28th Annual Midwest Stress Response and Molecular Chaperone Conference

Saturday, January 21, 2023
Hosted by Northwestern University
James L. Allen Center
2211 Campus Drive
Evanston, Illinois 60208

Program Chairs
Marc Mendillo, Biochemistry and Molecular Genetics
Northwestern University

Patricia van Oosten-Hawle, Department of Biological Sciences,
University of North Carolina, Charlotte

Laura Bott, Department of Molecular Biosciences,
Northwestern University

Meeting Organizers
Rick Morimoto, Department of Molecular Biosciences,
Northwestern University

Rebecca Phend, Department of Molecular Biosciences,
Northwestern University

PROGRAM

All times in CST

7:30 - 9:00 AM  Continental Breakfast

9:00 - 9:05 AM  Opening remarks- Rick Morimoto, Northwestern University

Session I: Cancer and Proteostasis

Session Chair: Richard Carpenter, Indiana University School of Medicine - Bloomington, IN

9:05 - 9:20 AM  Co-deletion of ATAD1 with PTEN primes cells for BIM-mediated apoptosis

Heidi L. Fresenius, Jacob M. Winter, Jared Rutter, and Matthew L. Wohlever
Department of Chemistry and Biochemistry, The University of Toledo, Toledo, OH

9:20 - 9:35 AM  c-Src is a master regulator of extracellular Hsp90 chaperone machinery
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**Sarah J. Backe**, Sarah Beth D. Votra, Matthew P. Stokes, Matteo Castelli, Luca Torielli, Giorgio Colombo, Mark R. Woodford, Mehdi Mollapour, and Dimitra Bourboulia
*Department of Urology, Upstate Cancer Center, State University of New York, Upstate Medical University, Syracuse, NY*

**9:35 - 9:50 AM**
Protein Folding Chaperones Detect BRCA1 Mutation Severity

**Brant Gracia**, Angelica Gutierrez Barrera, Banu Arun, Georgios Karras
*Department of Genetics, The University of Texas MD Anderson Cancer Center, Houston, TX*

**9:50 - 10:05 AM**
The HAPSTR2 retrogene buffers resilience in mammals

**David R. Amici**, Harun Cingoz, Milad J. Alasady, Sammy Alhayek, Claire M. Phoumyvong, Marc L. Mendillo
*Dept. of Biochemistry and Molecular Genetics, Northwestern University Feinberg School of Medicine, Chicago, IL*

**Session II- Chaperone Function and Regulation**
**Session Chair:** Dimitra Bourboulia, State University of New York, Upstate Medical University, Syracuse, NY

**10:05 - 10:20 AM**
The Hsp70 chaperone code regulates the core heat shock response

**Siddhi Omkar**, Elizabeth M. Abedi, Moritz Muehlhofer, D. Allan Drummond, Johannes Buchner, and Andrew W. Truman
*Department of Biological Sciences, University of North Carolina, Charlotte, NC*

**10:20 - 10:35 AM**
To Hold or to Fold: Insight into Grp94 chaperone mechanisms

**Yaa S. Amankwah**, Yasmeen Fleifil, Preston Collins, Katherine Vitou, Erin Unruh, and Andrea N. Kravats
*Department of Chemistry and Biochemistry, Miami University, Oxford, OH*

**10:35 - 10:50 AM**
O-GlcNAcylation suppresses TRAP1 activity and promotes mitochondrial respiration

Seungchan Kim, Sarah J. Backe, Laura A. Wengert, Anna Johnson, Michael S. Bratslavsky, **Mark R. Woodford**
*Department of Urology, Upstate Cancer Center, Department of Biochemistry & Molecular Biology, SUNY Upstate Medical University, Syracuse, NY*
Substrate specificity modulates Hsp104 middle domain function

Hannah Buchholz, Jane Dorweiler, Sam Guereca, Adam Knier, Brett Wisniewski, James Shorter, Anita Manogaran
Department of Biological Sciences, Marquette University, Milwaukee, WI

Coffee Break

Session III- Protein Aggregation and Disease
Session Chair: Rocío Gomez-Pastor, University of Minnesota, Minneapolis, MN

CK2 alpha prime and alpha-synuclein pathogenic functional interaction mediates synaptic dysregulation in Huntington’s disease

Dahyun Yu, Nicole Zarate, Angel White, De’jah Coates, Wei Tsai, Carmen Nanclares, Francesco Cuccu, Johnny S. Yue, Taylor G. Brown, Rachel H. Mansky, Kevin Jiang, Hyuck Kim, Tessa Nichols-Meade, Sarah N. Larson, Katie Gundry, Ying Zhang, Cristina Tomas-Zapico, Jose J. Lucas, Michael Benneyworth, Gulin Oz, Marija Cvetanovic, Alfonso Araque, and Rocío Gomez-Pastor
Department of Neuroscience, School of Medicine, University of Minnesota, Minneapolis, MN

Global proteome metastability response in isogenic animals to missense mutations and polyglutamine expansions in aging

Xiaojing Sui, Miguel A. Prado, Joao A. Paulo, Steven P. Gygi, Daniel Finley, Richard I. Morimoto
Department of Molecular Biosciences and Rice Institute for Biomedical Research, Northwestern University, IL

Limb Girdle Muscular Dystrophy (LGMD) D1: Finding ways using the prion system to understand disease pathogenesis for future therapeutic interventions

Ankan Kumar Bhadra, Conrad Chris Weihl, Heather True
Department of Cell Biology and Physiology, Washington University School of Medicine, St. Louis, MO

Neuronal IL-17 modulates p53/CEP-1 activity to control C. elegans developmental diapause

Abhishiktha Godthi, Srijit Das, Johnny Cruz-Corchado, Andrew Deonarine and Veena Prahlad
Department of Biology, University of Iowa, Iowa City, IA

Group picture
12:45 - 1:30 PM  Lunch

1:30 - 2:45 PM  Poster Session

**Session IV - Protein synthesis and Degradation**

**Session Chairs:** Daniel Czyz, University of Florida, Gainesville, FL
Anat Ben-Zvi, Ben-Gurion University of the Negev, Beer-Sheva, Israel

2:45 - 3:00 PM  Critical Beginnings: Selective Tuning of Solubility and Structural Accuracy of Newly-Synthesized Proteins by the Hsp70 Chaperone System

*Heather Allaman,* Rayna M. Addabbo, Rachel B. Hutchinson, Matthew D. Dalphin, Miranda F. Mecha, Yue Liu, and Silvia Cavagnero

*Department of Chemistry, University of Wisconsin, Madison, WI*

3:00 - 3:15 PM  Friend or foe? The potential role of the proteasome in amyloid beta nucleation.

*Alex T. Von Schulze,* Justin Mehojah, Lexie Berkowicz, Xiaqing Song1, and Randal Halfmann

*Stowers Institute of Medical Research, Kansas City, MO*

3:15 - 3:30 PM  Testing Mechanisms for Homomeric Protein Assembly In Vivo

*McKenze J. Moss* and Patricia L. Clark

*Department of Chemistry & Biochemistry, University of Notre Dame, Notre Dame, IN*

3:30 - 3:45 PM  Modulation of Ribosomal Frameshifting by Cotranslational Folding and Misfolding of the Nascent Polypeptide Chain


*Department of Chemistry, Indiana University, Bloomington, IN*

**Plenary session**

3:45 - 3:50 PM  Introduction of Plenary Speaker by Marc Mendillo, Northwestern University

3:50 - 4:35 PM  Rethinking the cellular response to heat shock

*D. Allan Drummond,* Associate Professor

Biochemistry & Molecular Biology and Genetic Medicine
The University of Chicago, Chicago, IL

4:35 - 4:50 PM  Q&A

4:50 - 5:00 PM  Closing Remarks by Patricija van Oosten-Hawle, University of North Carolina, Charlotte

5:00 - 6:30 PM  Reception w/food & beverages at the Allen Center

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

We thank Sue Fox of Northwestern University for her assistance in planning and organizing this conference.