

**Program**  
**5th College of Science Student Research Day**  
**May 1, 2009**  
**Duncan Hall**

**Department of Biological Sciences**

**1. Biogeography and Evolutionary Divergence of *Eriogonum nortonii*.**

Lisa Morton, Katherine Lai

Faculty: Jeff Honda, Rod Myatt

**2. A New Role for UNC-40/DCC and UNC-6/Netrin in Synaptic Partner Choice.**

Joori Park<sup>1,2</sup>, Akshi Goyal<sup>2</sup>, Phil Knezevich<sup>2</sup>, Shanté O'Hanlon<sup>2</sup>, Mekala Raman<sup>2</sup>, Kang Shen<sup>1</sup>.

Faculty: Miri VanHoven

<sup>1</sup>Howard Hughes Medical Institute, Stanford University; <sup>2</sup>San José State University

**3. Morphological plasticity of *Collinsia heterophylla* (Chinese houses; Scrophulariaceae) in response to moisture availability.**

Caitlin Petrilla

Faculty: Susan C. Lambrecht

**4. *Hulsea algida* (Pacific hulsea; Asteraceae) in the White Mountains: morphological variation, distribution, and climate change scenarios.**

Leo Hernandez

Faculty: Susan C. Lambrecht

**5. Human Notch and Mastermind Proteins Activate Target Genes Differently Depending on Combination Used.**

Tommy M. Burke

Faculty: J. Brandon White

**6. Evaluation of Flavonoids as Agents to Inhibit Breast Cancer.**

Sina Yadegarynia

Faculty: J. Brandon White

Collaborators: Martina Bremer

**7. An Environmental Model for Studying Human-Associated Bacterial Pathogens.**

Thalia Edith Ohene-Nyako, John R. Degnan

Faculty: Cleber Ouverney

**8. LABnovo: A Novel Open-sourced Web Service For Managing Laboratory Data and Protocols.**

Samuel Smits

Faculty: Cleber Ouverney

**9. Validation of a Fluorescent Probe at a Single Nucleotide Discrimination to a Human-associated Uncultivable Bacterium.**

Helen Gavrilova, Jorge Dinis

Faculty: Cleber Ouverney

Faculty: Ruthann Kibler and J. Brandon White

### **Department of Biological Sciences (continued)**

**11. Effects of *Bordetella pertussis* Antigens on the Maturation State of Bone Marrow Cultured Dendritic Cells.**

Sana Waheed, Vaishali Agarwal

Faculty: Ruthann Kibler and Tzvia Abramson

**12. Functional Analysis and Molecular Modeling of r-Mojastin and two Binding-loop Mutants.**

Victoria L. Tran, Elda E. Sanchez, Brandon Gaytán, Jason L. Choi, Sara E. Lucena, Maria Sugarek, Stephanie A. Mandal, Shervin Ghorab

Faculty: Julio Soto

**13. Determining the Role of ARE2 Sites in the Localization of Hro-Twist mRNA in *Helobdella robusta* Embryos.**

Agustin Seone, Jonathan Choi

Faculty: Julio G. Soto

**14. Diversity of the Microbial Population Associated With the Wall of Estuarine Mud Shrimp Burrows.**

Maria Alvarellos

Faculty: Sabine Rech

**15. Special Leukocyte Subsets Present During Homeostatic Conditions in Balb/c Mice.**

Brian Kwong, Caroline Green, Tommy Quigg, Sana Waheed, Nicole Tarlton.

Faculty: Ruth Kibler, Tzvia Abramson

Collaborator: Eugene Butcher, Stanford University

**16. Production of a monoclonal antibody against the human alpha 4 beta 7 gut-homing integrin**

Asima Khan, Sandy Voong

Faculty: Tzvia Abramson

Collaborator: Eugene Butcher, Stanford University

### **Department of Chemistry**

**17. The Continued Development of Circularly Polarized Luminescence Into a Biomolecular Structural Probe.**

KimNgan T. Hua, Jamie L. Lunkley, Steven D. Bonsall

Faculty: Gilles Muller

Collaborators: Sumio Kaizaki (Osaka University, Japan), Jerzy Lisowski (University of Wroclaw, Poland)

**18. Luminescence Dependence on Speciation and pH of MEBDPA Ligand**

Alex Dunlap

Faculty: Gilles Muller

**19. Si-H Bond Enthalpy in Substituted Silanes: A Computational Investigation.**

Nahal Nassabeh and Mark L. Tran

Faculty: Patrick E. Fleming

Jeffry A. Berry  
Faculty: Patrick E. Fleming

## Department of Chemistry (continued)

### **21. A Calorimetry Approach for Quantifying the Role of Water in Protein Folding.**

Elisa Aguilar, Lana E. Whitmer, Deauna D. Mansfield

Faculty: Daryl K. Eggers

### **22. Effects of Surface Chemistry on the Structure of Apomyoglobin in a Confined Environment.**

Phillip J. Calabretta, Carlos Torres

Faculty: Daryl K. Eggers

### **23. Unusual Patterns of Protein Packing Corresponding to Specific Clusters of Surface Accessible Residues.**

Radhika Mishra, Sylvia Do, Tuan Le, Khan-Van Tu

Faculty: Brooke Lustig

### **24. Modification of HPLC Method for PAH analysis for Chem 55 Lab.**

Josh Young

Faculty: Joe Pesek, Maria Matyska-Pesek

### **25. Exploring Nucleation and Growth of Water Ice at Martian Conditions**

Brendan Mar, Bruce Phebus, Alexandria Blanchard

Faculty: Bradley Stone

Collaborators: Laura Iraci (NASA/Ames); Tony Colaprete (NASA/Ames)

### **26. Cloning the cDNA of the Nuclear Receptor for Vitamin D into a pTWIN1 Expression Vector.**

Aileen Espinoza, Jennifer Amaya, Thu Hua

Faculty: Elaine D. Collins

### **27. Cloning the cDNA of the Bovine Immunodeficiency Virus (BIV) TAR RNA and Tat Peptide.**

Jonathan Grist, Heather Wright, Tuan Le

Faculty: Elaine D. Collins

### **28. Probing the Origin of Diastereoface Selectivity in a SmI<sub>2</sub>-Mediated Pinacol Cyclization.**

Kejia Ding

Faculty: Marc d'Alarcao

Collaborators: Alexander Kornienko (New Mexico Tech) and David I. Turner (Cubist Pharmaceuticals)

### **29. A Non-hydrolyzable, Lipid-linked Inositol Glycan with Potential Anticancer Activity.**

Meenakshi Goel

Faculty: Marc d'Alarcao

### **30. Flavonoids Can Be Cytotoxic to Breast Tumor Cells Despite Inhibiting Caspase-3.**

Jeremy Beckford, Sina Yadegarynia

Faculty: Marc d'Alarcao, J. Brandon White

### **31. Verdazyls: Stable Organic Free Radicals.**

**32. Sol-Gel Encapsulated Bromoperoxidase: The Effect of Gel shape and Size on Enzyme Activity.**

John Kim, Nophadol Angusri, William Wung

Faculty: Roy Okuda

**33. Iron Terpyridine-Pyrene Electrochemistry Study on Glassy Carbon and Carbon Nanotubes**

Hsiao-chu Lin, Weiling Hsieh

Faculty: Roger H. Terrill, Daniel Straus

**Department of Computer Science**

**34. Power Management in Data Centers.**

Barath Kuppuswamy

Faculty: Teng Moh

**35. Improving Web Recommendations Using Web Semantics and Web Usage Mining.**

Neha Saxena

Faculty: Teng Moh

**36. Software Reverse Engineering Education.**

Teodoro Cipresso

Faculty: Mark Stamp

**37. Granular Computing on Covering from the aspects of Knowledge Theory.**

Rushin Barot

Faculty: T.Y. Lin

**38. VESS: A Versatile Extensible Security Suite for Mobile Adhoc Network Routing.**

Randy Chang, Sreedeepti Gundala

Faculty: Melody Moh

**39. Performance of FMIPv6-Based Cross-Layer Handover for Supporting Mobile VoIP in WiMAX Networks..**

Heejung Kim

Faculty: Melody Moh

**Department of Geology**

**40. Structure and Construction of the El Capitan Granite and Yosemite Creek Granodiorite in Yosemite National Park.**

Brendon. L. Johnson

Faculty: Robert B. Miller

**41. Structure of the Northern Skagit Gneiss Complex, North Cascades, Washington.**

Niki E. Wintzer

Faculty: Robert B. Miller

**Department of Mathematics**

Lilliane Costa

Faculty: Martina Bremer

Collaborators: Brandon White, Sina Yadegarynia (both SJSU biology department)

## Department of Meteorology

### **43. Water Vapor Enhancement in Prescribed Fire Plumes.**

Caroline M. Kiefer, Scott J. Strenfel

Faculty: Craig B. Clements

Collaborators: Brian Potter, AirFire

### **44. Analysis and Characterization of Monsoonal Surges into Southern California's Deserts.**

Andrew Joros, Jamie Favors

Faculty: John Abatzoglou

### **45. Extratropical Initiation of Northward Surges of the North American Monsoon.**

Jamie Favors, Andrew Joros

Faculty: John Abatzoglou

### **46. PM<sub>2.5</sub> and Carbon Emissions from Prescribed Fires in a Long-Leaf Pine Ecosystem.**

Scott J. Strenfel, Caroline M. Kiefer

Faculty: Craig B. Clements

Collaborators: J. Kevin Hiers

### **47. Surface Layer Temperature Structure Observed at Summit, Greenland.**

Daisuke Seto, Christine Haman, Barry Lefer, Craig Beals

Faculty: Craig B. Clements

### **48. The Role of Ozone Forcing on Climate Models Simulations..**

Sium Tesfai

Faculty: Eugene Cordero

Collaborators: Steven A. Maugé, Department of Agriculture Research Service, USDA Plant Stress and Water Conservation Laboratory and Veronika Eyring, Department of Atmospheric Physics, German Center for Aerospace, Oberpfaffenhofen, Wessling, Germany.

### **49. Multimodel Comparisons of 21C Storm Tracks in the North Pacific Ocean.**

Emerson N. LaJoie

Faculty: Eugene Cordero

Collaborators: Alison Bridger, San Jose State University, Department of Meteorology

### **50. Regime Changes in California Temperature Trends.**

Wittaya Kessomkiat

Faculty: Eugene Cordero

Collaborators: Steven A. Maugé, U.S. Department of Agriculture-Agricultural Research Service,

**50. Verification of NAM and GFS Model Pressure Gradient Forecasts for California**

Jacob W. Wolf

Faculty: Mike G. Voss

**Moss Landing Marine Laboratories**

**52. Fish Surveys of the Moss Landing Power Plant Outfall**

Benjamin M. Perlman

Faculty: Lara A. Ferry-Graham, Gregor M. Cailliet

**Department of Physics and Astronomy**

**53. Predicted Magnetic Fields of Loop Currents for Cuprate Superconductivity: a MaxEnt- $\mu$ SR GdBCO study.**

Teera Songatikamas, Janice Wong and Huy Ngo

Faculty: Carel Boekema, Mike C Browne

Collaboration: WiSE(r) @ SJSU.

**Professional Masters in Biotechnology**

**54. Generic Medical Devices.**

Harmeet S. Arora, Soo-Khee Chia, Ramya Chintamanibhatla, Anna Le, Harshal Vadera

Faculty: Sorin Grunwald, Rick Steingart, Sally Veregge

**55. CROConnect: Empowering Medical Device Companies with Global Clinical Trial Solutions.**

Chandini Kalsy, Aditya Raghwa, and Vidya Ramesh

Faculty: Sorin Grunwald, Rick Steingart, Sally Veregge

**56. Drug Discovery Lab Services**

Jyoti Singh, Parag Sanghrajka, Tanzeema Ahmed, Sukhpreet Pabla

Faculty: Sorin Grunwald, Rick Steingart, Sally Veregge

**57. Boomerang Staffing: We will keep you coming back for more.**

Victor Taruch, Chris Tsafos, Julia Ma, Priyanka Pandey

Faculty: Sorin Grunwald, Rick Steingart, Sally Veregge

**58. Mitomi Microchip, Inc.**

Erin Autio, Jennifer Cheung, Nancy Ngo, Danh Tran, Shadi Vaezzadeh

Faculty: Sorin Grunwald, Rick Steingart, Sally Veregge

## About San Jose State University's College of Science



**The College of Science (COS) transforms its majors into qualified science professionals for a global and regional Silicon Valley work force, and prepares them for advanced (graduate) training and life-long learning. Core science education is provided for engineers, health care professionals, K-12 teachers, and other technical fields, as well as basic mathematics and science skills to students in on-science majors. Our students are instilled with a general awareness of science and technology, necessary to be an informed citizen in our highly technical, culturally diverse society.**

### **The mission of the College of Science is to:**

- Prepare students for rewarding careers in biological sciences, chemistry, computer science, geology, mathematics, meteorology and Physics.
- Provide lower division core biology, chemistry, mathematics, meteorology, geology, and physics courses for majors in technical disciplines (such as engineering)
- Enable all undergraduate students to achieve a well-rounded education by attaining the quantitative, critical thinking, and scientific skills necessary for lifelong learning and informed decision-making on scientific issues.
- Prepare future K-12 teachers with the appropriate math and science content and teaching practices required for teaching math and science in California's diverse classrooms, as well as providing professional development opportunities for these teachers.
- Foster high levels of student learning and faculty development by encouraging and supporting individualized undergraduate and graduate inquiry-based research and scholarship.

One of the ways that the College of Science prepares students for their post college work is to offer a wide range of opportunities to work with faculty on independent research projects. In support of these projects, College faculty over \$5 million in external funding in 2006. Students gain invaluable training, and in most cases work directly with the faculty member involved in the project.

For more information, please visit the College of Science website:  
<http://www.science.sjsu.edu/>

## ACKNOWLEDGEMENTS

Many people contributed to the success of this event. Special thanks to Dr. Michael Parrish (Dean, COS), Stan Vaughn (Facilities Manager, COS) and the College Technical Staff for providing essential infrastructure and support.  
Judith Moore and student assistants prepared this booklet.

***Thanks and congratulations** to all the hard working undergraduate and graduate students, and their faculty advisors for their hard work and for sharing it with us today!*