first-order streams in the Forests of the Sierra Nevada. Kings River Experimental Watershed (KREW) aims to determine the effects of management changes on the hydrologic regime of headwater stream ecosystems and their associated watersheds. It is unknown, for instance: 1) What effect fire and fuel reduction treatments will have on the riparian and stream physical, chemical and biological conditions; 2) Whether the use of prescribed fire will increase or decrease the rate of erosion and affect soil health and productivity; 3) How adequate and effective the current stream buffers are at protecting the aquatic ecosystems. The KREW study is designed as a long-term study lasting a minimum of 15 years starting in 2000. KREW is gathering baseline data on the condition of the headwater streams and their associated watersheds for 3 years, and then will gather 7 to 10 years worth of post-treatment data. There are four watersheds per site, ranging from 100 hectares to 300 hectares. One will have no treatment (control), one will have prescribed fire only, one will have mechanical treatment, and one will have fire and mechanical treatment done on it. The watershed study is holistic in nature in that KREW will evaluate physical, chemical, and biological variables. Components of the study include ecology, geology and soils, chemistry, hydrology and climate, vegetation, land use history, modeling and spatial analysis for fire and erosion. We will show the various instruments used in the study, and present stream discharge and chemistry and meteorology data collected thus far.

Brandy Lucas, Carolyn W. Graham Ph.D.
California State University, Fresno
Undergraduate Student Presenter
Department of Child, Family & Consumer Studies
Poster Session II, Poster Board No. 4

Foster Children's Attachment Behaviors in Visitations with Non-Custodial Parents

The goal of this study was to gain knowledge about the attachment relationship between foster children and their non-custodial parents in a supervised visitation setting. It was predicted that foster children would exhibit more negative than positive behaviors toward their non-custodial parent at initial interaction. It was also hypothesized that a significant number of foster children would exhibit insecure attachment, as measured by the presence or absence of positive and negative behaviors at initiation and separation. At the beginning and end of each session, supervisors indicated if the children smiled, kissed, hugged, had positive verbal interaction, cried, appeared withdrawn, sad, or clinged to the parent. The first hypothesis was tested by using paired t-tests, which found that significantly more negative behaviors than positive behaviors were exhibited during the initial interaction period, t (46) = -5.28, p = .000. The mean number of negative behaviors was 2.79 (SD = .69) and positive behaviors was 2.04 (SD = 1.14). Secondly, we hypothesized that more foster children would exhibit more insecure behaviors than secure behaviors. Securely attached children should exhibit more positive behaviors at initial interaction with their parents and more negative behaviors (i.e., crying, sad, withdrawn) at separation from their parents. To test this hypothesis we subtracted the number of positive behaviors from the number of negative behaviors at initial interaction. A 2 X 2 chi-square was performed to determine if the group frequency was significantly different. The chi-square was significant, ?^(2) (N = 46, 1) = 8.52, p = .004. There were only 4 (8.6%) foster children who exhibited secure behaviors at initiation and separation. The support of both hypotheses indicates that attachment behaviors are important in assessing the quality of the parent-child relationship of foster children. The majority (91.7%) of foster children in this study exhibited insecurely oriented attachment styles.

Ryan P. Lopez, Ruth A. Kern, Ph.D.
California State University, Fresno
Department of Biology
Graduate Student Presenter
Poster Session II, Poster Board No. 5

Fire Intensity and Shrub Cover Effects on Microclimate and Tree Regeneration in Sierra Nevada Forests

A field experiment was conducted to test the effects of fire intensity and the presence of the montane shrubs *Ceanothus cordulatus* and *Arctostaphylos patula* on the growth and survival of *Abies concolor* and *Pinus lambertiana* seedlings. Nine experimental plots were located at 2200 m elevation within the Teakettle Experimental Forest, Sierra National Forest, California, USA. Each plot was roughly circular, approximately 225 m2, and had extant patches of *C. cordulatus* and *A. patula* as well as open ground before treatment. The plots were subject to one of three burn treatments: hot, light, or no burn (control). In the first spring following the fall burn treatments, one-year old bareroot *A. concolor* and *P. lambertiana* seedlings were planted in the (former or current) patches of *C. cordulatus, A. patula* and in the open. Plots were instrumented and monitored for air and soil temperature as well as surface and seedling rooting depth soil moisture. In this way, we intended to study the possible facilitating effects of nitrogen enhancement in the proximity of *C. cordulatus*, root grafting with *A. patula*, or simple shade vs. the possible competing effects of shrub presence. Extreme drought led to a small seedling survival rate (2.5%), compromising meaningful statistical analysis of seedling growth and survival data. There was a positive correlation between seedling growth and soil moisture, which was highest in the unburned plots. A high proportion of the surviving seedlings were *P. lambertiana*, suggesting greater adaptation to hot, dry conditions than *A. concolor* seedlings. Survivorship and microclimate data suggest that current conditions present severe difficulty for tree regeneration. With low moisture and the exposed ridgetop location, the effect of fire may be to convert patches of forest to shrub community, thereby resetting the pathway of succession.

Paphavee Lertsethtakarn, Archana Mohan,
Joy Mombourquette, Alice Wright, Ph.D.
California State University, Fresno
Department of Biology
Undergraduate Student Presenter
Poster Session II, Poster Board No. 6

Isolation and Characterization of Organisms Capable of Degrading Pesticide Alternatives to Methyl Bromide

Major concerns about the depletion of ozone layer has prompted the phasing out of methyl bromide, a toxic pre-plant soil fumigant, widely used in California strawberry farms. Current efforts are focused on developing and implementing environmentally sound pesticide alternatives to methyl bromide. This research involves the isolation and characterization of microbes capable of degrading these alternatives, specifically methyl iodide, 1-3-dichloropropene and chloropicrin. Enrichment culture techniques at ambient conditions were used to isolate microorganisms that degrade each of these pesticides. Identification of these organisms was based on traditional staining techniques, biochemical analysis and by sequencing portions of DNA that encode the small ribosomal subunit and comparing the sequences to a ribosomal database. The rate of pesticide degradation will be analyzed using gas chromatography. Preliminary assessments have revealed the existence of 35 to 40 organisms capable of utilizing one of the pesticide alternatives as a sole carbon source. Biochemical tests and DNA sequences have identified species of Bacillus, Corynebacterium and Pseudomonas. Even though the species isolated are limited to organisms that grow at ambient conditions, this study provides further insight into the relationship between microorganisms and pesticide degradation.

B. R. Glosier, L. M. Donnelly, V. M. Gomes
E. A. Ogundiwin, G. Sidhu, J. P. Prince, Ph.D
California State University, Fresno
Department of Biology
Graduate Student Presentesr
Poster Session II, Poster Board No. 7

Combating *Phytophthora* Disease in Pepper (*Capsicum annuum*)

Phytophthora is a fungus that causes root rot and foliar blight in pepper. Sources of resistance have been reported in some pepper accessions. Reports indicate resistance to this fungus is controlled by one to several genes. The genetics of resistance are currently being studied to facilitate the development of resistant commercial varieties. Experiments are ongoing to elucidate the inheritance of resistance and to detect the locations of the resistance genes in the genome of pepper as well as the virulence genes in the genome of *Phytophthora capsici.*

Eight *P. capsici* isolates have been collected from different sources and used for the screening of 11 pepper lines. One month-old seedlings were inoculated with *Phytophthora* zoospores solution and two months later were scored for disease severity (0 = resistance, 5 = susceptible). Crosses between resistant and susceptible parents were performed to generate mapping populations. Fifteen primer pairs developed from resistance gene analogs (RGAs) are being used to screen pepper germplasm to generate linkage maps and identify putative RGAs. Sequences corresponding to elicitin proteins of *P. capsici* are being identified utilizing the *P. infestans* Genome Database to generate primers to screen P. capsici isolates.

Six of 11 pepper lines showed strong susceptibility to each of the *P. capsici* isolates, while five of the lines showed resistance. One of the RGA primers tested showed polymorphism between the parents and was observed to segregate in the mapping population. Efforts are ongoing to link these RGA-based polymorphisms with resistance genes (QTL's). Sequences for elicitin proteins of *P. infestans* have been found and sequence alignments are being performed to design primers to amplify putative virulence genes in *P. capsici.*

With the construction of pepper linkage maps, the location of resistance genes can be determined and will enhance marker-assisted breeding of pepper varieties resistant to root rot.

Ryan Gonzalez, Christine Edmondson, Ph.D.
California State University, Fresno
Department of Psychology
Undergraduate Student Presenter
Poster Session II, Poster Board No. 8

Gay Identity and Anger in Homosexual Relationships

This study is a literature review that explores the development of a gay identity and the influence it has on the experience of anger within a homosexual relationship. There are three models of gay identity formation that this study examines. These are the Homosexual Identity Formation (Cass, 1979), an ideal-typical model of homosexual identity formation (Troiden, 1989), and an inclusive model of sexual minority identity formation (McCarn & Fassinger, 1996). After an examination of the different frameworks of homosexual identity formation, this study uses the multidimensional-associationistic framework (Edmondson & Conger, 1996) to describe how anger processes are affected by gay identity development. Included in the multidimensional-associationistic conceptualization of anger are provocations, a cognitive component, an experiential component, a behavioral component, and a physiological component. To fully understand the interaction between gay identity models and the experience of anger, an analysis of specific provocations is conducted. Included in these provocations are six general areas: power, social issues, personal flaws, distrust, intimacy, and personal distance (Kurdek, 1994). This study provides a theoretical basis explaining the relationship between gay identity development and the cognitive, experiential, behavioral, and physiological responses (Tescher et al., 1999) to the provocations experienced by homosexual couples. An exploration of the relationship between gay identity and anger generates ideas for future research in which this relationship can be empirically tested.

Michael Henrickson, MD
Children's Hospital, Central California
Poster Session II, Poster Board No. 9

Familial Mediterranean Fever in a Pediatric Hispanic Population

Background: We have identified 21 children who present with a periodic fever syndrome involving a symptom complex, including arthralgias and oligoarthritis, pleuritis, abdominal pain and fatigue. Episodes are associated with moderate-grade fever, whose duration and severity parallel these other symptoms. Lab evaluation of these patients is typically normal, other than an elevated sedimentation rate during episodes. The clinical history and ameliorative effects of colchicine are highly suggestive of familial Mediterranean fever (FMF), an autosomal recessive disorder. MEFV gene mutations have been linked to FMF, mainly resulting from 6 founder mutations (M680I, M694V, M694I, V726A, E148Q and K695R). Phenotypic variance has been mainly ascribed to MEFV allelic heterogeneity. Objective: There is a paucity of literature regarding FMF in the Hispanic population, specifically among Mexicans, and the blended ethnicities of the American population. This descriptive study reviews gene mutation assay findings in this juvenile cohort. Method: Retrospective chart review was performed. All patients had MEFV testing; they were completed at either the NIH/NIAMS (16/21) or GeneDx, Inc. (5/21). Patients with a gene mutation for TNF-receptor associated periodic syndrome or an elevated IgD were excluded. The local population < 20 years of age is 40% Hispanic, 34% Caucasian and 21% Asian. Results: Average age of FMF onset for the entire cohort is 4.3 years, and 2.8 years in the 6 patients with identified gene mutations (p=0.32). Regarding ethnicity, 4/21 (19%) cite partial Mexican ethnicity, and another 2/21 (10%) are exclusively Mexican, for a total of 6/21 (29%). Of these 6 Mexican patients, the mean age of FMF onset was 5.2 years (p=0.60). Only 1 Mexican/Filipina patient had a heterozygous gene mutation both in M694V and E148Q; all other Mexican patients' MEFV gene mutations were negative.

Identified Gene Mutations by Ethnicity

Ethnicity	Exclusive	Partial	Associated Gene Mutation(s)
Mexican	2	4	1 M694V/E148Q (heterozygous)
Portuguese or Spanish	-	5	1 P706 "silent" polymorphism (hetero.)
Armenian and/or Assyrian	1	1	1 E148Q (hetero.) & 1 M694V (homo.)
Italian	-	5	1 K695R (hetero.)
N. European (incl. Irish)	-	17	1 P369S (hetero.)
Native American	-	6	None

Conclusion: In our pediatric cohort that shares a similar phenotype, 71% (15/21) do not have an identified MEFV gene mutation, including 83% (5/6) of our ethnic Mexican patients. This suggests a potentially different gene mutation, not yet derived, in the Mexican-Hispanic population. Alternatively, other genetic modifiers may exist in patients lacking the MEFV gene mutation.

Amanda Knapp & Lisa Winters
California State University, Fresno
Undergraduate Student Presenter
Poster Session II, Poster Board No. 10

Improving Empathy, Knowledge, and Helping Behavior Towards the Hungry: Evaluating the Interactive Seminar, Hunger 101

The purpose of this study was to examine any alteration in subjects' empathy, knowledge, and helping behavior towards the hungry after attending the Hunger 101 seminar. The Hunger 101 seminar was an hour of informative lecture followed by a second hour of role-playing activity that focused on the hungry. Subjects were thirty-one college students (6 males, 25 females), who completed the Hunger 101 Evaluation prior to, immediately after, and one month after attending the Hunger 101 seminar. The Hunger 101 Evaluation was a self-designed questionnaire composed of three open-ended questions and sixteen closed-ended questions designed to measure the three dependent variables of the study. It was predicted that subjects' empathy, knowledge, and helping behavior towards the hungry would increase after attending the Hunger 101 seminar. This study found significant differences in subjects' empathy, $F(2,85)=3.114$, $p=.050$, knowledge, $F(2,85)=100.170$, $p=.001$, and helping behavior towards the hungry, $F(2,85)=4.730$, $p=.001$, after attending the Hunger 101 seminar.

Ruth Ann Kern, Ph.D.
California State University, Fresno
Department of Biology
Poster Session II, Poster Board No. 11

The Effects of Logging and Prescribed Fire on Fecundity and Seed Dispersal of Sierran Conifers

Seed rain is being monitored in experimental forest treatment plots to investigate the effects of thinning and prescribed fire on seed production and seed dispersal distances of Sierra Nevada conifers. 18 1-ha forest research plots, established in the Teakettle Experimental Watershed, Sierra National Forest, have been manipulated in a 2 x 3 factorial design (fire or no fire; shelterwood thinning, California Spotted Owl protocol (CASPO) thinning, or no thinning) with three replicates of each treatment. 25 0.25m2 seed traps have been installed on a 25-m grid in each of the 18 plots. Seed traps were installed in the control plots in summer 2000 and 2001 and in the treatment plots in summer 2001 and 2002, following completion of logging and fire treatments in summer and fall 2001. Data from this long-term study will be used to understand the individual and cumulative effects of the two methods of logging and of prescribed burning on seed production and seed dispersal distances in White Fir, Red Fir, Sugar Pine, Jeffrey Pine, and Incense Cedar.

Ratnali V. Jain, Paul K. Mills, Ph.D.
Cancer Registry of Central California
Poster Session II, Poster Board 12

Cancer in the South Asian Population of California

Introduction: The South Asian (SA) population in the United States (people with origins mainly in India, Pakistan, Sri Lanka and Bangladesh) is increasing and more so in the State of California. In the 1990 census about 155,000 Asian Indians were identified as living in California and this number increased to about 315,000 in the 2000 census. Since 1988, California has maintained a statewide population-based cancer registry, the California Cancer Registry (CCR) and data from the CCR were utilized to examine patterns of cancer in the SA population of the state.

Methods: Since accurate denominator data was not available for the SA population on an age and sex-specific basis, a proportionate approach was used to compare the percentage distribution of cancers in this population during 4 time periods from 1988-2000 (i.e. 1988-1990, 1991-1993, 1994-1996, and 1997-2000). Analyses were completed separately in males and females and in two age groups (0-64 years and 65+ years).

Results: In younger men (0-64), prostate cancer is rising rapidly, with an increase from 5.5% of all cancer in the first time period to 24.3 % in the last time period. Other cancers, which are proportionately increasing in younger men, are lymphomas, leukemias and cancers of the nervous system and esophagus (especially in the last two time periods). In the older men (65+), prostate cancer has remained relatively steady over the 4 time periods even though it is the most common cancer. Other relevant observations in this group include an increase in proportion of cancers of the urinary system, liver and intrahepatic bile duct and also a steady increase in leukemias and lymphomas. In younger aged women, the breast cancer percentage rose dramatically from 28.6% in the first time period to 45.9% in the last time period. Other cancers on the rise in young SA women are lymphomas, leukemias and cancers of the urinary system, corpus and uterus, and esophagus. In older SA women cancer of the esophagus and stomach are proportionately increasing, while the proportions of other cancers are remaining steady or decreasing during the 4 time periods.

Conclusion: These results need to be interpreted in light of changes in lifestyle of the SA population in the U.S. More reliable results derived from incidence rates need to be calculated to obtain an accurate picture of trends in cancer in the SA population.

Lydia Herrera-Mata,
Andrew Alvarado, Ed.D. and Sean Schafer, MD
UCSF-Fresno Latino Center for
Medical Education and Research
Poster Session II, Poster Board No. 13

A Comparison of Academic Success in Two Groups of Students: Those Who Participate in the Doctor's Academy Versus Those Who Follow a Traditional High School Curriculum

Introduction: For decades, the medical community has officially acknowledged the sparse number of underrepresented minorities (URM) in the medical profession. Despite recent efforts to end affirmative-action programs, the medical community still recognizes the need to promote diversity in the profession in order to better serve all patients. The Doctors Academy is an academically enriched four-year curriculum based in the Fresno Unified School District that gears students toward a career in the medical profession. Its main purpose is to increase the number of physicians in the Fresno area from underrepresented/disadvantaged backgrounds. It is currently in its fourth year of operation. At this point, we would like to determine whether, in fact, this intervention we call the Doctors Academy has met some of its short-range goals of success. Our main objective is to determine whether participants of the Doctor's Academy at Sunnyside High School demonstrate increased success rates, as measured by GPA and standardized test scores when compared to their peers.

Methods: We will do a secondary analysis of student data that we obtained from the Fresno Unified School District. Our target population is Doctor's Academy students who are currently in their final year of high school. We have two comparison groups composed of high school seniors: one is students who applied to the Doctor's Academy but did not get accepted, and the other is the overall student population at Sunnyside High School. We will analyze the data using statistical methods available through SPSS.

Summary Of Results: To date we have demonstrated that Doctor's Academy students have cumulative high school GPA's in higher ranges than both comparison groups. However, we have not yet determined the statistical significance of these measures. Preliminary data review suggests the same findings for standardized test scores.

Preliminary Conclusions: Doctor's Academy participants tend to do well academically. They seem to have overall higher GPA's, and likely higher standardized test scores, than do students who were not accepted to the program, and other students at the same school.

Jennifer Turner, Ethelynda Harding, Ph.D.
California State University, Fresno
Department of Biology
Graduate Student Preenter
Poster Session II, Poster Board No. 14

Identification and Characterization of Rhizobium Infecting California Native Clover

Rhizobium forms nodules on the roots of leguminous plants, where the bacteria fix nitrogen into a form the plants can use. In order to obtain a better understanding of the evolution of such symbiotic association we have been investigating the populations of Rhizobium associated with native clovers in central California. Previous work in this laboratory has demonstrated that a single type of Rhizobium infects four species of annual clover in the foothills, while two genetically distinct types, showing host specificity, infect perennial clover species in high mountain meadows. The current study is designed to determine the genetic relatedness of the three groups of Rhizobium and to develop rapid and cost-effect means of characterizing Rhizobium populations to enable large scale population studies of additional clover species, as well as the determination of the extent to which individual plants are infected by multiple types of Rhizobium. Repetitive extragenic palindromic polymerase chain reaction (REP-PCR) and enterobacterial repetitive intergeneric consensus polymerase chain reaction (ERIC-PCR) will be employed to characterize a large number of isolates previously obtained from perennial clovers in the mountain meadows and annual clovers of the Sierra Nevada foothills. Isolates will be classified according to their genetic profiles and the results compared with previous data obtained using multilocus enzyme electrophoresis. Sequencing of rDNA of representative isolates will be used to determine the phylogenetic relationships among the Rhizobium types. Current results have yet to differentiate among the three Rhizobium groups. Future results will help us understand the evolutionary processes shaping the legume-Rhizobium mutualism, including coevolution between the plants and bacteria and form the basis for future studies of the extent of "cheating," or ineffective nodulation, occurring in native systems.

Angela G. Thornton, **Saeed Attar, Ph.D,**
California State University, Fresno
Department of Chemistry
Matthias Stender, Ph.D.
University of California, Davis
Undergraduate Student Presenter
Poster Session II, Poster Board No. 15

Synthesis and Characterization of a New Chiral Ligand: N,N-bis(ferrocenylidene)-*trans*-(*1S,2S*)-diaminocyclohexane

Introduction: Chiral synthesis is a stereo-selective reaction which yields a specific enantiomer or an enriched mixture of an optically active compound. It is used in the production of many pharmaceutical drugs. Drugs that are made in the laboratory are often racemic mixtures in which only one of the enantiomers has the desired effect on the body. For example the (*S*)-enantiomer of Ibuprofen produces the wanted anti-inflammatory responses whereas the (*R*)-enantiomer is inactive and is slowly converted to the (*S*)-enantiomer by the body. For many such drugs one enantiomer is helpful while the other can be harmful. Therefore, chiral synthesis is very beneficial in the manufacturing of drugs. To this end, transition-metal mediated asymmetric synthesis is one of the most efficient ways to obtain enantiomerically-enriched samples of optically-active organic compounds. We have started this study with the goal of utilizing the new, ferrocene-based enantiomerically-pure ligand, N,N-bis(ferrocenylidene)-*trans*-(1*S*,2*S*)-diaminocyclohexane, as an efficient chiral auxiliary in a variety of important asymmetric organic transformations. As the first step towards that goal, herein we report on the synthesis, spectroscopic characterization, and X-ray crystal structure of the title compound.

Methods: Ferrocencarboxaldehyde was allowed to react with *trans*-(1*S,2S*)-diaminocyclohexane mono-(-)-tartrate salt to form N,N-bis(ferrocenylidene)-*trans*-(*1S,2S*)-diaminocyclohexane. This compound was reacted with silver trifluoromethanesulfonate (triflate) in CH_2Cl_2 for 48 hours. The orange crystalline solid so-obtained was characterized by spectroscopic (IR, NMR, UV-Vis) and X-ray crystallographic techniques. In addition, the ideal conformation of the six-membered ring in this compound was obtained by performing a molecular mechanics calculation using the software "PC Spartan Plus".

Results & Conclusions: The new compound N,N-bis(ferrocenylidene)-*trans*-(*1S,2S*)-diaminocyclohexane was obtained as orange crystals in 42% yield. The product of the reaction of this compound with silver triflate was a deep-purple crystalline solid (37% yield). By an X-ray crystallographic analysis, it was shown that the compound was actually the protonated form of N,N-bis(ferrocenylidene)-*trans*-(1*S*,2*S*)-diaminocyclohexane (with the triflate as the counter-ion). The UV-Vis spectrum (CH_2Cl_2) of this compound showed a shift towards higher wavelengths (450 → 525 nm) as compared to its non-protonated form. The IR and ^{1}H-NMR spectra showed little change between the two compounds. Using the software "PC Spartan Plus", it was predicted that the ferrocenyl groups of the ligand would both be in equatorial (as opposed to axial) positions; this prediction was confirmed by X-ray crystallography. The protonation of the new chiral ligand, rather than the formation of its silver complex, was a surprising result. Further work on the formation of other transition-metal complexes with this ligand, including a nickel(II) analog, is in progress.

Nini Thomas,
California State University, Fresno
Prakash Deedwania, MD
VAMC
Graduate Student Presenter
Poster Session II, Poster Board No. 16

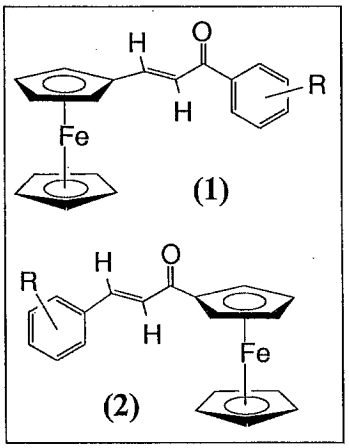
Metabolic Syndrome is Highly Prevalent in Patients with Coronary Artery Disease

Metabolic Syndrome is Highly Prevalent in Patients with Coronary Artery Disease Dr. Prakash Deedwania Nini Thomas Veterans Affairs Central California Center for Health and Human Services, Fresno California State University, Fresno Background: The metabolic syndrome consists of a clustering of metabolic abnormalities – insulin resistance, hyperlipidemia, hypertension and obesity. Recent Adult Treatment Panel III (ATP III) guidelines have emphasized the significance of metabolic syndrome (MS) as an important risk factor for coronary artery disease (CAD). However, the prevalence of MS in CAD patients is not known. Accordingly, the primary objective of the study was to evaluate the prevalence of MS in unselected consecutive patients with confirmed diagnosis of CAD. Method: A random group of 668 patients with established diagnosis of CAD was selected from computer records of VACCHCS, Fresno. Patients' age, pulse, blood pressure, height, weight, body mass index, FBS and total, LDL and HDL cholesterols were recorded. History of treatment for diabetes, hypertension, or dyslipidemia was also recorded. Diagnosis of MS was based on ATP III guidelines. Statistical analyses were done using the Chi-Square test for categorical variables and the t-test for continuous variables. Results: The study population consisted of 668 men with CAD with a mean age of 69 years. Of these, 507 were found to have MS, giving a prevalence of 75% (C.I. 72 –78%, p value <.001). Of the MS patients, 77% were found to have dyslipidemia and hypertension respectively (p value <.0001 for both). Conclusion: These data suggest that MS is highly prevalent among patients with CAD. Future prospective studies should evaluate the risk of CAD in patients with MS.

Zachary J. O'Brien , Saeed Attar, Ph.D.
Department of Chemistry
Alejandro Calderon-Urrea, Ph.D, Robert T. Gaeta
Department of Biology
Parameswar Hari, Ph.D
Department of Physics
California State University, Fresno
Graduate Student Presenter
Poster Session II, Poster Board No. 17

1-Ferrocenyl-3-phenyl-2-propen-1-one and 3-Ferrocenyl-1-phenyl-2-propen-1-one as Potential Nematicidal Agents

Introduction: Nematodes populate most moist environments, including plant and animal tissues. This parasitic nature of some species of nematodes gives rise to the need for an effective nematicidal agent as nematodes account for the deaths of thousands of people and the loss of billions of dollars to agriculture every year. Methyl bromide (CH_3Br), the most common fumigant, has been banned recently. Therefore, there is a need for effective and relatively safe nematicides. Ferrocenyl chalcones (e.g. **1** and **2** where R = H) have been recently shown to have biological activity against malaria parasites (*Bioorg. Med. Chem. Lett. 12*, 2299, **2002**). We have undertaken this project with the belief that these types of compounds may be effective against nematodes as well.



Methods: The two title compounds (**1** and **2**, R=H) were synthesized by adding 1 mmol of the ketone (acetophenone for **1**; acetylferrocene for **2**) to a 20-mL 50% ethanol solution along with approximately 0.2 grams of sodium hydroxide. A 1.4-mmol sample of the aldehyde (ferrocene-carboxaldehyde for **1**; benzaldehyde for **2**) was added to the previous solution. The reaction was monitored by thin layer chromatography. The precipitates were collected by vacuum filtration and were characterized by IR, ^{1}H-NMR, and UV-Vis spectroscopy. Compounds **1** and **2** were administered to *C. elegans* nematodes at first in concentrations on the order of 1 _M (micromolar) and then again in concentrations of 10 _M. The solutions were prepared by adding 1% DMSO (dimethyl sulfoxide solvent) to 99% (v/v) liquid medium.

Results & Conclusions: It was found that concentrations of DMSO greater than 1% resulted in the death of the nematodes even without the presence of compounds **1** and **2**. However, when the concentration of DMSO in the growth medium was kept at or below 1%, preliminary results pointed to the existence of some biological activity (either death or sterility in the nematodes). The detailed results will be presented in this presentation. More tests at greater concentrations, and with the substituted derivatives of compounds **1** and **2** (R ≠ H), are underway.

Leigh Schmidt, Ethelynda Harding, Ph. D.
California State University, Fresno
Department Of Biology
Graduate Student Presenter
Poster Session II, Poster Board No. 18

Host Associations of Bradyrhizobium from Paired Plants of *Lupinus bicolor* and *Lotus purshianus*

The aim of this study was to examine the degree of host specificity in situ by comparing Bradyrhizobium infecting native plants of Lotus and Lupinus. Genomic fingerprinting and sequencing of rDNA were used to characterize the bacteria. Bacteria had previously been isolated from paired adjacent plants of Lupinus bicolor and Lotus purshianus and stored frozen at -70 C. DNA from 30 pairs was extracted and used in repetitive extragenic palindromic PCR (REP-PCR), 16S-23S intergenic spacer (IGS) RFLP, and amplified rDNA restriction analysis (ARDRA). From these methods individual genomic fingerprints and banding patterns were generated. The isolates were classified by the presence/absence of bands using cluster analysis (between groups linkage using squared Euclidean distance), and chi-squared analysis was used to determine if different fingerprint groups preferentially associated with either of the two host genera. Under IGS-RFLP, thirty-seven isolates had an identical banding pattern. Results using ARDRA were similar to those obtained with IGS-RFLP. Each isolate produced a unique banding pattern under REP-PCR; results were not consistent with those obtained from IGS RFLP and/or ARDRA. In a combined analysis of IGS-RFLP and ARDRA patterns, thirty-eight isolates were grouped together with 99% similarity. The remaining isolates showed varying degrees of heterogeneity, with differences up to 24%. The homogeneous group included a higher than expected number of isolates from Lupinus ($P < 0.05$), suggesting a possibility of host preference. Additionally, ten of the paired strains fell together into the homogeneous group, with only two pairs in the heterogeneous group, indicating the possibility that geographically close plants are infected by the same bacterial clone ($P < 0.01$). We are currently sequencing rDNA for further characterization of the bacteria. These results suggest the possibility of host preference and effective nodulation of adjacent plants, even of differing genera, due to an endemic population of a particular Bradyrhizobium strain.

Michael Spiess, Ph. D.
California State University, Fresno
Department of Plant Science
Poster Session II, Poster Board No. 19

Online Data Collection of Secondary Agricultural Education Data

The California Department of Education's Agricultural Education Unit has been collecting secondary agricultural teacher and student demographic data for many years. In the past, paper forms (R-2) were processed at the regional level and the summary data by region was passed along to the state level. The R-2 contains data about the teacher (salary, teaching schedule, credential type) and a summary of students by year in agriculture, grade level, gender, ethnicity, and program area. In the year 2000, an on-line system was developed to allow entry of this data into a centralized database. The on-line forms mirrored the paper form and data was entered by the regional staff from the paper forms. In 2001 teachers were encouraged to enter their data on-line or submit it electronically using a provided program. However, paper forms were allowed and these were entered regionally by the state staff. For 2002 teachers were required to provide this data either using the on-line form or by uploading data using the provided program. The student summary of the R-2 was replaced by on-line entry of the FFA roster (previously submitted on paper) from which the summary data for the R-2 student data is automatically derived. The system is used by 322 agriculture programs (668 teachers) in California. The R-2 Report is due on October 15th of each year. 58% of schools reported by October 15, and 89% reported by November 15th. 58% of FFA Rosters were reported by October 15th and 88% reported by November 15th. Many teachers reported that it easier to report on-line since prior data was available as a starting point and the teacher did not have to find the form or mail it. Labor savings was achieved by combining the Roster and R-2 student summary since teachers no longer needed to summarize the student data. Labor is also saved at the state level since the paper data is not converted to electronic form. The data was reviewed and corrected for all three years for obvious errors. Two percent of women reported being male (the first choice of a drop down menu). Three percent of teachers reversed their first and last names. Three teachers were found to have copied the previous year's data and never updated it for the current year. While not all 668 secondary agricultural teachers in California embrace this technology, more data was received sooner than with the previous paper reporting method. The availability of a database of researchable data has created research opportunities for agricultural educators across the state. Although not expressly studied and measured, state staff expressed that the accuracy of the data entered online was equal or better then the paper reports previous used for teacher demographics. FFA Roster data and student demographic data reporting was improved since these numbers rarely matched in the past and the new system uses the same data to generate both reports.