



**SJSU College of Science
Fourth Annual Student Research Day**

Many SJSU students work with College of Science faculty on original scientific research projects. The Student Research Day is a public display of some of the wide variety of research projects from all Departments in the College. The student researchers and faculty will be present to answer questions.

Friday, May 2, 2008

Duncan Hall (ground level)

10:00am to 1pm

**Sponsored by
SJSU College of Science
*www.science.sjsu.edu***

DEPARTMENT OF BIOLOGICAL SCIENCES

1. Detecting Immune Response to *Listeria monocytogenes* in Mice Using Flow Cytometer.

Jayanthi Lakkyreddy, Neelima Mehendale

Faculty: Ruth Kibler and Tzvia Abramson

2. Production of a Human Monoclonal Antibody Against Gut Homing Integrin Receptor $\alpha 4\beta 7$ as a Tool to Identify Plasmablast Levels in Intestinal Diseases.

Asima Khan, Naama Shani,

Faculty Advisor: Tzvia Abramson

3. Genetic Analysis of Dugongs (*Dugong dugon*) from Thailand.

Jessie Bushell

Faculty Advisor: Leslee A. Parr

4. Genetic Characterization of the Burrowing Shrimp (*Neotrypaea californiensis*) in Washington and Oregon Estuaries.

Michael Doan, Veronica Chaidez, Humberto Roca, Cindy Bick

Faculty Advisor: Leslee A. Parr

Collaborators, affiliation Theodore H. Dewitt², Anthony D'Andrea³, Brett Dumbauld⁴

²U.S. Environmental Protection Agency; ³Oregon State University; ⁴USDA-Agricultural Research Service;

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

Maria Alvarellos

Faculty Advisor: Sabine Rech

6. Diversity of Methanogenic Archaea and Sulfate Reducing Bacteria in the Sediments of a Constructed Wetland in Monterey County, CA.

Paula B. Matheus-Carnevali

Faculty Advisor: Sabine Rech

7. A Molecular Approach to Studying Microbial Diversity in Soil.

Rawni Lunsford, Kimberley S. Seok

Faculty Advisor: Sabine Rech

8. Effects of Moisture and Heat on Germination of Two Species of *Ceanothus* (Rhamnaceae).

Sean Ryan, Erik Baxter, Mike Fong

Faculty Advisor: Susan Lambrecht

9. Determining if the ARE1 Sites in the Coding Sequence of *Hro-Twist* Play a Role in mRNA Stabilization in *Helobdella robusta* Embryos.

Ashley N. Nelson, Branden Fung

Faculty Advisor: Julio G. Soto

10. Twisting Through the Tree of Life: Divergence in Function of The *Twist* Gene Throughout Evolution.

Lidia Tekie

Faculty Advisor: Julio G. Soto

11. Ubiquitination of *Mastermind* and Its Role in Transcriptional Activation.

Nancy Fong

Faculty Advisor: Brandon White

DEPARTMENT OF BIOLOGICAL SCIENCES (cont.)

12. Uncultivated Environmental Prokaryotic Model to Study Human Disease-Associated Bacterium.

K. R. Boddugari, D. E. Barton, D. S. Surendar, A. Olencherry

Faculty Advisor: Cleber Ouverney

DEPARTMENT OF CHEMISTRY

13. Field Emission Properties of Carbon Nanotube Pillar Arrays.

Jessica L. Killian, Darrell L. Niemann, Nathaniel B. Zuckerman, Jeremy M. Silan, Bryan P. Ribaya

Faculty Advisor: Bradley M. Stone

Collaborator: Cattien V. Nguyen (NASA-Ames)

14. Laboratory Measurements of Supersaturation Needed to Nucleate Ice on Martian Dust Analogs in a Simulated Martian Atmosphere.

Bruce D. Phebus

Faculty Advisor: Bradley M. Stone

Collaborators: Laura T. Iraci, Anthony Colaprete (NASA-Ames)

15. Electrochemically Degradable Polymers.

Vivian J. Tarkul (SJSU), Simina Grigoriu (Tufts), and Mina Fung (Tufts).

Faculty Advisor: Marc d'Alarcao

16. Measuring Diffusion Coefficients in a Mixture of Polymers: Molecular Weight Distribution Determination from PGSE NMR Data.

Pascal Mangi

Faculty Advisor: John W. Logan

17. Effects of Selected Hofmeister Salt Solutions on Nucleoside Solubility.

Aaron R.W. Gilbert, Elisa Aguilar

Faculty Advisor: Daryl K. Eggers

18. Solubility of Cyclic Diglycine in Acetate Solutions: Testing the Relationship Between Backbone Hydration and Bulk Water Properties.

Annie K. Bui

Faculty Advisor: Daryl K. Eggers

19. Cloning the cDNA for the Vitamin D Receptor in an Expression Vector.

Thua Hua, Christina Cheung, Tuan Le

Faculty Advisor: Elaine D. Collins

20. Amplification of the Tissue Plasminogen Activator (tPA) Gene and Transformation into Competent Cells.

Duy Pham, Coleon Bang

Faculty Advisor: Elaine D. Collins

21. The Study of Chiral Lanthanide Complex Solutions Using Circularly Polarized Luminescence Spectroscopy.

Jamie Lunkley, Christine Pham

Faculty Advisor: Gilles Muller

22. Eu(III) Complex-Based Standard for Circularly Polarized Luminescence Spectroscopy.

Steven D. Bonsall, Mona Houcheime

Faculty Advisors: Gilles Muller, Daniel A. Straus

DEPARTMENT OF CHEMISTRY (cont.)

23. Modeling Amino Acid-Ligand Interactions for Chiral Clusters With Metal Centers.

Hoay-Fen Tan

Faculty Advisor: Patrick E. Fleming

24. Exploring Solvation Models Used in Calculating Accurate pK_as for Small Organic Acids Using *ab initio* Methods

Lap Y. Leung, Zin S. Myint

Faculty Advisor: Patrick E. Fleming

25. Building a Rocks Cluster for Molecular Modeling and Bioinformatics Research.

An Nguyen

Faculty Advisor: Brooke Lustig and Patrick E. Fleming

26. Protein Sequence Homology Parameters Applied to the Prediction of Solvent Accessible Residues

Sylvia Do, Hema Lakkaraju, Shalini Potluri, Katie Pham (CSU Fullerton)

Faculty Advisor: Brooke Lustig

Collaborator: Katherine Kantardjieff (CSU Fullerton)

27. Marine Bromoperoxidase Reaction Products and Sol-Gel Encapsulation of *Corallina vancouveriensis* Acetone Powder (CVAP).

Huan Nguyen, John Kim

Faculty Advisor: Roy K. Okuda

28. Donor substituted verdazyls as the basis for molecular switches.

Dallas A. Chambers, Victoria K. Chemistruck, Ben Haller

Faculty Advisor: David J.R. Brook,

29. Optimizing Layer Thickness and Surface Treatment in Porous Silicon Vapor Sensors.

YuChun Lu

Faculty Advisor: Roger Terrill

30. Electrostatically Limited Assembly of Acid Terminated Thiols.

Arthur Cheng

Faculty Advisor: Roger Terrill

31. Electrochemical Analysis of Pyrenal Iron Terpyridines on Glassy Carbon, Gold and Carbon Nanotube-Coated Electrodes.

Hsiao-Chu Lin

Faculty Advisor: Roger Terrill

DEPARTMENT OF COMPUTER SCIENCE

32. Flash Worm Detection.

Ervi Bongso, Ashira Khera, Falguni Negandhi, Soid Quintero

Faculty Advisor: Mark Stamp

33. JavaFX as a DSL in Scala / Groovy.

Sadiya Hameed

Faculty Advisor: Dr. Cay Horstmann

34. Improving the Quality of Clustering of Web Search Results using Heuristics..

Ramprakash Lingampalli

Faculty Advisor: Teng Moh

DEPARTMENT OF GEOLOGY

35. Geology of the Santa Clara Formation at Lexington Reservoir: Preliminary Data for Stratigraphy, Petrology, and Faulting.

Susan Meyer, Kristi Black, Morgan Mendoza

Faculty Advisor: David W. Andersen

36. Brittle Structures in the Ross Lake National Recreation Area, Northern Cascades, Washington.

Pamela Jamie Clay

Faculty Advisor: Robert B. Miller

37. Tectonic Implications of Eocene Teanaway Dike Swarm in the Eastern Swauk Basin, Central Washington.

Morgan K. Mendoza

Faculty Advisor: Robert B. Miller

DEPARTMENT OF METEOROLOGY

38. Integration of MGS Observations of the 2001 Global Dust Storm on Mars: Implications for Atmospheric Modeling.

John Noble

Faculty Advisor: Alison Bridger

39. IPCC Climate Change Scenarios for California Winters: The Impact of Model Sensitivity Parameters.

Emerson Lajoie

Faculty Advisors: Alison Bridger, Eugene Cordero

MOSS LANDING MARINE LABORATORIES

40. Recruitment Strategies of the Ephemeral, Opportunistic Macroalga *Ulva* (Linnaeus) in Central California.

Rosemary Romero

Faculty Advisor: Michael H. Graham

41. Upper Limit of Nitrate Uptake Rates in *Porphyra perforata* (Rhodophyta).

Samuel Rivera

Faculty Advisor: Michael H. Graham

DEPARTMENT OF PHYSICS

42. Integral Field Unit Spectral Imaging of H₂ Bullets in the Orion Molecular Outflow.

Daniel Olson

Faculty Advisor: Michael J. Kaufman

Collaborators: Chris J. Davis (United Kingdom Infrared Telescope), Sean Colgan & Ed Erickson (NASA Ames)

About the San José State University College of Science

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.

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.

Cher Jones and Judith Moore and student assistants prepared the name tags and this booklet. Kristina Dragovic designed the cover and SRD poster.

Last but NOT least:

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!