

# National Technology Centers for Networks and Pathways

2007 All-Hands Meeting

Lister Hill Auditorium

March 1-2, 2007

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## AGENDA

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**Thursday, March 1, 2007**

- 8 a.m.–12:30 p.m.                    **Morning Session: Overview, Interaction with Other Programs**
- 7:45 a.m.–5 p.m.                    **Registration**
- 8–8:20 a.m.                            **Continental Breakfast**
- 8:20–8:30 a.m.                        **Welcome, Introductions, Announcements**
- 8:30–8:45 a.m.                        **Opening Remarks**  
*Barbara M. Alving, M.D., Acting Director, National Center for Research Resources (NCRR)*
- 8:45–9 a.m.                            **Program Introduction**  
*Douglas Sheeley, NCRR*
- 9–9:25 a.m.                            **New Tools for Exploring the Dynamic Interactome**  
*Michael P. Rout, Rockefeller University*
- 9:25–9:50 a.m.                        **Center on Proteolytic Pathways**  
*Jeffrey W. Smith, Burnham Institute*
- 9:50–10:15 a.m.                       **Fluorescent Probes and Imaging for Networks and Pathways**  
*Alan S. Waggoner, Carnegie Mellon University*
- 10:15–10:30 a.m.                      **Break**
- 10:30–10:55 a.m.                      **Technology Center on Networks and Pathways of Lysine Modification**  
*Jef D. Boeke, Johns Hopkins University*
- 10:55–11:20 a.m.                      **Polarity in Networks and Pathways**  
*Ann Cowan, University of Connecticut School of Medicine and Dentistry*
- 11:20 a.m.–12:30 p.m.                **Overviews of Related National Institutes of Health (NIH) Programs and Panel Discussion**
- The NIH Roadmap for Structural Biology**  
*John Norvell and Jean Chin, National Institute of General Medical Sciences (NIGMS)*
- Probe Production from NIH's Molecular Libraries Initiative**  
*Carson Loomis, National Human Genome Research Institute (NHGRI)*
- Exploratory Centers for Development of High Resolution Probes for Cellular Imaging**  
*Richard Rodewald, NIGMS*
- The National Heart, Lung, and Blood Institute (NHLBI) Proteomics Consortium**  
*Susan Old, NHLBI*
- NIH National Centers for Biomedical Computing: Building Collaborations**  
*Jennifer Larkin, NHLBI*

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- 12:30–1:30 p.m.                    **Lunch** (on your own)
- 1:30–5 p.m.                        **Afternoon Session: Imaging and Probes**
- 1:30–2:05 p.m.                    **Protease Activity Imaging Technology**  
*Jeffrey W. Smith, Burnham Institute*
- 2:05–2:40 p.m.                    **New Probes for Networks and Pathways**  
*Peter Berget, Carnegie Mellon University*
- 2:40–3:15 p.m.                    **Probing Networks and Pathways with Holographic Optical Tweezers**  
*Eric Dufresne, Yale University*
- 3:15–3:45 p.m.                    **Break**
- 3:45–4:20 p.m.                    **Recent Advances in Proteomics Integrated with Fluorescence Imaging**  
*Ileana Cristea, Rockefeller University*
- 4:20–5 p.m.                        **Advances in Imaging Instrumentation and Applications**  
*Simon Watkins, University of Pittsburgh and Marcel Bruchez, Carnegie Mellon University*
- 5:00–7:30 p.m.                    **Dinner** (on your own)
- 5:00–7:30 p.m.                    Dinner meeting of NTCNP Steering Committee (Marriott)
- 7:30–9:30 pm                      **Poster Session, Bethesda Marriott at Pooks Hill**  
All are welcome

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### Friday, March 2, 2007

- 8 a.m.–12:30 p.m. **Morning Session: Modeling, Computation, and Informatics**
- 7:45 a.m.–3:30 p.m. **Registration**
- 8–8:20 a.m. **Continental Breakfast**
- 8:20–8:30 a.m. **Announcements**
- 8:30–9:05 a.m. **Image Informatics Tools in Support of Systems Modeling**  
*Robert Murphy, Carnegie Mellon University*
- 9:05–9:40 a.m. **The Virtual Cell**  
*James Schaff, University of Connecticut Health Center*
- 9:40–10:15 a.m. **Mapping Pathways from the Outside in**  
*Joel Bader, Johns Hopkins Medical Institutions*
- 10:15–10:30 a.m. **Break**
- 10:30–11:05 a.m. **P-MAP: The Proteolysis Map**  
*Adam Godzik, Burnham Institute*
- 11:05–11:40 a.m. **Modeling of Macromolecular Assemblies by Satisfaction of Spatial Restraints**  
*Frank Alber, University of California, San Francisco*
- 11:40 a.m.–12:15 p.m. **Tools for Collaboration: Primers on the NTCNP Wiki and VDC**  
*Ion Moraru, University of Connecticut Health Center*
- Nanomedicine Development Centers an Overview for the TCNP Grantees**  
*David Balshaw, National Institute of Environmental Health Sciences*
- 12:15–1:15 p.m. **Lunch** (on your own)
- 1:15–3:35 p.m. **Afternoon Session: High-throughput Technologies**
- 1:15–1:50 p.m. **High-throughput Microarray Analysis**  
*John Aitchison, Institute for Systems Biology*
- 1:50–2:25 p.m. **Detection of Proteolytic Signatures by Mass Spectrometry**  
*Mari Enoksson, Burnham Institute*
- 2:25–2:55 p.m. **Unraveling Lysine Modifications Using a Protein Chip Approach**  
*Heng Zhu, Johns Hopkins Medical Institutions*
- 2:55–3:05 p.m. **Tandem Time-of-Flight Mass Spectrometry Analysis of Lysine Modifications**  
*Robert J. Cotter, Johns Hopkins Medical Institutes*
- 3:05–3:35 p.m. **High-throughput Technologies and Resources for Studies of Lysine Modification**  
*Jef Boeke, Johns Hopkins Medical Institutions*
- 3:35 p.m. **Meeting Adjourn**

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## POSTER SESSION

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### **1. Analysis of microscopy data using modeling and simulation**

University of Connecticut Health Center

Presenting Author: James Schaff

Additional Authors: Anuradha Lakshminarayana, Frank Morgan, Fei Gao,

### **2. Near Infrared fluorescent probes of cysteine protease activity: Applications to cancer imaging**

Stanford University

Presenting Author: Galia Blum

Additional Authors: Georges von Degenfeld, Milton Merchant, Helen Blau, Matthew Bogoyo

### **3. A rule-based model of F-actin that enumerates branched actin networks**

University of Connecticut Health Center

Presenting Author: Michael Blinov

Additional Authors: Leslie Loew

### **4. BioNetGen at the Virtual Cell: extending biomolecular interactions to account for combinatorial complexity**

University of Connecticut Health Center

Presenting Author: Michael Blinov

Additional Authors: James Schaff, Anuradha Lakshminarayana, Fei Gao, Leslie Loew

### **5. Computational Investigation of Fluorogenic Dyes for Biological Imaging of Networks and Pathways**

Carnegie Mellon University

Presenting Author: David Yaron

Additional Authors: Volkan Ediz, Gloria L. Silva, Bruce A. Armitage

### **6. Nonlinear Optical Probes for 1064 nm Laser**

University of Connecticut Health Center

Presenting Author: Ping Yan

Additional Authors: Andrew Millard, Thomas Teisseyre, Mei-de Wei, Leslie Loew

### **7. Automated Image Analysis of Protein Localization in Budding Yeast**

Department of Biomedical Engineering, Carnegie Mellon University

Presenting Author: Shann-Ching Chen

Additional Authors: Ting Zhao, Geoffrey Gordon, Robert Murphy

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## POSTER SESSION

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### **8. Development of a New Fluoromodule Consisting of a Fluorogenic Cyanine Dye and an RNA Aptamer**

Carnegie Mellon University, Chemistry Department

Presenting Author: Tudor Constantin

Additional Authors: Gloria Silva, Kaitlin Fague, Bruce Armitage

### **9. High-throughput phenotypic profiling of synthetic histone mutations**

Johns Hopkins Univ School of Medicine

Presenting Author: Daniel Yuan

Additional Authors: Junbiao Dai, Edel Hyland, Jef Boeke

### **10. Utilizing Membrane Probes to understand cell fusion in *C. elegans***

University of Connecticut School of Medicine and Dentistry

Presenting Author: Star Ems

Additional Authors: William Mohler, Leslie Loew

### **11. Transcription Elongation Control Through a Novel Site of Histone Methylation in *Saccharomyces cerevisiae***

Johns Hopkins Medical Institute

Presenting Author: Edel Hyland

Additional Authors: Henrik Molina, Akhilesh Pandey, Jef Boeke

### **12. Affinity Maturation of Single Chain Antibody MG16**

Carnegie Mellon University

Presenting Author: Carol Woolford

Additional Authors: Sarah Capek, Chris Szent-Gyorgyi, Yehuda Creeger, Peter Berget

### **13. GeneDesign: Rapid, Automated Design of Multikilobase Synthetic Genes**

Johns Hopkins University School of Medicine

Presenting Author: Sarah Richardson

Additional Authors: Sarah Wheelan, Robert Yarrington, Jef Boeke

### **14. Where have all the interactions gone? Estimating the coverage of two-hybrid protein interaction maps**

Johns Hopkins University

Presenting Author: Hailiang Huang

Additional Authors: Bruno Jedynek, Joel Bader

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### **15. Phagocytic tentacles: Filopodia pull with discrete steps and a load-dependent velocity**

Yale University

Presenting Author: Holger Kress

Additional Authors: Ernst Stelzer, Gareth Griffiths, Alexander Rohrbach

### **16. Chemical Probes for LSD1 Histone Demethylase**

Johns Hopkins School of Medicine

Presenting Author: Lawrence Szewczuk

Additional Authors: Jeffrey Culhane, Maojun Yang, Hongtao Yu, Philip Cole

### **17. dSLAM queried with essential genes**

Johns Hopkins University School of Medicine

Presenting Author: Yu-yi Lin

### **18. DNA Sequence Characteristics of Promoters Correlate with Different Histone H3 Lysine 9 Modifications and RNA Polymerase 2 Binding.**

Laboratory of metabolism NIH/NCI

Presenting Author: Julian Rozenberg

Additional Authors: Andrey Shlyakhtenko, Kimberly Glass, Peter FitzGerald, Charles Vinson

### **19. Manipulating the affinity and specificity of polyubiquitin binding UBA domains**

Johns Hopkins University

Presenting Author: Josh Sims

Additional Authors: Robert Cohen, Cecile Pickart

### **20. A Selective Chemical Probe for Coenzyme-A Requiring Enzymes**

The Johns Hopkins University

Presenting Author: Yousang Hwang

Additional Authors: Philip Cole, Lihua Jiang, Neil Kelleher, Paul Thompson

### **21. Analysis of Lysine PTMs by Mass Spectrometry: Wrestling with SUMO; and Quantitation of Acetylation in Histones**

Johns Hopkins University School of Medicine

Presenting Author: Wendell P. Griffith

Additional Authors: Ivana Celic, Alain Verreault, Jef Boeke, Robert J. Cotter

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### **22. Structural basis for protein acetylation by the p300/CBP HAT family**

Johns Hopkins University, School of Medicine

Presenting Author: Ling Wang

Additional Authors: Xin Liu, Ronen Marmorstein, Philip A. Cole

### **23. Using Microarrays to Define Genetic Interactions in Budding Yeast : A Progress Report on d-SLAM**

Johns Hopkins University School of Medicine

Presenting Author: Pamela Meluh

Additional Authors: Daniel Yuan, Brian Peyser, Rafael Irizarry, Jef Boeke

### **24. CutDB: a proteolytic event database**

The Burnham Institute for Medical Research

Presenting Author: Alexey Eroshkin

Additional Authors: Yoshinobu Igarashi, Yolanda Zhang, Piotr Cieplak, Svetlana Gramatikova

### **25. Proteolysis Map (PMAP): Research Applications of a Reasoning Environment for Proteolysis. I. From Proteases to Substrates**

The Burnham Institute for Medical Research

Presenting Author: Alexey Eroshkin

Additional Authors: Yoshinobu Igarashi, Piotr Cieplak, Yolanda Zhang, Andrei Osterman

### **26. Proteolysis Map (PMAP): Research Applications of a Reasoning Environment for Proteolysis. II. From Substrates to Pathways**

The Burnham Institute for Medical Research

Presenting Author: Alexey Eroshkin

Additional Authors: Yoshinobu Igarashi, Sarah Boyd, Adam Godzik, Jeffrey Smith

### **27. Study Cellular Signaling by means of Multiphoton Nanofabrication**

University of Connecticut Health Center

Presenting Author: Xiyi Chen

Additional Authors: Matthew Veilleux, Lawrence Cunningham, Vladimir Rodionov, Paul Campagnola

### **28. Protein Subcellular Location Image Database for Comprehensive Image Retrieval and Automated Interpretation**

Carnegie Mellon University

Presenting Author: Estelle Glory

Additional Authors: Juchang Hua, Ting Zhao, Yanhua Hu, Shann-Ching Chen, Amol Shanbhag, Justin Newberg, Elvira Garcia Osuna, Robert F. Murphy

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### **29. Proteomic Screen to Identify Novel and Linkage-specific Polyubiquitin Receptors**

Johns Hopkins University

Presenting Author: Eric M. Cooper

Additional Authors: Matthew Lebsack, Heng Zhu, Robert E. Cohen, Cecile M. Pickart

### **30. Protein Microarray Technology Development**

Johns Hopkins University School of Medicine

Presenting Author: Sheng-Ce Tao

Additional Authors: Kenyon Evans-Nguyen, Robert J. Cotter, Heng Zhu

### **31. Development of Kinase Biosensors: Protein Engineering of Single Chain Antibodies (scFvs)**

Carnegie Mellon University

Presenting Author: Nina Senutovitch

Additional Authors: Peter Berget, Alan Waggoner