Cellular Stress Responses and Infectious Agents

December 4–8, 2016 | Eldorado Hotel | Santa Fe, New Mexico | USA

Scientific Organizers:
Margo A. Brinton, Georgia State University, USA
Sandra K. Weller, University of Connecticut Health Center, USA
Beth Levine, University of Texas Southwestern Medical Center, USA

This conference will bring together cell biologists studying various cellular stress responses and researchers interested in how various infectious agents activate and manipulate host cellular stress responses. Examples of cellular stress responses activated by infectious agents are: the stress granule response, the unfolded protein response, the DNA damage response, responses to oxidative stress and metabolic stress, autophagy, and other protein quality control responses. Many of these cellular homeostatic mechanisms function as part of innate and intrinsic defense mechanisms to counteract infections. Various infectious agents have evolved to subvert and manipulate many of these anti-pathogen mechanisms by utilizing, evading or inactivating components of these cellular pathways. The study of interactions between infectious agents and these pathways provides new insights about cellular stress responses and identifies new targets for the development of novel therapies for the treatment of infectious diseases.

Session Topics:
- Unfolded Protein Response
- Workshop 1: Unfolded Protein Response, Protein Homeostasis and Stress Granule Response
- Stress Granule Response, Modulation of Translation and Innate Immunity
- Regulation of Stress Responses
- Workshop 2: Oxidative Stress, PML and SOMOylation
- Infectious Agents and Oxidative Stress
- Autophagy and Host Defense Against Infectious Agents
- Workshop 3: Autophagy and Metabolic Stress
- Intracellular Infectious Agents and Metabolic Stress
- Integrated Stress Responses and Infectious Agents
- Infectious Agents and the DNA Damage Response
- Workshop 4: Integrated Stress Responses and the DNA Damage Response

Scholarship Application & Discounted Abstract Deadline: August 4, 2016
Abstract Deadline: September 12, 2016
Discounted Registration Deadline: October 4, 2016

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**Workshop 1: Unfolded Protein Response and ER Stress**

- **Margo A. Brinton**, Georgia State University, USA
- **Beth Levine**, University of Texas Southwestern Medical Center, USA
- **David Ron**, University of Cambridge, UK

  *Protein-Folding Homeostasis in the Endoplasmic Reticulum – Some Lessons from Microbes*

- **Timothy A.J. Haystead**, Duke University, USA
  *Hsp90 Promotes HIV and Chikungunya Virus Replication, Hsp90 Inhibitors are Antiviral*
- **Claudio Soto**, University of Texas Medical School at Houston, USA
  *The Unfolded Protein Response after Prion Infection*
- **Timothy E. Audas**, Simon Fraser University, Canada
  *Short Talk: Adaptation to Stressors by Systemic Protein Amyloidogenesis*
- **Ross Buchan**, University of Arizona, USA
  *Short Talk: Endocytosis is a Key Regulator of TDP-43 Aggregation, Toxicity and Turnover*

**Workshop 2: RNA Granules and Regulation of Translation**

- **Paul J. Anderson**, Harvard Medical School, USA
- **Wei-Chih Tsai**, Baylor College of Medicine, USA
- **Bruce W. Banfield**, University of British Columbia, Canada
- **Jason Mackenzie**, The University of Melbourne, Australia

  *A Small Plant Virus Co-opts Heat Shock Protein and the Actin Cytoskeleton and Rewires Glycolytic Pathway during Infection*

**Stress Granule Response, Modulation of Translation and Innate Immunity**

- **Margo A. Brinton**, Georgia State University, USA
- **Paul J. Anderson**, Harvard Medical School, USA
- **Richard E. Lloyd**, Baylor College of Medicine, USA
- **Craig McCormick**, Dalhousie University, Canada
- **Mena Abdel-Nour**, University of Toronto, Canada

  *Cross-Talk between RNA Granules and Innate Immunity*

  *Control of Protein Synthesis in Influenza Virus-Infected Cells*

  *The Role of 2',5'-Oligoadenylate Synthetases in Cellular Responses to Stress*

  *The DNA Sensor cGAS Detects Dengue Virus Infection and Facilitates Signaling of Cytosolic Innate Immune Receptors*

**Poster Session 1**

- **James C. Alwine**, University of Pennsylvania School of Medicine, USA
- **Carolyn-Ann Robinson**, Dalhousie University, Canada
- **Carmen Rivas**, Centro Nacional de Biotecnología, Spain
- **Robert H. Silverman**, Cleveland Clinic Foundation, USA
- **Mena Abdel-Nour**, University of Toronto, Canada

  *PKR-Mediated Antiviral Stress Responses*

  *Activation of LXRalpha Inhibits Kaposi’s Sarcoma-Associated Herpesvirus Replication*

  *Regulation of Stress Responses by SUMOylation*

  *Activation of UPR Transducer ATF6alpha and Increases in PDIA3 is Required for Cellular Protein Homeostasis*
**Stress Workshop 3: Autophagy, Regulation of Stress and Metabolic Stress**

**WEDNESDAY, DECEMBER 7**

**Autophagy and Host Defense Against Infectious Agents**

*Sara R. Cherry*, University of Pennsylvania, USA  
*Beth Levine*, University of Texas Southwestern Medical Center, USA  
*Conserved Mechanisms for Autophagic Removal of Mitochondria and Microbes*

**Herbert (Skip) W. Virgin**, Vir Biotechnology, USA  
*Regulation of Tissue Inflammation by Autophagy Genes through Multiple Mechanisms*

**Felix Randow**, Medical Research Council, UK  
*How Autophagy Defends the Cytosol Against Bacterial Invasion*

**Jae U. Jung**, Keck School of Medicine of University of Southern California, USA  
*Viral Manipulation of Autophagy for Viral Lifecycle*

**Chiara Calabrese**, University of Cologne, Germany  
*Short Talk: Salmonella Typhimurium Disrupts Sirt1/AMPK Signaling Network to Impair Autophagy*

**Elena Muscolino**, Heinrich Pette Institute, Germany  
*Short Talk: Murine Cytomegalovirus Recruits the Refrmer Complex to Promote NEMO Degradation by Autophagy*

**Workshop 3: Autophagy, Regulation of Stress and Metabolic Stress**

*Herbert (Skip) W. Virgin*, Vir Biotechnology, USA  
*Jennifer Corcoran*, Dalhousie University, Canada  
*Viral Control of Autophagy to Reprogram the Host Cell Secretome*

**Infectious Agents and Oxidative Stress**

*Robert H. Silverman*, Cleveland Clinic Foundation, USA  
*Sandra K. Weller*, University of Connecticut School of Medicine, USA  
*Herpes Simplex Virus Manipulates Cellular Oxidative Stress Responses to Promote Lytic Infection*

**Christopher F. Basler**, Georgia State University, USA  
*Marburg Virus VP24 Protein Interacts with Keap1 to Engage the Antioxidant Response Pathway*

**Margo A. Brinton**, Georgia State University, USA  
*Resistance of Flavivirus-infected Cells to Arsenite-induced Stress Granule Formation is Mediated by Activation of the Cell Antioxidant Pathway*

**Eric Skaar**, Vanderbilt University, USA  
*Short Talk: Dietary Manganese Supplementation Influences the Oxidative Stress Response to Staphylococcus Aureus during Infection of the Heart*

**Poster Session 2**

**THURSDAY, DECEMBER 8**

**Integrated Stress Responses and Infectious Agents**

*Sara R. Cherry*, University of Pennsylvania, USA  
*Systems Approaches to Study Antiviral Immunity*

**George A. Belov**, University of Maryland, USA  
*Membrane Metabolism of Picornavirus-Infected Cells: A Little Virus Makes A Big Mess*

**Denise A. Galloway**, Fred Hutchinson Cancer Research Center, USA  
*Human Papillomaviruses dampen the Response to DNA Damage*

**Alexandra Boeske**, Forschungszentrum Jülich, Germany  
*GABARAPs Mediate Anterograde Transport and Secretion of HIV-1 Nef via Mechanisms Related to Unconventional Protein Secretion*

**Nazira El-Hage**, Florida International University, USA  
*Electro-Magnetic Nano-Particle Bound Beclin1 siRNA Crosses the Blood–Brain Barrier to Attenuate the Inflammatory Effects of HIV-1 Infection in vitro*

**Elizabeth Figueroa-Juárez**, Instituto Nacional de Ciencias Médicas y Nutrición, S.Z., Mexico  
*Renal Endoplasmic Reticulum Stress and its Modulation by Resveratrol*

**Julien Moretti**, Mount Sinai School of Medicine, USA  
*Vita-PAMP Sensing by STING Orchestrates Stress-Induced ER-phagy Apical to a Type-I Interferon Response*

**Jessica Tsaklikis**, University of Toronto, Canada  
*The Role of U snRNA Maturation and mRNA Splicing Regulation in Response to Metabolic Stress and Bacterial Infection*

**Teresa S. Wiley**, Wiley Systems, Inc, USA  
*Autophagy Pathways and the Effects of Steroid Hormones*

**Angela M. Phillips**, Massachusetts Institute of Technology, USA  
*Host Proteostasis Network-Mediated Modulation of Influenza Evolution*

**Craig McCormick**, Dalhousie University, Canada  
*Harnessing Small Molecule Stress Pathways to Support Viral Infection*

**Stephen E. Girardin**, University of Toronto, Canada  
*A Cytosolic Unfolded Protein Response Controls Innate Immune Signaling*

**James C. Alwine**, University of Pennsylvania School of Medicine, USA  
*The Masterful Manipulation of Host Cell Stress Responses, Signaling and Metabolism by Human Cytomegalovirus*

**Andrew Timmons**, Johns Hopkins Hospital, USA  
*Short Talk: Small Molecule Inhibition of Intrinsic Stress Pathways Substantially Reduces HIV Transcription upon T Cell Activation*

**Poster Session 3**
Workshop 4: Integrated Stress Responses and the DNA Damage Response

*Denise A. Galloway, Fred Hutchinson Cancer Research Center, USA

Wolfram Brune, Heinrich Pette Institute, Leibniz Institute for Experimental Virology, Germany

Christopher Fisher, University of Florida College of Medicine, USA

HSV-1 Infection Activates ATR and Chk1, Mislocalizes the Phosphorylated Proteins, and Utilizes their Activity to Promote Viral Replication

Terri Edwards, University of Florida, USA

Rebound of Human Papillomavirus (HPV) DNA Episomes Following Antiviral Treatment Shares Fundamental Features with Genome Amplification During the HPV Life Cycle

Priya Luthra, Georgia State University, USA

The Crosstalk Between DNA Damage and Innate Immune Responses Circumvents Ebola Virus Immune Evasion Mechanisms

Michael P. Sheetz, Mechanobiology Institute, National University of Singapore, Singapore

DNA Damage Causes Rapid Accumulation of Phosphoinositides to Recruit ATR but not ATM

Rong Tan, University of Pittsburgh, USA

Nek7 Protects Telomeres from Oxidative DNA Damage by Phosphorylation and Stabilization of TRF1

Alexander Zaika, Vanderbilt University Medical Center, USA

Bacterial Pathogen Helicobacter Pylori Modulates Cellular Responses to DNA Damage and Oncogenic Stress by Inducing Degradation of p53 Protein and Altering Expression of p53 Isoforms

Infectious Agents and the DNA Damage Response

*Sandra K. Weller, University of Connecticut School of Medicine, USA

Matthew D. Weitzman, Children's Hospital of Philadelphia, USA

DNA Damage Responses to DNA Virus Infection

Richard I. Morimoto, Northwestern University, USA

Regulation of the Heat Shock Response and Proteostasis Networks

Hugues de Thé, Hopital St. Louis, France

In vivo Sumoylation Control by PML Nuclear Bodies under Oxidative Stress

Meeting Wrap-Up: Outcomes and Future Directions (Organizers)