

Workshop IV: Molecular Machines

Monday May 24, 2004

- 8:30–9:20 *Check-In/Light Breakfast (Hosted by IPAM)*
- 9:20–9:30 *Welcome and Opening Remarks*
- 9:30–10:30 **David Bensimon** (Ecole Normale Supérieure, France)
DNA/protein interactions at the single molecule level
- 10:30–11:00 *Break*
- 11:00–12:00 **Sunney Xie** (Harvard University)
Single Molecule Enzymology: From In vitro to In vivo Studies
- 12:00–2:00 *Lunch (on your own)*
- 2:00–3:00 **Yi-der Chen** (National Institute of Health)
Chemical-Mechano Free-Energy Transduction: From Muscles to Protein Motors and Brownian Ratchets
- 3:00–4:00 **Michelle Wang** (Cornell University)
Sequence-Dependent Kinetic Model for Transcription Elongation by RNA Polymerase
- 3:30
- 4:00–4:30 *Break*
- 4:30–5:30 **Saveez Saffarian** (Washington University/School of Medicine)
Interstitial Collagenase is an ATP-independent Molecular Motor Driven by Proteolysis of Collagen
- 5:30–7:00 *Wine Reception (Hosted by IPAM)*
- 7:00–8:00 **George Oster** (University of California)
Rotary Protein Motors

Tuesday May 25, 2004

- 8:30–9:30 *Continental Breakfast*
- 9:30–10:30 **Tom Chou** (UCLA)
Clustered bottlenecks in mRNA translation and protein synthesis
- 10:30–11:00 *Break*

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- 11:00–12:00 **Jacques Prost** (Institut Curie, France)
- 12:00–2:00 *Lunch (on your own)*
- 2:00–3:00 **Edward Pate** (Washington State University)
Conformational Changes at the Nucleotide-Binding Site of Kinesin-Family Motors
- 3:00–4:00 **Qiang Cui** (University of Wisconsin)
Preliminary insights into mechanochemical couplings in myosin with molecular simulations
- 4:00–4:30 *Break*
- 4:30–5:30 **Brian Walton** (Washington State University)
Hidden Markov model analysis of motor protein data

Wednesday May 26, 2004

- 8:30–9:30 *Continental Breakfast*
- 9:30–10:30 **Matthias Rief** (University of Munich)
Single Molecule Mechanics of Proteins – Forces and Energy Landscapes
- 10:30–11:00 *Break*
- 11:00–12:00 **Frank Julicher** (Max Planck Institute)
Cellular oscillations powered by motor proteins
- 12:00–2:00 *Lunch (on your own)*
- 2:00–3:00 **Ron Fox** (Georgia Institute of Technology)
Rectified Brownian Motion in Subcellular Biology
- 3:00–4:00 **Dean Astumian** (Maine)
Physics of Brownian Motors and Pumps: Swimming in Molasses and Walking in a Hurricane
- 4:00–4:30 *Break*
- 4:30–5:30 **Giovanni Cappello** (Institut Curie, France)
Kinesin step without external force takes less than 70 microseconds

Thursday May 27, 2004

- 8:30–9:30 *Continental Breakfast*
- 9:30–10:30 **Anatoly Kolomeisky** (Rice University)
Understanding Mechanochemical Coupling in Kinesins Using First-Passage Times
- 10:30–11:00 *Break*
- 11:00–12:00 **Christian Maes** (University of Leuven)
Recent results in nonequilibrium statistical mechanics
- 12:00–2:00 *Lunch (Hosted by IPAM)*
- 2:00–3:00 **Scot Kuo** (Johns Hopkins University)
*Actin-based motility of *Listeria monocytogenes**
- 3:00–4:00 **Reinhard Lipowsky** (Max Planck Institute)
Stochastic Movements of Molecular Motors
- 4:00–4:30 *Break*
- 4:30–5:30 **Meredith Betterton** (University of Colorado)
Interaction of motor proteins with obstacles: Helicase unwinding of DNA

Friday May 28, 2004

- 8:30–9:30 *Continental Breakfast*
- 9:30–10:30 **Josh Baker** (University of Vermont)
Talking heads: Myosin motors and the mechanical signals they send and receive
- 10:30–11:00 *Break*
- 11:00–12:00 **Michael Sheetz** (Columbia University)
Modeling of Cell Spreading Through Phases and Cytoskeletal Transport of Signals
- 12:00–1:30 *Lunch (on your own)*
- 1:30–2:30 **Jerome Percus** (New York University)
A Format for Molecular Motor Analysis
- 2:30–3:30 **Ronald Rock** (University of Chicago)
The Large Step Size of Myosin VI Requires Flexibility in the Proximal Tail Region
- 3:30–12:00 *Conclusion*
- 3:30 **David Colquhoun** (University College, London)
Single ion channels: theory and practice of the analysis of a single molecule

