23rd Annual Midwest Stress Response and Molecular Chaperone Meeting

Saturday, January 13, 2018
Northwestern University
James L. Allen Center, Evanston, IL

Program Chairs
Tali Gidalevitz, Drexel University
Cindy Voisine, Northeastern Illinois University

Meeting Organizers
Richard I. Morimoto, Northwestern University
Georgette Pliml, Northwestern University

This meeting is generously supported by
The Daniel F. and Ada L. Rice Institute for Biomedical Research

7:30–8:55 AM  Continental Breakfast
1st Floor Lounge (located behind the McCormick Tribune Auditorium)

8:55–9:00 AM  Opening Remarks
McCormick Tribune Auditorium

Function and Regulation of Chaperones
Session Chair: Andrew Truman, University of North Carolina at Charlotte

9:00–9:20 AM  Broadening the functionality of a J-protein/Hsp70 molecular chaperone system
Szymon J. Ciesielski¹, Brenda A. Schilke¹, Thomas Ziegelhoffer and Elizabeth A. Craig
Department of Biochemistry, University of Wisconsin-Madison, 433 Babcock Drive, Madison, WI 53706, USA
¹These authors contributed equally.

9:20–9:40 AM  Co-chaperones Cooperate with β-Catenin to Regulate the Androgen Receptor BF3 Surface
Nina Ortiz, Kathia Rodarte and Marc B. Cox
Department of Biological Sciences and Border Biomedical Research Center, The University of Texas at El Paso, El Paso, TX

9:40–10:00 AM  A polyphosphate-Hsp48 biomolecular condensate protects against protein aggregation during Dictyostelium discoideum development
Stephanie Santarriaga¹, Alicia Fikejs¹, Jamie Scaglione¹,², K Matthew Scaglione¹
¹Medical College of Wisconsin, Department of Biochemistry, Milwaukee, WI; ²Carroll University, Department of Computational and Physical Sciences, Waukesha, WI
10:00-10:20 AM  **Understanding the global architecture and topology of Hsp70 complexes using high-resolution cross-linking mass spectrometry**  
Nikita ¹, Jacek Sikora ², Luca Fornelli ², Paul M. Thomas ² and Andrew W. Truman ¹  
¹Department of Biological Sciences, University of North Carolina Charlotte, NC, USA.  
²Proteomics Center of Excellence, Northwestern University, Evanston, IL, USA

10:20-10:40 AM  **COFFEE BREAK** *(1st Floor Lounge behind the McCormick Tribune Auditorium)*

**Misfolding in the Endoplasmic Reticulum**  
Session Chair: Rocío Gomez-Pastor, University of Minnesota

10:40-11:00 AM  **ER-Associated Degradation is Required for Vasopressin Prohormone Processing and Systemic Water Homeostasis**  
Subtitle: The Regulatory Roles of Sel1L-Hrd1 ERAD from Protein to Physiology  
Guojun Shi ¹, Diane Somlo ², Geun Hyang Kim ¹, Peter Arvan ³, Martin Spiess ⁴, Ling Qi ¹  
¹Department of Molecular & Integrative Physiology, University of Michigan Medical School, Ann Arbor, MI 48105, USA; ²Division of Nutritional Sciences, Cornell University, Ithaca, NY 14853, USA; ³Division of Endocrinology & Metabolism, Endocrinology & Metabolism, University of Michigan Medical School, Ann Arbor, MI 48105, USA; ⁴Biozentrum, University of Basel, Klingelbergstrasse 70, CH-4056 Basel, Switzerland

11:00-11:20 AM  **Investigating the roles of molecular chaperones during the Endoplasmic Reticulum Associated Degradation (ERAD) of a cholesterol transporting lipoprotein**  
Deepa Kumari, Lynley M. Doonan, and Jeffrey L. Brodsky  
Department of Biological Sciences, University of Pittsburgh, Pittsburgh, PA, USA

11:20-11:40 AM  **Influence of Topological Energetics on the Cellular Proteostasis of Integral Membrane Proteins**  
Frank Roushar ¹, Wes Penn ¹, Timothy Gruenhagan ¹, Beata Jastrzebska ², and Jonathan Schlebach ¹  
¹Department of Chemistry, Indiana University, Bloomington, IN  
²Department of Pharmacology, Case Western Reserve University, Cleveland, OH

11:40 AM-12 PM  **Target-specific rather than global effects on ER folding homeostasis explain the selectivity of neuronal dysfunction due to broadly-expressed misfolded protein.**  
Lauren Klabonski, Ji Zha, Lakshana Senthilkumar, and Tali Gidalevitz  
Department of Biology, Drexel University, Philadelphia, PA

**Plenary Talk**  
Session Chair: Kevin Morano, McGovern Medical School at UTHealth

12:00-12:45 PM  **Sensing and Responding to Stress in Yeast and Mammals via Heat Shock Factors**  
Dennis Thiele  
Duke University School of Medicine, Durham, NC

12:45-1:45 PM  **Lunch in the Atrium Dining Room**

1:45-3:00 PM  **Poster Session**  
Room 153 (behind the McCormick Tribune Auditorium and next to the 1st floor lounge)
Cellular Stress
Session Chair: Jian Li, Oklahoma Medical Research Foundation

3:00-3:20 PM  The Aging Gene lamin Is Regulated by the p38 MAPK and the CASA Complex
Michael J. Almassey1, Sarah M. Ryan1,2, Basheer Beccera1, Kaitie Wildman1, Nathan T. Mortimer1, Alysia D. Vrailas-Mortimer1
1School of Biological Sciences, Illinois State University, Normal, IL; 2 Department of Biological Sciences, University of Denver, Denver, CO.; 3 Chemical and Biological Engineering Department, Colorado School of Mines, Golden, CO

3:20-3:40 PM  p53 regulates Heat Shock Factor 1 degradation and impairs excitatory synapse formation in Huntington’s Disease
Rocio Gomez-Pastor
Department of Neuroscience. University of Minnesota, Minneapolis, MN

3:40-4:00 PM  Rapid heat-shock response depends on intracellular pH
Catherine G. Triandafillou1, Aaron R. Dinner2, D. Allan Drummond3
1 Biophysical Sciences Graduate Program, The University of Chicago; 2 James Franck Institute, The University of Chicago; 3 Department of Biochemistry and Molecular Biology, The University of Chicago, Chicago, IL

4:00-4:20 PM  The landscape of transcription error and the role it plays in organismal health
S. Haroon1, C. Fritsch2, W. Li3, J.F. Gout4, M. Vermulst1, 2
1 Department of Pathology and Laboratory Medicine, Children’s Hospital of Philadelphia, PA; 2 Department of Pathology and Laboratory Medicine, University of Pennsylvania, Philadelphia, PA; 3 Department of Biology, Indiana University, Bloomington, IN

4:20-4:40 PM  Synonymous Codon Usage Affects E. coli Fitness
Ian M. Walsh & Patricia L. Clark
Department of Chemistry and Biochemistry
University of Notre Dame, Notre Dame, IN 46656

4:40-5:00 PM  COFFEE BREAK (1st Floor Lounge behind the McCormick Tribune Auditorium)

Pathological and Protective Aggregation
Session Chair: Alysia Vrailas-Mortimer, Illinois State University

5:00-5:20 PM  Quinary structure kinetically controls protein function and dysfunction
Tarique Khan1,3, Tebhir S. Kandola1,3, Jianzheng Wu1,2,3, Ellen Ketter1,3, Shriram Venkatesan1, Jeffrey J. Lange1, Alejandro Rodriguez Gama1, Andrew Box1, Jay R. Unruh1, Malcolm Cook1, and Randal Halfmann3
1 Stowers Institute for Medical Research, 1000 East 50th Street, Kansas City, MO 64110
2 Department of Molecular and Integrative Physiology, University of Kansas Medical Center, 3901 Rainbow Boulevard, Kansas City, KS 66160, USA
3 These authors contributed equally

5:20-5:40 PM  A novel type of molecular chaperone utilizes an amyloid decoy to prevent polyglutamine aggregation
Stephanie Santarriaga1, Adam J. Kanack1, Holly N. Haver1, Alicia Fikejs1, Samantha L. Sison2, Jonathan R. Bostrom2, Emily R. Seminary2, Brian A. Link2, Allison D. Ebert2, & K. Matthew Scaglione1
Molecular chaperones disperse Pab1 hydrogel more quickly than misfolded aggregates

Haneul Yoo, Evgeny Pilipenko, D. Allan Drummond
Department of Biochemistry and Molecular Biology, University of Chicago, Chicago, IL