

Meeting Organizer:

Patricia L. Clark, *University of Notre Dame*

Program Committee:

Connie Jeffery, *University of Illinois at Chicago*

Lisa Lapidus, *Michigan State University*

Conference Venue:

Jordan Hall of Science
University of Notre Dame
574-631-6456

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16th Midwest Conference on Protein Folding, Assembly & Molecular Motions

April 29, 2023

Jordan Hall of Science – University of Notre Dame

8:15 – 8:55 *Coffee, juice, and pastries*

8:55 – 9:00 *Opening Remarks* – Patricia L. Clark

Opening Plenary Speaker

9:00 – 9:30 Fic-mediated AMPylation in protein folding

Seema Mattoo

Department of Biological Sciences, Purdue University, West Lafayette, IN 47907

Protein Aggregation

Chair: Arghya Chakravorty (Brooks Lab, University of Michigan)

9:30 – 9:50 Global proteome metastability response in isogenic animals to missense mutations and polyglutamine expansions in aging
Xiaojing Sui¹, Miguel A. Prado², Joao A. Paulo², Steven P. Gygi², Daniel Finley², Richard I. Morimoto¹

¹Department of Molecular Biosciences; and Rice Institute for Biomedical Research, Northwestern University, IL 60208

²Department of Cell Biology, Harvard Medical School, Boston, MA 02115

9:50 – 10:10 Molecular Chaperones Influence the Aggregation of Transthyretin (TTR)
Adam S. Knier, Hannah E. Buchholz, Emily E. Davis, Jane E. Dorweiler, Anita L. Manogaran

Department of Biological Sciences, Marquette University, Milwaukee, WI.

10:10 – 10:30 Interplay between CsgF biomolecular condensates and bacterial curli biogenesis
Hema M. Swasthi, Joseph L. Basalla, Claire Dudley, Anthony G. Vecchiarelli, and Matthew R. Chapman

Department of Molecular, Cellular, and Developmental Biology, University of Michigan, Ann Arbor, MI 48109-1048 USA

10:30 – 11:00 *Coffee Break*

Protein Assembly and Motions

Chair: Ken Tsui (Ma Lab, University of Illinois Chicago)

11:00 – 11:20 Insight into the nucleotide based modulation of the Grp94 molecular chaperone using multiscale dynamics

John Paul Alao, Ikponwmosa Obaseki, Yaa Sarfowah Amankwah, Quynh Nguyen, Meghana Sugoor, Hannah Popoola, Erin Unruh, Riina Tehver, and Andrea N. Kravats

Department of Chemistry & Biochemistry, Miami University, Oxford, Ohio

11:20 – 11:40 Crowding in human cells facilitates assembly of an orthogonal tubulin system

Yuhan Wang¹, Mahima Unnikrishnan², Brooke Ramsey¹, Driss E. Andlosy³, Alex Keeley², Catherine J. Murphy², and Martin Gruebele^{1,2,4}

¹ Center for Biophysics and Quantitative Biology, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA.

² Department of Chemistry, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA.

³ Computer Science and Technologies Department, Parkland Community College, Champaign, IL 61821, USA.

⁴ Department of Physics, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA.

11:40 – 12:00 Homomeric Protein Assembly In Vivo

McKenze J. Moss & Patricia L. Clark

Department of Chemistry & Biochemistry, University of Notre Dame, Notre Dame, IN, 46556 USA

12:00 – 1:15 Lunch

1:15 – 2:40 Poster Session

Liquid-liquid Phase Separation

Chair: Cedrick Mukinay (Clark Lab, University of Notre Dame)

2:40 – 3:00 The Effect of Polymer Length in Liquid-Liquid Phase Separation

Kasun Gamage, Gilberto Valdes-Garcia, Casey Smith, Karina Martirosova, Michael Feig, Lisa J. Lapidus

Department of Physics and Astronomy, Michigan State University, East Lansing, MI 48824

3:00 – 3:20 Conformational properties of a protein-RNA complex determine its phase behavior

Rishav Mitra^{1,2,a}, Matthew J. Crotteau^{1,2}, Varun V. Gadkari^{3,b}, Kevin E. W. Namitz^{4,5}, Neela Yennawar⁴, Brandon T. Ruotolo³, Scott A. Showalter⁵, and James C. A. Bardwell^{1,2,c}

1 – Howard Hughes Medical Institute, University of Michigan, Ann Arbor, MI 48109

2 – Dept. of Molecular, Cellular, and Developmental Biology, University of Michigan, Ann Arbor, MI 48109, USA

3 – Dept. of Chemistry, University of Michigan, Ann Arbor, MI 48109, USA

4 – The Huck Institutes of the Life Sciences, The Pennsylvania State University, University Park, PA 16802

5 – Dept. of Chemistry, The Pennsylvania State University, University Park, PA 16802

3:20 – 3:40 No granules, no problem: Stress granules are not required for mRNA condensation or translational regulation during stress
Caitlin Wong Hickernell, Hendrik Glauninger, Jared A.M. Bard, Edward Wallace, D. Allan Drummond
Department of Biochemistry and Molecular Biology, University of Chicago, Chicago, IL

3:40 – 4:00 Thermodynamic specificity controls Pab1 condensate structure across temperatures and orthologs
Hendrik Glauninger, Ruofan Chen, Samantha Keyport Kik, D. Allan Drummond, Tobin Sosnick
Department of Biochemistry and Molecular Biology, University of Chicago, Chicago, IL

4:00 – 4:20 *Coffee Break*

Connections to Biology

Chair: Clinton Gabel (Chang Lab, Purdue University)

4:20 – 4:40 Development of a detergent free bar-coded binding assay unveils the biophysical basis for Ubiquitin substrate selectivity
Shawn Allen, Joan Onwunma, Matthew Wohlever
Department of Chemistry and Biochemistry, University of Toledo, Toledo, OH 43606

4:40 – 5:00 Breaking the iron piracy code of the Tbp system from pathogenic Neisseria
Shubham Dubey, Gabriel Gabriel S Bury, Yulia Pushkar, and Nicholas Noinaj
Department of Biological Sciences, Purdue University, West Lafayette, IN 47907

Closing Plenary Speaker

5:00 – 5:30 Exploring Protein Thermostability in Plant Photorespiratory Pathways
Josh Vermaas
Department of Biochemistry & Molecular Biology, Michigan State University, East Lansing, MI 48824

5:30 – 5:35 *Closing Remarks – Connie Jeffrey*

5:35 – 6:30 *Closing Reception*