



UNIVERSITY OF MASSACHUSETTS  
JOINT RETREAT CBI/BMB/BMP PROGRAMS  
MONDAY, JUNE 1ST, 2009

Hoagland-Pincus Conference Center, Shrewsbury, MA

*presented by*

Department of Biochemistry and Molecular Pharmacology  
*UMass, Worcester*

Department of Biochemistry and Molecular Biology  
*UMass, Amherst*

Chemistry and Biology Interface Program  
*UMass, Amherst*

# Schedule of Events

9:00 - 9:30 AM	Registration/ Hang <i>ALL</i> Posters
9:30 - 11:00 AM	Talks - Session I - <i>Amphitheater</i>
11:00 - 12:30 PM	Poster Session I – <i>Fuller Library</i>
12:30 PM – 1:30	Lunch – <i>Worcester Room</i>
1:00 - 2:30 PM	Inter-Program Softball Game
2:30 - 4:00 PM	Talks - Session II - <i>Amphitheater</i>
4:00 - 5:30 PM	Poster Session II – <i>Fuller Library</i> Happy Hour – <i>Worcester Room</i>

## Presentations – (*Amphitheater*)

### *Morning Session*                      *9:30 – 11:00 a.m.*

Dan Fowler Thompson Lab	Receptor Contacts in Active Signaling Arrays: Insights from Solid State NMR
Katryn Harwood Miller Lab	Leveraging a Small-Molecule Modification to Enable the Photoactivation of Rho GTPases
Anastasia Zhuravleva Gierasch Lab	Allosteric Mechanism of Hsp70 Molecular Chaperones
Melonnie Furgason Munson Lab	The N-Terminal Peptide of the Syntaxin Tlg2p Modulates Binding of its Closed Conformation to the Sec1/Munc18 Protein, Vps45

### *Afternoon Session*                      *2:30 – 4:00 p.m.*

Nat Clark Garman Lab	The Structure of Human Lysosomal Alpha-N-Acetylgalactosaminidase: The Molecular Basis of Schindler Disease
Madhavi Kolli Schiffer Lab	Co-evolution of HIV-1 Protease and its Substrates
Xiaoqing Liu Martin Lab	The Topological Lock: A New Paradigm for Understanding Stability In Transcription Elongation Complexes
Nynke van Berkum Dekker Lab	The Three Dimensional Organization of the Human Genome

# Poster Sessions

*\*Odd numbered posters will be presented at the morning session and even numbered at the afternoon session. Please hang your poster on the board with the appropriate number.*

## Poster #

## Title

1. "An Expanded Toolkit for Multi-Wavelength Single Molecule Fluorescence Analysis of Pre-mRNA Splicing in Crude Cell Extracts"  
Eric G. Anderson
2. "Structural and Biochemical Insights into Altered Drug Resistance Pathways in Non-Clade B HIV-1 Proteases"  
Rajintha Bandaranayake, Madhavi Kolli, Ellen Nalivaika, Nancy King and Celia Schiffer
3. "A 'Dark' to 'Bright' Fluorescent Reporter of Proteolytic Activity"  
Samantha Bernard and Jeanne A. Hardy
4. "Microsecond Timescale Acquisition of Heterogeneous Structure in the Folding of a TIM Barrel Protein"  
Ying Wu, Can Kayatekin, Elena Kondrashkina, C. Robert Matthew and Osman Bilseil
5. "Disruption of N-terminal Exocyst Binding Residues in Sec6p Identify a Stable Subcomplex"  
Daniel N. Brewer, Mary Munson
6. "Identification of Core Regions of In vitro and In vivo-formed Aggregates of Mutants of a beta-Clam Protein"  
Ivan Budyak
7. "Cellular Sunscreen: How DNA Repair Protein Mfd Protects Bacteria from DNA Damage"  
Melisa E. Burgos, Michael Murphy, and Karsten Theis
8. "Acylamido Analogs of Endocannabinoids Selectively Inhibit Cancer Cell Proliferation"  
Sumner Burstein and Rebecca Salmonsén
9. "Molecular Determinants of GLUT1 Oligomerization"  
Julie DeZutter, Kara Levine & Anthony Carruthers
10. "Design, Construction and Preliminary Characterization of a Segmentally Labeled DnaK"  
Eugenia M. Clerico, Anastasia Zhuravleva, Rob B. Smock and Lila M. Gierasch
11. "The RNA Binding Protein Musashi is a Regulator of Oligodendrocyte Differentiation"  
Carina C. Clingman, Sean P. Ryder
12. "Investigating the Clustering of Intact Transmembrane Serine Receptors of Escherichia coli in Bacterial Chemotaxis"  
Fe C. Consolacion, Robert M. Weis, Lynmarie K. Thompson
13. "Coordinated Post-transcriptional Regulation of C. elegans Embryogenesis"  
Brian M. Farley, Sean P. Ryder

14. "Identification of Core Regions of in vitro and in vivo-formed Aggregates of Variants of a beta-clam Protein"  
Mylene C. Ferrolino, Ivan L. Budyak and Lila M. Gierasch
15. "Red-Shifting the Emission of Luciferase for Improved Biomedical Imaging"  
Randheer Reddy Gadarla and Stephen C. Miller
16. "Studying Protein and Cell Adsorption over Nano Patterned Surfaces"  
Saugata Gon, Prof. Maria Santore
17. "A Pharmacological Chaperone, DGJ stabilizes  $\alpha$ -galactosidase (A Fabry Disease Lysosomal Enzyme)"  
Abigail I. Guce and Scott Garman
18. "Examining the Interaction of Protein Chaperone Hsp90 with Cdc37"  
Ryan Hietpas
19. "Crowding Effect on Protein Folding Energetics and Kinetics"  
Jiang Hong, Lila M Gierasch
20. "Rapid Production of a Protease Directed Peptide Library"  
Kristen L Huber, Kevin D. Olson, and Jeanne A Hardy
21. "Characterization of the Differential Binding of Perfringolysin O Derivatives to Live Cells"  
Benjamin B. Johnson, Paul C. Moe, Juan L. Anguita, Bernardo L. Trigatti, and Alejandro P. Heuck
22. "A Crucial Role for Branched Aliphatic Side Chain Residues in Stabilizing Partially-folded States Along Folding Reaction Coordinates"  
Sagar V Kathuria and C Robert Matthews
23. "Disulfide-Reduced ALS-Variants of Copper Zinc Superoxide Dismutase Are Partially Denatured"  
Can Kayatekin, Jill A. Zitzewitz, Nicole Washington and C. Robert Matthews
24. "A fast and reliable method to measure aggregation and Growth in Plant Cell Suspension Culture"  
Martin E. Kolewe, Michael A. Henson, Susan C. Roberts
25. "Investigating the Functional Dynamics of Bacterial Chemoreceptors Using Hydrogen Exchange Mass Spectrometry"  
Seena Koshy, Robert Weis, Lynmarie Thompson
26. "Low-Resolution Structure Mapping of an Aggregation Prone Intermediate in the Folding of Alpha-1 Antitrypsin"  
Beena Krishnan and Lila M. Gierasch
27. "The role of TOC receptor Dimerization in Controlling Protein Import into Chloroplasts"  
Jeonghwa Lee, Danny Schnell
28. "University of Massachusetts Worcester Foundation Campus Laboratory for Proteomic Mass Spectrometry"  
John Leszyk
29. "Mechanism of Antagonistic Dopamine Receptor Signaling in C. elegans"  
Kathryn N Maher and Dan Chase
30. "Beyond GFP: Toward Imaging Probes that are Smaller, Better, and Faster"  
Anjan K. Bhunia and Stephen C. Miller

31. "Probing Hydrophobic Core Sliding as a Possible Mechanism for Enzymatic Activity in Human Immunodeficiency Virus Type-1 Protease"  
Seema Mittal and Celia A. Schiffer
32. "Phospholipid Hydrolysis Caused by Clostridium Perfringens Alpha-toxin Facilitates the Targeting of Perfringolysin O to Membrane Bilayers"  
Paul C. Moe, Alejandro P. Heuck
33. "The Cooperativity of HbI: A Study of Protein Flexibility and Water Dynamics"  
Jennifer Mongeau and Francesca Massi
34. "Studies of the SV40 Proteins VP2, VP3, and VP4: Towards Understanding the Viral Penetration and Release Processes. "  
Kristina I. Moody, Robert Daniels and Daniel N. Hebert
35. "The Role of Flexibility in RNA Recognition and Binding in the Tandem Zinc Finger Domain of TIS11d"  
Brittany Morgan and Francesca Massi
36. "P-TEFb Kinase Complex Phosphorylates Histone H1 to Regulate Expression of HIV-1 and Cellular Genes Involved in Differentiation"  
Siobhan K. O'Brien, Tariq M. Rana
37. "RNA Recognition by the Cell Fate determinant MEX-3"  
John M. Pagano, Sean P. Ryder
38. "Crystal Structure of a Mutant Class II MHC with Greater Susceptibility to HLA-DM"  
Corrie Ann Painter, Zarixia Zaval-Ruiz and Larry Stern
39. "Loss of the ER Quality Control Aensor GT1 Results in Mislocalization of an Endogenous Aubstrate to Intracellular Deposits"  
Bradley R. Pearse, Taku Tamura, and Daniel N. Hebert
40. "Conformational Restrictions of HSP90 using a Coiled-Coil Motif at Its N-Terminus"  
LESTER PULLEN, DAN BOLON
41. "Characterizing Folding Intermediates of a Beta-clam Protein by FRET"  
Yadilette Rivera-Colonn,Harekrushna Sahoo, Lila Gierasch
42. "Inhibitory Effects of Rhodiola crenulata on an Invasive Immortal Human Cell Line"  
Adaris Rodriguez-Cortes, Kelly Gauger, and Sallie Smith Schneider
43. "Analyzing Drug Resistance in Terms of Substrate Recognition by HCV NS3/4A Protease"  
Keith Romano
44. "Analysis of the Structure and Assembly of the Pseudomonas aeruginosa Translocon Protein PopD in Membrane Bilayers"  
Kyle C. Rossi, Fabian B. Romano, Sarah E. Kells, and Alejandro P. Heuck
45. "Activation of Interferon Regulatory Factors Revealed By The Crystal Structure of Dimeric IRF-5"  
William E. Royer, Weijun Chen, Brendan Hilbert, Suvana Lam, Hema Srinath, Zhaozhao Jiang, John Correia, Celia Schiffer, Katherine Fitzgerald, Kai Lin

46. "Meis Cofactors Control HDAC and CBP Accessibility at Hox-regulated Promoters During Zebrafish Embryogenesis"  
Seong-Kyu Choe, Peiyuan Lu, Mako Nakamura, Jinhyup Lee and Charles Sagerstrom
47. "Identification of Putative Regulatory Elements Involved in Long-Range Control of the CFTR Locus"  
Emily Smith, Nele Gheldof and Job Dekker
48. "Optimizing Cell Encapsulation for Transplantation"  
Whitney Stoppel, Melissa Brown, Alan Schneyer, and Susan Roberts
49. "Conformational Dynamics and Interdomain Allostery in an Hsp70 Molecular Chaperone, E. coli DnaK"  
Rob Smock and Lila Gierasch
50. "Turnover of ER-associated Degradation Accelerating Factor, EDEM1, is Regulated by the Cytoplasmic Proteasome and Autophagy"  
Taku Tamura, James H. Cormier and Daniel N. Hebert
51. "Re-engineering Alpha Galactosidase for Enzyme Replacement Therapy of Shindler,Âs Patients"  
Ivan Tomasic, Matt Metcalf, Abigail Guce, Nathaniel Clark, Scott Garman
52. "Investigating The Role of Loop 7 of Sec61p in the Molecular Mechanism of ER Protein Translocation"  
Steven F. Trueman, Elisabet C. Mandon and Reid Gilmore
53. "Evidence Against "Scrunching" as a mechanism for abortive cycling in RNA polymerase initiation"  
Ankit V. Vahia and Craig T. Martin
54. "Determinants for stop-transfer and post-import pathways for protein targeting to the chloroplast inner envelope membrane"  
Antonio AB Viana, Ming Li and Danny Schnell
55. "Effect of Alanine Mutations on Ubiquitin Stability and Its Functionality in Yeast"  
Daniel Virgil and Daniel N. Bolon
56. "Seeing Proteins Inside Cells by In-cell NMR"  
Qinghua Wang, Anastasia Zhuravleva, Beena Krishnan, Lila M. Gierasch
57. "Investigating the Relationship between Protein Charge and Solubility with the Hsp90 Molecular Chaperone"  
Natalie Wayne and Dan Bolon
58. "Replication Forks: The Principle Substrate for the S-phase DNA Damage Checkpoint"  
Nick Willis and Nick Rhind
59. "Role of Caspase-7 L2' loop in active site formation and allosteric inhibition"  
Witold Witkowski and Jeanne Hardy
60. "Protein function and stability impose limits on the mutation rates"  
Konstantin Zeldovich
61. "Impact of Environment on the Folding Landscape of a beta-clam protein"  
Harekrushna Sahoo and Lila M. Gierasch