

# 4TH ANNUAL BIG DATA IN BIOLOGY SYMPOSIUM

The Shirley Bird Perry Ballroom of the Texas Union Building

WEDNESDAY, MAY 11, 2016

- 8:45 **WELCOME BREAKFAST**
- 9:15 Opening Remarks  
Dr. Hans Hofmann, Director, Center for Computational Biology and Bioinformatics
- 9:30 Genome evolution of bacteria with an expanded genetic code  
**Dr. Ross Thyer**, Post-doctoral Fellow, Laboratory of Dr. Andrew Ellington
- 9:50 Uncovering rules governing functional gene replacement between humans and yeast.  
**Jon Laurent**, Graduate Student, Laboratory of Dr. Edward Marcotte
- 10:10 Using next-generation sequencing to diagnose disease in reef-building corals  
**Rachel Wight**, Graduate Student, Laboratory of Dr. Mikhail Matz
- 10:30 **COFFEE BREAK**
- 11:00 **KEYNOTE LECTURE:** Building Biological Control: Living Therapeutics to Cell Factories  
**Dr. Pam Silver**, Harvard Medical School, Department of Systems Biology
- 12:00 **LUNCH IN THE SANTA RITA SUITE**
- 1:30 Collaboration through Open Superposition: What's really different about "the open source way" and what does it mean for scientific software developers?  
**Dr. James Howison**, School of Information
- 2:00 Limits on inferring structure from activity in strongly connected circuits  
**Dr. Ila Fiete**, Department of Neuroscience
- 2:30 **INVITED LECTURE:** LAVA flow and genomic earthquakes: the gibbon has it all  
**Dr. Lucia Carbone**, Oregon Health & Science University, Department of Behavioral Neuroscience
- 3:30 **POSTER SESSION, INDUSTRY EXHIBITS, AND COFFEE BREAK**
- 4:45 **CLOSING REMARKS AND POSTER AWARDS**

## INDUSTRY EXHIBITS

- 1 **Association of Women in Science, Austin** – Margo Lee, Biotechnology Professional
- 2 **Bioo Scientific** – Adam Morris, Senior Scientist, Next Generation Sequencing
- 3 **Lab 7 Systems**– Chris Mueller, President and CTO; Cheng Lee, Principle Software Engineer
- 4 **Macromoltek** - Pragati Prasad, Scientific Software Developer
- 5 **Mirna Therapeutics** – Andreas Bader, VP, Translational R&D; Vinny Bonato, Bioinformatics Senior Scientist

## POSTERS

- 1 **Modeling chromatin states to elucidate transcriptional regulation in glioblastoma** - Amelia Hall, Graduate Student, Vishy Iyer Lab
- 2 **The genomic localization of H2A.Z** - Dia Bagchi, Graduate Student, Vishy Iyer Lab
- 3 **The chromatin repressor protein EZH2 interacts with small RNAs and activates gene expression in glioblastoma cells** - Haridha Shivram, Graduate Student, Vishy Iyer Lab
- 4 **Genome Sequencing and Analysis Facility** - Mike Wilson - Director, GSAF
- 5 **Transcriptomics, bacterial genome annotation, and custom pipelines** - Benjamin Goetz, Research Associate, CCBB
- 6 **Identifying novel transcriptome level changes related to chronic alcohol abuse** - Dhivya Arasappan, Research Scientist, CCBB
- 7 **Machine Learning Methods in Bioinformatics** - Dennis Wylie, Research Scientist, CCBB
- 8 **Big Data analytics and bioinformatics consulting** - Hans Hofmann - Director, CCBB
- 9 **From mating systems to transcriptomes: a systems level approach to the evolution of social behavior** - Rebecca Young Brim, Research Associate, Hans Hofmann Lab
- 10 **A bioinformatic pipeline to test the hourglass model of vertebrate development** - Pranav Bhamidipati, Undergraduate, Hans Hofmann Lab
- 11 **Proteomics Facility: Protein interactions, quantitation, and modifications** - Maria Person - Director, Proteomics Facility
- 12 **CpG islands-mediated linear and spatial gene partitioning accounts for the divergence in transcriptional regulation mechanisms** - Samyeol Baek, Post-doc, Jonghwan Kim Lab
- 13 **Conserved rates and patterns of transcription errors across bacterial growth states and lifestyles** - Charles Traverse, Graduate Student, Howard Ochman Lab
- 14 **Search for the crucial extracellular nucleotide receptor: Kinase receptor DORN1's role in the eATP and eADP stomatal signaling pathways in *Arabidopsis thaliana*** - Katia Hougaard, Undergraduate, Stan Roux Lab
- 15 **Selective forces shape the evolution of regulatory elements that influence pair-bonding and sexual fidelity** - Alejandro Berrio, Graduate Student, Steve Phelps Lab
- 16 **Individual amino acid contributions across paired EF-hands in calmodulin** - Suzanna Bennett, Undergraduate, Richard Aldrich Lab
- 17 **The Influence of spine SER on synapses in the hippocampus** - Mikayla Waters, Undergraduate, Kristen Harris Lab
- 18 **Using LINCS to find new drugs for alcohol dependence treatment** - Laura Ferguson, Graduate Student, R. Adron Harris Lab
- 19 **Optogenetic elimination of protein function in vivo** - Abdurrahman Kharbat, Undergraduate, David Stein Lab

- 20 **Functional sites and enzyme evolution** - Benjamin Jack, Graduate Student, Claus Wilke Lab
- 21 **Structure can predict tolerance to deletions in proteins** - Eleisha Jackson, Graduate Student, Claus Wilke Lab
- 22 **Comprehensive analysis of *E. coli* under different growth conditions** - Mehmet Caglar, Post-doc, Claus Wilke Lab
- 23 **Swarming motility force: Pushing Around *P. dendritiformis* Type C** - Janelle Korf, Undergraduate, Ernst-Ludwig Florin Lab
- 24 **Cross Immunity and population risk for pandemic influenza emergence** - Spencer Fox, Graduate Student, Lauren Meyers Lab
- 25 **Past and present of coral populations on the Great Barrier Reef** - Mikhail Matz, Associate Professor, Integrative Biology
- 26 **Detecting spatially varying selection in broadcast spawning corals with RAD and Random Forests** - Groves Dixon, Graduate Student, Mikhail Matz Lab
- 27 **Computational framework for multispecies proteomic comparisons** – Claire McWhite, Graduate Student, Edward Marcotte Lab

## ABOUT THE SPEAKERS

**Dr. Ross Thyer** received his BSc in biochemistry at the University of Western Australia then Completed his PhD in the Rackham lab at the Western Australian Institute of Medical Research. Thyer is currently a postdoc in the Ellington lab at the Center for Systems and Synthetic Biology, UT Austin. His main research interests include protein engineering with non-canonical amino acids.

**Jon M Laurent** is a graduate student in the lab of Edward Marcotte. He is interested in the general principles underlying evolutionary conservation of biological phenomena, from expression to phenotype and function of orthologous genes. Laurent's current research involves "humanizing" yeast by replacing yeast genes with their human orthologs and investigating the properties of these genes that dictate their ability to replace or not.

**Rachel Wright** is a fourth-year graduate student in the Cell and Molecular Biology program at UT Austin. She's interested in developing diagnostic tools to assess disease risk in reef-building corals throughout the Great Barrier Reef and Caribbean using next-generation sequencing technologies. These research efforts have expanded her computational skill-set infinitely (from "zero" to "competent"... every day is a learning experience!) and have taken her to tragically gorgeous tropical field sites around the world.

**Dr. Pamela Silver** is the Elliot T and Onie H Adams Professor of Biochemistry and Systems Biology at Harvard Medical School. She is also a full member of the Wyss Institute of Biologically Inspired Engineering. She was one of the first members of the Department of Systems Biology and the first Director of the Harvard University Graduate Program in Systems Biology. She is involved in a number of educational efforts and is a founder and Board Member of the International iGEM competition.

**Dr. James Howison** is an Assistant Professor in the Information School of the University of Texas at Austin. He did a post-doc at Carnegie Mellon and received his PhD from the School of Information Studies at Syracuse University. Howison studies people at work building technologies, particularly free and open source software and scientific software development. His work has been funded by the National Science Foundation; most recently through a CAREER award to study transitions from grant funding to peer production.

**Dr. Ila Fiete** is an Associate Professor in the field of Theoretical and Computational Neuroscience at the Department of Neuroscience at UT Austin. She is interested in how the brain stores memory, how it overcomes noise, and how it performs the computations involved in spatial navigation. Fiete obtained her Ph.D. at Harvard and MIT. Her postdoctoral work was at the Kavli Institute for Theoretical Physics at Santa Barbara, and at Caltech, where she was a Broad Fellow. Ila Fiete is currently a fellow in the Center for Learning and Memory, a McKnight Scholar, and an ONR Young Investigator.

**Dr. Lucia Carbone** is an Assistant Professor in the Department of Behavioral Neuroscience at Oregon Health & Science University and has a joint appointment as an Assistant Scientist in the Division of Neuroscience at the Oregon National Primate Research Center (ONPRC). In 2010 Carbone started her own lab at OHSU/ONPRC which includes experts in bioinformatics interested in retrotransposons and genome evolution and epigenetics. Researchers in the lab apply cutting edge experimental technologies to investigate genomic and epigenetic changes occurring during species evolution and disease. Carbone is leading the International Consortium for the Sequencing and Annotation of the gibbon genome.

## PARKING & TRANSPORTATION

It is a [4 minute walk](#) from the **San Antonio Garage** at 2420 San Antonio St. to the **Texas Union Building** at 2247 Guadalupe St. The parking garage hourly rates are listed at this website:

<http://www.utexas.edu/parking/parking/garages/daily-rates.html>

## RESOURCES FOR NURSING MOTHERS

Nursing mothers will have access to quite rooms during the conference. For more details, email Rayna at [rayna.harris@utexas.edu](mailto:rayna.harris@utexas.edu)

- UNB 3.208 (Lone Star Room). This room is adjacent to the ballroom. Curtains will be up for privacy.
- [FAC 312](#): This official university lactation room is in the building adjacent to the symposium.

## BREAKFAST, LUNCH, AND AFTERNOON COFFEE

The buffet style breakfast options include assorted breakfast tacos, muffins, yogurt cups, and coffee.

The buffet style lunch will include Caesar salad, broccoli with lemon zest, fresh garlic bread, choice of chicken Parmesan or sausage and peppers, rotini marinara, biscotti, assorted rolls and butter, ice water and iced tea.

The afternoon coffee break will include cookies, crackers, and seasonal fruit.