

The 13th Annual SJSU College of Science
Student Research Day
May 5, 2017
10:00am to 1:00pm
Duncan Hall
PROGRAM

SPECIAL POSTER

*College of Science students matriculating to Graduate or Professional Schools in Spring 2017
and students working in off-site programs during Summer 2017.*

RESEARCH POSTERS

Presenting students are underlined.

Department of Biological Sciences

- 1. Sensory Activity is Required to Maintain Synaptic Integrity in *C. elegans*.**
Ben Barsi-Rhyne, Kristine Miller, Kristine E. Andersen, Chris Vargas, Jacqueline Pyle, Aruna Varshney,
Alex Duong, Alan Tran, Bryan Tsujimoto, Joy Li, Joori Park
Faculty: Miri VanHoven
- 2. Investigating a Novel Role for SAX-3/Robo and SLT-1/Slit in Mediating Axon Outgrowth Termination in *C. elegans*.**
Doris Coto Villa, Vanessa Jimenez, Anthony Thomas, Zanett Kieu, Johann Zaroli, Thuy-Linh Duong,
Christopher Vargas, William Wung, Kelly Benedetti, Joori Park, Eric Chang, Amber Farooqi
Faculty: Miri VanHoven
- 3. Investigations of the Molecular Mechanisms That Mediate Neural Circuit Formation.**
Katherine Watters, Aruna Varshney, Raakhee Shankar, Khristina Magallanes, Yunus Koroglu, Joy Li
Faculty: Miri VanHoven
- 4. Identifying Compounds From Walnuts That Target Cell Cycle Proteins.**
Stephanie Dsouza, Jasmine Garcia, Jobelle Peralta
Faculty: J. Brandon White
- 5. Effects of High Fat Diet on Follicle Count Ratios in Mouse Ovaries.**
Bianca Opara, Dania Abid
Faculty: Shelley Cargill
Collaborators: Katherine Wilkinson, SJSU

Department of Biological Sciences

6. **Identification and Characterization of Two Novel Genes Involved in Lanthanide-dependent Methanol Oxidation in *Methylobacterium extorquens* AM1.**
Ralph Valentine Crisostomo, Fauna Yarza
Faculty: Elizabeth Skovran
Collaborators: Megan Pryce, Cabrillo College; Isabel Velosa, Michigan State University; Nabila Khan, Michigan State University; Cecilia Martinez-Gomez, Michigan State University
7. **Lipid Degradation by a Novel Bacterial Lipase/Esterase.**
Kyaw Lynn, Eric Kwan
Faculty: Cleber Ouverney
8. **Rise in Interleukin-17-Producing Invariant Natural Killer T Cells During *Bordetella Pertussis* Infection in Mice.**
Daniel Santos, Alana Nguyen, Khoa Bui
Faculty: Tzvia Abramson
9. **mBM-Mesenchymal Stem Cells as a Vehicle for Immunization Of Mice Against *Bordetella pertussis*.**
Touhidul Molla, Sree Lakshmi Velandi Maroli,
Faculty: Tzvia Abramson
10. **Regulatory T Cells Facilitate Th17 Responses to *Bordetella pertussis* and Aid in Resolution of Whooping Cough in Mice.**
Hillary Gates, Elvia Silva, Andrew Smith.
Faculty: Tzvia Abramson
11. **The Effects of Obesity on Spinal Cord Excitability.**
Gerard Nguyen, Mulatwa Haile, Morgan Chang, Shea Putnam
Faculty: Katherine Wilkinson
12. **Effect of Hydrogen Peroxide and Glutamate on Muscle Spindle Afferent Receptor Ending Sensitivity in Adult Mice.**
Kimberly Than, Anthony Kwon
Faculty: Katherine Wilkinson
13. **The Effect of Dietary Modifications on the Expression of Fetal Alcohol Syndrome in *Drosophila melanogaster*.**
Patricia Khouderchah, Armon Khorsaviani
Faculty: Rachael L. French
14. **The Effect of Larval Exposure to Nicotine on Development in *Drosophila melanogaster*.**
Lisa Wong, Ifechukwu Okeke
Faculty: Rachael L. French
15. **Characterization of a Novel Gene Required For Mating In *Drosophila melanogaster*.**
Sadaf Zaki, Peter Luu, Jaspal Sandhu
Faculty: Rachael L. French
16. **Probing pH-dependent Mechanisms of Tumorigenesis and Metastasis in *Drosophila* Cancer Models.**
Vivian Bui, Ismahan Chire, Hussein Abed, Martey Haw, Lyzett Lavenant, Donia Momen, Harnoor Virk
Faculty: Bree Grillo-Hill

Department of Biological Sciences

17. **Characterization of the Recurrent Beta-catenin His36Arg Mutation: Roles for pH-Sensing in Tumorigenesis.**
Andin Josipovic, Delena Hoang, Daniel Orozco
Faculty: Bree Grillo-Hill
Collaborators: Katharine White (UC San Francisco), Diane Barber (UC San Francisco)
18. **Methods of Determining Bacterial Diversity Along a Precipitation Gradient in the Mojave Desert.**
Stephanie Carigma, Guadalupe Hernandez, Kevin Le, Gabriela Lopez, Evelyn Padilla, Hobert Rapada, Nhi Vo
Faculty: Sabine Rech
19. **Endothelial Cells Contribute to Early Lymphocytosis in Whooping Cough.**
Aneesha Kulkarni
Faculty: Jessica Westfall, Tzvia Abramson

Department of Chemistry

20. **Synthesis of Polymers Containing Precisely Placed Ketone Functional Groups Via ADMET Polymerization.**
Angel Moreno, Paul Abarquez, Natsu Okuda
Faculty: Chester Simocko
21. **Synthesis of Amphiphilic Block Copolymers Via ALTMET Polymerization.**
Melvina Lu, Andrew Pham, Josh Chen
Faculty: Chester Simocko
22. **The Synthesis of High Chi Polymers and Their Thermal Stability.**
Jasmine Nguyen, Sandy Rosa, Alexis Sarabia
Faculty: Chester Simocko
Collaborators: Dale L. Huber and Amalie Frischknecht
23. **Using Photoaffinity Labeling to Determine Target Proteins in *Pseudomonas aeruginosa*.**
Kareem Aboulhosn, Zi Jun Chen, Rebecca Moore
Faculty: Laura Miller Conrad
24. **Inhibition of Cationic Antimicrobial Resistance in *Pseudomonas aeruginosa*.**
Husna Bassal, Cheyenne Dean, Sarah Matthews, Bianca Nguyen, Rodger Storment, Minh Tran
Faculty: Laura Miller Conrad
25. **Disrupting Bacterial Communication by Inhibition of LuxI-Type Synthases.**
Matthew Aguilar, Anthony Balistreri, Francisco McGee, Terrence Nguyen
Faculty: Laura Miller Conrad
26. **Computational Models Characterizing the Role of Flexibility in Binding Peptides to TAR RNA.**
David Yu, Thanh Le, Manuel Rodriguez, Takayuki Kimura, Artem Soshnikov, Amos Park
Faculty: Brooke Lustig
27. **Computational Characterization of Alternative Structural Features in an Allosteric Dodecameric Polyamine Acetyltransferase SpeG.**
Jonathan Oribello, Mild Veeraklaew, Ruchi Gaur, Saira Monterroso
Faculty: Brooke Lustig
Collaborator: Misty Kuhn (San Francisco State University)

Department of Chemistry

28. **Optical Properties of Mixed Sulfuric Acid/Organic Aerosols in the Upper Troposphere and Lower Stratosphere: Implications for Climate.**
Michelia Dam, Evelin Ventura, Mei Yun Li, Janaina de Sousa, Adrian Sandoval, Migel Clemente, Sai Somepalle, Kieu Ha, Anh Duong, Fatima Hussain, Alex Shen, Rebecca Spangler
Faculty: Annalise Van Wyngarden
29. **Effects of Cloud Formation on the Speciation and Kinetics of Glyoxal and Methylglyoxal Hydrates and Polymers.**
Kim Houghton, Patricia Goh, Weston Schweitzer, Khaled Khaled, Jeffrey Berry
Faculty: Annalise Van Wyngarden
30. **Cloning and Recombinant Expression of *Aedes aegypti* Serine Protease V (AaSPV), a Constantly Expressed Midgut Protease.**
Sze Wan (Jo) Wang, Alexis Venegas
Faculty: Alberto A. Rascón, Jr.
31. **Protein Expression of Cysteine Proteinases (CPZ and CPL1) Involved in the Molting Development Stages of *Onchocerca volvulus* larvae, a Human Nematode Parasite.**
Daniel Fong
Faculty: Alberto A. Rascón, Jr.
32. **Recombinant Protein Expression of C-terminally His₆-tagged EhCP1, a Key Cysteine Protease from *Entamoeba histolytica*.**
Saira Montermoso
Faculty: Alberto A. Rascón, Jr.
33. **Facile Fabrication of Lead-Halide Perovskite Solar Cells and PbSe Photophysics.**
Carlos Amarral, Michael Leroy, Han Le, Trenton Edwards
Faculty: Abraham Wolcott
34. **Photoelectrochemical Water Splitting For Hydrogen Generation With Zinc Oxide: Nanowire Arrays.**
Tung Nguyen, Grace Jeanpierre
Faculty: Abraham Wolcott
35. **Synthesis of Tetra-Substituted Borates for Covalent Bond Formation to Nanoscale Diamond Surfaces.**
Jesse Hnatek), Ikram Laaguidi, Hailin Zhou
Faculty: Abraham Wolcott
36. **Concentration Effects on DNA:DNA Binding as Measured by Isothermal Titration Calorimetry.**
Jason Duong
Faculty: Daryl K. Eggers
37. **Synthesis and Characterization of a Verdazyl Substituted Amino Acid Spin Probe.**
Alissa Clemens, Jeffrey DaRos
Faculty: David Brook

Department of Chemistry

- 38. Toward Spin Bearing Polymers as Components of Spintronic Systems.**
Tim Hom, Amir Mansouri, Kelly Sai, Weiming (Alfred) Guan, Yu Bin (Gary) Chen
Faculty: David Brook
- 39. C-H Functionalization Via Light-Driven Biocatalysis and Photocatalysis.**
Victor Sosa, Marya Melkie, Carolina Sulca, Justin Faris, Mallory Kato
Faculty: Lionel Cheruzel
- 40. Using a Directed Evolution Approach for the Optimization of Light-Driven P450 Biocatalysts.**
Jennifer Li, Jeffrey Li, Michelle Chau, Lawrence Tang, Mallory Kato
Faculty: Lionel Cheruzel
- 41. Printing as a Tool for Science Education.**
Marcus Le, Raquel Franco, Nicole Matouk, Nacia Rivas, Chris Wong
Faculty: Elizabeth Pollom
- 41A. Materials for Hybrid Ultracapacitors.**
Shalaka Rahangdale, Kanishka Rana and Shahraiz Qureshi
Faculty: Roger Terrill
- 41B Nanoparticle Aggregation and the Surface Enhanced Raman Effect.**
Caesar Munera, Melanie Fujiwara, Ngoc Hong Nguyen, Ricki Menard
Faculty: Roger Terrill

NOTE Posters 42A, 43A and 44A will be posted from 10:00AM to 11:30AM

- 42A. Bath Salts Analyzed Via HPLC and LC-MS Detection.**
Margaryta Makhanov, Seiichiro Watanabe, Arlette Lopez
Faculty: Maria T. Matyska-Pesek, Joseph J. Pesek
- 43A. Determination of Folic Acid Concentration in Tick Samples with Cogent DH Columns.**
Joshua Topete, Seiichiro Watanabe
Faculty: Maria-Matyska Pesek, Joseph Pesek
Collaborators: Junyan Chen
- 44A. Quantitative Analysis of Mesquite Pod Flour.**
Tina Nguyen, Vivian Truong, Sunny Jarman, Doris Hong, Tony Mo
Faculty: Maria T. Matyska-Pesek, Joseph J. Pesek
Collaborators: Gary Takeoka, USDA

NOTE Posters 42B, 43B and 44B will be posted from 11:30AM to 1:00PM

- 42B. Preparative HPLC Methods With Type-C Columns.**
Joshua Topete
Faculty: Maria-Matyska Pesek, Joseph J. Pesek
- 43B. HPLC/ESI-TOF-MS Identification and Quantification of Phenolic Compounds in Fermented/Non-Fermented Jaboticaba Fruit (*Myrciaria cauliflora*).**
Seiichiro Watanabe, Jacob Sanchez, Jesus Guido
Faculty: Maria T. Matyska-Pesek, Joseph J. Pesek
Collaborators: Gary Takeoka, USDA

Department of Chemistry

- 44B. Evaluation of Perfluorinate and Non-Perfluorinate Columns.**
Tina Nguyen, Vivian Truong, Joshua Topete, Doris Hong, M
Faculty: Maria T. Matyska-Pesek, Joseph J. Pesek
Collaborators: Prof. Milton Hearn, Monash University, Melbourne, Australia.

Department of Computer Sciences

- 45. Periodicity of Network Traffic and Botnet Detection.**
Prathiba Nagarajan
Faculty: Mark Stamp
- 46. Machine Learning for Image Spam Detection.**
Aneri Chavda
Faculty: Mark Stamp
- 47. An Improved Evil Maid Attack.**
Armen Boursalian
Faculty: Mark Stamp
- 48. Minimizing Energy Consumption with QoS Guarantee for IoT Communications in LTE-A Networks.**
Gary Su
Faculty: Melody Moh
- 49. Cost-Based Real-Time Parallel Workflow Scheduling for Cloud Data Centers.**
Lingfang Gao, Tejaswini Choudhari
Faculty: Melody Moh
- 50. Load Balancing with Consensus and VM Allocation in Cloud Data Centers.**
Gurpreet Kaur, Saily Ghodke
Faculty: Melody Moh
- 51. Enhancing Naïve Bayes Classifier with Word Embedding.**
Lihao Ge
Faculty: Teng Moh
- 52. A Hybrid Approach to Facial Expression Recognition.**
Roshni Velluva Puthanidam
Faculty: Teng Moh
- 53. Cache Management and Load Balancing for 5G Cloud Radio Access Network.**
Chin Tsai
Faculty: Melody Moh and Teng Moh
Collaborators: Sponsored in part by Nokia Research Foundation
- 54. Classifiers of Authentic and Cryptic Splice Sites in the Human Genome.**
Pratikshya Mishra, Remya Mohanan, Tapomay Dey
Faculty: Dr. Sami Khuri

Department of Geological Sciences

55. **Characterization of Volcanic Material from Fuerteventura as a Potential Mars Analog Site.**
Jacob M. Danielsen
Faculty: Ellen Metzger
Collaborators: Janice L. Bishop, SETI Institute; L. Gruendler, SETI Institute
56. **Displacement History of the Pasayten Fault Zone in the North Cascades, Washington and British Columbia.**
Natasha Budimirovic
Faculty: Robert B. Miller

Department of Mathematics and Statistics

57. **A Comparative Study of Linear and Nonlinear Dimensionality Reduction Methods.**
Xiaohong Liu, Yi Xiao
Faculty: Guangliang Chen
58. **A Scalable Spectral Clustering Algorithm for Effective Grouping of Text Documents.**
Shiou-Shiou Deng, Joseph Fitch, Qingbin Kong, Nathaniel Kotila, Qiuyu Li, Fengmei Liu, Ryan Quigley, Andrew Zastovnik
Faculty: Guangliang Chen
59. **An Implementation of the Probabilistic Distance Algorithm for Mixtures of Student's t-Distribution.**
Christopher D. Rainey
Faculty: Cristina Tortora

Department of Meteorology and Climate Science

60. **Airborne Radar Observations of Wildfire Plume Dynamics.**
Bruno Rodriguez
Faculty: Craig Clements
Collaborators: (David Kingsmill, CU Boulder)
61. **Probing Aerosol Impacts on Fog in the San Francisco Bay Area.**
Erica Burrows
Faculty: Sen Chiao
62. **A Comparison of SAL Characteristics During Tropical Cyclone Formation.**
Amy Ip
Faculty: Sen Chiao
63. **Airborne In-Situ Measurements of Relative Humidity and Clouds Over the Southern Ocean.**
John D'Alessandro
Faculty: Minghui Diao
Collaborators: Chenglai Wu, Xiaohong Liu (University of Wyoming), Jorgen Jensen (National Center for Atmospheric Research)

Department of Physics and Astronomy

64. **Micromagnetic Simulations With Python.**
Maxwell Casebolt
Faculty: Ehsan Khatami
65. **Disordered Spin Models in the Thermodynamic Limit.**
Michael Mulanix
Faculty: Ehsan Khatami
66. **Magnetization Reversal in Arrays of Magnetic Nanowires.**
Robert Eimerl, Karl Muster
Faculty: Ranko Heindl
67. **Acoustic Beamforming for Sound Recording in Noisy Classroom Environments.**
George Condit
Faculty: Benedikt W. Harrer
68. **Frustration in Condensed Matter with Implications For Protein Folding.**
Stephanie Lorelli, Katie†Burrows
Faculty: Carolus Boekema
69. **Comparative Study of Broadband Photometry Relations for Ultra-Diffuse and Normal Galaxies in the Coma Cluster.**
Maria Stone
Faculty: Aaron Romanowsky
70. **Supermassive Black Holes and Compact Stellar Systems.**
Devin Cunningham, Christopher Dixon, Stephanie Striegel
Faculty: Aaron Romanowsky

Acknowledgements:

Thanks to the College of Science for supporting this event, including Dean Michael Parrish, Stan Vaughn, Lee Veliz, Cher Jones, Marco Parent, Mike Stephens, Steve Boring, and other College Staff. Cathy Kozac, Steve Boring and colleagues in the COS Computer Center printed most of the posters for the SRD. Congratulations and thanks to all the hard working undergraduate and graduate students and their faculty mentors who presented their work today!

A team of students from Chem 100W developed the first website for the Student Research Day and we thank them for their efforts. They are Mohammad Rizvi, Yash Parikh, Keshav Narula, and Rodion Yaryy. We also thank Francisco de la Calle and Debra Caires who advised the team.

The COS SRD website may be viewed at: <http://www.sjsu.edu/science/student-research-day/>