

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:

Notre Dame Conference Center

McKenna Hall

University of Notre Dame

574-631-6691

Financial support for this Conference is gratefully acknowledged from:

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Department of Chemistry & Biochemistry, University of Notre Dame
Thomas R. Kissel Endowment for Excellence in Chemistry

College of Science, University of Notre Dame

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14th Midwest Conference on Protein Folding, Assembly and Molecular Motions

Notre Dame Conference Center – McKenna Hall – University of Notre Dame

May 4, 2019

8:30 – 8:55 *Coffee, juice, and pastries*

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

Proteins In Vivo

Chair: Elizabeth Gichana (Chapman Lab, Univ. Michigan)

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Opening Plenary Speaker

9:00 – 9:30 *The Para/MinD family of ATPases make waves to position DNA, cell division
& organelles in bacteria*

Anthony Vecchiarelli

Department of Molecular, Cellular, and Developmental Biology, University of Michigan,
AnnArbor

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9:30 – 9:50 *Cell Volume Controls Protein Stability and Compactness of the
Unfolded State*

Yuhan Wang,^{†,||} Shahar Sukenik,^{*,||,#} Caitlin M. Davis,^{‡,§} and Martin Gruebele^{*,†,‡,§}

[†]Center for Biophysics and Computational Biology, University of Illinois, Urbana, Illinois 61801, United States;
[‡]Department of Chemistry, University of Illinois, Urbana, Illinois 61801, United States;

[§]Department of Physics, University of Illinois, Urbana, Illinois 61801, United States; [#]Department of Chemistry and Chemical Biology, University of California, Merced; ^{||}Equally contributing authors,

^{*}Corresponding authors

9:50 – 10:10 *Polymerizing the Fiber Between Bacteria and Parkinson's Disease*

Sujeet S. Bhoite, Neha Jain and Matthew R. Chapman

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

10:10 – 10:40 *Coffee Break*

Binding & Phase Separation

Chair: Gopika Gopen (Gruebele Lab, UIUC)

- 10:40 – 11:00 *Molecular factors underlying stress-triggered phase separation of Pab1*
Ruofan Chen³, Darren Kahan^{1,2}, Joshua A. Riback², Christopher D. Katanski¹, D. Allan Drummond^{2,4*}, Tobin R. Sosnick^{1,2*}
¹Department of Biochemistry & Molecular Biology, University of Chicago, Chicago, IL 60637
²Institute for Biophysical Dynamics, University of Chicago, Chicago, IL 60637
³Institute for Molecular Engineering, University of Chicago, Chicago, IL 60637
⁴Department of Human Genetics, University of Chicago, Chicago, IL 60637

- 11:00 – 11:20 *Dissociation Pathway of Selective Ligand PK11195 from TSPO*
Thomas Dixon^{1,2} and Alex Dickson^{2,1}
1: Department of Computational Mathematics, Science and Engineering, Michigan State University, East Lansing, Michigan
2: Department of Biochemistry and Molecular Biology, Michigan State University, East Lansing, Michigan

- 11:20 – 11:40 *Structural heterogeneity of the protein Cdt1 in the formation of kinetochore - microtubule attachments*
Kyle Smith¹, Srinivas Chakravarthy², Jared Young³, Arabela Grigorescu⁴, Joseph Curtis⁵, Dileep Varma¹
1 Department of Cell & Molecular Biology, Northwestern University, Chicago, IL
2 Biophysics Collaborative Access Team, Argonne National Laboratory, Argonne, IL
3 Elion Labs, Louisville, CO
4 Keck Biophysics Facility and Department of Molecular Biosciences, Northwestern University, Evanston, IL
5 National Institutes of Standards and Technology, Gaithersburg, MD

11:45 – 1:30 *Lunch*

1:30 – 3:00 *Poster Session*

Protein Screening & Sequence Scanning

Chair: Anabel Rodriguez (Clark Lab, Univ. Notre Dame)

- 3:00 – 3:20 *The structural basis for protein energy landscapes in a de novo designed proteome*
Gabriel J. Rocklin¹, Scott Houliston², Lauren Carter³, Cheryl Arrowsmith², Miklos Guttman⁴, David Baker^{3,5}
¹Department of Pharmacology & Center for Synthetic Biology, Northwestern University, Chicago, IL
²Structural Genomics Consortium, University of Toronto, Toronto, Ontario, Canada ³Department of Biochemistry & Institute for Protein Design, University of Washington, Seattle, WA ⁴Department of Medicinal Chemistry, University of Washington, Seattle, WA ⁵HHMI

- 3:20 – 3:40 *Quantitative Prediction of Bacterial Fitness from Protein Biophysics*
Catherine R. Knoverek and Gregory R. Bowman

Department of Biochemistry and Molecular Biophysics, Washington University School of Medicine, St. Louis, MO 63110

- 3:40 – 4:00 *Evaluating Biophysical Constraints on the Sequence of Rhodopsin by Deep Mutational Scanning*
Charles P. Kuntz,¹ Francis J. Roushar,¹ Laura M. Chamness,¹ Wesley D. Penn,¹ Bian Li,² Hope Woods,² Beata Jastrzebska,³ Jens Meiler² & Jonathan P. Schleich^{1*}
¹ Department of Chemistry, Indiana University, Bloomington, IN USA 47405
² Department of Chemistry, Vanderbilt University, Nashville, TN USA 37235
³ Department of Pharmacology, Case Western Reserve University, Cleveland, OH USA 44106

4:00 – 4:30 *Coffee Break*

Protein Quality Control

Chair: Iker Soto (Clark Lab, Univ. Notre Dame)

- 4:30 – 4:50 *Dispersal of stress-induced poly(A)-binding protein aggregates (Pab1) by the Hsp104 disaggregation system*
Haneul Yoo, Evgeny Pilipenko, D. Allan Drummond
Department of Biochemistry and Molecular Biology, University of Chicago, Chicago, IL

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Closing Plenary Speaker

- 4:50 – 5:20 *Quality Control of Mitochondrial Membrane Proteins*
Heidi Fresenius, Mackenzie Dolacki, Shreya Gumidyala, Chaitanya Koli, Ashley Scheutzw, Nadia Sherman, Gracie Siffer, Nathan Walker, and Matthew L. Wohlever
Department of Chemistry and Biochemistry, The University of Toledo, 2801 Bancroft Street, Toledo, OH 43606 USA

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5:20 – 5:25 *Closing Remarks – Connie Jeffrey*

5:25 – 6:30 *Closing Reception*