

## PACIFIC SYMPOSIUM ON BIOCOMPUTING 2014

2014 marks the 19th Pacific Symposium on Biocomputing. The past year has been a magnificent one for computational biology. Dr. Michael Levitt won the Nobel Prize in Chemistry in October 2013 for his work modeling and simulating biological macromolecular structure. The demand for bioinformatics and computational biology skills in the marketplace has exploded, and there is a robust industry emerging providing “Big Data” services in support of genomics, pharmaceuticals and health care. The NIH has announced a \$100M program in “Big Data to Knowledge” or BD2K, to support a broad portfolio of work across all biomedical disciplines.

In addition to being published by World Scientific and indexed in PubMed, the proceedings from all previous meetings are available online at <http://psb.stanford.edu/psb-online/>. PSB provides sessions focusing on emerging areas in biomedical computation. These sessions are typically conceived at the previous PSB meeting as people discuss the opportunities for new sessions. Once again, we have a very exciting set of areas that build on previous sessions and introduce new topics. There are revolutions occurring in cancer, drug repurposing, personalized medicine, the characterization of complex phenotypes, and our ability to extract knowledge from text. Each of these is associated with a session at this year’s meeting. In addition, we see increasing interest in non-coding RNA, quantitative training in the biosciences, and applications in autism, which form the basis for our workshops. The efforts of a dedicated group of leaders has produced an outstanding set of sessions, with associated introductory tutorials. These organizers provide the scientific core of PSB and their sessions are as follows:

### **Cancer Panomics: Computational Methods and Infrastructure for Integrative Analysis of Cancer High-Throughput “Omics” Data**

Søren Brunak, Francisco M. De La Vega, Gunnar Rätsch, Joshua M. Stuart

### **Computational Approaches to Drug Repurposing and Pharmacology**

Zhiyong Lu, Pankaj Agarwal, Atul Butte, S. Joshua Swamidass

### **Detecting and Characterizing Pleiotropy: New Methods for Uncovering the Connection Between the Complexity of Genomic Architecture and Multiple Phenotypes**

Sarah A. Pendergrass, Dana C. Crawford, Anna L. Tyler

### **Personalized Medicine: From Genotypes and Molecular Phenotypes Towards Therapy**

Oliver Stegle, Jennifer Listgarten, Steven Brenner, Leopold Parts, Quaid Morris

### **Text and Data Mining for Biomedical Discovery**

Graciela H. González, Kevin Bretonnel Cohen, Maricel G. Kann, Casey Greene, Robert Leaman, Nigam Shah, Jieping Ye

We are also pleased to present three workshops in which investigators with a common interest come together to exchange results and new ideas in a format that is more informal than the peer-reviewed sessions. For this year, the workshops and their organizers are:

### **Applications of Bioinformatics to Non-Coding RNAs in the Era of Next-Generation Sequencing**

Chao Cheng, Jason Moore, Casey Greene

### **Building the Next Generation of Quantitative Biologists**

Kristine A. Pattin, Anna C. Greene, James A. Foster, Jason Moore

### **Uncovering the Etiology of Autism Spectrum Disorders: Genomics, Bioinformatics, Environment, Data Collection and Exploration, and Future Possibilities**

Sarah A. Pendergrass & Scott Selleck

We thank our keynote speakers Atul Butte (Science keynote) and Douglas Fridsma (Ethical, Legal and Social Implications keynote).

Tiffany Murray manages the peer review process and assembly of the proceedings, and also plays a key role in many other aspects of the meeting. We also thank the National Institutes of Health and the International Society for Computational Biology (ISCB) for travel grant support. We are particularly grateful to the onsite PSB staff Al Conde, Brant Hansen, Georgia Hansen, BJ McKay-Morrison, Jackson Miller, Kasey Miller, and Paul Murray for their assistance. We also acknowledge the many busy researchers who reviewed the submitted manuscripts on a very tight schedule. The partial list following this preface does not include many who wished to remain anonymous, and of course we apologize to any who may have been left out by mistake.

We look forward to a great meeting once again.

Aloha!

Pacific Symposium on Biocomputing Co-Chairs,  
October 14, 2013

**Russ B. Altman**

*Departments of Bioengineering, Genetics & Medicine, Stanford University*

**A. Keith Dunker**

*Department of Biochemistry and Molecular Biology, Indiana University School of Medicine*

**Lawrence Hunter**

*Department of Pharmacology, University of Colorado Health Sciences Center*

**Teri E. Klein**

*Department of Genetics, Stanford University*

**Marylyn D. Ritchie**

*Department of Biochemistry and Molecular Biology, Pennsylvania State University*

## Thanks to the reviewers...

Finally, we wish to thank the scores of reviewers. PSB aims for every paper in this volume be reviewed by three independent referees. Since there is a large volume of submitted papers, paper reviews require a great deal of work from many people. We are grateful to all of you listed below and to anyone whose name we may have accidentally omitted or who wished to remain anonymous.

Zaky Adam	Julien Gagneur	Yen Yi Lin	Oliver Stegle
Pankag Agarwal	Eugenia	Christoph Lippert	Josh Stuart
Uri David Akavia	Giannopoulou	Chunyu Liu	S. Joshua Swamidass
Gary Bader	Jesse Gillis	Haiguang Liu	Tasnia Tahsin
Joel Bader	Anna Goldenberg	Yi Liu	Haixu Tang
Amol Bhalla	Graciela Gonzalez	Xinghua Lou	Nick Tatonetti
Ziv Bar-Joseph	Assaf Gottlieb	Zhiyong Lu	Lisa Tucker-Kellogg
Alexis Battle	Jonathan Goya	Yves Lussier	Tamir Tuller
Gurkan Bebek	Gregory Grant	Florian Markowitz	Igor Ulitsky
Gill Bejerano	Casey Greene	Brett McKinney	Ryan Urbanowicz
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Stephen Benz	Rachael Hageman	Jill Mesirov	Alfonso Valencia
Andreas Beyer	David Haussler	Sara Mostafavi	Charles Vaske
Sourav Bhowmick	Xin He	Sayan Mukherjee	Shankar Vembu
Inanc Birol	Wenlian Hsu	Chad Myers	Karin Verspoor
Josh Bittker	Jing Hu	Dvir Netanely	Bjarni Vilhjalmsson
Sébastien Boisvert	Ting Hu	William Stafford	Tomas Vinar
Karsten Borgwardt	Jun Huan	Noble	Julia Vogt
Andrew Brown	Hailiang Huang	Chris O'Donnell	Kavishwar
Søren Brunak	Heng Huang	Hatice Osmanbeyoglu	Waghlikar
Atul Butte	Curtis Huttenhower	Princy Parsana	Peter Waltman
Colin Campbell	Janina Jeff	Leopold Parts	Fei Wang
Elias Chaibub Neto	Shuiwang Ji	Chirag Patel	Chih-Hsuan Wei
Sreenivas Chavali	Antonio Jimeno	Bethany Percha	John Witte
Keira Cheetham	Vladimir Jojic	Fernando Perez-Cruz	Chris Wong
Bin Chen	Siddharta Jonnalagada	Jason Piper	Jinbo Xu
Su-Shing Chen	Kenneth Jung	Feng Qi	Julie Yang
Jie Cheng	Irene Kaplow	Francis Quetier	Jieping Ye
John Cleary	Theofanis Karaletsos	Barbara Rakitsch	Lana Yeganova
Greg Cooper	Ritu Khare	Huzefa Rangwala	Xiaoqing You
Eivind Coward	Robert Kincaid	Ben Raphael	Habil Zare
Francisco De La Vega	Smita Krishnaswamy	Gunnar Ratsch	Jasmine Zhou
Jeroen De Ridder	Semyon Kruglyak	Ben Readhead	Jian Zhou
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Iddo Freidberg	Christina Leslie	Matthew Scotch	
Johannes	Haiquan Li	Jun Sese	
Freundenberg	Hua Li	Ron Shamir	
Brooke Fridely	Jason Li	Artem Sokolov	
Nicolo Fusi	Jiao Li	Joe Song	
Daniel Gaffney	Wenyuan Li	Sriganesh Srihari	