Interfaces Research Symposium

Interdisciplinary Research in Multi-Scale Biology

Saturday, May 30th, 2015
8:30am—4:00pm
La Jolla Shores Hotel
La Jolla, CA

The Annual Interfaces Research Symposium: Interdisciplinary Research in Multi-Scale Biology, is made possibly by the National Institutes of Health, National Institute of Biomedical Imaging and Bioengineering; UCSD Graduate Division; and the UCSD Departments of Bioengineering, Chemistry and Biochemistry, Mechanical and Aerospace Engineering, and Physics; Division of Biological Sciences and Graduate Programs of Biomedical Sciences and Neurosciences.
SUMMARY

The Interfaces Graduate Training Program at UCSD welcomes you to our Annual Interfaces Research Symposium:

Interdisciplinary Research in Multi-Scale Biology

This annual event offers graduate students the unique challenge to present their work to faculty and fellow students from across the biological, medical, physical and engineering disciplines of science. In addition, it is an excellent opportunity for attendees to identify common interests and form new interdisciplinary collaborations within the UCSD community. Thank you for joining us

Director of the Interfaces Program
Dr. Andrew McCulloch, Dept. of Bioengineering

Program Committee
Jeffrey Bush, Neurosciences Graduate Program
Eric Carruth, Dept. of Bioengineering
Ilean Chai, Biomedical Sciences Graduate Program
Nathaniel Wood Cohan, Dept. of Chemistry & Biochemistry
Shruti Davey, Dept. of Bioengineering
Dmitri Floros Dept. of Chemistry & Biochemistry
Thomas Gillespie, Neurosciences Graduate Program
Kristopher Haushalter, Dept. of Chemistry & Biochemistry
Ernesto Criado Hidalgo, Dept. of Mechanical & Aerospace Engineering
Sophia Hirakis, Dept. of Chemistry & Biochemistry
Samantha Jones, Biomedical Sciences Program
Jae-Young Jung, Dept. of Mechanical & Aerospace Engineering
Heidi Leonard, Dept. of Chemistry & Biochemistry
Jonathan Okerblom, Biomedical Sciences Graduate Program
Seth Parker, Dept. of Bioengineering
Steven Rees, Biomedical Sciences Graduate Program
Jessica Ungerleider, Dept. of Bioengineering
Ya-San Yeh, Dept. of Bioengineering

Administrative Support
Pam Murphy, Program Coordinator
Irene Jacobo, Chief Administrative Officer, Dept. of Bioengineering

Interfaces Graduate Training Program, Research Symposium 2015 Quick Talks and Posters

Poster presentations
Persistent Environmental Pollutants
Steven Rees, Biomedical Sciences Graduate Program
Multi-omic Approaches to Microbial Communities
Dmitri Floros Dept. of Chemistry & Biochemistry
Human Loss of Neu5Gc: Impact on the Innate Response
Jonathan Okerblom, Biomedical Sciences Graduate Program
The Contributions of Remodeling at Multiple Scales to Ventricular Dysfunction in Pressure Overload Hypertrophy
Eric Carruth, Dept. of Bioengineering
The Cellular Function of PD related protein LRRK2
Nathaniel Cohen, Dept. of Chemistry & Biochemistry
Structural Analysis of Woodpecker Tongue and Hyoid Apparatus
Jae-Young Jung, Dept. of Mechanical & Aerospace Engineering

Quick Talks
Persistent Environmental Pollutants
Steven Rees, Biomedical Sciences Graduate Program
Multi-omic Approaches to Microbial Communities
Dmitri Floros Dept. of Chemistry & Biochemistry
Human Loss of Neu5Gc: Impact on the Innate Response
Jonathan Okerblom, Biomedical Sciences Graduate Program
Multivalent Glycomaterials for Study of Influenza A specificity towards Unique Glycan Presentations
Chris Fisher, Dept. of Chemistry & Biochemistry
The Role of Nonsense Mediated RNA Decay in Neurogenesis
Samantha Jones, Biomedical Sciences Graduate Program
The Contributions of Remodeling at Multiple Scales to Ventricular Dysfunction in Pressure Overload Hypertrophy
Eric Carruth, Dept. of Bioengineering
Dr. Phillip Kyriakakis

Ph.D., Bioengineering, with a Specialization in Multi-Scale Biology, UC San Diego
B.S., Chemistry, University of Massachusetts Boston

Phillip Kyriakakis received his Associates degree in Biotechnology from Massachusetts Bay Community College in 2004. Before finishing his undergraduate degree, he interned at Boston University Medical Center and Forsyth Institute/Harvard Medical School and worked at BD Biosciences for a year. He then attended University of Massachusetts Boston where he obtained his B.S. in Biochemistry. In 2008 Phillip came to the UC San Diego Biology PhD program, where he was an Interfaces Training Grant graduate student.

Dr. Kyriakakis currently is a postdoctoral researcher in Dr. Todd Coleman’s Neural Interaction Lab in the Bioengineering Department where he is working on new ways to engineer optical control of cells/genes with a focus on neuroscience.

AGENDA

SATURDAY MAY 30TH
LA JOLLA SHORES HOTEL

8:30 AM Registration & Breakfast
Poster presenters please check in at 8:15 AM

9:30 AM Welcome
Dr. Andrew McCulloch
Professor of Bioengineering, Director of the Interfaces Program

9:10 AM Co-Mentor Faculty Keynote Address
Mechanisms of Inhibitory Circuit Plasticity
Dr. Brenda Bloodgood
Assistant Professor, Div. of Biological Sciences, Neurobiology Section

9:45 AM Student Research Quick Talks
3-5 minute talks appealing to a non-scientific audience
Collegial competition with a panel of judges

11:00 AM Keynote Address
Learning How to Learn: From Neuron to Brain and Beyond
Dr. Terrence Sejnowski
Distinguished Professor, Div. of Biological Sciences, Neurobiology Section

11:45 AM Poster Presentations
Displayed during lunch hour

11:45 AM Lunch Buffet

1:00 PM Development Panel
Career Paths in Biotechnology
1:00PM—1:40PM Introductory session followed by 3 40 min breakout sessions

4:00 PM Mixer at La Jolla Shores
**Interfaces Graduate Training Program, Research Symposium 2015 Speaker Bios**

**Dr. Brenda Bloodgood**  
Ph.D., Neurobiology, and Postdoctorate, Harvard Medical School, B.S., Animal Physiology and Neuroscience at UCSD. Dr. Bloodgood is an Assistant Professor of Biology (Neurobiology department) at UC San Diego. The Bloodgood lab works to understand how neuronal computations change in response to an animals interactions with the environment. They hope to understand how experience, via the execution of activity-dependent gene expression, regulates the connectivity of inhibitory and excitatory neurons and how these processes relate to animal behavior and disease states.

Dr. Bloodgood is currently a Searle Scholar and has been the recipient of the Charles A. King Trust and Helen Hay Whitney Foundation Fellowships, a L’Oreal for Women in Science Fellow, the Dorsett L. Spurgeon Research Award, and the Harold M. Weintraub Graduate Student Award.

**Jennifer Cayer**  
B.S., Bioengineering, San Diego  
Jennifer Giottonini Cayer serves on the board of Travus Therapeutics, and also held the COO post of Rempex Pharmaceuticals before selling the firm last year. Ms. Giottonini Cayer has over twenty years of biotech, pharmaceutical and medical device experience. She has executed multiple alliances with pharmaceutical and biotech companies worth over $1B including company acquisitions, drug licensing, technology licensing, drug discovery and development collaborations, and the creation of spinout businesses. Prior to her service with Rempex Pharmaceuticals, she was with Conatus Pharmaceuticals, a company she co-founded and where she served as the Senior Vice President of Corporate Development.

Ms. Cayer led the negotiations for the acquisition of multiple drug candidates from pharmaceutical companies. Prior to Conatus, she was the head of Corporate Development for Idun Pharmaceuticals, Inc. Ms. Cayer played a key role in the negotiations leading to the sale of Idun to Pfizer. Prior to Idun, Ms. Cayer spent five years at Isis Pharmaceuticals where she served as Vice President, Business Development. She has held various technical, marketing and operational roles at Genus and Puritan Bennett (Tyco). She is a member of the Board of Directors for Athena and co-chairs the Advisory Committee for Biocom’s Global Partnering Conference.

**Dr. Andrew McCulloch**  
Ph.D., Engineering Science and Physiology, University of Auckland, New Zealand  
Dr. McCulloch is Distinguished Professor of Bioengineering and Medicine, and Jacobs School Distinguished Scholar at UC San Diego. He is a member of the UCSD Institute for Engineering in Medicine, the Qualcomm Institute; a Senior Fellow of the San Diego Supercomputer Center and a member of the UCSD Center for Research on Biological Systems.

Dr. McCulloch is a Principal Investigator of the National Biomedical Computation Resource and the Cardiac Atlas Project, and Co-Director of the Cardiac Biomedical Science and Engineering Center at UCSD. He served as Vice Chair of the Bioengineering Department from 2002-2005 and Chair from 2005-2008. Dr. McCulloch is Director of the HHMI-NIBIB Interfaces Graduate Training Program and the accompanying UCSD Interdisciplinary Ph.D. Specialization in Multi-Scale Biology.

Dr. McCulloch's lab uses experimental and computational models to investigate the relationships between the cellular and extracellular structure of cardiac muscle and the electrical and mechanical function of the whole heart during ventricular remodeling, heart failure and arrhythmia.

**Dr. Terrence J. Sejnowski**  
Postdoctorate, Princeton and Harvard Medical School  
Ph.D., Physics, Princeton University  
B.S., Physics, Case Western Reserve University  
Dr. Sejnowski is a professor and head of the Computational Neurobiology Laboratory at the Salk Institute for Biological Studies. Dr. Sejnowski's lab uses sophisticated electrical and chemical monitoring techniques to measure changes that occur in the connections among nerve cells in the hippocampus during a simple form of learning. They use the results of these studies to instruct large-scale computers to mimic how these nerve cells work. By studying how the resulting computer simulations can perform operations that resemble the activities of the hippocampus, Sejnowski hopes to gain new knowledge of how the human brain is capable of learning and storing memories. This knowledge may ultimately provide medical specialists with critical clues to combating Alzheimer's disease and other disorders.
Dr. Ghassan S. Kassab
Ph.D., Bioengineering, UC San Diego, Summa Cum Laude
M.S. Engineering Sciences, UC San Diego
B.S. Chemical Engineering, UC San Diego
Dr. Kassab is currently the Founder/President/CSO of California Medical Innovations Institute in San Diego. He previously served as the Thomas J. Linnemeier Guidant Foundation Chair and Professor in Biomedical Engineering, Professor in Surgery, and Professor in Cellular and Integrative Physiology at Indiana State University, Indianapolis.

Dr. Kathy Ogilvie
Postdoctorate, Salk Institute for Biological Sciences, San Diego
Ph.D., Biological Sciences, University of Delaware
Dr. Ogilvie is currently the Director of Physiology at aTyr Pharma. A physiologist and endocrinologist by training, she has applied her knowledge and skills in an industrial setting as a pharmacologist working at Ligand Pharmaceuticals, Pfizer, Inc., Exelixis and CovX Research. She has successfully advanced small molecule, peptide and antibody-based drug discovery projects, reduced experimental cycle times, improved data quality and increased efficiency in the pharmacology groups that she has led, contributing to 8 clinical candidates. In addition to a high level of organization, she has strong management and interpersonal skills, including mentoring scientists to promotions and graduate school. Dr. Ogilvie currently volunteers as the corporate sponsorship co-chair for the Association for Women in Science (AWIS). She has held many roles within the chapter, serving previously on the Events and WIST committees and also as chapter Treasurer.

Dr. Michelle Chen
M.S., Ph.D., UC San Diego, Siebel Scholar
B.S. with honors, Information and Computer Science, UC Irvine
Dr. Chen is currently a Clinical Development Manager at Allergan, Inc., where she has led a number of external research collaborations to develop novel diagnostic procedures and analytical methods for various clinical studies. She has been involved in several ophthalmology clinical trials. Dr. Chen previously served as Senior Process Development Engineer at Spin-naker Biosciences, Inc. Dr. Chen started her extensive research experience as an undergraduate, designing and constructing devices to study the effect of mechanical forces on stem cell regeneration. Her Ph.D. thesis involved constructing and utilizing nanomaterials for biosensing and encoding applications. She also helped develop a device marketed under the trade name “TruTags”. Dr. Chen served as an officer for the Society of Women Engineers, assisting in career development events. She has also served as an NIH reviewer for Small Business Grants in Basic and Integrative Bioengineering.

Dr. Samir Elamrani
J.D., University of Houston Law Center.
Ph.D., Chemistry, Computational Molecular Structural Biology, Institute of Molecular Design, University of Houston
Ph.D., Chemistry, Catalysis, Universite Claude Bernard, Lyon, France
M.S., Theoretical & Computational Chemistry, Universite Paris XI Orsay, France;
B.S., Chemistry, Universite Mohammed V Rabat, Morocco
Dr. Samir Elamrani is a partner in the San Diego office of Wilson Sonsini Goodrich & Rosati, where he advises biotechnology, pharmaceutical, and nanotechnology clients on all aspects of patent law and related business matters. Prior to joining the firm, Dr. Elamrani was counsel at Crowell & Moring and a senior associate at Pillsbury Winthrop LLP. He is a member of the American Bar Association and San Diego Intellectual Property Law Association.

Dr. Elamrani has prepared and prosecuted over 250 U.S. Patent Cooperation Treaties and foreign applications; covering inventions related to small molecule pharmaceuticals, molecular design, structural biology, therapeutic peptides, proteins, vaccines, genes, gene therapy, anti-sense technology, recombinant antibodies, fuel-cell technology, zeolites and noble metal catalysts.