24th Annual Midwest Stress Response
and
Molecular Chaperone Meeting

Saturday, January 19, 2019
Northwestern University
James L. Allen Center, Evanston, IL

Program Chairs
Sandy Westerheide, University of South Florida
Michal Zolkiewski, Kansas State 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

Protein Aggregation and Degradation
Session Chair: Andrea Kravats, Miami University

9:00-9:20 AM  The earliest stages of a protein’s life influence its long-term solubility and structural accuracy
Department of Chemistry, University of Wisconsin-Madison, Madison, Wisconsin 53706

9:20-9:40 AM  Thiol stress-dependent aggregation of the glycolytic enzyme triose phosphate isomerase in yeast and human cells
Amy E. Ford†,§, Catherine Denicourt†, and Kevin A. Morano†
† Department of Microbiology and Molecular Genetics, University of Texas McGovern Medical School at Houston, Houston TX 77030; ‡ Department of Integrative Biology and Pharmacology, University of Texas McGovern Medical School at Houston, Houston TX 77030; § MD Anderson UT Health Graduate School of Biomedical Sciences, Houston TX 77030

9:40-10:00 AM  Detecting Protein Aggregation in Live Cells with Turn-on Fluorescence
Yu Liu, Charles Wolstenholme, and Xin Zhang
Department of Chemistry, The Pennsylvania State University, University Park, PA, 16802, United States
10:00-10:20 AM  **Proteasome Abundance and Localization Are Altered Upon Cellular Stress**
Kenrick A. Waite1, Gabrielle Vontz1, Angelica Lang2, Jeroen Roelofs1
1Molecular, Cellular, and Developmental Biology Program, Division of Biology, Kansas State University
2Manhattan High School, Manhattan, KS

10:20-10:45 AM  **COFFEE BREAK** *(1st Floor Lounge behind the auditorium)*

**Regulation of Stress Responses**
Session Chair: Matthew Wohlever, University of Toledo

10:45-11:05 AM  **A molecular link between egg integrity and somatic proteostasis in C. elegans**
Ambre Sala, Lauren Strohbehn, and Richard I. Morimoto
Department of Molecular Biosciences and Rice Institute for Biomedical Research, Northwestern University, Evanston, USA

11:05-11:25 AM  **Identification of a proteostasis sensor for the heat shock response**
Zoe A. Feder1, Joanna Krakowiak1, Xu Zheng1, David Pincus1,2
1 Whitehead Institute for Biomedical Research
2 Department of Molecular Genetics & Cell Biology, University of Chicago

11:25-11:45 AM  **Transient intracellular acidification regulates the core transcriptional heat shock response**
Catherine G. Triandafillou1, Christopher D. Katanski2, Aaron R. Dinner3, D. Allan Drummond2
1 Biophysical Sciences Graduate Program, The University of Chicago; 2 Department of Biochemistry and Molecular Biology, The University of Chicago; 3 James Franck Institute, The University of Chicago

11:45 AM-12:05 PM  **Transcription factor-mediated recruitment of stress-induced genes to the nuclear pore complex promotes stronger expression and epigenetic transcriptional memory**
Donna Garvey Brickner*, Carlo Randise-Hinchliffe†, Marine Lebrun Corbin, Bethany Sump, Julie Ming Liang, Stephanie Kim, Agustina D’Urso†, Seo Hyun Kim, Atsushi Satomura, Heidi Schmit, Robert Coukos3, Subin Hwang, Raven Watson & Jason H. Brickner
Department of Molecular Biosciences, Northwestern University, Evanston, IL 60201
*These authors made comparable contributions to this work.
1 Present address: Illumina, San Diego, California
2 Present address: Division of Biological Sciences, University of California, San Diego, California
3 Present address: Department of Genetics, Stanford University School of Medicine, Stanford, California

12:05-12:10 PM  **Tribute to Mark Fisher**
Michal Zolkiewski, Kansas State University
Plenary Talk
Session Chair: Veena Prahlad, University of Iowa

12:10-12:55 PM  **Chaperoning Protein Folding with Translation Elongation Rate**
Patricia Clark
University of Notre Dame

12:55-1:00 PM  Group Photo

1:00-1:45 PM  Lunch
SC Johnson Dining Room

1:45-3:00 PM  **Poster Session**
Atrium (directly across from the front entrance)

Stress Responses and Cancer
Session Chair: Marc Mendillo, Northwestern University

3:00-3:20 PM  **Chemical Biology Approaches to Interrogate Heat Shock Factor 1 Regulation in Cancer**
Bushu Dong¹, Alex M. Jaeger², Philip Hughes², Timothy A. Haystead², Jiaoti Huang²,³, and Dennis J. Thiele¹,²,⁴
¹Department of Biochemistry, ²Department of Pharmacology and Cancer Biology, ³Department of Pathology, ⁴Department of Molecular Genetics and Microbiology, Duke University School of Medicine, Durham, North Carolina

3:20-3:40 PM  **The Role of Heat Shock Factor 2 in Human Malignancies**
Seesha Takagishi, Roger S. Smith, Yaqi Wu, Kyle Metz, Milad Alasady, Marc Mendillo
Department of Biochemistry and Molecular Genetics, Feinberg School of Medicine, Northwestern University, Chicago, IL

3:40-4:00 PM  Rebalancing protein homeostasis enhances antigen presentation to stimulate anti-tumor immunity
Alex M. Jaeger¹,², Lauren Stopfer¹,³, Sunmin Lee⁴, Giorgio Gaglia⁵, Demi Sandel¹, Sandro Santagata⁶,⁷, Nancy U. Lin⁸, Jane B. Trepel⁴, Forest White¹,³, Tyler Jacks¹,¹⁰, Susan Lindquist²,¹⁰,¹¹, and Luke Whitesell²
¹Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology, Cambridge, MA 02140
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⁸Department of Oncologic Pathology, Harvard Medical School, MA, 02115
⁹Department of Medical Oncology, Dana Farber Cancer Institute, Boston, MA 02215
¹⁰Howard Hughes Medical Institute, Chevy Chase, MD 20815-6789
¹¹Deceased

4:00-4:20 PM  **COFFEE BREAK (1st Floor Lounge behind the auditorium)**
Stress Responses and Diseases of Protein Aggregation
Session Chair: Alysia Vrailes-Mortimer, Illinois State University

4:20-4:40 PM  **HSF1 transcription factor: a new regulator of excitatory synapses in Huntington’s Disease**
Nicole Zarate¹, Sarah Larson², Gulin Oz², Dennis Thiele³ and Rocio Gomez-Pastor¹
¹ Department of Neuroscience, University of Minnesota School of Medicine, Minneapolis, MN. ² Department of Radiology University of Minnesota School of Medicine, Minneapolis, MN. ³ Department of Pharmacology, Duke University, Durham, NC.

4:40-5:00 PM  **Polyphosphate - A Modifier of Neurodegeneration**
Justine Lempart¹, Eric Tse², James Lauer¹ and Ursula Jakob¹,³
¹ Department of Molecular, Cellular and Developmental Biology, University of Michigan, Ann Arbor
² Department of Chemistry, UCSF, San Francisco
³ Department of Biological Chemistry, University of Michigan, Ann Arbor

5:00-5:20 PM  **SERF acts as a catalyst for Aβ amyloid formation in vitro**
Ben A Meinen¹, Varun V. Gadkari², Frederick Stull¹, Brandon T. Ruotolo² and James Bardwell¹
¹Molecular, Cellular, and Developmental Biology, Howard Hughes Medical Institute, University of Michigan, Ann Arbor, Michigan 48109
²Department of Chemistry, University of Michigan, Ann Arbor, Michigan 48109

5:20-5:40 PM  **Exploring the chaperone-tau interaction landscape during tau aggregation**
Sue-Ann Mok¹*,², Carlo Condello², Rebecca Freilich³, Anne Gillies⁴, Taylor Arhar³, Javier Oroz⁷, Harindranath Kadavath¹, Olivier Julien⁵, Victoria A. Assimon⁵, Jennifer N. Rauch³, Bryan M. Dunyak², Junghoon Lee⁴, Francis T.F. Tsai⁸, Mark R. Wilson⁵, Markus Zweckstetter⁶,⁷,⁸, Chad A. Dickey⁹, Jason E. Gestwicki²,³
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⁸Department of Neurology, University Medical Center Göttingen, University of Göttingen, Göttingen, Germany
⁹Department of Molecular Medicine and Byrd Alzheimer’s Research Institute, University of South Florida, Tampa, Florida, USA

5:40-6:00 PM  **Genetic and dietary manipulation of stearate levels rescues a model of retinal degeneration and ER stress**
Rebecca A.S. Palu, Clement Y. Chow
University of Utah School of Medicine

6:00-6:05 PM  **Closing Remarks**