



Workshop on Modeling in Cell Biology:
Scale and Granularity
May 18-19, 2015
Hyatt Regency San Francisco Airport 1333
Bayshore Hwy, Burlingame, CA 94010

Day 1 Monday May 18

8.00 – Registration/Breakfast Refreshments Harbour Room AB - (LOBBY)

9:00 Wallace Marshall
University of California, San Francisco
Welcome and introduction

9:10 Jianhua Xing
University of Pittsburgh
Molecular cooperativity leads to monoallelic olfactory receptor expression—importance of physical insight in cell biology modeling

9:30 Adriana Dawes
Ohio State University
Modeling microtubule organization in the presence of motor proteins

9:50 Jian Liu
NIH
The tale of two distinct actin networks in focal adhesion mechanosensing

10:10 Jun Allard
University of California, Irvine
Mechanics of the cell surface in immune signaling

10:30 – 11:00 BREAK

11:00 William Hlavacek
Los Alamos National Lab
Predicting how submolecular details influence behaviors of cellular regulatory systems

11:20 James Faeder
University of Pittsburgh
Rule based modeling in cell biology: Capabilities and prospects

11:40 Carlos Lopez
Vanderbilt University
PySB: a modeling framework for mathematical simulations of cell-decision processes and cellular communities

12:00 – 1:30 LUNCH - Scalini Room (Atrium)

1:30 Erkan Tuzel
Worcester Polytechnic Cancer Research Center
Cooperative intracellular transport by populations of fast and slow kinesin motors

1:50 Ram Dixit
Washington University St. Louis
Integrating modeling and experiments to understand noncentrosomal microtubule organization

2:10 Lan Ma
University of Texas at Dallas
Regulation of P53 oscillations by mircoRNA- mediated positive feedback loops

2:30 Jia Wu
Northwestern University
Sliding window regression methods for biological time-series

2:50 – 3:10 BREAK

3:10 – 3:45 BREAKOUT SESSION I Oak Room (Atrium) Conifer Room (Atrium)

3:50 Neda Bagheri
Northwestern University
Predicting emergent dynamics by integrating intra- and inter-cellular signaling

4:10 - 4:40 BREAK

4:40 Zaida Luthey-Schulten
University of Illinois
Simulations of cellular processes from single cells to colonies

5:00 Ivan Survtsev
Yale University
Evidence for a DNA-relay mechanism in chromosome segregation by ParABS-system

5:20 George Karniadakis
Brown University
Multiscale modeling of red blood cells in health and disease

5:40 David Odde
University of Minnesota
Simulating microtubule self-assembly

6:00 – 8:00 DINNER - Scalini Room (Atrium)

Day 2 Tuesday May 19

8:00 – Breakfast/Refreshments Scalini Room (Atrium)

9:00 Wallace Marshall
University of California, San Francisco
Discuss plans for breakout session

9:10 Lishibanya Mohapatra
Brandeis University
How cells control the size of their organelles

9:30 Charles Little
University of Kansas
Emergent ECM, cellular and tissue-scale motion patterns during amniote morphogenesis

9:50 Andras Czirok
University of Kansas
Modeling elasto-plastic tissue deformations and their driving forces

10:10 Wenying Shou
Fred Hutchinson Cancer Research Center
Spatial self-organization in microbial communities

10:30 – 11:00 BREAK

11:00 Bin Zhang
Icahn School of Medicine at Mount Sinai
Network modeling of immune response in complex human diseases

11:20 Julien Berro
Yale University
Quantitative approaches to unravel the molecular mechanisms of clathrin-mediated endocytosis

11:40 Leslie Loew
University of Connecticut Health Center
Multiscale and multiphysics modeling with VCell

12:00 – 1:30 LUNCH Scalini Room (Atrium)

1:30 Greg Warr
National Science Foundation
NSF vision for quantitative cell biology

1:50 Holly Goodson
University of Notre Dame
Reconsidering the concept of “critical concentration” as it applies to microtubules and other steady-state polymers

2:10 Chuan Xue
Ohio State University
A stochastic multiscale model that explains the segregation of axonal microtubules and neurofilaments in neurological diseases

2:30 Erin Jonasson
University of Notre Dame
Tau binding laterally to the microtubule lattice promotes microtubule stabilization

2:50 – 3:10 BREAK

3:10 – 4:10 BREAKOUT SESSION II OAK ROOM (Atrium) CONIFER ROOM (Atrium)

4:10 - 4:40 BREAK

4:40 Maria Minakova
University of North Carolina
Utilizing local stability analysis to investigate models of polarity establishment: method overview and application

5:00 Haicen Yue
University of California, San Diego
Combining modeling and experiments to probe cellular memory

5:20 John Sauls
University of California, San Diego
Cell-size homeostasis in bacteria

5:40 Tim Elston
University of North Carolina at Chapel Hill
Gradient sensing in yeast

6:00 – 8:00 DINNER - Scalini Room (Atrium)