25th Annual Midwest Stress Response and Molecular Chaperone Meeting

Saturday, January 18, 2020
Northwestern University
James L. Allen Center, Evanston, IL

Program Chairs
Clement Chow, University of Utah
Veena Prahlad, The University of Iowa

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 Auditorium)

8:55-9:00 AM  Opening Remarks
McCormick Auditorium

Stress Responses: Genetic Networks
Session Chairs: Silvia Cavagnero, University of Wisconsin and Jan-Ulrik Dahl, Illinois State University

9:00-9:20 AM  Coessential Genetic Networks Reveal the Organization and Constituents of a Dynamic Cellular Stress Response
David R. Amici, Jasen M. Jackson, Kyle A. Metz, Daniel J. Ansel, Roger S. Smith, Sonia Brockway, Seesha R. Takagishi, Shashank Srivastava, Brendan P. O’Hara, Byoung-Kyu Cho, Young Ah Goo, Neil L. Kelleher, Issam Ben-Sahra, Daniel R. Foltz, Marc L. Mendillo
1. Dept. of Biochemistry and Molecular Genetics, Northwestern University Feinberg School of Medicine, Chicago, IL
2. Simpson Querrey Center for Epigenetics, Northwestern University Feinberg School of Medicine, Chicago, IL
3. Robert H. Lurie Comprehensive Cancer Center, Northwestern University Feinberg School of Medicine, Chicago, IL
4. Medical Scientist Training Program, Northwestern University Feinberg School of Medicine, Chicago, IL
5. Northwestern Proteomics Center of Excellence Core Facility, Northwestern University, Evanston, IL, USA

9:20-9:40 AM  Using natural genetic variation in Drosophila to characterize the underlying mechanisms of hormesis
Katie G. Owings, Clement Y. Chow
Department of Human Genetics, University of Utah, Salt Lake City, UT
inefficient polymerization as a potential driver of length bias in the aging transcriptome
Thomas Stoeger¹,²,³, Rogan A. Grant⁴, Alexandra C. McQuattie-Pimentel⁵, Kishore Anekalla⁶, Sophia S. Liu⁷, Heliodoro Tejedor-Navarro⁵, Benjamin D. Singer⁶,⁷, Hiam Abdala-Valencia⁸, Michael Schwake⁷, Marie-Pier Tetreault⁹, Harris Perlman⁹, William E Balch¹⁰, Navdeep Chandel⁶, Karen Ridge⁹, Jacob I. Sznejder⁶, Richard I. Morimoto⁴, Alexander V. Misharin⁶†, G.R. Scott Budinger⁶†, Luis A. Nunes Amaral¹,²,⁴,⁶,¹¹†
¹Department of Chemical and Biological Engineering, Northwestern University; ²Northwestern Institute on Complex Systems, Northwestern University; ³Center for Genetic Medicine, Northwestern University; ⁴Department of Molecular Biosciences, Northwestern University; ⁵Division of Pulmonary and Critical Care Medicine, Northwestern University; ⁶Department of Biochemistry and Molecular Genetics, Northwestern University; ⁷Department of Neurology, Northwestern University; ⁸Division of Gastroenterology and Hepatology, Northwestern University; ⁹Division of Rheumatology, Northwestern University; ¹⁰The Scripps Research Institute; ¹¹Department of Physics and Astronomy, Northwestern University;  †These authors contributed equally

Loss of the ER metalloprotease superdeath reduces ER stress-induced apoptosis in Drosophila
Rebecca A.S. Palu
Department of Biology, Purdue University-Fort Wayne

Characterizing the pleiotropic nature of the HSP70 co-chaperone HDJ2 in castration-resistant prostate cancer
Nitika¹, Jacob S. Blackman¹, Laura E. Knighton¹, Jade E. Takakuwa¹, Stuart K. Calderwood² and Andrew W. Truman¹
¹Department of Biological Sciences, University of North Carolina Charlotte, Charlotte, NC 28223, USA; ²Department of Radiation Oncology, Beth Israel Deaconess Medical Center, Harvard Medical School, 330 Brookline Ave, Boston, MA 02215, USA

COFFEE BREAK (1st Floor Lounge behind the auditorium)

Protein Folding and Aggregation
Session Chair: Andrea N. Kravats, Miami University

Fic-mediated Adenylylation/AMPylation in Cellular Stress Response
Seema Mattoo
Department of Biological Sciences, Purdue University, West Lafayette, IN

Degradation of Misfolded Cystic Fibrosis Transmembrane-conductance Regulator (CFTR) is Regulated by DNAJB9 within the ER Lumen
Yunjie Huang⁵,², Kavisha Arora⁵, Kyu Shik Mun⁵, Fanmuyi Yang⁵, ChangSuk Moon⁵, Sunitha Yarlagadda⁵, Anil Jegga⁵, Timothy Weaver⁵, and Anjaparavanda P. Naren⁵,¹
⁵Division of Pulmonary Medicine, Cincinnati Children's Hospital Medical Center, Cincinnati, OH 45229; ¹Division of Biomedical Informatics, Cincinnati Children's Hospital Medical Center, Cincinnati, OH 45229; ²Division of Pulmonary Biology, Cincinnati Children's Hospital Medical Center, Cincinnati, OH 45229

Butyrate Suppresses Bacteria-induced Protein Aggregation in C. elegans Models of Protein Conformational Diseases
Alyssa Walker, Emily Donahue, Alfonso Vaziriyan-Sani, Benjamin Hoffman, Autumn Dove, Daniel M. Czyż
Plenary Talk
Session Chair: Clement Chow, University of Utah

11:30 AM-12:30 PM
Genome-nuclear pore interactions regulate nuclear architecture, transcription and epigenetic states
Jason Brickner
Northwestern University, Evanston, IL

12:30-12:35 PM Group Photo

12:35-1:30 PM Lunch

1:30-3:00 PM Poster Session
Atrium (directly across from the front entrance)

Regulation of Protein Folding and Stress Responses
Session Chairs: Daniel Czyz, University of Florida and Elise Kikis, The University of the South

3:00-3:20 PM Sis1 modulates Hsf1 activity by sensing the status of cellular proteostasis
Asif Ali1,2, Zoe A. Feder3, Joanna Krakowiak3, Xu Zheng3 and David Pincus1,2,3
1 Department of Molecular Genetics and Cell Biology, University of Chicago, Chicago, USA,
2 Center for Physics of Evolving Systems, University of Chicago, Chicago, USA,
3 Whitehead Institute for Biomedical Research, Cambridge, USA

3:20-3:40 PM HSF1 and mitochondrial function: new regulatory mechanistic insights
Taylor A. Intihar1, Elisa A. Martinez2, Nicole Zarate1 and Rocio-Gomez-Pastor1
1 Department of Neuroscience, School of Medicine, University of Minnesota, Minneapolis, MN, United States.
2 Department of Biochemistry and Molecular Biology, Dickinson College, Carlisle, PA, United States.

3:40-4:00 PM Germline-specific roles of HSF1 and its regulation by stress and metabolic signals
Stacey Edwards, Purevsuren Erdenebat, Lai Wang, Allison Morphis, Lalit Kumar, Jian Li
Aging and Metabolism Research Program, Oklahoma Medical Research Foundation, Oklahoma City, USA

4:00-4:20 PM Oligomerization as a General Mechanism for Enhancing Liquid-Liquid Phase Separation
Gregory Carter, Chia-Heng Hsung, Leman Simpson, Xin Zhang
1 Department of Biochemistry and Molecular Biology, 2 Department of Chemistry, 3 Huck Institute of Life Sciences, The Pennsylvania State University, University Park, PA
4 Department of Biochemistry and Microbiology, The College of Wooster, Wooster, OH

4:20-4:25 PM Interaction Between a Foldable Ribosome-Bound Nascent Protein and a Specific Region of the Ribosomal Surface
Valeria Guzman-Luna, Andrew M. Fuchs, Rayna M. Addabbo, and Silvia Cavagnero
Department of Chemistry, University of Wisconsin, Madison, WI 53706
4:25-4:40 PM  **COFFEE BREAK** (1st Floor Lounge behind the auditorium)

Chaperones in Physiology and Homeostasis  
Session Chairs: Jian Li, Oklahoma Medical Research Foundation and Rebecca Palu, Purdue University-Fort Wayne

4:40-5:00 PM  **The unfolded protein response sensor IRE1 participates in the developmental regulation of dauer formation in C. elegans**  
Mingjie Ying\(^1\), Yair Argon\(^2\), Tali Gidalevitz\(^1\)  
\(^1\) Biology Department, Drexel University, Philadelphia, Pennsylvania, USA  
\(^2\) Department of Pathology and Laboratory Medicine, The Children's Hospital of Philadelphia and Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania, USA

5:00-5:20 PM  **DnaJ family proteins tune long-term memory**  
Kyle Patton, Kausik Si  
Stowers Institute for Medical Research, Kansas City, MO

5:20-5:40 PM  **Maternal serotonin protects future progeny from thermal stress by modulating histone occupancy in germ cells**  
Srijit Das\(^1\), Felicia K. Ooi\(^1\), Johnny Cruz Corchado\(^1\), Leah C. Fuller\(^1\), Joshua A. Weiner\(^1,2\)  
and Veena Prahlad\(^1,2\)  
\(^1\) Department of Biology, University of Iowa, 143 Biology Building, Iowa City, IA  
\(^2\) Iowa Neuroscience Institute, 169 Newton Road, 2312 Pappajohn Biomedical Discovery Building, Iowa City, IA

5:40-6:00 PM  **Evidence for a BAG3-dependent sarcomere protein quality control complex that maintains cardiomyocyte contractile function**  
Department of Cellular and Molecular Physiology, Loyola University Chicago

6:00-6:05 PM  **Characterization of stress resistance in uropathogenic *E. coli* (UPEC)**  
Greg Anderson\(^1\), Sadia Sultana\(^1\), Kevin P. Hoffmann\(^1,2\), Makayla Hall\(^1\), and Jan-Ulrik Dahl\(^1\)  
\(^1\) School of Biological Sciences, Illinois State University, Normal, IL 61790, USA  
\(^2\) DAAD RISE Fellow, Technical University Braunschweig, Germany

6:05 PM  **Closing Remarks**