NOTICE: THIS DOCUMENT IS PROVIDED FOR THE USE OF PRESENTERS AT THE 17 – 20 JUNE 2014 MEETING OF THE AAAS, PACIFIC DIVISION IN ORDER TO INFORM THEM OF WHEN AND WHERE THEIR PRESENTATIONS ARE SCHEDULED TO OCCUR. IT MAY ALSO BE OF USE TO THOSE WISHING TO REVIEW THE TECHNICAL PROGRAM OF THE MEETING IN ORDER TO PLAN THEIR TIME IN RIVERSIDE. ALL MEETING ATTENDEES, WHETHER PRESENTING OR NOT, ARE EXPECTED TO BE REGISTERED FOR THE MEETING. USE OF THIS DOCUMENT TO CIRCUMVENT REGISTRATION SHALL BE CONSIDERED FRAUDULENT USE AND TREATED AS SUCH.

The page numbers listed in the index below refer only to pages in this document. When you complete your registration at the meeting, you will receive the complete program book that includes additional information as well as all of the abstracts submitted for this meeting. Due to the additional content, the page numbers will all be different in those *Proceedings* compared to this document. However, the *information* in the *Proceedings* will be the same as here. Electronic copies of the *Proceedings* will be available for download from the Division's home page (pacific.aaas.org) in late summer/early fall.

HUB = Highlander Union Building
MS&E = Materials Sciences and Engineering
SURGE = SURGE Building.

INDEX OF NAMES

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GENERAL SESSIONS

Tuesday, 17 June 2014

Meeting of the Council of the Pacific Division

HUB 260
Tuesday
Noon – 4:00 p.m.

The Council of the AAAS, Pacific Division will hold its annual business meeting starting at noon in the HUB, room 260. The Council will elect officers, discuss programs for upcoming annual meetings, and transact other business as is required by the Division's By-laws. This is an open meeting and members interested in the governance of the Division are invited to attend.

**Evening Public Plenary Presentation*

HUB 302 S
Tuesday
6:30 p.m. – 7:30 p.m.

1 *And Ever the Twain Shall Meet: An Exposé of Sexual Differences in the Animal Kingdom*, presented by **Dr. DAPHNE J. FAIRBAIRN** (Department of Biology, University of California, Riverside). Please refer to page 29 in these *Proceedings* and abstract #1 for additional information about this talk.

Welcome Reception

HUB 355
Tuesday
7:30 p.m.

Sponsored by the UCR office of Research and Economic Development, this low key reception features beer, soft drinks and salty snacks. It begins immediately following the conclusion of the evening public plenary panel and continues until about 9:00 p.m. All registrants and their families are invited to enjoy the conviviality of this event. Please wear your registration badge.

Student Awards Judges Organizational Meeting

HUB 265
Tuesday
8:15 p.m.

*The public is invited to attend this program at no charge.

Wednesday, 18 June 2014

**Wednesday Noon Public Plenary Lecture*

HUB 355
Wednesday
12:15 p.m. – 1:15 p.m.

2 *Ecological Restoration and Post Natural Aesthetics*, presented by **Dr. ROBERT LOUIS CHIANESE** (Emeritus, Department of English, California State University, Northridge). Please refer to page 29 in these *Proceedings* and abstract #2 for additional information about this talk.

**Sigma Xi Distinguished Lecture*

HUB 302 S
Wednesday
7:00 p.m. – 8:00 p.m.

3 *Two Revolutions: Copernicus and Darwin*, presented by **Dr. FRANCISCO J. AYALA** (Departments of Biological Sciences and Philosophy, University of California, Irvine). Please refer to page 29 in these *Proceedings* and abstract #3 for additional information about this talk.

UCR Chancellor's Reception

HUB SECOND LEVEL PATIO
Wednesday
8:00 p.m.

Sponsored by UCR Chancellor **Kim A. Wilcox**, this informal reception begins immediately following the conclusion of the Sigma Xi Distinguished Lecture. All meeting registrants and their guests are invited to attend. Non-registered guests are welcome, but must be accompanied by a registrant. Please wear your registration badge to this event.

Thursday, 19 June 2014

Business Meeting
Molecular Reproduction and Development

HUB 355
Thursday
8:00 a.m.

**Thursday Noon Plenary Lecture #1*

HUB 269
Thursday
12:15 p.m. – 1:15 p.m.

4 *The Expanding Universe, Dark Matter and Dark Energy: The Three Greatest Discoveries in Cosmology*, presented by **Dr. GILLIAN WILSON** (Professor of Physics and Astronomy, University of California Riverside). Please refer to page 30 in these *Proceedings* and abstract #4 for additional information about this talk.

**Thursday Noon Plenary Lecture #2*

HUB 268
Thursday
12:15 p.m. – 1:15 p.m.

5 *Currents Implicated in Cardiac Arrhythmia*, presented by **Mr. DAVID BLACKMAN** (affiliated faculty member, Department of Mathematics, Southern Oregon University). Please refer to page 30 in these *Proceedings* and abstract #5 for additional information about this talk.

Student Award Judges Meeting

HUB 268
Thursday
3:00 p.m.

Reception and
Student Awards Banquet

HUB 302
Thursday
6:00 p.m.

The evening will begin at 6:00 p.m. with a reception hosted by Sigma Xi and which features beer, wine, soft drinks, and hors d'oeuvres. Dinner service will begin about 6:45 p.m. Be sure to bring your dinner ticket with you, as it is needed not only to verify that you are on our dinner list but also to let the servers know your choice of entrée. Tickets to the banquet cost $40 and needed to be purchased in advance. Students in competition for Awards of Excellence were invited to attend the banquet as guests of the Division by requesting a ticket in advance (at no charge). Following dinner will be the announcement of the winners of the student Awards of Excellence as part of a short program. *Student award winners are asked to stay until the end of the program so that photographs may be taken of the group.* The evening is expected to end by about 9:00 p.m.

*The public is invited to attend this program at no charge.

Friday, 20 June 2014

Panel Discussion: Does Nature Photography Distort Environmental Realties?

CALIFORNIA MUSEUM OF PHOTOGRAPHY
3834 MAIN STREET, RIVERSIDE
Friday
8:30 a.m. – 11:30 a.m.

For information about this event, please refer to page 68 in these *Proceedings*.

**Friday Noon Plenary Lecture*

HUB 260
Friday
12:15 p.m. – 1:15 p.m.

6 *Higher Infinity and the Foundations of Mathematics*, presented by **Dr. JOEL DAVID HAMKINS** (The City University of New York). Please refer to page 30 in these *Proceedings* and abstract #6 for additional information about this talk.

TECHNICAL SESSIONS

1100 (time italicized and underlined) identifies a student presentation
* identifies the speaker from among several authors listed
63 (bolded number) is the abstract number

I. SYMPOSIA

Wednesday, 18 June 2014

Multi-Scale Bioengineering

MS&E 0103
Wednesday
8:35 a.m. – 5:00 p.m.

Program organizers: *Dimitrios Morikis* and *Valentine Vullev* (Department of Bioengineering, University of California, Riverside).

Program sponsor: Pacific Division Engineering, Technology, and Applied Sciences Section.

This symposium brings together experimental and theoretical bioengineering and biotechnology researchers, educators, students, and professionals with diverse research interests to promote intellectual exchanges across bioengineering research areas and scales. The symposium has the general theme of "Multi-Scale Bioengineering" and will cover selected topics of cutting edge research, spanning the bioengineering scales from molecular, cellular, tissue, organ, organismal, to human bioengineering, and including the development of innovative systems biology approaches, bioinformatics methods, biologicals, biomaterials, bioprocesses, implants, prosthetics, biomedical devices, and bioinstrumentation. The objective of the symposium is to bring together scientists with bioengineering and biotechnology interests in a setting that will provoke novel questions on how to cut across these diverse bioengineering topics and scales, and to develop new collaborations to address the common goals of understanding basic sciences and improving health.

Morning Session Chair: *Dimitrios Morikis*

8:35 *Introductory Comments*, **DIMITRIOS MORIKIS**

8:40 **7** *Controlled One-on-One Encounters between Immune Cells and Microbes Provide a New Window into the Mechanisms of the Innate Immune Response*, **VOLKMAR HEINRICH** (Department of Biomedical Engineering, University of California Davis).

9:10 **8** *Scalable Drug Infusion Technologies*, **ELLIS MENG** (Department of Biomedical Engineering and Ming Hsieh Department of Electrical Engineering, University of Southern California).

9:40 **9** *Biological Insights from Measuring the Physical Properties of Cells and Organisms*, **WILLIAM H. GROVER** (Department of Bioengineering, University of California, Riverside).

10:10 BREAK

10:30 **10** *A Kinetic Model of Multivalent Nanoparticle Binding*, **JERED B. HAUN[1,2,3]* and MINGQIU WANG[1]** ([1]Department of Biomedical Engineering, [2]Department of Chemical Engineering and Materials Science, [3]Chao Family Comprehensive Cancer Center, University of California Irvine).

11:00 **11** *In-situ Advanced Optical Spatiotemporal Analysis of Collagen Systems*, **JULIA LYUBOVITSKY[1]*, YU-JER HWANG[2], XUYE LANG[3], CASSANDRA TURGMAN[1], and JOSEPH GRANELLI[1]** ([1]Department of Bioengineering, [2]Cell, Molecular and Developmental Biology Program, [3]Department of Biochemistry, University of California, Riverside).

11:30 **12** *Label-free Imaging of Neural Activity from Brain to Single Neurons*, **M. REZUANUL HAQUE, MICHAEL C. OLIVEIRA, MELISSA M. EBERLE, CARISSA L. RODRIGUEZ, CHRISTIAN M. OH, and B. HYLE PARK*** (Department of Bioengineering, University of California, Riverside).

12:00 LUNCH

Afternoon Session Chair: *Valentine Vullev*

1:30 **13** *Mechanism of Bone Remodeling in Normal and DMP-1 Deficient Mice*, **MEGAN VELTEN[1], JIAN Q. FENG[2], and PRANESH B. ASWATH[1]*** ([1]Materials Science and Engineering Department, Box 19031, University of Texas at Arlington; [2]Department of Biomedical Sciences, Texas A&M Health Science Center, Baylor College of Dentistry).

2:00 **14** *Engineering Nutrient Derived Alloys for Medical Applications*, **HUINAN LIU** (Department of

Bioengineering, Materials Science and Engineering Program, and Stem Cell Center, University of California, Riverside).

2:30 **15** *Multi-step Self-organization of Tissue-scale Tubules*, **CHIN-LIN GUO** (Division of Engineering and Applied Science, Caltech).

3:00 **BREAK**

3:30 **16** *Modulation of Stem Cell Fate via Engineered Mechano-environment*, **MARICELA MALDONADO, LAUREN WONG, KAREN LOW, GERARDO ICO, and JIN NAM*** (Department of Bioengineering, University of California, Riverside).

4:00 **17** *Engineering the Neural Microenvironment to Promote Spinal Cord Regeneration*, **STEPHANIE K. SEIDLITS[1,2]*, RYAN M. BOEHLER[2], ALINE M. THOMAS[3], DOMINIQUE SMITH[3], DANIEL J. MARGUL[2], ASHLEY G. GOODMAN[2], TODOR V. KUKUSHLIEV[2], TING HE[2], DYLAN A. MCCREEDY[2], JAIME PALMA[2], DONNA M. HASSANI[4], BRIAN J. CUMMINGS, AILEEN J. ANDERSON, and LONNIE D. SHEA[2]** ([1]Department of Bioengineering, University of California Los Angeles; [2]Department of Chemical and Biological Engineering, [3]Department of Biomedical Engineering, [4]Department of Psychology, Northwestern University; [5]Department of Physical Medicine and Rehabilitation, Anatomy and Neurobiology, University of California Irvine).

4:30 **18** *Physical Determinants of Endothelial Inflammation*, **KAUSTABH GHOSH** (Department of Bioengineering, University of California, Riverside).

Please refer to poster 296 on page 79 of these Proceedings, which was submitted as part of this symposium.

Advances in Fluid Mechanics and Turbulence

MS&E 0113
Wednesday
8:35 a.m. – 5:00 p.m.

Program organizers: *Frank Jacobitz* (Mechanical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego) and *Marko Princevac* (Department of Mechanical Engineering, University of California, Riverside).

Program sponsor: Pacific Division section on Engineering, Technology, and Applied Science.

This symposium brings together researchers advancing our understanding of processes in turbulence and their applications in diverse fields, including modeling of atmospheric or oceanic turbulence, or air pollution problems. Application topics include urban dispersion, vehicular emissions, fire spread, multiphase flow, air lubrication, as well as smoke and visibility issues. Basic processes to be discussed include helical properties and acceleration statistics at multiple scales of turbulent motion.

Morning session chair: *Marko Princevac*

8:35 *Introductory Comments*, **MARKO PRINCEVAC**

8:40 **19** *Lagrangian and Eulerian Acceleration Properties in Homogeneous Turbulence with Shear and Rotation*, **FRANK G. JACOBITZ[1]*, KAI SCHNEIDER[2], WOUTER J.T. BOS[3], and MARIE FARGE[4]** ([1]Mechanical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego; [2]Laboratoire de Mécanique, Modélisation, et Procédés Propres du Centre National de la Recherche Scientifique, Aix-Marseille Université; [3]Laboratoire de Mécanique des Fluides et d'Acoustique du Centre National de la Recherche Scientifique, Ecole Centrale de Lyon, Université de Lyon; [4]Laboratoire de Météorologie Dynamique du Centre National de la Recherche Scientifique, Ecole Normale Supérieure)**.**

9:10 **20** *Subtle Effects of Air Lubrication*, **CAMPBELL DINSMORE*, MARKO PRINCEVAC, RICHARD COPCA, JOSHUA HAUSER, WARNER TSE, PAUL LOU, JIT MALAY, and CHRISTOPHER MORALES** (Department of Mechanical Engineering, University of California, Riverside).

9:40 **21** *New Superfog Screening Tool – Development and Validations through Laboratory Experiments*, **CHRISTIAN BARTOLOME[1]*, MARKO PRINCEVAC[1], AKULA VENKATRAM[1], DAVID WEISE[2], GARY ACHTEMEIER[3], and SHANKAR MAHALINGAM[4]** ([1]Department of Mechanical Engineering, University of California, Riverside; [2]USDA Forest Service Pacific Southwest Station, Riverside, CA; [3]USDA Forest Service Southern Research Station, Athens, GA; [4]College of Engineering, University of Alabama, Huntsville, AL).

10:10 **BREAK**

10:30 **22** *A Study of the Flow Field Surrounding Interacting Line Fires*, **TREVOR MAYNARD[1]*, MARKO PRINCEVAC[2], and DAVID WEISE[3]** ([1]USDA Forest Service Technology and Development Program, San Dimas, CA; [2]University of California, Riverside; [3]USDA Forest Service Pacific Southwest Research Station, Riverside, CA).

11:00 **23** *Ignition of Live Vegetation by Convection and/or Radiation – Preliminary Results*, **DAVID R. WEISE[1]*, THOMAS H. FLETCHER[2], SARA McALLISTER[3], and JONATHAN GALLACHER[2]** ([1]USDA Forest Service, Pacific Southwest Research Station, Riverside, CA; [2]Brigham Young University; [3]USDA Forest Service, Rocky Mountain Research Station, Missoula, MT).

11:30 **24** *Experiments on Surface Fire Transition to the Elevated Live Fuels*, **SUNDAY OMODAN[1]*, CHRISTIAN BARTOLOME[1], RAUL-DELGA DELGADILLO[1], JOEY CHONG[2], GLORIA BURKE[2], MARKO PRINCEVAC[1], and DAVID WEISE[2]** ([1]Department of Mechanical Engineering, Bourns College of Engineering, University of California, Riverside; [2]USDA Forest Service, Pacific Southwest Research Station, Riverside, CA).

12:00 LUNCH

Afternoon session chair: *Frank Jacobitz*

1:30 **25** *Characterizing Wicking for Development of Paper-based Analytical Devices*, **CARLOS CASTRO*, CINDY ROSILLO, and HIDEAKI TSUTSUI** (Department of Mechanical Engineering, University of California, Riverside).

2:00 **26** *Recent Advances in Optical Thermocavitation*, **DARREN BANKS*, MOLLY DANIELS, and GUILLERMO AGUILAR** (Department of Mechanical Engineering, University of California, Riverside).

2:30 **27** *Single Droplet and Train Impingement Pool Cooling*, **DARREN BANKS*, CYNTHIA AJAWARA, JIE LIU, and GUILLERMO AGUILAR** (Department of Mechanical Engineering, University of California, Riverside).

3:00 BREAK

3:30 **28** *Magnification of Concentrations in Cities*, **NICO SHULTE*, SI TAN, and AKULA VENKATRAM** (Mechanical Engineering, University of California, Riverside).

4:00 **29** *Understanding the Impact of Built Environment on Air Quality in Transit Oriented Developments*, **SI TAN*, NICO SCHULTE, and AKULA VENKATRAM** (Mechanical Engineering, University of California, Riverside).

4:30 **30** *Near Road Impact of Sound Walls on Air Quality Mitigation*, **MARKO PRINCEVAC*, SAM POURNAZERI, and BRANDN GAZZOLO** (Department of Mechanical Engineering, University of California Riverside).

Please refer to poster 300 on page 79 of these Proceedings, which was submitted as part of this symposium.

Boise Extravaganza in Set Theory (BEST)

HUB 260

Wednesday, 8:50 a.m. – 5:20 p.m.
Thursday, 9:00 a.m. – 3:30 p.m.
Friday, 9:30 a.m. – 1:15 p.m.

Program organizers: *Liljana Babinkostova, Andres Caicedo, Samuel Coskey* and *Marion Scheepers* (Department of Mathematics, Boise State University, Boise, Idaho).

Program sponsored by the Pacific Division section on Mathematics and by the National Science Foundation under grant DMS1440263.

This program is a continuation of the well-known conference BEST (Boise Extravaganza in Set Theory). BEST focuses on the mathematical discipline called Set Theory and its applications in other disciplines in Mathematics. BEST was hosted in Idaho at Boise State University for its first nineteen years.

Set Theory is the mathematical foundation for the study of the infinitary objects that routinely arise in Mathematics and its applications, and in the mathematical sciences. Contemporary set theoretic research addresses basic questions about provability, consistency and independence, and the relative strength of postulates or hypotheses in mathematized scientific theories. The methods developed by set theory serve as powerful tools for applications in many other mathematical disciplines, including algebra, analysis, combinatorics, complexity, topology and more.

The invited speakers for this program are successful set theorists from different career stages and will present high level scientific talks in several areas of set theory and its applications. The BEST symposium will also host contributed talks in Set Theory and its applications by participants. Undergraduate and graduate students will also present research accomplishments in these areas.

EDITOR'S NOTE: Due to the nature of this particular program and our printer's deadline for printing these *Proceedings*, it was impossible to present this program here in its entirety. The planners have provided an outline for the program with as much detail as was known at press time. Exact details may change as the program develops. Meeting attendees will be given the detailed program for this symposium with their registration packets at registration in Riverside.

Session chair: *Liljana Babinkostova*

8:50 *Opening comments*

9:00 **31** *Boldface Resurrection and the Strongly Uplifting Cardinals, the Superstrongly Unfoldable Cardinals and the almost Hugely Unfoldable Cardinals*, **JOEL D. HAMKINS* and THOMAS A. JOHNSTONE** (City University of New York).

10:00 **BREAK**

10:20 **32** *Student presentation. Information not available at press time. Please refer to updates sheet for information about this presentation.*

10:55 **33** *Information not available at press time. Please refer to updates sheet for information about this presentation.*

11:20 **34** *Information not available at press time. Please refer to updates sheet for information about this presentation.*

11:45 **35** *Information not available at press time. Please refer to updates sheet for information about this presentation.*

12:10 **LUNCH**

2:00 **36** *Singularizing and Square*, **MENACHEM MAGIDOR[1] and DIMA SINAPOVA[2]*** ([1]Department of Mathematics, Hebrew University of Jerusalem, Israel; [2]Department of Mathematics, University of Illinois at Chicago).

3:00 **BREAK**

3:20 **37** *Weak Square and the Failure of SCH*, **SPENCER UNGER** (Department of Mathematics, University of California, Los Angeles).

3:55 **38** *Information not available at press time. Please refer to updates sheet for information about this presentation.*

4:20 **39** *Information not available at press time. Please refer to updates sheet for information about this presentation.*

4:45 **40** *Information not available at press time. Please refer to updates sheet for information about this presentation.*

Program continues at 9:00 a.m. on Thursday.
Please refer to page 52 of these Proceedings.

Advances and Challenges in Marine Cell Biology

MS&E 0003
Wednesday
9:05 a.m. – 5:00 p.m.

Program organizers: *Amro Hamdoun* (Scripps Institution of Oceanography, University of California, San Diego) and *Anthony De Tomaso* (Department of Molecular Cellular and Developmental Biology, University of California, Santa Barbara).

Program sponsor: Pacific Division section on Cell and Molecular Biology.

Marine model systems have long played central roles in understanding conserved features of cell function and organization, ranging from the mechanisms underlying generation of membrane potentials to the identification of molecules necessary for interaction of sperm and egg. Recent advances in genomics, microscopy and molecular biology have now greatly expanded the range of marine cell biological models accessible to researchers, and expanded the suite of questions accessible using established models. In this symposium we will present 8 examples of how marine cell biological models are being used to address modern problems in biology, and how unique aspects of the biology of marine organisms can potentially offer insights not available using classic laboratory organisms. One presentation will focus on the use of echinoderms to understand membrane transport systems involved in cellular signaling and efflux of xenobiotics. Another presentation will highlight the use of urochordates to understand mechanisms of allorecognition and tissue regeneration. Other examples of proposed presentations include one on the use of hemichordates to study evolution of developmental circuits necessary for formation of the nervous system, and one on the use of marine cells to understand function of acid/base sensing mechanisms. The presentations will provide insight into the utility of marine model organisms to address broad biological problems. These include problems in basic science, such as the understanding of animal developmental

mechanisms, and those of relevance to applied science, as in the example of studying acid base sensing mechanisms to understand consequences of ocean acidification. The symposium is also likely to define novel questions that could be addressed by collaboration across these disparate models.

Morning session chair: *Anthony De Tomaso*

9:05 *Introductory comments*, **ANTHONY DE TOMASO**

9:10 **41** *Identification of Novel Egg Activation Circuits Revealed By Integrative Network Analysis of the Sea Urchin Egg Phosphoproteome*, **HONGBO GUO[1], ANTHONY MORADA[2], ANDREW LUGOWSKI[1], ANA ELISA GARCIA-VEDRENNE[3], RUTH ISSERLIN[1], ANDREW EMILI[1], and KATHY FOLTZ[2]*** ([1]Donnelly Center for Cellular and Biomolecular Research, University of Toronto; [2]Department of MCD Biology and Marine Science Institute, University of California, Santa Barbara; [3]Department of EEM Biology, University of California, Santa Barbara).

9:40 **42** *Comparative Genomes Emphasizing Echinoderms*, **R. ANDREW CAMERON** (Division of Biology, California Institute of Technology).

10:10 BREAK

10:30 **43** *Life's Wonderful Solutions: Convergent Molecular Evolution Underlies Origins of Bioluminescence in Marine Animals*, **TODD OAKLEY** (Department of Evolution Ecology and Marine Biology, University of California, Santa Barbara).

11:00 **44** *Dissecting Transporter Function in Sea Urchin Embryos*, **AMRO HAMDOUN*, TUFAN GOKIRMAK**, **JOSEPH CAMPNALE, and LAUREN SHIPP** (Scripps Institution of Oceanography, University of California, San Diego).

11:30 LUNCH

Afternoon session chair: *Amro Hamdoun*

1:30 **45** *Predicting Pollutant Transfer from the Oceans to Humans Using Biochemistry and Structural Biology*, **SASCHA C. T. NICKLISCH[1]*, GEOFFREY CHANG[2] and AMRO HAMDOUN[1]** ([1]Marine Biology Research Division, Scripps Institution of Oceanography, University of California, San Diego; [2]Skaggs School of Pharmacy and Pharmaceutical Sciences, Department of Pharmacology, School of Medicine, University of California, San Diego).

2:00 **46** *Sensing Acid/Base Conditions via the cAMP Pathway*, **MARTIN TRESGUERRES** (Scripps Institution of Oceanography, University of California San Diego, 9500 Gilman Drive (0202), La Jolla, California, 92093, mtresguerres@ucsd.edu).

2:30 BREAK

3:00 **47** *Diversity in Germ Line Determination*, **GARY WESSEL** (Department of Molecular and Cellular Biology, Brown University).

3:30 **48** *Allorecognition in a Basal Chordate: A Simplified Model for Transplantation Tolerance*, **ANTHONY W. DE TOMASO** (Department of MCD Biology and Marine Science Institute, University of California, Santa Barbara).

Forensic and Clinical Service Challenges in a Juvenile Arson Explosives and Research Center (JAERIC)

HUB 379
Wednesday
9:05 a.m. – NOON

Program organizer: *Ronn Johnson* (University of San Diego).

Program sponsor: Pacific Division Psychology Section.

Juvenile Fire Setting and Bomb Making (JFSB) is a growing public safety concern. In an effort to secure a more accurate forensic and clinical snapshot of the prevalence of JFSB, a national data base for JFSB is being crafted. This effort is being coordinated though the International Association of Fire Fighters (IAFF). Still, the comprehensive risk assessment factors for JFSB may not be completely captured by the anticipated national data set. A Juvenile Arson, Explosives and Research Center has coded 14 years of research data that includes roughly 1,600 cases of JFSBs. It is also very important to identify bomb-making and/or other explosive-making in forensic evaluation and treatment programming related to arson. Current peer reviewed research underrepresents the link between juvenile arson and juvenile bomb-making. Use of explosives was documented in 14.9% of the cases referred to a community juvenile arson intervention program in San Diego County. Of the 205 cases reported on in which use of explosives was documented, 37.1% of the juveniles had also committed arson apart from their use of explosives. Data from the JAERIC research project of the Burn Institute of San Diego County will be presented.

Session chair: *Ronn Johnson*

9:05 *Introductory Comments*, **RONN JOHNSON**

9:10 **49** *Geopsychological Profiling of Juvenile Fire Setters and Bomb Makers in San Diego County for Schools*, **ERIC JACOBS*, ADRIANA DEL VECCHIO*, and CHRISTINE COLLINS*** (University of San Diego).

9:40 **50** *Use of a DSM-5 Quadrant with Juvenile Fire Setters and Bomb Makers*, **DERRICK YOUNG*, PATRICIA JONES, KORI RYAN*, and JESSICA MUELLER*** (University of San Diego).

10:10 BREAK

10:30 **51** *Geopsychological Profiling of Juvenile Fire Setters and Bomb Makers in San Diego County*, **ANDI FESSLER*, PATRICIA JONES*, and YASMIN SAADATZADEH*** (University of San Diego).

11:00 **52** *Clinical Decision Making in the Treatment of Juvenile Fire Setters during the Treatment Termination Phase: A Second Risk Assessment*, **DERRICK YOUNG*, ANDI FESSLER*, CHRISTINE COLLINS*, and ALEXIS WILSON*** (University of San Diego).

11:30 **53** *The Forensic Psychological Patterns of "No Shows" in Juvenile Fire Setters and Bomb Makers*, **CINDY KIM*, YASMIN SAADATZADEH*, ANDI FESSLER*, and JESSICA MUELLER*** (University of San Diego).

The Importance of Citizen Science in Forming Scientific Communities from the Local to the National Level

HUB 268
Wednesday
9:05 a.m. – NOON

Program organizer: *Kimberly A. Hammond* (Department of Biology, University of California, Riverside).

Program sponsors: Pacific Division sections of Education and General and Interdisciplinary Studies.

Involving the general public (Citizens) in the exploration of natural areas and the collection of scientific data results in more engaged and educated communities. In addition, the crowd-sourced data gathered in citizen science activities can be used to leverage scientific activities in a myriad of ways. In an age when federal dollars are limited, this is a valuable way to continue to collect much needed information about the world around us. Despite all of the benefits of careful incorporation of citizen science into mainstream scientific activities, citizen science remains relatively unorganized and often lacks a coordinated direction. To some extent, the lack of organization is a good thing because activities arise from the grassroots efforts that allow for ingenious and fresh strategies. However, the cooperation and collaboration of groups organizing, supporting, and collecting data from citizen science activities can also help to further strengthen and improve the activities themselves and the results of those activities.

In this symposium, individuals, public non-profit organizations, and university groups will be brought together to explore the victories and current needs in citizen science. Specifically, however, we are aiming to sharpen the focus from the national level (Smithsonian Institution), to the Pacific Region, to the state of California, to the Southern California area and finally to one city (the city of Riverside) in a quest for an understanding of how the process works and how the different levels fit together to answer important questions and to inform a large and dynamic citizenry.

Session chairs: *Kimberly A. Hammond* and *Jamie E. Dolan*

9:05 *Introductory comments*

9:10 **54** *Big Visions, Big Data .... Big Problems*, **RUSTY RUSSELL** (Department of Botany, Smithsonian Institution).

9:40 **55** *Rediscovering California: Engaging the Public in Biodiversity Research and Conservation*, **ALISON YOUNG*, REBECCA JOHNSON*, SCOTT LOARIE, TERRENCE GOSLINER, ELIZABETH BABCOCK, and JEAN FARRINGTON** (California Academy of Sciences).

10:10 BREAK

10:30 **56** *Thinking about Knowledge and Power: Orienting Undergraduates to the Potential and Limits of Citizen Science/PPSR*, **DANIELA SOLERI** (Geography Department, University of California Santa Barbara, Santa Barbara, CA 93106-4060; soleri@geog.ucsb.edu).

11:00 **57** *Urban Citizen Science and the Future of Cities*, **LILA M. HIGGINS*, GREGORY B. PAULY, and BRIAN V. BROWN** (Natural History Museum, Los Angeles, CA).h

11:30 **58** *Seeking Out Stink Bugs in Southern California: Using Citizen Scientists to Learn More About Stink*

Bug Diversity, Behavior and Distribution, and Track the Spread of the Invasive Brown Marmorated Stink Bug (Halyomorpha halys), **JAMES M. BRYANT[1]* and MARK S. HODDLE[2]** ([1]Museum Department, City of Riverside; [2]Center for Invasive Species Research, University of California, Riverside).

Forensic and Clinical Psychological Research in Uganda: Challenges for Trauma on Top of Trauma Service Delivery

HUB 379
Wednesday
1:25 p.m. – 4:30 p.m.

Program organizer: *Ronn Johnson* (University of San Diego).

Program sponsor: Pacific Division Psychology Section.

Acts of terrorism and civil wars have resulted in multigenerational experiences with traumatic (PTSD) incidents that have no international border restrictions in Africa. The Republic of Uganda is a landlocked country in East Africa. Its size is comparable to the state of Oregon. Uganda has a high HIV prevalence in persons with severe mental illness (SMI) compared to the general population. The health problems stemming from HIV also coincide with disabling cognitive, behavioral, and motor dysfunction. The availability of competent and reliable mental health services is inadequate given the needs found in the remote regions of the country. Alternate approaches to mental health service delivery through collaborative partnerships as well as technology have garnered increasing interest, though there remains relatively limited research evaluating these forensic or clinical mental health approaches. In fact, there is some evidence that clinical mental health services have resulted in positive outcomes for many psychological disorders. This symposium examines issues that complicate and compliment mental health services research in Uganda.

The objective of this symposium is to review the efficacy of research-based clinical mental health interventions involved while delivering culturally responsive services in Uganda.

Session chair: *Ronn Johnson*

1:25 *Introductory comments*, **RONN JOHNSON**

1:30 **59** *Culturally-responsive Approaches for Addressing the Perceptions and Acceptability of Trauma Interventions in Uganda*, **ERIC JACOBS*, ELIZABETH GRACE*, MAGGIE WILHELM*, CINDY KIM*, ADRIANA DEL VECCHIO*, and KATHLEEN THOMAS*** (University of San Diego).

2:00 **60** *Group Counseling Training and Supervision for Trauma Issues Faced in Uganda: Why a Counseling Theory is Important*, **DERRICK YOUNG*, MAGGIE WILHELM*, MONIQUE LITTLE*, and KATHLEEN THOMAS*** (University of San Diego).

2:30 **61** *Culturally-Responsive Approaches for Addressing Severe Mental Health Issues Associated with HIV and AIDS*, **KATHLEEN THOMAS*, MELISSA KOENIGSBERG*, CHRISTINE COLLINS*, and MONICA GAMBILADO*** (University of San Diego).

3:00 BREAK

3:30 **62** *An overview of East African Research and Trauma Hope (EARTH)*, **ELIZABETH GRACE*, MAGGIE WILHELM*, MONICA GAMBILADO* and NICK BOYD*** (University of San Diego).

4:00 **63** *Organization and Delivery of Clinical Mental Health Services in Uganda*, **ELIZABETH GRACE*, CINDY KIM*, YASMIN SAADATZADEH*, MONIQUE LITTLE*, and MELISSA KOENIGSBERG*** (University of San Diego).

Should Science Reform the Humanities?

HUB 268
Wednesday
1:30 p.m. – 5:00 p.m.

Program organizer: *Jesse James Thomas* (Department of Religious Studies, San Diego State University) and *Mark Wheeler* (Department of Philosophy, San Diego State University).

Program sponsor: Pacific Division section of Science and the Arts and Humanities.

In a New Republic 8/6/2013 article titled "Science is not your enemy," Steven Pinker argues that if the humanities were more scientific they could reverse the recent decline in the status of the humanities. Simon Weiseltier responds on 9/4/13 with "Crimes against the Humanities" in which he argues that the authority of the sciences belongs properly in the province of fact rather than value, which is the province of the humanities. Little discussion has followed these two articles. This symposium hopes to do that.

Professor Thomas will open the symposium with a brief summary of the two articles referenced above, as well as his

own answer to the question. He will then invite the presenters to provide and elaborate briefly on their own answers to the basic question.
Session chair: *Jesse James Thomas*

1:30 **64** *Parable of the Chicken House: The Importance of Metaphors in Science and Humanities*, **JESSE JAMES THOMAS** (San Diego State University).

2:00 **65** *Should Science Reform the Humanities?* **NICOLE ASHLEY MEDA** (San Diego State University).

2:30 **66** *Expanding Artistic Expression through Science?* **SHERIDON STOKES** (Herb Alpert School of Music, University of California Los Angeles).

3:00 **BREAK**

3:30 **67** *Should Science Reform the Humanities?* **DARREN IAMMARINO** (San Diego State University).

4:00 **68** *Problem-Posing: How Altering Our Educational Philosophy Can Bridge the Divide Between the Sciences and the Humanities*, **TREVOR AULDRIDGE* and JEREMY JUYBARI** (San Diego State University).

4:30 **69** *A House Divided: The Humanism of Science and the Scientific Nature of the Humanities*, **MARK RICHARD WHEELER** (San Diego State University).

Thursday, 19 June 2014

Theory, Experiment, and Computations: A Synergistic Approach to Research

MS&E 0113
Thursday
8:05 a.m. – NOON

Program organizer: *C. Mark Maupin* (Colorado School of Mines).

Program sponsors: Pacific Division sections on Computer and Information Systems, and Chemistry and Biochemistry.

The utilization of theory and computations to complement and sometimes lead (i.e. theory driven research) experimental efforts is becoming increasingly common. The synergistic combination of experiment, theory, and computations has allowed for a greater understanding of many physical phenomena. The structural information obtained from various techniques such as X-ray and NMR is often critical to the creation of realistic models for computations, while theory and computations often reveal molecular level insights into catalytic mechanisms, binding phenomena, and system dynamics. This symposium is focused on the combination of experiment and theory/computations to expand our understanding of diverse systems ranging from gas phase reactions to complex condensed phase systems.

Session Chair: *C. Mark Maupin*

8:05 *Introductory comments*, **C. MARK MAUPIN**

8:10 **70** *Acetylcholine Promotes Binding of a-Contoxin MII at a_3b_2 Nicotinic Acetylcholine Receptors*, **SOMISETTI V. SAMBASIVARAO[1], JESSICA ROBERTS[2], VIVEK S. BHARADWAJ[1], JASON G. SLINGSBY[1], CONRAD ROHLEDER[1], CHRIS MALLORY[3], JAMES R. GROOME[2], OWEN M. McDOUGAL[3]*, and C. MARK MAUPIN[1]*** ([1]Chemical and Biological Engineering Department, Colorado School of Mines; [2]Department of Biological Sciences, Idaho State University, Pocatello; [3]Department of Chemistry and Biochemistry, Boise State University).

8:40 **71** *Impact of Ionic Liquids on the Structure of Cellulose*, **VIVEK BHARADWAJ*, TIMOTHY SCHUTT, COREY KINSINGER, TIMOTHY ASHURST, and C. MARK MAUPIN** (Chemical and Biological Engineering Department, Colorado School of Mines).

1100 (time italicized and underlined) identifies a student presentation
* identifies the speaker from among several authors listed
63 (bolded number) is the abstract number
abstracts contain complete contact information for authors

9:10 **72** *Using α-Conotoxin Molecular Scaffolds to Inform the Discovery of Potent and Selective Receptor Ligands toward the Treatment of Parkinson's Disease*, **OWEN M. McDOUGAL** (Department of Chemistry and Biochemistry, Boise State University).

9:40 **73** *Using Peptide Mutation and Structural Similarity to Aid in Drug Development*, **THOMAS LONG** (Departments of Computer Science and Chemistry and Biochemistry, Boise State University).

10:10 BREAK

10:30 **74** *Comparison of the Microcirculation in the Human Conjunctiva in Healthy and Diabetic Patients*, **WILLIAM L. DOW[1]*, FRANK G. JACOBITZ[1], and PETER CHEN[2]** ([1]Shiley-Marcos School of Engineering, University of San Diego; [2]Department of Bioengineering, University of California, San Diego).

11:00 **75** *Augmenting NMR Crystallography through Fragment Methods*, **JOSHUA D. HARTMAN** (Department of Chemistry, University of California Riverside).

11:30 **76** *Creating Computational Models of Cellular Development through Machine Learning in a Visual Programming Environment*, **NIC CORNIA*, TIM ANDERSEN, and JEFF HABIG** (Department of Computer Science, Boise State University).

Ecology and Conservation in River Networks

HUB 379
Thursday
8:30 a.m. – NOON

Program organizer: *Kurt E. Anderson* (Department of Biology, University of California, Riverside).

Program sponsor: Pacific Division section on Ecology, Environmental Sciences, and Sustainability.

Freshwater scientists are increasingly demonstrating that the branching structure of river networks has substantial ecological consequences. Local dynamics in rivers have been profitably studied over small spatial scales, and modeled by idealizing rivers as a one-dimensional line. Yet river stretches belong to branching, tree-like networks, which adds complexity in several ways. For example, restriction of movement along branches may influence population dynamics, while fluxes of materials and organisms at river confluences can alter habitat and species diversity. Superimposed on this river geometry is a large degree of temporal and spatial variation in ecological processes that is often arranged hierarchically. We still lack a coherent understanding of how river network structure constrains ecological processes, which hinders our ability to predict how other types of environmental variability, including human alterations, will affect freshwater ecosystems. However, there have recently been great strides made in our understanding of ecological dynamics in river networks, and this symposium will highlight recent exemplary research in the area. Each speaker has been suggested based on a broad expertise in river ecology, and will speak on one or more particular subthemes. These include: 1) how life history strategies and population dynamics reflect river network geometry, 2) patterns of abiotic and biotic diversity at different levels of hierarchical network organization, and 3) novel mathematical and statistical tools for studying the influence of network geometry on ecological processes.

Session Chair: *Kurt E. Anderson*

8:30 *Introductory comments*, **KURT E. ANDERSON**

8:40 **77** *Tectonic Controls over Ecological Transitions and Linkages Through River Drainage Networks*, **MARY E. POWER[1]*, WILLIAM E. DIETRICH[2], and JACQUES C. FINLAY[3]** ([1]Department of Integrative Biology, University of California, Berkeley; [2]Department of Earth and Planetary Science, University of California, Berkeley; [3]Department of Ecology, Evolution, and Behavior, University of Minnesota, Minneapolis).

9:10 **78** *Mainstem-Tributary Food Web Interactions in River Networks Mediated by Migratory Mayflies and Anadromous Fish*, **HIROMI UNO* and MARY E. POWER** (Department of Integrative Biology, University of California, Berkeley).

9:40 **79** *A Strategy for Aquatic Biodiversity Conservation in California*, **REBECCA M. QUIÑONES*, TED E. GRANTHAM, RYAN PEEK, ERIC HOLMES, NICK SANTOS, ANDY BELL, PETER B. MOYLE, and JOSHUA H. VIERS** (Center for Watershed Sciences, University of California, Davis).

10:10 BREAK

10:30 **80** *Assessing the Performance of Geometric and Habitat-Based Indices of Population Persistence Using Continuous Space Models of River Networks*, **KURT E. ANDERSON*, JONATHAN SARHAD, and SCOTT MANIFOLD** (Department of Biology, University of California, Riverside).

11:00 81 *Spatial Sampling on Streams: Principles for Inference on Aquatic Networks*, **NICHOLAS A. SOM[1]*, PASCAL MONESTIEZ[2], JAY M. VER HOEF[3], DALE L. ZIMMERMAN[4], and ERIN E. PETERSON[5]** ([1]Arcata Fish and Wildlife Office, US Fish and Wildlife Service, Arcata, CA; [2]Biostatistique et Processus Spatiaux, INRA, Avignon, France; [3]National Marine Mammal Laboratory, Alaska Fisheries Science Center, National Oceanographic and Atmospheric Administration, Seattle, WA; [4]Department of Statistics and Actuarial Science, University of Iowa, Iowa City; [5]CSIRO Computational Informatics, Dutton Park, QLD, Australia).

11:30 82 *Stream Temperature Variability over Time and Space: Metrics and Models*, **E. ASHLEY STEEL** (Pacific Northwest Research Station, USDA Forest Service, Seattle WA).

Accelerating Chemical and Biomedical Discovery with Molecular Simulation

MS&E 0003
Thursday
8:35 a.m. – NOON

Program organizers: *Chia-en A. Chang* (Department of Chemistry, University of California, Riverside) and *Dong Xu* (Department of Biomedical and Pharmaceutical Sciences, College of Pharmacy, Idaho State University, Meridian).

Program sponsors: Pacific Division sections of Cell and Molecular Biology, and Chemistry and Biochemistry.

This research symposium focuses on the advancements of state-of-the-art computational chemical and biological methods and their applications in addressing the most important and urgent biomedical questions. The objective of the symposium is to inform and engage elite computational scientists from around the globe in a discussion about the latest computational method development, the current applications in biomedical research, and the future outlook of the advanced simulation technologies.

Session chair: *Dong Xu*

8:35 *Introductory comments*, **DONG XU**

8:40 83 *Dynamical Ensembles of Nucleic Acids and Their Importance for Binding*, **IOAN ANDRICIOAEI** (Department of Chemistry, University of California, Irvine).

9:10 84 *Effects of Spatial Organization and Molecular Scaffoldings on the Diffusive Activity of Substrates in Enzyme Nanostructures*, **CHIA-EN A. CHANG* and CHRISTOPHER ROBERTS** (Department of Chemistry, University of California, Riverside).

9:40 85 *AMBER 14: Peer to Peer Molecular Dynamics FTW*, **SCOTT LE GRAND** (Amazon and Scatologic, Inc.).

10:10 BREAK

10:30 86 *Protein Force Field Developments: Explicit and Implicit Strategies*, **RAY LUO** (Department of Biochemistry, Molecular Biophysics and Biomedical Engineering, University of California, Irvine).

11:00 87 *Making Sense of Transmembrane Voltage Sensing by Voltage-Sensitive Ion Channels: Concerted Simulation and Experimental Studies*, **DOUGLAS TOBIAS** (Department of Chemistry, University of California, Irvine).

11:30 88 *A Molecular Theory for High-throughput Prediction of Hydration Free Energies*, **YU LIU, JIA FU and JIANZHONG WU*** (Departments of Chemical and Environmental Engineering and Mathematics, University of California, Riverside).

Two Dimensional Materials for Next Generation Devices

MS&E 0103
Thursday
8:35 a.m. – 4:10 p.m.

Program organizers: *Jory Yarmoff* (Department of Physics and Astronomy, University of California, Riverside) and *Jeanie Lau* (Department of Physics and Astronomy, University of California, Riverside).

Program sponsor: Pacific Division section on Physics and Materials Science.

The global challenge in electronic materials, driven by the impending end of Moore's law, is to find effective materials that can replace silicon in device applications. Recently discovered two-dimensional materials, such as graphene and topological insulators, are the leading candidates. These materials are composed of layers that are weakly coupled to each other by van der Waals forces. They have been found to exhibit novel conductivity properties within the two-dimensional plane that is leading to an abundance of new

physics and materials properties. This symposium will highlight recent advances in the science that underlies the fabrication, understanding and applications of two-dimensional materials.

Morning session chair: *Jory Yarmoff*

8:35 *Introductory comments*, **JORY YARMOFF**

8:45 **89** *Ripples, Strains and Quantum Transport in Few Layer Graphene Membranes*, **CHUN NING (JEANIE) LAU** (Department of Physics and Astronomy, University of California, Riverside)

9:20 **90** *Optoelectronic and Thermal Transport Properties of Two-Dimensional Materials and Heterostructures*, **CHUN-CHUNG CHEN[1], ZHEN LI[1], SHUN-WEN CHANG[2], and STEPHEN B. CRONIN[1,2]*** ([1]Department of Electrical Engineering, [2]Department of Physics, University of Southern California).

9:55 **91** *Indirect Excitons in van der Waals Heterostructures*, **M.M. FOLGER*, L.V. BUTOV, and K.S. NOVOSELOV** (Department of Physics, University of California, San Diego).

10:30 BREAK

10:50 **92** *Manipulating Correlated Phases in Graphene*, **ALESSANDRA LANZARA** (Department of Physics, University of California, Berkeley).

11:25 **93** *Electron-Hole Excitations in Two-Dimensional Atomic Layer Materials*, **NATHANIEL M. GABOR** (Department of Physics and Astronomy, University of California, Riverside).

12:00 LUNCH

Afternoon session chair: *Jeanie Lau*

1:30 **94** *2D Transition Metal Dichalcogenide Films: Facile Single-Layer Film Growth on SiO_2 and Bandgap Engineering through Alloying*, **LUDWIG BARTELS** (Department of Chemistry, University of California, Riverside).

2:05 **95** *Engineering a Fault-tolerant Quantum Computer*, **JASON ALICEA** (Department of Physics, and Institute for Quantum Information and Matter, California Institute of Technology).

2:40 BREAK

3:00 **96** *Magnetic Topological Insulator Hetero-Structures*, **KANG L. WANG** (Device Research Laboratory, Department of Electrical Engineering, WIN Institute of Neurotronics Systems, KACST-UCLA Center on Green Nano Electronics, University of California, Los Angeles).

3:35 **97** *Topological Insulators and Beyond*, **DAVID HSIEH**, (Institute for Quantum Information and Matter, California Institute of Technology).

Please refer to posters on page 75 of these Proceedings, which were submitted as part of this symposium.

Boise Extravaganza in Set Theory (BEST)

HUB 260
Thursday, 9:00 a.m. – 3:30 p.m.
Friday, 9:30 a.m. – 1:15 p.m.

Continuing from Wednesday. Please refer to page 43 of these Proceedings for information about this program.

Session chair: *Liljana Babinkostova*

9:00 **98** *On a Class of Guessing Models*, **NAM TRANG** (Department of Mathematics, Carnegie Mellon University).

10:00 BREAK

10:20 **99** *Basic Tukey Reductions for Selective and Ramsey Filters on General Topological Ramsey Spaces*, **NATASHA DOBRINEN, JOSE G. MIJARES and TIMOTHY TRUJILLO*** (Department of Mathematics, The University of Denver).

10:55 **100** *Tychonoff's Embedding into an H-closed Space*, **JOHN P. REYNOLDS** (Department of Mathematics, University of Kansas).

11:20 **101** *Topological Ramsey spaces and Baire sets*, **NATASHA DOBRINEN and JOSE G. MIJARES*** (Department of Mathematics, University of Denver)

11:45 **102** *Information not available at press time. Please refer to updates sheet for information about this presentation.*

12:10 LUNCH

2:00 **103** *Generalized Choquet Spaces*, **SAMUEL COSKEY[1]* and PHILIPP SCHLICHT[2]**, ([1]Department of Mathematics, Boise State University; [2]Rheinische Friedrich-Wilhelms-Universität, Bonn, Germany).

2:30 **104** *Information not available at press time. Please refer to updates sheet for information about this presentation.*

3:00 **105** *Information not available at press time. Please refer to updates sheet for information about this presentation.*

Program continues at 9:30 a.m. on Friday.
Please refer to page 64 of these Proceedings.

Promoting Deeper Learning in Middle Adolescence: Critical Connections and Implications for STEM Education

HUB 269
Thursday
9:00 a.m. – 4:00 p.m.

Program organized by *Carl A. Maida* (University of California, Los Angeles) and *Paul Heckman* (University of California, Davis).

Program sponsored by the Pacific Division section on Education.

Over the past few decades, research from the cognitive and learning sciences, education sciences, and developmental psychology has converged to yield a clear and compelling model of how high school-aged youth learn best. Research confirms observations that good learning involves direct experience, "deep immersion in a consequential activity," according to psychologist Jerome Bruner. It confirms that learning works best when young people can focus in depth on a few things at a time, when they see a clear purpose in learning activities, and when they have an active role co-constructing, interpreting, applying, making sense of, and making connections. Deeper learning involves, in addition to mastering core academic content, the ability to think critically and solve complex problems, to work collaboratively, to communicate effectively, and to learn how to learn. This session will combine didactic, experiential, and reflective activities to engage audience members, including K-14 teachers and informal science educators, and presenters in a professional learning community experience. The intent is to provide an opportunity for collaborative inquiry and the learning related to the promotion of deeper learning approaches in STEM (Science, Technology, Engineering and Mathematics) in the classroom and beyond. This workshop will consider ways to increase students' scientific literacy through involvement in deeper learning activities, including project-based learning in the classroom, in after school programs, and in experiential, community-based learning activities, including mentored internships and apprenticeships. Panelists will discuss current issues and future trends in science education, including STEM after school programs, pre-college science enrichment and "pipeline" programs, STEM scientist mentoring activities, informal STEM education, and the role of the arts and design in STEM education initiatives.

Morning session chair: *Carl A. Maida*

9:00 *Welcome*, **ROGER G. CHRISTIANSON** (Executive Director, Pacific Division of AAAS, and Department of Biology, Southern Oregon University).

9:05 *Introductory remarks,* **RICHARD A. CARDULLO** (President, Pacific Division of AAAS, and Department of Biology, University of California, Riverside).

9:15 **KEYNOTE ADDRESS:** *Realizing the Potential of Learning in Middle Adolescence*, **PAUL HECKMAN** (University of California, Davis).

Comments, **RICHARD ROBERTS** (Los Angeles Unified School District, retired).

10:00 **PANEL:** *Promoting Deeper Learning in Middle Adolescence.*
Moderator:
PAUL HECKMAN (University of California, Davis)
Panelists:
STACEY CAILLIER (High Tech High School of Graduate Education, San Diego)
KENNETH MAZEY (University of California, Los Angeles)
RICHARD ROBERTS (Los Angeles Unified School District, ret.)
JOHNNIE SAVOY (College Bound, Los Angeles)
KIMBERLY TANNER (San Francisco State University)

10:45 **WORKSHOP:** *Deeper Learning and STEM Activities* (breakout sessions with panelists and audience)

11:45 *Morning session wrap-up*, **PAUL HECKMAN**

12:00 **LUNCH**

Afternoon session chair: *Paul Heckman*

1:30 **KEYNOTE ADDRESS:** *Advancing Deeper Learning and Diversity in STEM Education*, **SHIRLEY MALCOM** (AAAS, Washington, D.C.).

Comments, **RICHARD CARDULLO** (University of California, Riverside).

2:15 **SYNTHESIS PANEL:** *Reflections on Deeper Learning Beyond the Classroom.*
Moderator:
CARL A. MAIDA (University of California, Los Angeles)
Panelists:
MAITE ALVAREZ (J. Paul Getty Museum, Los Angeles)
TERRY GOSLINER (California Academy of Sciences)
MARVIN MARCUS (University of California, Los Angeles)
EDWIN MEYER (University of California, Los Angeles)
ICHIRO NISHIMURA (University of California, Los Angeles)

3:15 *Afternoon session wrap-up*, **CARL A. MAIDA**

Future Trends on the Past History of Life

HUB 268
Thursday
9:05 a.m. – 11:30 a.m.

Program organizer: *Bahram Mobasher* (Department of Physics and Astronomy, University of California, Riverside).

Program sponsored by the Pacific Division sections on Earth Sciences; Evolution, Organismal Biology, and Biodiversity; and Physics and Materials Science.

Session chair: *Bahram Mobasher*

9:05 *Introductory comments*, **BAHRAM MOBASHER**

9:10 **106** *Molecular Biomarker Evidence for the Earliest Animal Life from Unusual Fossil Steroids Produced by Sponges*, **GORDON D. LOVE** (Department of Earth Sciences, University of California, Riverside).

9:40 **107** *Evolution of Photosynthesis and the Rise of Oxygen*, **WOODWARD FISCHER** (California Institute of Technology).

10:10 **BREAK**

10:30 **108** *Transitioning Towards the Modern Animal Biota: Small Shelly Fossils from the Cambrian of the Himalaya*, **IAN R. GILBERT* and NIGEL C. HUGHES** (Earth Sciences Department, University of California, Riverside).

11:00 **109** *Searches for Extrasolar Planets with the Next Generation of Ground-based Telescopes*, **BAHRAM MOBASHER** (Department of Physics and Astronomy, University of California, Riverside).

Computer Aided Drug Discovery and Development

MS&E 0003
Thursday
1:00 p.m. – 5:00 p.m.

Program organizers: *Chia-en A. Chang* (Department of Chemistry, University of California, Riverside) and *Dong Xu* (Department of Biomedical and Pharmaceutical Sciences, College of Pharmacy, Idaho State University, Meridian).

Program sponsors: Pacific Division sections of Cell and Molecular Biology, and Chemistry and Biochemistry.

This research symposium focuses on the advancements of state-of-the-art computational chemical and biological methods and their applications in addressing the most important and urgent biomedical questions. The objective of the symposium is to inform and engage elite computational scientists from around the globe in a discussion about the latest computational method development, the current applications in biomedical research, and the future outlook of the advanced simulation technologies.

Session chair: *Chia-en A. Chang*

1:00 **110** *Structure Based Drug Discovery Targeting the Complement System,* **DIMITRIOS MORIKIS** (Department of Bioengineering, University of California, Riverside).

1:30 **111** *Bridging Calorimetry and Simulation through Precise Calculation of Binding Enthalpies in Host-Guest and Protein-Ligand Systems*, **ANDREW FENLEY* and MICHAEL GILSON** (Skaggs School of Pharmacy and Pharmaceutical Sciences, University of California, San Diego).

2:00 **112** *Activation Mechanisms of the M2 Muscarinic Receptor and Design of Allosteric Modulators*, **YINGLONG MIAO* and ANDY McCAMMON** (Howard Hughes Medical Institute, University of California, San Diego).

2:30 **113** *Using Model Systems to Improve Binding Free Energy Calculations for Drug Discovery*, **DAVID MOBLEY** (Department of Pharmaceutical Sciences and Department of Chemistry, University of California, Irvine).

3:00 **BREAK**

3:30 **114** *Deciphering and Engineering Chromodomain-Methyllysine Peptide Recognition*, **WEI HE, NAN LI, RICHARD STEIN, ELIZABETH KOMIVES**

and WEI WANG* (Department of Chemistry and Biochemistry, University of California, San Diego).

4:00 **115** *CADD and Translational Science: Interfacing Industry Practices with Academia*, **VICTORIA A. FEHER* and ROMMIE AMARO** (Department of Chemistry and Biochemistry, University of California, San Diego).

4:30 **116** *Drug Repurposing and Adverse Event Mitigation via an Integrated Molecular Modeling and Systems Pharmacology Approach*, **DONG XU** (Department of Biomedical and Pharmaceutical Sciences, College of Pharmacy, Idaho State University).

Molecular Reproduction and Development

HUB 355
Thursday
1:00 – 5:00 p.m.
program continues on Friday
8:10 a.m. – 5:00 p.m.

Program organizers: *Gary M. Wessel* (Editor-in-Chief, *Molecular Reproduction and Development*, and Department of Molecular Biology, Cell Biology, and Biochemistry, Brown University), *Julian Wong* (Managing editor, Molecular Reproduction and Development and Department of Molecular and Cellular Neuroscience, The Scripps Research Institute, La Jolla, CA), *Mark Paalman* (Senior Editor, Life Science Journals, Wiley), and *Richard A. Cardullo* (College of Natural and Agricultural Sciences, University of California, Riverside).

Program sponsors: the journal *Molecular Reproduction and Development*, and the Pacific Division sections of Cell and Molecular Biology; Chemistry and Biochemistry; and Evolution, Organismal Biology, and Biodiversity.

Reproduction is arguably the singular life goal of most organisms. Its study depends upon and impacts a broad cross-section of the sciences, is heavily influenced by evolutionary selection, and the application of research successes in the field are limited only by ethical considerations. It is therefore a lively centerpiece of intersecting interests.

This program will explore the biological mechanisms of reproduction in plants and animals. The topics will range from sperm and egg functions and fertilization, development of reproductive organs, environmental impact on reproductive success and selection, the clinical impacts of research progress in reproduction, and the stem cell technologies that influence our understanding of germ cell formation. The approaches used in this field are broad – cellular, molecular, biochemical, computational, synthetic, and includes cells studied in vitro as well as whole organismal examination. The series of talks will be diverse and the discussions synthetic in nature. Members of the broader scientific community are urged to participate in this session to learn for the first time the rapidly moving field of reproduction and by contributing to the advancements made in the research and in their interpretations.

Session chair: *Ekaterina Voronina* (University of Montana)

1:00 *Introductory comments*, **GARY WESSEL**

1:10 **117** *How Sperm Learn to be Fertile*, **KEITH SUTTON, MELISSA JUNGNICKEL, and HARVEY FLORMAN*** (Department of Cell and Developmental Biology, University of Massachusetts Medical Center).

1:40 **118** *Time to Make New Skin: Periodic Stem Cell Activation and Matrix Renovation in C. elegans*, **ALISON FRAND** (Department of Biological Chemistry, School of Medicine, University of California, Los Angeles).

2:10 **119** *Adaptive Co-evolution of Interacting Sperm-Egg Reproductive Proteins*, **WILLIE J. SWANSON** (Department of Genome Sciences, University of Washington, Seattle, WA).

2:40 **120** *Activation and Regulation of Insect Sperm Motility*, **CATHERINE D. THALER[1]*, HARUHIKO MIYATA[1,2], LEAH T. HAIMO[1], and RICHARD A. CARDULLO[1]** ([1]Department of Biology, University of California, Riverside; [2]Animal Resource Center for Infectious Diseases, Immunology Frontier Research Center, Osaka University, Osaka, Japan).

3:10 **BREAK**

3:30 **121** *Elucidating the Molecular Mechanisms behind Female Choice*, **KELLY KWAN, YIDING JIA, PETER CHANG, BRENT YOUNG and MATTHEW D. DEAN*** (Molecular and Computational Biology, University of Southern California).

4:00 **122** *Human Stem Cells from Single Blastomeres Reveal Pathways of Embryonic or Trophoblast Fate Specification*, **TAMARA ZDRAVKOVIC[1], OLGA GENBACEV[1], LOUISE LAURENT[2], JEANNE LORING[2], and SUSAN FISHER[1]*** ([1]Department of Obstetrics, Gynecology, and Reproductive Sciences, University of California San Francisco; [2]Department of Chemical Physiology, The Scripps Research Institute, La Jolla, CA).

4:30 **123** *Master Regulators of Early Lineage Formation in Mammalian Embryos*, **JASON KNOTT** (Department of Animal Science, Michigan State University, East Lansing, MI).

Program continues on Friday. Please refer to page 60 of these Proceedings.

Please refer to oral presentations on page 71 of these Proceedings and posters on page 76 of these Proceedings, which were presented as part of this program.

World War II Anthropology: Austrians and Germans in Poland; Japanese in Asia; Anthropological Research and the Search for Survivors

HUB 367
Thursday
1:20 p.m. – 5:00 p.m.

Program organizer: *Alan L. Bain* (Emeritus Certified Archivist; Research Collaborator, National Anthropological Archives; Retired Archivist, Smithsonian Institution Archives).

Program sponsor: Pacific Division sections on Anthropology and Archaeology, and General and Interdisciplinary Studies.

The Institut für Deutsche Osterbeit (IDO) was one of many ventures during the 19th and 20th centuries in which Germany attempted to examine the potential of using resources from the lands to its east to fulfill its own ambitions. The occupation of Poland from 1939 to the end of World War II, unlike previous attempts, allowed the German Nazi regime to organize the plunder of Poland from within the country.

The IDO was headquartered in Krakow beginning in 1940 and quickly developed its organizational plan based on the ideology of race. Non-human resources were confiscated and exploited by the availability of an unending supply of slave labor. The IDO developed systems of hierarchical classification that led to clear-cut decision-making regarding the placement of individuals into slots. All Polish citizens were sentenced anywhere from immediate death to mindless labor for the Third Reich as determined by Nazi functionaries.

The IDO Section on Race and Ethnicity Research was supposed to form a scientific base for racial segregation of the Polish population under the General Government (GG), District of Occupied Poland. Anthropological, medical, and psychological tests were conducted. Systematic ethnographic field studies were organized. Library orders and bibliographic sources were created for subjects the Section was most interested in, including materials about settlement patterns, art and scientific treasures, and laws and legal issues that had developed over the past several centuries. Genealogical records were created for specific groups. Several ethnic groups underwent precise anthropological and biological investigations. Among them were the Highlanders from the Podhale region and the population in the Lemko region (south-eastern Poland), discussed in this session. The Jewish community of the Tarnow ghetto was one of the first to be examined by the Section staff shortly before it was completely exterminated.

The Highlanders occupied a special place in Nazi plans and visions concerning a conquered population in the GG. Attention was drawn to their cultural attractiveness, trying to attribute it to German cultural influences, which in turn, attested to the strength and power of the cultural potential of German colonization of Poland. Unlike several of the other regions where the Section subjected adults to tests, children and youth were also tested. Fingerprints were taken, palm prints, head measurements and hair samples. Sets of photographs and slides supplementing the racial questionnaires were taken of individuals, as well as everyday life, churches and village architecture. From the anthropometrical data several townspeople were classified as cross-breed, noting that some were considered part Celtic. Within the larger body of records there were also photographs of Polish works of art in museums.

In the Lemko region, some of the documents left behind by the anthropologists were similar to those completed during the tests used on the population in the Podhale area. The subjects covered were aged 20 to 60. The anthropologists were searching for traces of Germanness as well as conducting a census of races that existed in the area of the GC. Unlike the Podhale area, only the anthropological and sociological survey data were available for research at a later time at Jagiellonian University. Ethnologists at the University found that the survivors agreed that the survey work was carried out in 1942, but felt that the participants were never informed what the real objective was. Within this discussion, the ethnologist will comment on how the remembering process works.

The records of the IDO Section on Race and Ethnicity Research were transferred from Krakow by Austrian and German anthropologists to Bavaria, where they continued to work on them. The records were captured by the Allied forces, and the wooden crates containing the records had British Military Intelligence stamped on them. In 1947, the Medical Intelligence Section of the United States War Department offered the Section records to the Smithsonian Institution on a long-term loan.

Sixty-years later the records were digitized and microfilmed and in 2008 were returned to Jagiellonian University in Krakow. Dr. Gretchen Schafft, who used the Section records at the Smithsonian to write a portion of her publication on anthropology in the Third Reich, visited the University in the summer of 2012. She found that ethnologists and

anthropologists at the University had gone through the documents, with one group focusing their research on the Podhale region, while a second research team went into the Lemko region. Through the use of the photographs staff found and met some of the survivors of the Section's research. Interviews were conducted with more than twenty-five of them, and film was produced documenting the events. In addtition, after the digitization of the records, the anthropometric data gathered by the German and Austrian anthropologists have been used to document variations in the Polish population.

Meanwhile, in Asia, Japanese anthropologists followed Japan's empire and carried out ethnological studies in the annexed colonies. By 1942, Japan controlled a vast Asian-Pacific area from Indonesia to the Aleutian Islands. In 1926, Keijo Imperial University in Korea was established and an anatomy department was created by physical anthropologist Imamura Yutaka. Imamura attempted to collect the world's best bone collection. He collected over 600 full-size skeletons from the Pacific Islands, Korea, Manchuria, and China. The United States prevented the skeletons from being transferred to Japan at the end of the war, but when the University was turned over to the Koreans, the skeletons could not be found. Chun Kyung-Soo has carried out research and fieldwork in Korea, Japan, China, Manchuria and Papua, New Guinea. Chun has tried to find survivors and interviewed some of them regarding their experiences under Japanese military rule. He will also discuss the set of skeletons collected at the University.

During this time, an ethnology (cultural anthropology) course was being taught at Taihoku Imperial University (located in modern-day Taipei). The course was taught by Dr. Utsurikawa, Nenozo, who was one of the first Japanese who took the PhD in cultural anthropology at Harvard University. The ethnology course, founded in 1928, was a landmark in the development of Japanese cultural anthropology because professional education was begun by professional anthropologists in a "Japanese" territory for the first time. Utsurikawa returned to Japan in December 1945. However, he was unable to establish his influence over the Japanese academic world. Why this occured will be one of the topics that will be discussed at this session.

Session chair: *Alan L. Bain*

1:20 *Introductory comments*, **ALAN L. BAIN**

1:30 **124** *Continuity and Discontinuity seen in the Japanese Anthropological Tradition : A Case of Dr. Utsurikawa, Nenozo*, **YUKO MIO** (Professor of Anthropology, Institute for Languages and Cultures of Asia and Africa, Tokyo University of Foreign Studies, Tokyo, Japan).

2:00 **125** *Anthropological Researches done by Japanese Scholars during WWII: A Case of Keijo Imperial University*, **KYUNG-SOO CHUN** (Professor of Anthropology, Department of Anthropology, Seoul National University, Seoul, Korea).

2:30 **126** *The Institut fűr Deutsche Ostarbeit: Lessons Learned*, **GRETCHEN E. SCHAFFT** (Public Anthropologist in Residence, The American University, Silver Spring, MD).

3:00 **BREAK**

3:30 **127** *We Were Scared ... Nazi Racial Examinations in Memory of Polish Highlanders from Podhale Region*, **STANISLAWA TREBUNIA-STASZEL** (Associate Professor, Institute of Ethnology and Cultural Anthropology, Jagiellonian University, Cracow Poland).

4:00 **128** *The Work of the Section of Racial and National Traditions Research (SRV) of the Institut für Deutsche Ostarbeit in the Lemkivshchyna Region in South-Eastern Poland*, **PATRYCJA TRZESZEZYNSKA-DEMEL** (Associate Professor, Institute of Ethnology and Cultural Anthropology, Jagiellonian University, Cracow, Poland).

4:30 **129** *The Institut för Deutsche Ostarbeit (IDO): Using Anthropometric Data to Gain an Appreciation of the Polish Population Before, During, and After World War II*, **ALICJA K. LANFEAR** (Post-doctoral Research Assistant, Forensic Institute for Research and Education, Middle Tennessee State University, Murfreesboro, TN).

Genetics of Adaptation – From Spiders' Silk to Marathon Mice

HUB 379
Thursday
1:20 p.m. – 5:00 p.m.

Program organizer: *David Reznick* (Department of Biology, University of California, Riverside).

Program sponsor: Pacific Division section on Evolution, Organismal Biology, and Biodiversity.

Empirical studies of evolution and adaptation have long since defined how and why organisms evolve from a phenomenological perspective. Advances in molecular genetics now make it possible to extend these endeavors to a consideration of specific genes associated with evolution and a characterization of their action. We will present six study systems in which the link between adaptation and the action of specific genes is being

established. These presentations will include three experimental studies of evolution - one on laboratory populations of fruit flies, one on laboratory populations of mice and one on natural populations of guppies - in which we are identifying and characterizing candidate genes or scanning whole genomes for signatures of the role of genes in shaping complex adaptations. One presentation will focus on the remarkably diverse array of silks and the genetics of silk synthesis in spiders, revealing the evolutionary dynamics that have shaped these high-performance proteins. One presentation will consider the genetic basis of floral evolution and speciation in a genus of flowering plants. Finally, one presentation will characterize de-evolution, or what happens in the long term when a gene is no longer used. The resulting degradation represents the mirror image of the negative Darwinian selection that persists unseen in any study of positive Darwinian selection associated with adaptation. Collectively, these studies illustrate some of the diversity of technology that now makes it possible to associate genes with adaptations, but also illustrates the contribution of such endeavors to basic and applied science.

Session chair: *David Reznick*

1:20 *Introductory comments*, **DAVID REZNICK**

1:30 **130** *Born to Run: Genotype-Phenotype Mapping and the Evolution of Locomotor Activity*, **THEODORE GARLAND, JR.** (Department of Biology, University of California, Riverside).

2:00 **131** *How Fast Is Mendelian Adaptation?* **MICHAEL R. ROSE[1*], LARRY G. CABRAL[1], THOMAS T. BARTER[1], GRANT A. RUTLEDGE[1], JAMES N. KEZOS[1], MARK A. PHILLIPS[1], LAURENCE D. MUELLER[1], LEE F. GREER[1], and JOSEPH L. GRAVES, JR[2]** ([1]Department of Ecology and Evolutionary Biology, University of California, Irvine; [2]Joint School of Nanoscience and Nanoengineering, Greensboro, NC,).

2:30 **132** *Molecular Evolution of Spider Silk: Genetics of Functional Repetitive DNA*, **CHERYL Y. HAYASHI** (Department of Biology, University of California, Riverside).

3:00 **BREAK**

3:30 **133** *Molecular Evolution of Tooth Genes in Toothless Vertebrates: Deciphering Evolutionary History from Pseudogenes*, **MARK SPRINGER** (Department of Biology, University of California, Riverside).

4:00 **134** *Genomics of Convergently and Experimentally Evolving Populations of Guppies* (*Poecilia reticulata*). **BONNIE A. FRASER[1*], AXEL KUNSTER[1], DAVID N. REZNICK[2], CHRISTINE DREYER[1], and DETLEF WEIGEL[1]** ([1]Department of Molecular Biology, Max Planck Institute for Developmental Biology, Tübingen, Germany; [2]Department of Biology, University of California at Riverside).

4:30 **135** *The Genetics of Floral Adaptation: Flower Color, Shape and Organ Identity*, **SCOTT A. HODGES*, NATHAN J. DERIEG, and EVANGELINE S. BALLERINI** (Department of Ecology, Evolution and Marine Biology, University of California, Santa Barbara).

Mechanisms of Tumor Progression and Cancer Therapy

MS&E 0113
Thursday
1:25 p.m. – 4:30 p.m.

Program organizer: *Cheryl Jorcyk* (Department of Biological Sciences, Boise State University).

Program sponsor: Pacific Division section of Cell and Molecular Biology.

Cancer is a large group of different diseases, all involving uncontrolled growth of cells in the body. During tumor progression, cells proliferate, form malignant tumors, invade to nearby parts of the body and metastasize, or spread, to more distant parts of the body through the lymphatic system or bloodstream. This program will provide scientific presentations addressing different mechanisms of tumor progression and metastasis, as well as mechanistic discussions on established and emerging cancer therapeutics. This symposium is designed for all types of biomedical researchers, undergraduate and graduate students, physicians and oncologists, nurses, pharmacists, and others who research or manage patients with cancer.

Session chair: *Cheryl Jorcyk*

1:25 *Introductory comments*, **CHERYL JORCYK**

1:30 **136** *Bone Metastatic Microenvironment: Oncostatin M Promotes Osteolytic Bone Degradation and Breast Cancer Metastasis*, **KEN TAWARA*, CELESTE BOLIN, CALEB SUTHERLAND, JEFF REDSHAW, PATRICK ARANDA, JIM MOSELY, ROBIN ANDERSON, and CHERYL L. JORCYK** (Department of Biological Sciences, Boise State University).

2:00 **137** *Antitumor Activity of a Polypryidyl Chelating Ligand: In Vitro and In Vivo Inhibition of Glioblastoma*, **CLEMENT N. DAVID[1], ELMA S. FRIAS[2], CATHERINE C. ELIX[2], AMEAE M. WALKER[1], JACK F. EICHLER[2], and EMMA H. WILSON[1]*** ([1]Division of Biomedical Sciences, School of Medicine, University of California, Riverside; [2]Department of Chemistry, College of Natural and Agricultural Sciences, University of California, Riverside).

2:30 **138** *Antimaia Inhibits Breast Cancer Metastasis through Effects on Both Tumor and Immune Cells*, **KUAN-HUI E. CHEN, TOMOHIRO YONEZAWA, MRINAL K. GHOSH, and AMEAE M. WALKER*** (Division of Biomedical Sciences, University of California, Riverside).

3:00 **BREAK**

3:30 **139** *Immune Responses and Racial Disparities in Colon Cancer*, **KATHLEEN L. McGUIRE[1], MOHAMMAD W. KHAN[1]*, and JOHN M. CARETHERS[2] (**[1]Department of Biology, Molecular Biology Institute, San Diego State University; [2]Division of Gastroenterology, Department of Internal Medicine, University of Michigan, Ann Arbor).

4:00 **140** *Promoting Breast Cancer Metastasis: A Role for the Inflammatory Cytokine Oncostatin M*, **CHERYL L. JORCYK (**Department of Biological Sciences, Biomolecular Sciences Program, Boise State University).

Small RNA-Mediated Gene Regulation

HUB 265
Thursday
1:25 p.m. – 5:00 p.m.

Program organizers: *Hailing Jin* and *Katherine Borkovich* (Department of Plant Pathology and Microbiology, University of California, Riverside, CA).

Program sponsors: Pacific Division sections of Agriculture, Food and Renewable Resources, and Cell and Molecular Biology.

Small non-coding RNAs have emerged as important gene expression regulators in eukaryotic organisms. They are involved in regulating almost multiple cellular processes, including development and growth, stress responses, immunity and genome integrity. Our symposium will invite experts in the small RNA field from both animal and plant systems to present their recent findings on the function and regulation of small RNAs in various organisms. This symposium will include experimental studies on how small RNAs regulate gene expression, as well as computational modeling and practical applications.

Session chair: *Hailing Jin*

1:25 *Introductory comments*, **HAILING JIN**

1:30 **141** *Connecting RNA Directed-DNA Methylation and Histone Methylation in Arabidopsis thaliana*, **JULIE A. LAW[1,5], JIAMU DU[2]*, CHRISTOPHER J. HALE[1]*, SUHUA FENG[1], ANA MARIE S. PALANCA[5], KRZYSZTOF KRAJEWSKI[3], BRIAN D. STRAHL[3], DINSHAW J. PATEL[2], and STEVEN E. JACOBSEN[1,4]** ([1]Department of Molecular Cell and Developmental Biology, University of California, Los Angeles; [2]Structural Biology Program, Memorial Sloan-Kettering Cancer Center; [3]Department of Biochemistry and Biophysics, University of North Carolina at Chapel Hill; [4]Howard Hughes Medical Institute, University of California, Los Angeles; [5]Plant Molecular and Cellular Biology, Salk Institute).

2:00 **142** *Remodeling of Ago2-mRNA Interactions Upon Cellular Stress Reflects miRNA Complementarity and Correlates with Altered Translation Rates*, **FEDOR V. KARGINOV[1]* and GREGORY J. HANNON[2]** ([1]Department of Cell Biology and Neuroscience, University of California, Riverside; [2]Watson School of Biological Sciences, Howard Hughes Medical Institute, Cold Spring Harbor Laboratory).

2:30 **143** *Fungal Small RNAs Suppress Plant Host Immunity by Hijacking Host RNAi Machinery*, **ARNE WEIBERG[1], MING WANG[1], FENG-MAO LIN[2], HONGWEI ZHAO[1], ZHIHONG ZHANG[1], ISGOUHI KALOSHIAN[1], HSEIN-DA HUANG[2], and HAILING JIN[1]*** ([1]University of California, Riverside; [2]National Chiao Tung University, Taiwan; hailingj@ucr.edu).

3:00 **BREAK**

3:30 **144** *A Highly Conserved Protein PIR-1 is Required for Silencing Orsay Virus in C. elegans*, **WEIFENG GU** (Department of Cell Biology and Neuroscience, University of California, Riverside).

4:00 **145** *The Arabidopsis PHD-Finger Protein EDM2 Controls Plant Innate Immunity by Modulating Levels of the Epigenetic Transposon-Silencing Mark*

H3K9me2, **THOMAS EUGLEM*, TOKUJI TSUCHIYA, and YAN LAI** (Center for Plant Cell Biology, Institute for Integrative Genome Biology, Department of Botany and Plant Sciences, University of California, Riverside).

4:30 **146** *Regulation of Innate Immunity to the Fungal Pathogen Fusarium oxysporum by MicroRNAs in Tomato*, **SHOUQIANG OUYANG[1], GYUNGSOON PARK[1], HAGOP ATAMIAN[2] , CLIFF S. HAN[3], JASON E. STAJICH[1], ISGOUHI KALOSHIAN[2], and KATHERINE A. BORKOVICH[1]*** ([1]Department of Plant Pathology and Microbiology, [2]Department of Nematology, Institute for Integrative Genome Biology, University of California, Riverside; [3]Bioscience Division, Los Alamos National Laboratory).

Friday, 20 June 2014

Molecular Reproduction and Development

HUB 355
Friday
8:10 a.m. – 5:00 p.m.

This program is continued from Thursday afternoon. Please refer to page 54 of these Proceedings for details.

Morning session chair: *Sara K. Olson*

8:10 **147** *Developmental Regulation of Heparan Sulfate Proteoglycan Synthesis*, **LINE HOFMANN, DOUGLAS BORNEMANN and RAHUL WARRIOR*** (Department of Developmental and Cell Biology, University of California, Irvine).

8:40 **148** *A Role for Dynein in Germline Stem Cell Maintenance in C. elegans*, **XIAOBO WANG[1], EKATERINA VORONINA[1]*, DOMINIQUE RASOLOSON[2], and MARIAH MALEY[1]** ([1]Division of Biological Sciences, University of Montana; [2]Department of Molecular Biology and Genetics, Johns Hopkins University School of Medicine/HHMI).

9:10 **149** *Developmental Robustness in the C. elegans Embryo*, **MORRIS MADURO[1]*, HAILEY CHOI[1,2], CASSANDRA BENNETT[1], FRANCISCO CARRANZA[1], FARHAD GHAMSARI[1], GINA BROITMAN-MADURO[1], and GURJOT WALIA[1]** ([1]Department of Biology and [2]Graduate Program in Cell, Molecular and Developmental Biology, University of California, Riverside).

9:40 **150** *Deciphering the Role of EMP2 in Trophoblast Invasion and Placental Vascular Remodeling*, **MADHURI WADHERA[1]*, CARMEN J. WILLIAMS[2], WENDY N. JEFFERSON[2], DEEPTHI SUDHAKAR[2], ELIZABETH PADILLA-BANKS[1], and NEVIL KHURANA[1]** ([1]Department of Pathology and Laboratory Medicine, Geffen School of Medicine at UCLA; [2]Reproductive Medicine Group, Laboratory of Reproductive and Developmental Toxicology, National Institute of Environmental Health Sciences, National Institutes of Health).

10:10 BREAK

10:30 **151** *Germline Development in the Colonial Ascidian, Botryllus schlosseri*, **ADAM LANGENBACHER, ALESSANDRO DE MAIO, DELANY RODRIGUEZ, SUSANNAH KASSMER, and ANTHONY W. DE TOMASO*** (Department of MCD Biology and Marine Science Institute, University of California Santa Barbara).

11:00 **152** *Neonatal Estrogen Exposure Alters Global Epigenetic Marks in the Female Reproductive Tract*, **CARMEN J WILLIAMS*, WENDY N. JEFFERSON, ELIZABETH PADILLA-BANKS, H. KARIMI KINYAMU, TIANYUAN WANG, and WEICHUN HUANG** (National Institute of Environmental Health Sciences).

11:30 **153** *Molecular Determinants of Oocyte Competence*, **GEORGE W. SMITH (**Laboratory of Mammalian Reproductive Biology and Genomics, Departments of Animal Science and Physiology, Michigan State University).

12:00 LUNCH

Afternoon session chair: *Catherine D. Thaler*

1:30 **154** *The Terra Incognita of Male Fertility: Flagellar Ion Channels and Their Function*, **POLINA V. LISHKO*, MELISSA MILLER, STEVEN MANSELL, and SARA S. A. CHOO** (Department of Molecular and Cell Biology, University of California, Berkeley).

2:00 **155** *Molecular Pathways Involved in Oocyte Developmental Competence*, **MARCO CONTI*, FEDERICA FRANCIOSI, HAKAN CAKMAK, and SHILA MANANDHAR** (Center for Reproductive Sciences, University of California, San Francisco).

2:30 **156** *Cracking the Eggshell: Assembly of Protective Barriers Following Fertilization of the C. elegans Embryo*, **SARA K. OLSON** (Department of Biology, Pomona College).

3:00 BREAK

3:30 **157** *How Attractive is the Fish Egg's Micropyle?* **GARY N. CHERR[1]* and RYUZO YANAGIMACHI[1,2]** ([1]University of California Davis Bodega Marine Laboratory; [2]Institute for Biogenesis Research, Department of Anatomy, Physiology, and Biochemistry, University of Hawaii Medical School).

4:00 **158** *Converging Calcium Waves Occur as Drosophila Oocytes Activate*, **TARO KANEUCHI[1], CAROLINE V. SARTAIN[2], SATOMI TAKEO[3], VANESSA L. HORNER[2], TOSHIRO AIGAKI[1], and MARIANA F. WOLFNER[2]*** ([1]Department of Biological Sciences, Tokyo Metropolitan University, Tokyo, Japan;

[2]Department of Molecular Biology and Genetics, Cornell University; [3]Graduate School of Life and Environmental Sciences, University of Tsukuba, Ibaraki, Japan).

4:30 **159** *Sugar Coated Genomes – Sperm Sialome and Sexual Selection*, **PASCAL GAGNEUX** (Department of Cellular and Molecular Medicine, and Glycobiology Research and Training Center, University of California, San Diego).

California's World's Fairs: Panama Pacific International Exposition, San Francisco, 1915; Panama-California Exposition, San Diego, 1915–1916

HUB 367
Friday
8:30 a.m. – NOON

Program organizer: *Alan L. Bain* (Emeritus Certified Archivist; Research Collaborator, National Anthropological Archives; Retired Archivist, Smithsonian Institution Archives).

Program sponsors: Pacific Division sections on Anthropology and Archaeology, and General and Interdisciplinary Studies.

The Panama Pacific International Exposition (PPIE) held in San Francisco, 1915, was first conceptualized in 1904 by San Francisco businessmen. Later, San Francisco leaders and businessmen wanted to use the fair as a vehicle to show the city's recovery from the 1906 earthquake and fire and rid its reputation as an uncouth frontier town. With the completion of the Panama Canal in 1913, the fair was designed to commemorate that amazing engineering feat. In 1909, business leaders of the small city of San Diego announced their intentions to celebrate the opening of the Canal with their own fair (Panama-California Exposition, 1915-1916). With the completion of the Canal, San Diego would be the first American port north of the waterway on the Pacific Coast. The exposition would help bolster an economy shaken by the Wall Street panic of 1907. San Francisco's leaders became very upset. Thus began a competition of cities (which later included New Orleans) between businessmen, community leaders, and politicians for federal recognition and support. San Francisco received the prize. Later, San Diego was also given recognition and received federal support. It became the smallest of any city, with a population a little over 39,000, to attempt to hold an international exposition. Open for only nine months, San Francisco attracted over 19 million visitors, while San Diego, open for one year, received over 3.5 million to its regional displays.

Behind the expositions, which were cities within cities, the beautiful buildings, exhibitions on science, art, and literature, and the midways (amusement and concession stands), called the "Joy Zone" in San Francisco, and the Isthmus in San Diego, lay the concept of natural selection, survival of the fittest, and the Darwinian struggle between the races. Eugenics was revealed, using science to improve the human stock, with discussions at PPIE congresses held on the prevention of the ill-fit and improper intermarriages. The Federal government supported these concepts. At PPIE, the United States Department of Labor had exhibitions on immigration statistics between 1820 and 1914 that described the races that arrived, their occupations, arrests, deportations and conclusions that the composition of the white ethnic population was changing for the worse. At the Panama-California Exposition, the president for the fair utilized the services of the anthropologists from the Smithsonian Institution to develop exhibitions showing the physical evolution of man, evolution of culture, and the Native races of America. Led by Ales Hrdlicka, anthropologists carried out research. Expeditions were undertaken to gather and photograph skeletal remains in Europe, Africa, the United States, Siberia, Mongolia, and Peru; studies were made of the Eskimo and Sioux Indians; and graves were desecrated in the Philippines for cranial and skeletal material. The collections were displayed so that the classification of mankind along racial lines was easily understood and demonstrated man's progress towards future perfection. The displays linked race to biology, even though anthropologist Franz Boas had earlier shown this linkage to be false, making racial attitudes untenable. Combined, the exhibitions helped to provide public support for the restrictive immigration laws of the 1920s, beginning with fixed racial quotas for European immigration and culminating in the exclusion of Asians altogether, in 1927.

The panelists at this session on the California expositions will discuss varied themes, demonstrating how the exhibitions represented reality to advance the aims of exposition organizers, and in some instances, how ethnic groups were able to participate at the fair under their own agency and agenda. Included are presentations regarding the ethnic communities around San Francisco, how Chinese American and Chinese American women participated at the fair, the exhibition of the Chinese Pagoda, how Native Americans were presented and the reality of their condition, mining exhibitions and the reality of mining conditions, and the creation of the Museum of Man.

Session chair: *Alan L. Bain*

8:30 *Introductory comments*, **ALAN L. BAIN**

8:40 **160** *Claiming Citizenship and Heritage: Bay Area Ethnic Communities at the Panama-Pacific International Exposition*, **ABIGAIL MARKWYN** (Carroll University, Waukesha, WI).

9:10 **161** *The Argonaut's Palace: Mining at the Panama-Pacific International Exposition, 1915*, **JEFF BARTOS** (Department of History, Philosophy, and Religious Studies, Montana State University).

9:40 **162** *Chinese Pagoda*, **WILLIAM H. MA** (History of Art Department, University of California, Berkeley).

10:10 **BREAK**

10:30 **163** *Chinese Women and the Panama Pacific International Exposition*, **CHUIMEI HO** (Chinese in Northwest America Research Committee, Bainbridge Island, WA).

11:00 **164** *Ethnographic Showcases at the California Fairs of 1915*, **MATTHEW BOKOVOY** (Senior Acquisitions Editor, Native American and Indigenous Studies and Southwestern Borderlands, University of Nebraska Press).

11:30 **165** *Hrdlicka and the Museum of Man*, **TORI D. RANDALL** (Department of Physical Anthropology, San Diego Museum of Man).

Challenges for Implementing Vision and Change in Science Classrooms

HUB 269
Friday
8:35 a.m. – NOON

Program organizers: *Richard Cardullo* (Department of Biology, University of California) and *William B. Davis* (Associate Dean for Undergraduate Education, School of Molecular Biosciences, College of Veterinary Medicine, Washington State University, Pullman, WA).

Program sponsor: Pacific Division section on Science and Technology Education.

Transformation in the life sciences on a large scale will only occur when institutions support change at the departmental level that is then shared with, and adopted by, other institutions. Over the past two decades, various initiatives have promoted changes in pedagogical strategies that focus on process over content while acknowledging the inherent power that diversity brings to science classrooms. A number of national efforts, including the AAAS-sponsored Vision and Change recommendations and the recent establishment of the National Academies Scientific Teaching Alliance (NASTA), seek to inform the scientific and science education communities about effective, evidence-based teaching practices that improve student learning. Significant challenges exist for transforming faculty members, departments, and institutions that reflect the growing need for delivering a relevant curriculum that serves all students in the sciences. This symposium will focus on these challenges and will present evidence of practices that improve student engagement and success using state-of-the-art assessments, technology, and strategies for empowering departments to fundamentally improve the quality of science education.

Session chairs: *William B. Davis* and *Richard A. Cardullo*

8:35 *Introductory comments*

8:40 **166** *Colored Cards to Coursera: The Role of In-house Education Research in Supporting Instructional Innovation*, **DIANE K. O'DOWD* and ADRIENNE E. WILLIAMS** (Department of Developmental and Cell Biology, University of California, Irvine).

9:10 **167** *Re-Considering Biology Student Assessment: Development of a Biology Card Sorting Task in Alignment with Vision and Change*, **KIMBERLY D. TANNER[1,*], JULIA I. SMITH[2], ELIJAH D. COMBS[1], PAUL H. NAGAMI[1], VALERIE M. ALTO[2], HENRY G. GOH[2], MURYAM A. A. GOURDET[2], CHRISTINA M. HOUGH[2], ASHLEY E. NICKELL[2], ADRIAN G. PEER[2], and JOHN D. COLEY[3]** ([1]San Francisco State University; [2]Holy Names University, Oakland, CA; [3]Northeastern University).

9:40 **168** *Providing First-year Undergraduate Scientific Research Experiences in the Teaching Laboratory*, **JAMES M. BURNETTE III** (Neil A. Campbell Science Learning Laboratory and Dynamic Genome Program, University of California, Riverside).

10:10 **BREAK**

10:30 **169** *Strategies for Implementation of Vision and Change at Community Colleges*, **PAMELA PAPE-LINDSTROM (**Everett Community College, Everett, WA).

11:00 **170** *The Change in Demographics and STEM: How PULSE Strategies Can Increase URM participation in STEM Careers*, **EDWIN J. BAREA-RODRIGUEZ* and DANIELLE GORDON** (Department of Biology, University of Texas at San Antonio).

11:30 **171** *A Partnership for Undergraduate Life Science Education (PULSE): An Initiative to Promote Vision and Change*, **GARY REINESS** (Department of Biology, Lewis and Clark College).

Libraries and Learning

HUB 265
Friday
8:35 a.m. – 4:00 p.m.

Program organizers: *Crystal Goldman* (Dr. Martin Luther King, Jr. Library, San Jose State University), *Frank Jacobitz* (Mechanical Engineering Department, University of San Diego), *Amy Besnoy* (Copley Library, University of San Diego), and *Michele Potter* (Orbach Science Library, University of California, Riverside).

Program sponsor: Pacific Division section on General and Interdisciplinary Studies.

Libraries and librarians play a key role in student learning. This can happen in one-shot instruction sessions, embedded librarianship, credit-bearing courses, co-teaching, at the reference desk, and in extended reference consultations. During such interactions, librarians teach students about access to information, gauging and evaluating information sources, and information literacy, all of which depend upon and develop critical thinking skills. The development of critical thinking skills in students, which remains relevant far beyond the walls of academia, relies on locating information and determining its appropriateness and validity within the specific application.

In the university classroom—be it online or on the ground—librarians work with teaching faculty to embed research and critical thinking skills into classroom pedagogy, with consideration going toward suitable projects, methods, timing, and frequency and length of interactions. This symposium will feature an all-inclusive consideration of libraries in the learning environment, from instruction to reference, synchronous to asynchronous services, and in the digital and in-person environments.

Session chairs: *Crystal Goldman, Frank G. Jacobitz, Amy Besnoy,* and *Michele Potter.*

8:35 *Introductory comments*

8:40 **172** *Technology Impact on New Adult Behavior about Health Information*, **LESLEY S. J. FARMER** (Department of Advanced Studies in Education and Counseling, California State University, Long Beach).

9:10 **173** *Video Incorporation in Scientific Publishing: New Roles for Libraries to Consider*, **JULIA GELFAND* and LYDIA FLETCHER*** (University of California, Irvine).

9:40 **174** *It Takes a Village: A Collaborative Model for Cultivating and Diversifying Librarianship*, **PATRICIA SMITH-HUNT[1]*, JESSICA DAVILA GREENE[2]*, and TIFFANY K. CHOW[3]*** ([1]Preservation Department, Orbach Science Library, University of California, Riverside; [2]Special Collections and University Archives, University of California, Riverside; [3]Alliant International University, Alhambra, CA).

10:10 BREAK

10:30 **175** *How Hard Can I Snuggle My King Penguin Without Waking Him? And Other Fun, Engaging, and Hands-on Ways of Bringing Information Literacy Skills Into a First Year Science Class*, **AMY BESNOY** (Copley Library, University of San Diego).

11:00 **176** *Field of Dreams: Employing Special Collections in the Classroom*, **MATTHEW COOK** (John Spoor Broome Library, California State University Channel Islands).

11:30 **177** *Information Literacy at the Freshman Level: Observations and Experiences from Three First-Semester Engineering Courses*, **FRANK JACOBITZ[1]* and AMY BESNOY[2]*** ([1]Mechanical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego; [2]Copley Library, University of San Diego).

12:00 LUNCH

1:30 **178** *Critical Thinking and Information Literacy in Teaching Research: Embedded Librarian Model*, **CAROLE HUSTON[1]*, HUGH BURKHART[2]*, and PAULA KRIST[3]** ([1]College of Arts and Sciences, Dean's Office, University of San Diego; [2]Copley Library, University of San Diego; [3]Office of Institutional Research and Planning, University of San Diego).

2:00 **179** *Using Open Educational Resources to Develop Adaptable Online Library Instruction Modules for a Learning Management System*, **CHRISTINA MUNE, CRYSTAL GOLDMAN*, SILKE HIGGINS, LAUREL EBY, EMILY K. CHAN, and LINDA CROTTY** (King Library, San Jose State University).

2:30 **180** *Analyzing Results from an Online Learning Assessment to Improve Information Literacy Teaching and Learning*, **TRISH STUMPF GARCIA* and MICHELE POTTER** (Science Library**,** University of California, Riverside).

3:00 BREAK

3:30 **181** *Panel Discussion: Faculty and Librarian Perspectives on Embedded Librarianship, Assessment, Information Literacy, and the New ACRL Framework*, **AMY BESNOY[1]*, CRYSTAL GOLDMAN[2]*, CAROLE HUSTON[3]*, FRANK G. JACOBITZ[4]*, MICHELE POTTER[5]*** ([1]Copley Library, University of San Diego; [2]Dr. Martin Luther King, Jr. Library, San Jose State University; [3]College of Arts and Sciences, University of San Diego; [4]Mechanical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego; [5]Orbach Science Library, University of California, Riverside).

Please refer to poster 258 on page 76 of these Proceedings, which was submitted as part of this symposium.

Biotic Invasions: Impacts on Natural and Urban Communities and Ecosystems

HUB 379
Friday
8:35 a.m. – NOON

Program organizers: *Erin Wilson Rankin* and *Richard Redak* (Department of Entomology, University of California, Riverside).

Program sponsor: Pacific Division section on Ecology, Environmental Sciences, and Sustainability.

Biological invasions, one of the main drivers of global environmental change, disrupt species interactions and can contribute to the collapse of trophic systems. Consequently, there is growing interest in how invaders alter community and ecosystem processes. We will present six different contexts in which non-native taxa change their invaded communities that include agricultural, urban and natural systems. This symposium will include experimental studies examining how invaders of large effect can alter local trophic interactions and how invasions may lead to the decoupling of ecosystem services. Two presentations will focus on invasion at several levels of disease transmission and describe efforts to minimize the threats posed by invasive pathogens and disease vectors. Using a combination of ecological and ever-evolving molecular genetic techniques, these studies delve into the mechanisms underlying the ecological impacts of invasion and provide insight into the best strategies to maintain ecosystem health and function.

Session chair: *Erin Wilson Rankin*

8:35 *Introductory comments*, **ERIN WILSON RANKIN**

8:40 **182** *Impacts of Plant Invasions: Pervasive Examples, Elusive Generality*, **JEFFREY M. DIEZ** (Department of Botany and Plant Sciences, University of California, Riverside).

9:10 **183** *Human-mediated Movement of the Bacterium Xylella fastidiosa has Resulted in a Range of Plant Diseases that Affects the Urban, Agricultural, and Native Environment*, **LEONARD NUNNEY** (Department of Biology, University of California, Riverside).

9:40 **184** *Invasive Beetles as Vectors of Invasive Diseases: Threats to Urban and Native Forests*, **T. D. PAINE** (Department of Entomology, University of California, Riverside).

10:10 **BREAK**

10:30 **185** *Usurpation of Plant - Pollinator Mutualisms by Introduced Ants*, **DAVID A. HOLWAY** (Division of Biological Sciences, University of California, San Diego).

11:00 **186** *Multi-trophic Effects of an Invasive Generalist on Endemic Arthropod Communities*, **ERIN W. RANKIN[1]*, DAVID J. FLASPOHLER[2], TADASHI FUKAMI[3], CHRISTIAN GIARDINA[4], JESSIE L. KNOWLTON[2], and DANIEL S. GRUNER[5]** ([1]Department of Entomology, University of California, Riverside; [2]School of Forest Resources and Environmental Science, Michigan Technological University; [3]Department of Biology, Stanford University; [4]US Forest Service, Hilo, HI; [5]Department of Entomology, University of Maryland).

11:30 **187** *Sahara Mustard, Brassica tournefortii: Trophic Impacts on a Desert Sand Dune Community*, **CAMERON W. BARROWS** (Center for Conservation Biology, University of California, Riverside).

Boise Extravaganza in Set Theory (BEST)

HUB 260
Friday
9:30 a.m. – 1:15 p.m.

Continuing from Thursday. Please refer to page 43 of these Proceedings for information about this program.

Session chair: *Liljana Babinkostova*

9:30 **188** *Descriptive Graph Combinatorics and Countable Borel Equivalence Relations*, **ANDREW MARKS**

(Department of Mathematics, California Institute of Technology).

10:30 **189** *Productive Properties and Infinite Games*, **RODRIGO R. DIAS[1] and MARION SCHEEPERS[2]***, (Departments of Mathematics, [1]University of Sao Paulo, Brazil and [2]Boise State University).

12:15 **6** **Public Lecture** *Higher Infinity and the Foundations of Mathematics*, **JOEL D. HAMKINS** (City University of New York).

Climate Change Through the 20th and 21st Centuries

HUB 379
Friday
1:25 p.m. – 5:00 p.m.

Program organizer: *Robert J. Allen* (Department of Earth Sciences, University of California, Riverside).

Program sponsor: Pacific Division section on Atmospheric and Hydrospheric Sciences.

Since 1900, global average temperature has significantly increased by 0.75 ± 0.18°C, likely making our planet the warmest it has been in the last millennium. This, combined with many overlapping pieces of evidence, has led the leading body for the assessment of climate change—the Intergovernmental Panel on Climate Change—to conclude that warming of our planet is unequivocal. Most of this warming is very likely due to the observed increase in anthropogenic greenhouse gases, which are now at their highest values in the last 650,000 years. Future climate projections show additional warming by the end of this century, ranging from 1.1 – 6.4°C. This rate of warming is orders of magnitude more rapid than any in the past 65 million years. This session will explore several consequences of recent and future climate change, including diminished snow and ice—important reservoirs of fresh water—and increased frequency of occurrence of heat waves and extreme precipitation (droughts/floods). This session also addresses several of the feedbacks that operate within the climate system, including those related to the hydrological and carbon cycles.

Session chair: *Robert J. Allen*

1:25 *Introductory comments*, **ROBERT J. ALLEN**

1:30 **190** *Climate Change and California's Mountain Snow Pack—How Much Could be Lost?* **DANIEL R. CAYAN** (Scripps Institution of Oceanography, University of California San Diego and U.S. Geological Survey).

2:00 **191** *Evidence for Climate Change in the Satellite Cloud Record*, **JOEL R. NORRIS[1]*, AMATO T. EVAN[1], ROBERT J. ALLEN[2], MARK D. ZELINKA[3], CHRISTOPHER W. O'DELL[4], and STEPHEN A. KLEIN[3]** ([1]Scripps Institution of Oceanography, University of California at San Diego; [2]Department of Earth Sciences, University of California at Riverside; [3]Program for Climate Model Diagnosis and Intercomparison, Lawrence Livermore National Laboratory; [4]Cooperative Institute for Research in the Atmosphere, Colorado State University).

2:30 **192** *Vegetation and Urban Climate in a Changing World***, G. DARREL JENERETTE (**Department of Botany and Plant Sciences, University of California, Riverside).

3:00 **BREAK**

3:30 **193** *The Importance of Anthropogenic Aerosols to Recent Precipitation Trends in the Southwest United States*, **MAHESH KOVILAKAM* and ROBERT J. ALLEN** (Department of Earth Sciences, University of California, Riverside).

4:00 **194** *An Analysis of Future Changes in Precipitation and Tropical Cell Width Through the 21st Century using CAM3*, **OSINACHI AJOKU[1]* and ROBERT J. ALLEN[1]** (Department of Earth Sciences, University of California, Riverside).

4:30 **195** *Re-assessing the Role of Forests in Climate and Water Security*, **B. LARRY LI*, ANASTASSIA MAKARIEVA, and VICTOR GORSHKOV** (Ecological Complexity and Modeling Laboratory, University of California, Riverside).

Applications of 3D Printing

HUB 268
Friday
1:30 p.m. – 5:15 p.m.

Program organizer: *Joan Horvath* (Deezmaker 3D Printers, Pasadena, CA).

Program sponsor: Pacific Division section on Engineering, Technology, and Applied Science.

This symposium will look at practical uses of open-source 3D printing for scientists and educators, with case studies of actual use. The symposium will be in two parts, with a panel discussion at the end of each. The first section will review

uses of 3D printing as an aspect of "learning by making" in high school, community college, and informal education settings. The second part will cover the use of 3D printing in scientific visualization, equipment fabrication and laboratory biological tissue printing.

Session chair: *Joan Horvath*

1:30 *Introduction to Part I: Learning with 3D Printing*, **JOAN HORVATH**

1:35 **196** *The Design Technology Pathway at Pasadena City College*, **SALOMÓN DÁVILA** (Career and Technical Education, Pasadena City College).

1:55 **197** *3D Printing as a Curricular Tool in Design and Engineering for the Secondary Curriculum*, **SIMON P. HUSS[1]*, REGINA RUBIO[1], and JOAN HORVATH[2]** ([1]Science Department, Windward School, Los Angeles; [2]Deezmaker 3D Printers, Pasadena).

2:15 **198** *Open-Source 3D Printing Projects as Multidisciplinary Learning Tools*, **KRISTIAN WITTMAN** (Mechanical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego).

2:35 **199** *3D Printing Nautical History at the MIT Museum*, **JOAN HORVATH[1]*, DIEGO PORQUERAS[1], KURT HASSELBALCH[2]** ([1]Deezmaker 3D Printers, Pasadena; [2]MIT Museum, Cambridge, MA).

2:55 *Panel/Audience Discussion I with Part I Presenters*

3:15 **BREAK**

3:45 *Introduction to Part II: Science with 3D Printing*, **JOAN HORVATH**

3:50 **200** *Designing DNA Nanosystems through 3D Printing*, **MATT GETHERS[1]*, SI-PING HAN[1], LISA SCHERER[2], JULIAN VOSS-ANDREAE[3], WILLIAM A. GODDARD III[1]** ([1]Materials and Process Simulation Center, California Institute of Technology; [2]City of Hope, Duarte CA; [3]Julian Voss-Andreae, Portland, OR).

4:10 **201** *3D Printing Protocols for Tissue Printing in an Academic Setting: A Strategy for Printing a Human Cornea*, **ANDREW BARAJAS[1]*, KEVIN KIM[1], LEEOR ZIBERMINTZ[1], PAUL SCHUBER[2], JOEL WEST[2], and ANNA HICKERSON[1]** ([1]Biomedical Engineering, [2]The Business of Bioscience, Keck Graduate Institute School of Applied Life Sciences, Claremont).

4:30 **202** *Development and Initial Porcine and Cadaver Experience with Three-Dimensional Printing of Endoscopic and Laparoscopic Equipment*, **MICHAEL DEL JUNCO[1], RENAI YOON[1], ZHAMSHID OKHUNOV[1], RAMTIN KHANIPOUR[1], SAMUEL JUNCAL[1], GAREN ABEDI[1], ACHIM LUSCH[1], JAIME LANDMAN[1], and BENJAMIN DOLAN[2]*** ([1]Department of Urology, University of California, Irvine; [2]RapidTech, Irvine, CA).

4:50 *Panel/Audience Discussion II, with Part II Presenters*

5:10 *Wrap up*

II. WORKSHOPS

Wednesday, 18 June 2014

WORKSHOP

PULSE-ating with Vision and Change: Promoting the Role of Faculty as STEM Education Change Agents

HUB 269
Wednesday
1:30 p.m – 4:30 p.m.

Organized by *David J. Marcey* (Biology Department, California Lutheran University; marcey@callutheran.edu) and *Rick Gonzalez*, Biology Department, University of San Diego; gonzalez@sandiego.edu).

This workshop is intended to advance faculty expertise in promoting department-level STEM education reform at their home institutions. Although the workshop staff are PULSE Vision and Change Leadership Fellows (PULSE = **P**artnership for **U**ndergraduate **L**ife **S**ciences **E**ducation), the topics covered will be relevant to all STEM fields. Workshop attendees will be active participants in developing skills and approaches that can be used to effect significant department-level educational change. Participants will employ self-assessment rubrics in order to determine their home department's progress relative to the educational recommendations found in the AAAS/NSF Vision and Change (V&C) document. Attendee-led discussions of barriers to significant STEM education reform will be followed by activities designed to develop student-centered pedagogical "mindsets." Participants will receive resources for Vision and Change implementation and each will develop a specific action plan to enhance their roles as change agents in their departments.

Friday, 20 June 2014

WORKSHOP

DockoMatic Experiments for the Science Curriculum

SURGE 171
Friday
9:00 a.m. – Noon

Organizers: *C. Mark Maupin* (Department of Chemical and Biological Engineering, Colorado School of Mines; cmmaupin@mines.edu) and *Owen McDougal* (Department of Chemistry and Biochemistry, Boise State University; owenmcdougal@boisestate.edu).

This workshop will focus on the use of the computer program, DockoMatic. This program, created at Boise State University, is a wrapper that links several different codes, including AutoDock4 and Modeller, into a single user friendly graphical user interface (GUI). During this workshop the participants will be guided through the use of DockoMatic to create a homology model of a macromolecule. After the successful creation of the 3D structure for the macromolecule, DockoMatic will then be used to automate docking calculations between the macromolecule and a ligand. The workshop will finish with an analysis of the calculations and a question and answer phase to help participants formulate ways in which to use DockoMatic for their own research or teaching needs.

WORKSHOP

Open Source 3D Printing – How Does It Really Work?

HUB 268
Friday
9:00 a.m. – Noon

Organizer: *Joan Horvath* (Deezmaker 3D Printers, Pasadena; joan@deezmaker.com).

What is 3-D printing, and how can it be used in scientific visualization and to make one-off objects you might need around the lab? What tools are available open source, and what is the workflow like if you are a user that needs maximal flexibility? Use a 3-D printer "in person" to learn what is and what is not possible with one of these machines. Attendees will learn the state-of-the-art in low-cost open-source 3D printing, the workflow involved in this type of printing, capabilities and limitations of low-cost printers, and some suggested applications. As time permits, some objects will

be developed and printed to show the end-to-end process. People who are already conversant with 3D modeling can prepare a model ahead of time and skip the second hour. One particular 3D printer will be used, but the open source software suite works on many printer brands with some variation on input parameters.

Workshop agenda:

- First hour: Review of open source 3D printer technology, what it is good for and what it isn't ready for yet, and how the consumer printers have evolved.
- Second hour: Introduce two free or open source 3D modeling programs (Tinkercad, if adequate wifi is available, and OpenSCAD) and let people make a simple object. For people who already are advanced 3D modelers, we will start printing out a file they have prepared ahead of time if it doesn't require extensive fixes.
- Third hour: Introduce the open source slicing and hosting programs Slic3r/Repetier Host. Discuss the considerations for printing something on a printer and then actually print out as many objects as we have time for. (We can leave the printers we bring printing for the duration of the 3-D printing symposium, which follows this workshop in the afternoon.)

Participants will be sent a list of software to download ahead of time (compatible with PC, Mac, Linux). The software is all open-source and free, except for Tinkercad which is a free cloud-based program that requires registration. Participants with extensive 3D modeling experience can prepare a .stl file for printing ahead of time if they wish, but should keep the item small – a few inches on a side at most – so that printing completes quickly.

WORKSHOP

Gas Diffusion Simulations for Chemical Engineering Curriculum

SURGE 171

Friday

1:30 p.m. – 3:30 p.m.

Organizers: *C. Mark Maupin* (Department of Chemical and Biological Engineering, Colorado School of Mines; cmmaupin@mines.edu) and *Owen McDougal* (Department of Chemistry and Biochemistry, Boise State University; owenmcdougal@boisestate.edu).

This workshop will focus on the analysis of molecular dynamics simulations of various flue gases passing through semi-permeable polymer membranes. The workshop will outline the use of computational techniques that will assist in the learning experience for undergraduate students. This module is appropriate for facilitating a molecular-level understanding of various topics including molecular interactions, diffusion, adsorption, and membrane separation phenomena.

PANEL DISCUSSION

Does Nature Photography Distort Environmental Realities?

CALIFORNIA MUSEUM of PHOTOGRAPHY (CMP)

3834 MAIN STREET, RIVERSIDE

(about 1 block from the Mission Inn)

Friday

8:30 a.m. – 11:30 a.m.

Organizer: *Robert Louis Chianese* (Emeritus, California State University Northridge; rlchianese@gmail.com).

The morning will begin with a coffee reception in the Atrium of the CMP, followed at 9:00 a.m. with the panel presentations and discussion in the CMP Screening Room. Please note that there is limited seating in the Screening Room and no food or beverages are allowed into that room.

The panel will discuss the impact of Nature Photography on public perceptions of the state of the environment. For instance, do stunning photos of the natural world serve to enhance appreciation and potential conservation of it, or do they provide a dishonest reassurance that the natural world continues to thrive in beauty and grandeur? Or, is photography an adequate medium to convey an objective view of the natural world?

Each panelist will present a short exploration of various kinds of Nature Photography and then the group will discuss and debate the topic, along with questions from the audience.

An essay by the organizer, "Is Nature Photography Too Beautiful?" published in the Jan/Feb *American Scientis*t magazine, can serve as a catalyst for discussion. It can be found on line at: http://www.americanscientist.org/issues/pub/2014/1/is-nature-photography-too-beautiful.

Panelists:

Patrick Nichelson (Professor Emeritus, CSU Northridge, Religious Studies/ Ethics)

Mark Chappell (Professor, UC Riverside, Biology/ Ecology)

Steve Kaye (Professional Nature Photographer—Birds; Placentia, CA)

Jason Weems (Assistant Professor, UC Riverside, History of Art/ Photography)

Robert Louis Chianese (Professor Emeritus, CSU Northridge, English/Humanities; Panel Organizer and AAASPD past president).

III. CONTRIBUTED ORAL PRESENTATIONS

1100 (time italicized and underlined) indicates a student presentation
* indicates the speaker from among several authors listed
63 (bolded number) indicates abstract number

Wednesday, 18 June 2014

Joint Oral Session 1
Education
History and Philosophy of Science
Science and the Arts and Humanities
Social, Economic, and Political Sciences

HUB 367
Wednesday
8:25 a.m. – 11:50 a.m.

Organizer for the Education section: *Kimberly D. Tanner* (San Francisco State University).

Organizer for the History and Philosophy of Science section: *Donald J. McGraw* (Ephraim, Utah).

Organizer for the Science and the Arts and Humanities: *Robert L. Chianese* (California State University Northridge, Emeritus).

Social, Economic, and Political Sciences section: *Carl A. Maida* (University of California Los Angeles).

Session chair: *Donald J. McGraw*

8:25 *Introductory comments*

Education

8:30 **203** *Ethics Education for Students Engaging in Undergraduate Biological Research*, **ALEXANDRA QUACKENBUSH* and AMELIA J. AHERN-RINDELL** (Department of Biology, University of Portland, 5000 N Willamette Blvd Portland, OR 97203; quackenb15@up.edu, ahernrin@up.edu).

8:50 **204** *Complexity of Information Literacy in our 21st Century and the STEM Undergraduate Curriculum*, **DANIELLE MIHRAM[1]* and G. ARTHUR MIHRAM[2]** ([1]Leavey Library, University of Southern California, Suite 113, 650W 35th Street, Los Angeles, CA 90089-2571; [2]P. O. Box 1188, Princeton, NJ 08542-1188; dmihram@usc.edu).

9:10 **205** *An Experimental Study of the Efficacy of Game Augmentation Learning Effects on Computer Aided Instruction (CAI) of Physics Science Tasks*, **MICHAEL ELIOT** (Department of Physics, Huntington Beach High School, 16033 Bolsa Chica St., 104, Huntington Beach, CA 92649; physics.hbhs@gmail.com).

Social, Economic and Political Sciences

9:30 **206** *Experience Culture to Better Understand Others*, **DEBORAH KISSINGER** (Department of Psychiatry, John A. Burns School of Medicine, University of Hawaii, 1356 Lusitania Street, 4th Floor, Honolulu HI 96813; kissinger@dop.hawaii.edu).

9:50 **207** *When Railroads Blow Up: The Development of Regulations for Shipping Hazardous Cargo, 1903-2013*, **MARK ALDRICH** (Department of Economics, Smith College, Northampton MA 01038; MAldrich@Smith.Edu).

10:10 BREAK

Science and the Arts and Humanities

10:30 **208** *Designing Comics and Multi-Media Narrative for the Exploration of and Audience Engagement with the Southern California Spiny Lobster Fishery*, **VICTORIA MINNICH** (Independent Scholar, 4015 Havenhurst Ave., Riverside, CA 92507); stokastika@gmail.com, accidentalanthropologist@gmail.com, ohtheotheraa@gmail.com).

History and Philosophy of Science

10:50 **209** *The Pendulum and Three Standards that Measured the Ancient World*, **ROLAND A. BOUCHER** (Independent Scholar, 11 Deerspring, Irvine, California 92604; rolandfly@sbcglobal.net).

11:10 **210** *Evolution is Both True and Inevitable,* **LAWRENCE H. WOOD** (Physicist, Retired, 8433 Camano Loop NE, Lacey, WA 98516; marylar@comcast.net).

11:30 **211** *Mathematics, a Language, is Not Science; Nor does the Scientific Method Mime the Mathematician's*

Theorem-proving Process, **G. ARTHUR MIHRAM[1]* and DANIELLE MIHRAM[2]** ([1]PO Box 1188, Princeton, NJ 08542-1188; [2]Leavey Library, University of Southern California, Suite 113, 650W 35th Street, Los Angeles, CA 90089-2571; dmihram@usc.edu).

Joint Oral Session 2
Evolution, Organismal Biology, and Biodiversity
Ecology, Environmental Sciences, and Sustainability
Atmospheric and Hydrospheric Sciences

HUB 265
Wednesday
9:05 a.m. – 11:50 a.m.

Organizer for the Evolution, Organismal Biology, and Biodiversity section: *position unfilled*.

Organizer for the Ecology, Environmental Sciences, and Sustainability section: *Richard Van Buskirk* (Department of Environmental Studies, Pacific University).

Organizer for the Atmospheric and Hydrospheric Sciences section: *position unfilled.*

Session Chair: *Richard Van Buskirk*

9:05 *Introductory comments*

Evolution, Organismal Biology, and Biodiversity

9:10 **212** *Patterns of Genetic, Morphological and Physiological Trait Variation among Native and Introduced Populations of Bromus rubens*, **MATTHEW R. O'NEILL[1]*, NORMAN C. ELLSTRAND[2], LOUIS S. SANTIAGO[2], and MICHAEL F. ALLEN[1]** ([1]Department of Biology, University of California, Riverside; [2]Department of Botany and Plant Sciences, University of California, Riverside).

9:30 **213** *Host Plant Affects Mate Choice in a Plant-Eating Beetle*, **KATHERINE GOULD** (California State University, Northridge).

9:50 **214** *A New Hypothesis Explaining the Reversed Sexual Size Dimorphism in Raptors*, **HARTMUT S. WALTER** (Department of Geography, University of California, Los Angeles).

10:10 BREAK

Ecology, Environmental Sciences, and Sustainability

10:30 **215** *American Kestrel (Falco sparverius) Breeding Success In Human-modified Landscapes*, **NICHOLAS J. NOVERO, KELSEY R. BROWN, and RICHARD W. VAN BUSKIRK*** (Environmental Studies, Pacific University, Forest Grove, OR).

10:50 **216** *A Vegetative Survey in the Marsh Flats of the Ballona Wetlands to Determine the Occurrence of Non-Native Plants*, **T. KIM[1]*, E. CLEMENTI[2], and J. DORSEY[3]** ([1]North Hollywood Highly Gifted Magnet High School, North Hollywood, CA; [2]Marlborough School, Los Angeles, CA; [3]Department of Natural Sciences, Loyola Marymount University).

11:10 **216** *Modeling the Dynamic Pattern of Household-based Forest Use Driven by Labor Availability in Rural Communities of Developing Countries*, **ZHIYUAN SONG[1]*, WILLIAM S. CURRIE[1], ARUN AGRAWAL[1], and ALLISON STEINER[2]** ([1]School of Natural Resources and Environment, University of Michigan; [2]Department of Atmospheric, Oceanic and Space Sciences, University of Michigan).

Atmospheric and Hydrospheric Sciences

11:30 **218** *From Passive Samplers to Estimates of Dry Nitrogen Deposition in the Western United States*, **ANDRZEJ BYTNEROWICZ[1]*, WITOLD FRACZEK[2], ROBERT JOHNSON[3], MARK FENN[1], LEIMING ZHANG[4], and DARREL JENERETTE[3,5]** ([1]USDA, Forest Service, Pacific Southwest Research Station, Riverside, California; [2]Environmental Systems Research Institute, Redlands, California; [3]Center for Conservation Biology, University of California, Riverside; [4]Air Quality Research Division, Environment Canada, Toronto, Ontario, Canada; [5]Department of Botany and Plant Sciences, University of California, Riverside).

Joint Oral Session 3
Engineering, Technology, and General Science
Physics and Materials Science

HUB 265
Wednesday
1:25 p.m. – 3:30 p.m.

Organizer for the Engineering, Technology, and General Science section: *Frank Jacobitz* (Department of Engineering, University of San Diego).

Organizer for the Physics and Materials Science section: *George Quainoo* (Department of Physics and Engineering, Southern Oregon University).

Session chair: *George Quainoo*

1:25 *Introductory comments*

Physics and Materials Science

1:30 **219** *Electrochemical Impedance Spectroscopy of Ti-6Al-4V Containing Boron Additions in Hanks Balanced Salt Solution*, **OBED VILLALPANDO*, TRAVIS VOORHEES, MORGAN WONG, MATTHEW BORGIALLI, HANNAH LEU, and VILUPANUR RAVI** (California State Polytechnic University, Pomona).

1:50 **220** *High Temperature Oxidation Behavior of Aluminized Austenitic Stainless Steel*, **CORY GAINES*, NICHOLAS AGEE-ACOSTA, MICHAEL CASPER, MATTHEW DOWNS, BRANDON ELLEDGE, BETTY LEUNG, and VILUPANUR RAVI** (California State Polytechnic University, Pomona).

2:10 **221** *Effect of Activator in Pack Aluminizing Type 304 Stainless Steel*, **ARMANDO CORONADO*, SHAHAN KASNAKJIAN*, SUTINE SUJITTOSAKUL*, MICHELL ARANDA*, CHRISTOPHER CALLE* and VILUPANUR RAVI** (California State Polytechnic University, Pomona).

Engineering, Technology, and General Science

2:30 **222** *Role of Matrix Stiffness in the Mechanochemical Regulation of Endothelial Inflammation*, **HARRY A. SCOTT*, XIAO YANG, SOROUSH ARDEKANI, and KAUSTABH GHOSH** (Department of Bioengineering, University of California Riverside).

2:50 **223** *Synthesis and Characterization of Novel Nitroglycerin Nanoformulation for Superior Anti-Inflammatory Therapy*, **SOROUSH ARDEKANI[1]*, HARRY SCOTT[1], SHARAD GUPTA[3], SHANE EUM[1], XIAO YANG[1], UMAR MOHIDEEN[2], and KAUSTABH GHOSH[1]** ([1]Department of Bioengineering, University of California, Riverside; [2]Department of Physics and Astronomy, University of California, Riverside; [3]Department Biosciences and Biomedical Engineering, Indian Institute of Technology, Indore, India).

3:10 **224** *Corrosion Behavior of Titanium Alloys Containing Boron Additions in Simulated Physiological Environments*, **TRAVIS VOORHEES*, OBED VILLALPANDO, MORGAN WONG, MATTHEW BORGIALLI, HANNAH LEU, and VILUPANUR RAVI** (California State Polytechnic University, Pomona).

Joint Oral Session 4
Cell and Molecular Biology
Molecular Reproduction and Development

HUB 355
Wednesday
1:25 p.m. – 4:50 p.m.

Organizer for Cell and Molecular Biology section: *Kristen Mitchell* (Department of Biology, Boise State University).

Session chair: *Kristen Mitchell*

1:25 *Introductory comments*

Cell and Molecular Biology

1:30 **225** *The Role of AlgX Carbohydrate-binding Module during Alginate Biosynthesis in Pseudomonas aeruginosa*, **DANH C. DO[1]*, BRANDON GALLAHER[2], ZIED GAIEB[3], DIMITRIOS MORIKIS[3], and NEAL L. SCHILLER[1]** ([1]Division of Biomedical Sciences, [2]Department of Biochemistry, [3]Department of Bioengineering, University of California, Riverside).

1:50 **226** *Disposable Electronic Cigarettes and Electronic Hookahs: Evaluation of Performance*, **SANJAY GHAI*, MONIQUE WILLIAMS, and PRUE TALBOT** (Department of Cell Biology and Neuroscience, University of California, Riverside).

2:10 **227** *Role of LOX-dependent Matrix Stiffening in Diabetic Retinal Endothelial Inflammation*, **XIAO YANG*, HARRY SCOTT, SOROUSH ARDEKANI, and KAUSTABH GHOSH** (Department of Bioengineering, University of California, Riverside).

2:30 **228** *Bisphosphonates and Connexin 43: A Systematic Review of Evidence*, **POOYAN SADR-ESHKEVARI[1]*, SAJJAD ASHNAGAR[2], ASHKAN RASHAD[3], and NORA PROCHNOW[4]** ([1]Professional Program for the International Dentists; School of Dentistry, University of California, Los Angeles; [2]Scientific Research Center, School of Dentistry, Tehran University of Medical Sciences, Tehran, Iran; [3]Oral and Maxillofacial Surgery Department, University Medical Center, Hamburg-Eppendorf, Martinistr. Hamburg, Germany; [4]Department of Neuroanatomy and Molecular Brain Research, Ruhr University

Bochum, Bochum, Germany).

2:50 **229** *Metabolic Network Construction Based on the Genome of the Marine Diatom Thalassiosira pseudonana and the Analysis of Genome-wide Transcriptome Data to Investigate Triacylglyceride Accumulation*, **KAREN PARKER** (Moss Landing Marine Labs, San Jose State University).

3:10 BREAK

3:30 **230** *A Video Bioinformatics Approach to Evaluate Cofilin Dynamics*, **ATENA ZAHEDI[1]*, VINCENT ON[2], IRYNA ETHELL[3]** ([1]Department of Bioengineering; [2]Department of Electrical Engineering; [3]Department of Biomedical Sciences, University of California, Riverside).

Molecular Reproduction and Development

3:50 **231** *Expression of the ATP-Binding Cassette Transporter Sp-ABCC5a in Pigment Cells is Required for Sea Urchin Gastrulation*, **LAUREN E. SHIPP*, ROSE Z. HILL, GARY W. MOY[1], TUFAN GOKIRMAK[1], and AMRO HAMDOUN** (Scripps Institution of Oceanography).

4:10 **232** *Modeling Spermiogenesis in the Water Strider Aquarius remigis*, **GEORGE OTT*, NICHOLAS SHIRKEY, LEAH HAIMO, RICHARD CARDULLO, and CATHERINE THALER** (Department of Biology, University of California, Riverside).

4:30 **233** *The Phosphatidyl-inositol-3-kinase/AKT Pathway Controls Mouse Oocyte Developmental Competence*, **SHILA MANANDHAR*, FEDERICA FRANCIOSI, and MARCO CONTI** (Center for Reproductive Sciences, University of California, San Francisco, 513 Parnassus Avenue, HSW1656, Box 0556, San Francisco CA 94143-0556; contim@obgyn.ucsf.edu).

Joint Oral Session 5
Chemistry and Biochemistry
Earth Sciences

HUB 367
Wednesday
1:25 p.m. – 5:10 p.m.

Organizer for the Chemistry and Biochemistry section: *Owen M. McDougal* (Department of Chemistry and Biochemistry, Boise State University).

Organizer for the Earth Sciences section: *Jad A. D'Allura* (Department of Chemistry, Physics, Materials, and Engineering, Southern Oregon University).

Session Chair: *Owen M. McDougal*

1:25 *Opening comments*

Earth Sciences

1:30 **234** *Oligocene Volcanism and Intrusions along Soda Mountain Ridge, Western Cascades Volcanic Series, Southwest Oregon*, **JAD A. D'ALLURA[1]*, KACY CARLSON[2], and ROBERT BUCKMISTER, II[3]** ([1]Department of Chemistry, Physics, Materials, and Engineering, Southern Oregon University; [2]B. S. Geology, University of Orego; [3]Geological Sciences, University of Oregon).

1:50 **235** *Transitioning Towards the Modern Animal Biota: Small Shelly Fossils from the Cambrian of the Himalaya*, **IAN R. GILBERT* and NIGEL C. HUGHES** (Earth Sciences Department, University of California, Riverside).

Chemistry and Biochemistry

2:10 **236** *Medicinal Garlic, Raw or Cooked?* **KENNETH CHONG[1], MARTHA P. ZAMORA[2], DILESHNI A. TILAKAWARDANE[2], NANCY E. BUCKLEY[2], JAMES A. REGO[1], and YAN LIU[1]*** ([1]Chemistry and Biochemistry Department, [2]Biological Sciences Department, California State Polytechnic University, Pomona).

2:30 **237** *Chemicapacitor Detectors in Gas Chromatography*, **W. K. TOLLEY* and SANJAY V. PATEL** (Seacoast Science, Inc., Carlsbad, CA).

2:50 **238** *Augmenting NMR Crystallography Through Fragment Methods*, **JOSHUAL D. HARTMAN** (Department of Chemistry, University of California, Riverside).

3:10 BREAK

3:30 **239** *NMR Crystallography in the Enzyme Active Site of Tryptophan Synthase*, **BETHANY G. CAULKINS[1]*, BABACK BASTIN[1], CHEN YANG[1], THOMAS J. NEUBAUER[1], ROBERT P. YOUNG[1], EDUARDO HILARIO[2], LI FAN[2], MICHAEL F. DUNN[2], MICHAEL J. MARSELLA[1], and LEONARD J. MUELLER[1]** (Departments of [1]Chemistry and [2]Biochemistry, University of California, Riverside).

3:50 **240** *Determining Bacterial vs. Viral Infections via Chemi-Resistive CNT Devices*, **NUVIA MARIA SAUCEDO[1]*, YINGNING GAO[2], and ASHOK MULCHANDANI[2]** ([1]Department of Chemistry and [2]Department of Chemical and Environmental Engineering, University of California, Riverside).

4:10 **241** *Breaking through the Other Side: De novo Designed Peptides that Cross the Cell Membrane for Biomolecule Delivery*, **I. ABBREY MONREAL and JONEL P. SALUDES*** (Department of Chemistry, Washington State University, Pullman).

4:30 **242** *Heat-Induced Coarsening of Gold Nanoparticle-Graphene Oxide Hybrids*, **HANQING PAN[1]*, YOHANNES ABATE[2], and YOUNG-SEOK SHON[1]** ([1]Department of Chemistry and Biochemistry and [2]Department of Physics and Astronomy, California State University, Long Beach).

4:50 **243** *Optimizing the Extraction Efficiency of Biologically Active pH Sensitive Steroidal Alkaloids from Veratrum californicum*, **JARED MATTOS*, ROBERTO CRUZ, NIC BAUGHMAN, PETR MALEK, CHRIS CHANDLER, and OWEN McDOUGAL** (Department of Chemistry and Biochemistry, Boise State University).

IV. POSTER PRESENTATIONS

189 poster number is also the abstract number
193 (number italicized and underlined) identifies a student presentation
*identifies the presenter from among authors listed

Boards on which to attach poster presentations will be set up in HUB 302 N. The poster boards have numbers on them that coincide with the numbers assigned to the posters in this program (see number to the left of the title of each presentation). You must use the appropriately numbered board for your poster. Please use map tacks (provided) to attach your poster to the board. Do not use tape!

Posters for the Wednesday morning session can be set up starting at 8:15 a.m. Wednesday morning and must be in place no later than 8:45 a.m. that morning. Posters for the Thursday morning session can be set up starting at 8:15 a.m. that morning and must be in place no later than 8:45 a.m. Posters can be removed starting at 11:45 a.m. and must be removed no later than 12:15 p.m. each day.

All presenters must be present with their posters for the duration of the session in which they are presenting in order to discuss their research with interested parties.

Presenters assume full responsibility for the security of their poster and other materials. Unclaimed posters will be discarded at the close of the technical sessions on Friday afternoon.

Quick Directory of Sponsoring Sections for these Posters

Wednesday Morning, 18 June 2014

Poster Session 1

HUB 302 N
Wednesday
9:00 a.m. – 11:45 a.m.

Two-Dimensional Materials for Next Generation Devices

244 *Novel Methods for the Growth of Single Layer Transition Metal Dichalcogenides*, **ARIANA NGUYEN*, DAVID BARROSO, EDWIN PRECIADO, VELVETH KLEE, SARAH BOBEK, JOHN MANN, and LUDWIG BARTELS** (Department of Chemistry and Materials Science, and Engineering Program, University of California, Riverside).

245 *Comparison of Surface Preparation Methods for Single Crystal Bismuth Selenide*, **W. ZHOU* and J. A. YARMOFF** (Department of Physics and Astronomy, University of California, Riverside).

246 *Proximity-Induced Anomalous Hall Effect in Graphene*, **ZHIYONG WANG*, CHI TANG, ZHISHENG LIN, RAYMOND SACHS, YAFIS BARLAS, and JING SHI** (Department of Physics and Astronomy, University of California, Riverside).

247 *Transport Properties and Devices of Molybdenum Disulfide*, **FENGLIN WANG*, PETR STEPANOV, MASON GRAY, and CHUN NING (JEANIE) LAU** (Department of Physics, University of California, Riverside).

248 *2D Materials beyond 2D: Growth of MoS_2 and Related Materials on Patterned Substrates*, **EDWIN PRECIADO*, DAVID BARROSO, ARIANA NGUYEN, SAHAR NAGHIBI, KELLY BROWN, VELVETH KLEE, SARAH BOBEK, JOHN MANN, and LUDWIG BARTELS** (Department of Chemistry, University of California, Riverside).

249 *Effect of Misorientation on the Electronic Properties of van-der-Waal (vdW) Materials*, **MAHESH R. NEUPANE[1]*, DARSHANA WICKRAMARATNE[1], SUPENG GE[2], SHANSHAN SU[1], GEN YIN[1], and ROGER K. LAKE[1]** ([1]Department of Electrical Engineering, [2]Department of Physics and Astronomy, University of California, Riverside).

250 *In Situ Observation of Electrostatic and Thermal Manipulation of Suspended Graphene Membranes*, **WENZHONG BAO[1], KEVIN MYHRO[1]*, ZENG ZHAO[1], ZHEN CHEN[2], WANYOUNG JANG[2], LEI JING[1], FENG MIAO[1], HANG ZHANG[1], CHRIS DAMES[2], and CHUN NING LAU[1]** ([1]Department of Physics and Astronomy and [2]Department of Mechanical Engineering, University of California, Riverside).

251 *Computational Exploration of Aspects of Contact Formation and Bending in 2D Layers of Transition Metal Dichalcogenides*, **MARK MICKLICH*, JESSICA MCKINLEY, VELVETH KLEE, CHEN WANG, and LUDWIG BARTELS** (Department of Chemistry and Materials Science, and Engineering Program, University of California, Riverside).

252 *Post-Growth Tuning of the Bandgap of Single-Layer Molybdenum Disulfide Films by Sulfur/Selenium Exchange*, **QUAN MA*, MIGUEL ISARRARAZ, CHEN WANG, EDWIN PRECIADO, VELVETH KLEE, SARAH BOBEK, KOICHI YAMAGUCHI, EMILY LI, PATRICK ODENTHAL, ARIANA NGUYEN, DAVID BARROSO, DEZHENG SUN, GRETEL VON SON PALACIO, MICHAEL GOMEZ, ANDREW NGUYEN, DUY LE, GREG PAWIN, JOHN MANN, and LUDWIG BARTELS** (Department of Chemistry, University of California, Riverside).

253 *Spin Hall Effect in Graphene with Enhanced Spin-Orbit Coupling*, **Z. S. LIN*, Z. Y. WANG, B. W. YANG and J. SHI** (Department of Physics and Astronomy, University of California, Riverside).

254 *Enhanced Photoluminescence and Photocurrent Spectra in MoS_2 under Ionic Liquid Gating*, **ZHEN LI[1]*, SHUN-WEN CHANG[2], and STEPHEN B. CRONIN[1,2]** ([1]Department of Electrical Engineering, [2]Department of Physics, University of Southern California).

255 *Giant Interaction-induced Gap and Electronic Phases in Rhombohedral Trilayer Graphene*, **YONGJIN LEE*, DAVID TRAN, KEVIN MYHRO, JAIRO VELASCO, JR., NATHANIEL GILLGREN, YAFIS BARLAS, and CHUN NING (JEANIE) LAU** (Department of Physics, University of California, Riverside).

256 *Magnetic Proximity Effect Induced Effects in Topological Insulator/YIG Heterostructures*, **ZILONG JIANG[1]*, CHI TANG[1], FERHAT KATMIS[2], PENG WEI[2], JAGADEESH S. MOODERA[2] and JING SHI[1]** ([1]Department of Physics and Astronomy, University of California, Riverside; [2]Francis Bitter Laboratory, Massachusetts Institute of Technology).

257 *Electronic Properties of Misoriented Bilayer Transition Metal Dichalcogenides*, **SUPENG GE[1]*, DARSHANA WICKRAMARATNE[2], MAHESH NEUPANE[2], SHANSHAN SU[2], and ROGER LAKE[2]** ([1]Department of Physics and [2]Department of Electrical Engineering, University of California, Riverside).

Education

258 *It's Critical: Student Attitudes Toward Critical Thinking and an Assessment of a Lecture to an Introductory Engineering Class*, **ESTHER K. CHO*, KARLY V. JERMAN, KAMERON J. LACALLI, SABRINA E. LUCERO, VICTORIA S. MARAGA*, DAVID P. PENNINGTON, AIMEE E. SLAVENSKY, RACHEL E. STEIN*, NEIL C. VRANICAR, and FRANK G. JACOBITZ** (Shiley-Marcos School of Engineering, University of San Diego).

259 *Staying on Track: Revisiting the DNA Subway as a Tool to Engage Life Sciences Community College Students in Basic Research*, **ALEJANDRO CORTEZ[1]*, NHI TRAN[2], JAMES BURNETTE III[1], and RICHARD A. CARDULLO[2]** ([1]Dynamic Genome Program, [2]College of Natural and Agricultural Sciences, University of California, Riverside).

Molecular Reproduction and Development

260 *Transcriptomics between Fertile and Infertile Colonies of the Urochordate B.schlosseri Reveal Key Genes Involved in Germline Formation and Maintenance*, **DELANY RODRIGUEZ*, KELSEA FARELL, ERIN SANDERS, ADAM LANGENBACHER, DARYL TAKETA, and ANTHONY W. DE TOMASO** (Department of Molecular, Cellular, and Developmental Biology, University of California, Santa Barbara).

261 *The Role of Chromatin Modification in Germ Cell Specification and Development*, **JENESSA R. OLSON* and EKATERINA VORONINA** (Division of Biological Sciences, University of Montana).

262 *Using a Reactivated Sperm Model to Determine the Role of Calcium in the Regulation of Mosquito Sperm Motility*, **ELIZABETH S. KOO*, RICHARD A. CARDULLO, and CATHERINE D. THALER**

(Department of Biology, University of California, Riverside).

263 *Prospective Isolation and Molecular Characterization of Germ Line Stem Cells from Botryllus schlosseri*, **SUSANNAH H. KASSMER*[1], DELANY RODRIGUEZ[2], ADAM LANGENBACHER[2], and ANTHONY DE TOMASO[2]** ([1]Neuroscience Research Institute and [2]Molecular, Cellular and Developmental Biology, University of California, Santa Barbara).

264 *Detection of a Trypsin-like Protease in the Accessory Glands of Culex quinquefasciatus and the Reproductive Tract of Aquarius remigis*. **ERANTHI U. JAYAWARDENA*, CATHERINE D. THALER, and RICHARD A. CARDULLO** (Department of Biology, University of California, Riverside).

265 *Localization and Trafficking of ATP-Binding Cassette Transporters in the Sea Urchin, Strongylocentrotus purpuratus, Embryo*, **ROSE Z. HILL*, LAUREN E. SHIPP, and AMRO HAMDOUN** (Marine Biology Research Division, Scripps Institution of Oceanography).

266 *Membrane Proteins Regulate Viral Immunity by Controlling Viral siRNA Production in Arabidopsis*, **ZHONGXIN GUO*, BINHUI ZHAN, JINFENG LU, STEPHANIE COFFMAN, and SHOUWEI DING** (Department of Plant Pathology and Microbiology, University of California, Riverside).

267 *ATP-binding Cassette Transporters Mediate Small Micromere Migration and Left/Right Coelomic Pouch Segregation in the Purple Sea Urchin, Strongylocentrotus purpuratus*, **JOSEPH P. CAMPANALE*, JOSE A. ESPINOZA, TUFAN GöKIRMAK, and AMRO HAMDOUN** (Marine Biology Research Division, Scripps Institution of Oceanography).

Physics and Materials Science

268 *Nitrogen Dopant Distribution in Polycrystalline N-doped Graphene Monolayer Films*, **LIUYAN ZHAO[1]*, RUI HE[1,2], AMIR ZABET[3], KEUN SOO KIM[1,4], THEANNE SCHIROS[5], MICHAEL ROTH[2], PHILIP KIM[1], GEORGE W. FLYNN[3], ARON PINCZUK[1], and ABHAY N. PASUPATHY[1]** ([1]Department of Physics, Columbia University; [2]Department of Physics, University of Northern Iowa; [3]Department of Chemistry, Columbia University; [4]Department of Physics and Graphene Research Institute, Sejong University, Seoul, Korea; [5]Energy of Frontier Research Center, Columbia University).

269 *Studying the Microstructure Changes of CVD-Synthesized Graphene with Growth Pressure using Fluorescence Quenching Microscopy (FQM)*, **PAIGE ROMERO[1]*, HAMDED HOSSEINI BAY[2], WEI WANG[1], CENGIZ S. OZKAN[2] and MIHRIMAH OZKAN[3]** (Departments of [1]Materials Science and Engineering, [2]Mechanical Engineering and [3]Electrical Engineering, University of California, Riverside).

270 *Internal Polarization of Bromine Adatoms on Si(111) Measured by Low Energy Alkali Ion Scattering*, **J. KEAGY*, S. TEMIZ, and J. A. YARMOFF** (Department of Physics and Astronomy, University of California, Riverside).

271 *Demonstrating Entanglement by Testing Bell's Theorem in Majorana Wires*, **DAVID E. DRUMMOND[1]*, KIRILL SHTENGEL[1], ALEXEY A. KOVALEV[2], CHAND-YU HOU[1,3], and LEONID P. PRYADKO[1] ([1]Department of Physics and Astronomy, University of California, Riverside; [2]**Department of Physics and Astronomy, and Nebraska Center for Materials and Nanoscience, University of Nebraska-Lincoln; [3]Department of Physics, California Institute of Technology).

272 *Fluctuation-Induced Forces between Inclusions Embedded in Membrane*, **TYLER CARO*, JEFFREY WAGNER, UMAR MOHIDEEN, and ROYA ZANDI** (Department of Physics and Astronomy, University of California, Riverside).

273 *Magnet and Accumulator for Making a Two-dimensional Positronium BEC*, **ALINA M. ESCALERA*, PARTH B. PATEL, and ALLEN P. MILLS, JR.** (Department of Physics and Astronomy, University of California, Riverside).

274 *Mechanical Characterization of an Adhesive Tape*, **RUKMINI A. RAVI** (Claremont High School, Claremont, CA).

275 *Corrosion of Nickel Chromium Alloys in Molten Sodium Sulfate Salt at 900°C*, **ZACK GENTRY, ANDREW SAKAMOTO, MATTHEW COREY, NORTON THONGCHUA*, and KISHAN PATEL** (Chemical and Materials Engineering Department, California State Polytechnic University, Pomona).

189 poster number is also the abstract number
abstracts contain complete contact information for authors
193 (number italicized and underlined) identifies a student presentation
*identifies the presenter from among several authors listed

Earth Sciences

276 *Imaging Tiny Earthquakes in the San Andreas Fault with a Mini Seismic Array*, **MANUEL MENDOZA* and ABHIJIT GHOSH** (Earth Science Department, University of California, Riverside, 900 University Ave, Riverside, CA 92521; mmend028@ucr.edu)

Atmospheric and Hydrospheric Sciences

277 *From Passive Samplers to Estimates of Dry Nitrogen Deposition in the Western United States*, **ANDRZEJ BYTNEROWICZ[1]*, WITOLD FRACZEK[2], ROBERT JOHNSON[3], MARK FENN[1], LEIMING ZHANG[4], and DARREL JENERETTE[3,5]** ([1]USDA, Forest Service, Pacific Southwest Research Station, Riverside, California; [2]Environmental Systems Research Institute, Redlands, California; [3]Center for Conservation Biology, University of California, Riverside; [4]Air Quality Research Division, Environment Canada, Toronto, Ontario, Canada; [5]Department of Botany and Plant Sciences, University of California, Riverside).

Chemistry and Biochemistry

278 *Characterization of Glycosidases in the Aquarius remigis Sperm Plasma Membrane*, **KIMBERLY STEPHENS[1]*, CATHERINE D. THALER[2], and RICHARD A. CARDULLO[1,2]** ([1]Department of Entomology and [2]Department of Biology, University of California, Riverside).

279 *Investigating the Folding Dynamics of the RNA Pseudoknot Structural Motif via Massively Parallel Molecular Dynamics*, **KHAI NGUYEN[1]*, AMETHYST RADCLIFF[2], SAMANTHA CAO[1], PHUC LA[1], MONA BACKHOM[1], RICHARD WANG[3], and ERIC SORIN[1]** (Departments of [1]Chemistry and Biochemistry, [2]Physics and Astronomy, and [3]Computer Engineering and Computer Science, California State University, Long Beach).

280 *The Study of Diffusion of Volatile Organic Compounds Through a Synthetic Membrane Using a Low Cost Apparatus in an Undergraduate Laboratory Setting*, **JULIAN LEE*, RICHARD RAKIJIAN, and MARCO M. ALLARD** (Department of Chemistry and Biochemistry, La Sierra University, Riverside, CA).

281 *Single-stranded DNA-Protein Binding and Collections through Asymmetrical Flow Field-Flow Fractionation*, **LUIS JIMENEZ[1]*, JONATHAN ASHBY[2], SAMANTHA SCHACHERMEYER[2], and WENWAN ZHONG[2]** ([1]Program in Biomedical Sciences, [2]Department of Chemistry, University of California, Riverside).

282 *Fluorescamine-based Screening of Nanoparticle-Protein Interactions*, **JONATHAN ASHBY[1*], ERIK LIGANS[2], and WENWAN ZHONG[1]** ([1]Department of Chemistry, [2]Department of Biology, University of California, Riverside).

283 *Flow Field-flow Fractionation-based Localization and Quantitation of MicroRNA Biomarkers*, **KENNETH FLACK*, JONATHAN ASHBY, and WENWAN ZHONG** (Department of Chemistry, University of California, Riverside).

284 *Analysis of Tobacco Expressing Candidate Methyltransferase Transgenes from Moss*, **GABRIEL JULOYA*, LAUREN KIVLEN, LEI ZHU, and EUGENE A. NOTHNAGEL** (Department of Botany and Plant Sciences, University of California, Riverside).

285 *Microsecond Monomer-Oligomer Exchange in the Intrinsically Disordered Protein Stathmin as Revealed by Saturation Recovery EPR*, **JESUS M. MEJIA* and MICHAEL D. BRIDGES** (Department of Chemistry and Biochemistry, California State University, Fullerton).

286 *The Effect of Morphology of ZnO Support on Activity of Gold Catalyst in Low Temperatures Oxidation of Benzyl Alcohol*, **REZA SHIDPOUR*, HADI SALARI, ABDOLREZA SIMCHI, and MANOUCHEHR VOSSOUGHI** (Department of Chemistry, University of California, Riverside).

Thursday Morning, 19 June 2014

Poster Session 2
HUB 302 N
Thursday
9:00 a.m. – 11:45 a.m.

Evolution, Organismal Biology, and Biodiversity

287 *Designing Computational Models of Planaria Regeneration for Use in Evolutionary Search*, **JARED MATTOS*, MARIANNA BUDNIKOVA, NIC CORNIA, TIM ANDERSEN, and JEFFREY HABIG** (Department of Computer Science, Boise State University).

288 *Reproductive Diversity in the Skink Genus* Trachylepis*: An Example of Convergent Evolution of Extensive Placentation?* **BRETT A. SCHILLER*, RACHELLE E. BROWN*, NOORA MOSAFAEI SHIRAZI*, SAMMIE TANG*, ADAM R. REY*, and MARCELO N. PIRES** (Department of Biological Sciences, Saddleback College, Mission Viejo, CA).

289 *Red Water of Mesodinium Blooms in the Columbia River Estuary Contain Elevated Levels of Eudubosquella, a Parasitic Dinoflagellate that Infects Tintinnid Ciliates*, **DEIRDRE McATEER*, PETER KAHN, and PETER ZUBER** (Center for Coastal Margin Observation and Prediction, Oregon Health Sciences University).

Agriculture, Food, and Renewable Resources

290 *The Effect of Biochar Soil Amendments on Wheat Biomass*, **CLAUDIA C. MARIN*, ELIZABETH CRUTCHFIELD, J. GILES WAINES and MILTON E. McGIFFEN, Jr.** (Department of Botany and Plant Sciences, University of California, Riverside).

Anthropology and Archaeology

291 *Archaeological Feature Extraction from Aerial Imagery: Ahupua'a o Kōloa, Kaua'i*, **JOHN T. O'CONNOR** (Department of Anthropology, University of Oregon).

Psychology

292 *Relationship of Physician-Patient Communication to Patient Satisfaction, Health, and Psychological Outcomes: A Meta-Analysis*, **TRICIA A. MILLER*, JULIET BENI EDGCOMB, and M. ROBIN DIMATTEO** (Department of Psychology, University of California, Riverside).

293 *Aversions to Water Consumption Increase with Proximity of Use*, **MARY GAUVAIN and DANIEL HARMON*** (Department of Psychology, University of California, Riverside).

294 *The Effect of Differing Conversation Types on Bystanders*, **CHRISTINA CARNER*, CHRISTOPHER DISHOP*, and VERONICA V. GALVÁN** (Department of Psychological Sciences, University of San Diego).

295 *Stress and Coping in College Students*, **SARAH JENSEN*, CORI TERGESEN*, and VERONICA V. GALVÁN** (Department of Psychological Sciences, University of San Diego).

Engineering, Technology, and Applied Science

296 *Effect of ICG Concentration on the Fluorescence Emission Characteristics of Erythrocyte-Mimicking Optical Nanoprobes*, **JACK TANG[1]*, WANGCUN JIA[2], VICTOR SUN[2], J. STUART NELSON[2], and BAHMAN ANVARI[1]** ([1]Department of Bioengineering, University of California, Riverside; [2]Beckman Laser Institute and Medical Clinic, University of California, Irvine)

297 *Increasing Power Output by Reducing the Windmill Blade Tip Vortex*, **ELEANOR FROST** (Chaminade College Preparatory School, Los Angeles, CA).

298 *A Study of Sperm Motility of Culex quinquefasciatus Sperm*, **CARLA DE LOS SANTOS[1]*, MARCO GARCIA[2], CATHERINE D. THALER[2], and RICHARD A. CARDULLO[1,2]** ([1]Department of Bioengineering and [2]Department of Biological Sciences, University of California, Riverside).

299 *Fabrication of Silica Nanofibers for DNA Extraction*, **MARISSA GIONET-GONZALES*[1], LUIS JIMENEZ[2], YANG LIU[3], and WENWAN ZHONG[4]** (Departments of [1]Bioengineering, [2]Biomedical Sciences, [3]Environmental Toxicology, and [4]Chemistry, University of California, Riverside).

189 poster number is also the abstract number
abstracts contain complete contact information for authors
193 (number italicized and underlined) identifies a student presentation
*identifies the presenter from among several authors listed

300 *Visualization of Direct Numerical Simulation Results of an Advection-Diffusion Equation for Magneto-Geostrophic Turbulence*, **KRISTIAN WITTMAN[1]*, FRANK JACOBITZ[1], and SUSAN FRIEDLANDER[2]** ([1]Mechanical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego; [2]Center for Applied Mathematic Sciences, Mathematics Department, University of Southern California).

Ecology, Environmental Sciences, and Sustainability

301 *Epiphytic Moss as a Biomonitor of Nitrogen Deposition in the Pacific Northwest*, **TIMEA DEAKOVA*[1], TERRY ROLFE[2], ERIN SHORTLIDGE[1], MEENAKSHI RAO[3], TODD ROSENSTIEL[1], and ANDREW RICE[2]** ([1]Department of Biology, [2]Department of Physics, [3]Department of Environmental Science and Management, Portland State University).

302 *Quantification of in situ Root Herbivory Using Remote Sensing Technology*, **SAMANTHA A. ESTANISLAO*, MICHAEL F. ALLEN, and MATTHEW R. O'NEILL** (UCR Center for Conservation Biology, University of California, Riverside).

303 *Evaluation of the Design, Performance, and Metal Emissions of Electronic Cigarettes*, **MONIQUE WILLIAMS[1]*, AMANDA VILLARREAL[1], KRASSIMIR BOZHILOV[2], and PRUE TALBOT[1]** ([1]Department of Cell Biology and Neuroscience, University of California, Riverside; [2]Central Facility for Advanced Microscopy, University of California, Riverside).

304 *Isolation and Characterization of a Crude Oil-Tolerant Bacterium from the Great Salt Lake*, **RUHUL KUDDUS, JONATHAN OAKES, JOHURIMAM NOAH KUDDUS, and EASTON DOWNS*** (Department of Biology, Utah Valley University).

305 *Gradient Analysis of Terrestrial Arthropod Community Composition in a California Desert Habitat*, **SARAH L. O'NEILL*, RICHARD REDAK, and MATT DAUGHERTY** (Department of Entomology, University of California, Riverside).

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306 *PG0686 May Function in Oxidative Stress Resistance as a Redox Sensor in Porphyromonas gingivalis W83*, **ALEXIA D. XIMINIES[1]*, YUETAN DOU[1], WILSON ARUNI[1], LAWRENCE SANDBERG[2], and HANSEL M. FLETCHER[1]** ([1]Division of Microbiology and Molecular Genetics and [2]Division of Biochemistry, School of Medicine, Loma Linda University).

307 *Using Neural Stem Cells to Understand Developmental Defects*, **VASUNDHRA BAHL[1]*, KIMBERLY JOHNSON[1], JULIAN HARTZELL[1], SUZAYNN SCHICK[2] and PRUE TALBOT[1]** ([1]Department of Cell Biology and Neuroscience, University of California, Riverside; [2]Department of Medicine, University of California, San Francisco).

308 *Prediction of Cardiac and Skeletogenic Teratogens Using Human Induced Pluripotent Stem Cell-Based* in vitro *Models of Differentiation*, **LAUREN WALKER[1]*, NICOLE SPARKS[1], VERONICA PUIG-SANVICENS[2] and NICOLE ZUR NIEDEN[3]** ([1]Department of Environmental Toxicology, University of California, Riverside; [2]Department of Cellular and Molecular Medicine, University of California, San Diego; [3]Department of Cell Biology and Neuroscience, University of California, Riverside).

309 *Comparing Mandible Bone Marrow Derived Osteoblast Attachment to Titanium Scaffolds With or Without UV Treatment*, **MARIA SIERRA ASIAN B. BALATAN*[1], NANCY SILVA*[1], MANABU ISHIJIMA[2], POOYA SOLTANZADEH[2], CHIKA IWASAKI[2], and TAKAHIRO OGAWA[2]** ([1]Howard Hughes Medical Institute Pre-College Science Education Program, UCLA School of Dentistry; [2]UCLA School of Dentistry).

310 *Neurobehavioral Effects of In Utero Exposure to Polybrominated Diphenyl Ethers (PBDEs) on the F1 Progeny of C57Bl/6 Mice*, **M. VALDEZ[1]*, G. GONZALEZ[2], R. GUITIERREZ[2], H. CHENG[2], T. KYAW[2], J. VALDEZ[2], M. BLAIBEL[2], H. CHERUKURY[3] and M. CURRAS-COLLAZO[1,2]** ([1]Neuroscience Graduate Program, [2]Department of Cell Biology and Neuroscience, University of California, Riverside; [3]Biological Science Department, California State University, Fullerton).

311 *Cytotoxicity of Electronic Cigarette Refill Fluid Aerosols*, **RACHEL Z. BEHAR* and PRUE TALBOT** (Department of Cell Biology and Neuroscience, University of California, Riverside).

312 *The Effects of Astrocytic Swelling on Neuronal Excitability*, **KELLI LAUDERDALE, TODD A. FIACCO, and TINA TUNG*** (Department of Cell

Biology and Neuroscience, University of California, Riverside).

313 *Transcriptional Regulation of LPS-Induced Inflammatory Genes in Dental Pulp*, **ANIKA BENONS*[1], JONATHAN VERGARA-DIAZ*[1], SHEBLI MEHRAZARIN[2], MINSUNG HUH[2], and MO KANG[2]** ([1]Howard Hughes Medical Institute Pre-College Science Education Program, UCLA School of Dentistry; [2]UCLA School of Dentistry).

314 *Characterizing Candidate Allorecognition Genes in Botryllus schlosseri*, **DARYL A. TAKETA*, ADAM D. LANGENBACHER, DELANY RODRIGUEZ, ALLISON B. ANDRASKI, KEVIN J. YOUNG, LIVIU CENGHER, MICHAEL A. TRIBINO, KATHARINA R. CLORE-GRONENBORN, and ANTHONY W. DE TOMASO** (Department of Molecular, Cellular and Developmental Biology, University of California, Santa Barbara).

315 *Changes in Glutamatergic and GABAergic Receptor Subunits in a Rodent Model of Post-Traumatic Stress Disorder*, **JOSE CATALAN[1]*, EDWARD MEYER[2], and IGOR SPIGELMAN[2]** ([1]Howard Hughes Medical Institute Pre-College Science Education Program, UCLA School of Dentistry; [2]UCLA School of Dentistry).

316 *Cardiovascular Toxicity and Sympathetic Nervous System Disruption following Developmental Exposure to Organohalogen Pollutant*, **KURT SPURGIN*, ROBERTO GUTIERREZ, ALEXANDER PRIEN, and MARGARITA CURRAS-COLLAZO** (Department of Cell Biology and Neuroscience, University of California, Riverside).

317 *Collagen Related Proteins Can Modulate the Invasive Ability of Filifactor alocis*. **OZIOMA CHIOMA*, ARUNI WILSON, YUETAN DOU, and HANSEL M. FLETCHER** (Division of Microbiology and Molecular Genetic School of Medicine, Loma Linda University).

318 *Low Level Laser Therapy and Malignant Cells: A Pilot Systematic Review*, **MOLOOD SADRESHKEVARY[1], SAJJAD ASHNAGAR[2], ROMINA SADRESHKEVARY[3]*, and POOYAN SADR-ESHKEVARI[4]** ([1]Queen Mary University; London, UK; [2]Students Scientific Research Center, School of Dentistry, Tehran University of Medical Sciences, Tehran, Iran; [3]University of California, Los Angeles Extension; [4]School of Dentistry, University of California, Los Angeles).

319 *Astrocytic Localization of Supraoptic Serine Racemase and its Potential Participation in NMDA-stimulated Vasopressin Responses in Hypothalamo-Neurohypophysial Explants*, **SIMON KIM[1], MATTHEW VALDEZ[2], JOE VALDEZ[1], GWENDOLYN GONZALEZ[1], ROBERT FERNANDEZ[1], ROBERT GUITERREZ[1] and MARGARITA C. CURRAS-COLLAZO[1,2]*** ([1]Department of Cell Biology and Neuroscience, University of California, Riverside,; [2]Neuroscience Graduate Program, University of California, Riverside).

320 *Vitamin D and Resveratrol: A Fountain of Youth in Gene Regulation*, **MARYA S. SABIR[1]*, ZAINAB KHAN[1], MICHAEL A. GALLIGAN[1], ANGELIKA DAMPF-STONE[1], G. KERR WHITFIELD[2], MARK R. HAUSSLER[2], and PETER W. JURUTKA[1,2]** ([1]Mathematical and Natural Sciences, Arizona State University; [2]Basic Medical Sciences, University of Arizona College of Medicine).

321 *Identification of Toxicants In Cinnamon-Flavored Electronic Cigarette Refill Fluids*, **RACHEL Z. BEHAR, BARBARA DAVIS*, YUHUAN WANG, VASUNDHRA BAHL, SABRINA C. LIN, and PRUE TALBOT** (Department of Cell Biology and Neuroscience, University of California, Riverside).

322 *qPCR Analysis of Gene Expression in Salivary Glands of NOD Mice Treated by Bone Marrow Cells*, **BARAKA GATHERE[1]*, JACQUELINE GARCIA[1]*, RAMIN RABII[2], and SHEN HU[2]** ([1]Howard Hughes Medical Institute Pre-College Science Education Program, UCLA School of Dentistry; [2] UCLA School of Dentistry).

323 *A Comprehensive Comparison Between RNA-Seq and Microarray for Transcriptomic Profiling*, **CHARLES WANG[1], BINSHENG GONG[2], PIERRE R. BUSHEL[3], VICTOR RUAN[1]*, JEAN THIERRY-MIEG[4], DANIELLE THIERRY-MIEG[4], JOSHUA XU[2], HONG FANG[2], HUIXIAO HONG[2], LEMING SHI[5], SCOTT AUERBACH[6] and WEIDA TONG[2]** ([1]Center for Genomics, and Division of Microbiology and Molecular Genetics, School of Medicine, Loma Linda University,; [2]Division of Bioinformatics and Biostatistics, National Center for Toxicological Research, US Food and Drug Administration, Jefferson, AR; [3]Microarray and Genome Informatics Group, National Institute of Environmental Health Sciences; [4]National Center for Biotechnology Information, National Library of Medicine, National Institutes of Health; [5]Center for Pharmacogenomics, Schools of Life Sciences and Pharmacy, Fudan University, Shanghai, China; [6]National Toxicology Program, National

Institute of Environmental Health Sciences).

324 *Understanding Promiscuous Efflux Functions of MDR Transporters with Guidance from Evolution*, **TUFAN GOKIRMAK*, JOSEPH P. CAMPANALE, LAUREN E. SHIPP, GARY W. MOY, and AMRO HAMDOUN** (Scripps Institution of Oceanography).

325 *Metabolic Effects of Soybean Oil and Fructose in Female Mice*, **ANTONIA RIZO*, FRANCES SLADEK, POONAMJOT DEOL, and JANE EVANS** (Department of Cell Biology and Neuroscience, University of California, Riverside).

326 *IFN-gamma and IL-10 Production by NK Cells Cultured with Probiotics*, **SCARLETT PLANTILLAS[1]*, THAIS HOGARTH[1]*, HELEN TSENG[2], and ANAHID JEWETT[2]** ([1]Howard Hughes Medical Institute Pre-College Science Program, UCLA School of Dentistry; [2]UCLA School of Dentistry).

327 *Adverse Metabolic Effects of a Soybean Oil Diet*, **CYNTHIA PEREA*, JANE EVANS, POONAMJOT DEOL, and FRANCES SLADEK** (Department of Cell Biology and Neuroscience, University of California, Riverside).

328 *TRPV1 Channel Activity Triggered by Hyperosmotic Stimulation Increases Phosphorylated NOS Activity in Rat Supraotic Slices*, **ANDRANIK KHACHATUROV*, SHAWNT TOSONIAN, CHRISTY BEITZEL, and MARGARITA CURRAS-COLLAZO** (Department of Cell Biology and Neuroscience, University of California, Riverside).

329 *Effect of Interleukin 4 on Oral Cancer Stem Cells*, **OLUFUNMILOLA ODUFALU*[1], OLUTOBI JEKAYINFA*[1], NICOLE RIGAS[2] and KI-HYUK SHIN[2] ([1]**Howard Hughes Medical Institute Pre-College Pipeline Program, UCLA School of Dentistry; [2]UCLA School of Dentistry).

330 *Toxicology-in-a-Dish: Using In Vitro Stem Cell Models to Predict Health Defects Due to Cigarette Smoke Exposure*, **SABRINA C. LIN*, RATTAPOL PHANDTHONG, NIKKI WENG, BRENDA MONTES, and PRUE TALBOT** (UCR Stem Cell Center and Department of Cell Biology and Neuroscience, University of California, Riverside).

331 *Lyve1 Distinguishes Yolk Sac Myelo-erythroid Progenitor Wave from Primitive Hematopoiesis*, **YEON JOO KIM*, LYDIA LEE, and HANNA MIKKOLA** (University of California, Los Angeles).