

Emerson Center Lectureship Award Symposium

Insights to Modern Problems of Life Sciences: Interplay of Theory and Experiment



April 20, 2012

Harland Cinema, Dobbs University Center, Emory University

AWARD WINNER & KEYNOTE SPEAKER:

Prof. Klaus Schulten,
University of Illinois at Urbana Champaign



The Computational Microscope Images, Biomolecular Machines and Biomedical Nanodevices

Over the past three decades computational biology has made great strides into simulating biomolecules at ever more relevant time scales and length scales. The simulations offer entirely new views that conventional microscopy could not furnish. In fact, computer simulations take the place of a new type of microscopy, ideally suited for the nanoscale relevant for studies of living cells and for designing new devices in nanotechnology. While being impressive on its own, the computational microscope excels most in conjunction with other types of microscopies, a key example being the combination of X-ray scattering, electron microscopy and computational microscopy. Applications include integral views of proteins exerting forces on cells or sculpting cellular membranes, of ribosomes in different functional states, and of entire (70 nm size including hundreds of proteins) photosynthetic organelles absorbing sun light and charging the cellular membrane. The advanced software and hardware technologies that make the computational microscope feasible will also be outlined.

INVITED SPEAKERS

EVENTS SCHEDULE



James Taylor
*Department of
Mathematics and
Computer Science,
Department of Biology,
Emory University*

9:00 – 9:20

OPENING CEREMONY & AWARD PRESENTATION

9:20 – 10:20

K. Schulten: *The Computational Microscope Images, Biomolecular Machines and Biomedical Nanodevices*

10:20 – 11:20

J. Taylor: *High-resolution identification of 3D chromatin interactions*



Ilya Nemenman
*Department of Physics,
Department of Biology,
Emory University*

11:20 – 1:00

POSTER SESSION

1:00 – 2:30

LUNCH

2:30 – 3:30

I. Nemenman: *Information processing in biology*

3:30 – 3:50

COFFEE BREAK

3:50 – 4:50

K. Warncke: *Dynamics in Enzyme Catalysis:
A Moving Target for Theory and Experiment*

4:50 – 5:50

J. Kindt: *Simulating mixing and demixing in lipid bilayers*

5:50

CLOSING

6:30 – 8:30

DINNER (by invitation)



Kurt Warncke
*Department of Physics,
Emory University*



James Kindt
*Department of
Chemistry, Emory
University*

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REGISTRATION:

<http://www.emerson.emory.edu/conferences/form/register.html>

CONTACT INFORMATION:

dmusaev@emory.edu

Ph: 404-727-2382

Registration is free. Please register to attend.
Abstracts of invited talks are available online