

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Intra- and Intercellular Mechanisms of Aging (B2)

February 9-13, 2020 • Fairmont Hotel Vancouver • Vancouver, BC, Canada

Scientific Organizers: Malene Hansen, Johan Auwerx and Heinrich Jasper

Sponsored by Astellas Pharma Inc. and Cell Research

Discounted Abstract & Scholarship Deadline: October 31, 2019 / Abstract Deadline: November 7, 2019 / Discounted Registration Deadline: December 11, 2019

SUNDAY, FEBRUARY 9

Arrival and Registration

MONDAY, FEBRUARY 10

Welcome and Keynote Address

***Malene Hansen**, Sanford Burnham Prebys Medical Discovery Institute, USA

***Johan Auwerx**, École Polytechnique Fédérale de Lausanne, Switzerland

Andrew G. Dillin, University of California, Berkeley, USA
Cell Autonomous and Cell Non-Autonomous Regulation of Proteostasis

DNA / Chromatin Homeostasis

***Jason G. Wood**, Brown University, USA

***Julia von Maltzahn**, Leibniz Institute on Aging, Germany

Shelley L. Berger, University of Pennsylvania, USA
Epigenetic Mechanisms in Yeast and Cells

Joachim Lingner, École Polytechnique Fédérale de Lausanne, Switzerland
Critical Roles of Single Strand Telomere Binding Proteins to Prevent Telomeric DNA Damage, Checkpoint Signaling and Cellular Senescence

Judith Campisi, Buck Institute for Research on Aging, USA
Cellular Senescence and Aging: Cell Autonomous and Non-Autonomous Mechanisms

Abigail K. Brown, Brown University, USA
Short Talk: Long live FOXOs: Transcriptional and Epigenetic Effects of FOXO3 Pioneer-factor Activity in Humans

Siu Sylvia Sylvia Lee, Cornell University, USA
Short Talk: Chromatin Regulation and Longevity in C. elegans

Poster Session 1

Workshop 1: Emerging Concepts

***Kristopher Burkewitz**, Vanderbilt University, USA

***Shuhei Nakamura**, Osaka University, Japan

Oliver Hahn, Stanford University, USA
Longitudinal Profiling of Murine Transcriptome in 17 Tissues Uncovers Global Aging Nodes with Organ-Specific Phase and Amplitude

Ann Zenobia Moore, NIA, National Institutes of Health, USA
Addressing the Biomarkers Challenge in Aging Research: The Genetic and Epigenetic Signatures of Translational Aging Laboratory Testing (GESTALT) Study

Erik Ben van den Akker, Leiden University Medical Center, Netherlands

A Nine-Year Longitudinal Study in the Blood of A Supercentenarian Reveals an Extensive Subclonal Architecture with Ongoing Clonal Dynamics and a Functional Thymic Output

Benoit Lehallier, Stanford University, USA
Undulating Changes in Human Plasma Proteome Profiles Across the Lifespan are Linked to Disease

Francesco Della Valle, King Abdullah University of Science and Technology, Saudi Arabia
L1 RNA Knockdown Averts Heterochromatin Loss and Premature Ageing Phenotypes

Katrin Kalies, University Hospital Halle, Martin-Luther-University Halle-Wittenberg, Germany

Reversing Endothelial Cell Aging by Partial Reprogramming

Michael A. Bonaguidi, University of Southern California, USA
New Single Cell Tools to Overcome Age-Related Stem Cell Dysfunction

Vesicle/Membrane Homeostasis

***Ashley E. Webb**, Brown University, USA

***Hua Bai**, Iowa State University, USA

Malene Hansen, Sanford Burnham Prebys Medical Discovery Institute, USA

Regulation of Autophagy in Aging and Disease

Ana Maria Cuervo, Albert Einstein College of Medicine, USA
Role of Chaperone-Mediated Autophagy in Neurodegeneration and Aging

Martin W. Hetzer, The Salk Institute, USA
Age Mosaicism across Multiple Scales in Adult Tissues

Ana Gomez-Larrauri, University of the Basque Country, Spain
Short Talk: Regulation of Autophagy and Cell Survival by Ceramide 1-Phosphate

Dorota Skowronska-Krawczyk, UC San Diego, USA
Short Talk: Aging Membranes – Role of Lipids in Aging Retina

TUESDAY, FEBRUARY 11

Protein Homeostasis

***Claudia Chini**, Mayo Clinic, USA

***Brian J. North**, Creighton University, USA

Dan Gottschling, Calico, USA
Developing a Comprehensive Understanding of Genetic and Environmental Contributions to Cellular Aging

Judith Frydman, Stanford University, USA
Proteostasis Dysfunction and Aggregate Management: Implications for Aging and Neurodegenerative Disease

Richard I. Morimoto, Northwestern University, USA
Cell Non-Autonomous Regulation of Organismal Proteostasis

Cynthia Kenyon, Calico, USA
Mechanisms that Slow or Reverse Aspects of Aging in C. elegans

Alessandro Ori, Leibniz Institute on Aging, Germany
Short Talk: Reduced Proteasome Activity in the Aging Brain Results in Ribosome Stoichiometry Loss and Aggregation

Ashley E. Frakes, University of California Berkeley, USA
Short Talk: Four Glial Cells Regulate ER Stress Resistance and Longevity via Neuropeptide Signaling

Workshop 2: Mentoring

***Malene Hansen**, Sanford Burnham Prebys Medical Discovery Institute, USA

***Bita Nakhai**, NIA, National Institutes of Health, USA

Mitochondrial Homeostasis

***Maria Ermolaeva**, Leibniz Institute on Aging, Germany

***Mark McCormick**, University of New Mexico, USA

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Johan Auwerx, École Polytechnique Fédérale de Lausanne, Switzerland
A Conserved Role of CBP/p300 in Mitochondrial Stress Response and Longevity

David Walker, University of California, Los Angeles, USA
Role of Mitophagy in Drosophila Aging

Cole M. Haynes, University of Massachusetts Medical School, USA
Scaling Mitochondrial Network Expansion with Cell Growth or Recovery

Amanda J. Audesse, Brown University, USA
Short Talk: Elucidating the Function of Mitophagy in the Maintenance of Metabolic Stability Throughout Neural Stem Cell Aging

Kristopher Burkewitz, Vanderbilt University, USA
Short Talk: Exploring the Roles of ER-Mitochondrial Calcium Coordination in Aging

Ao-Lin Allen Hsu, University of Michigan, USA
Short Talk: HSB-1/HSF-1 Pathway Modulates Histone H4 in Mitochondria to Control mtDNA Transcription and Longevity

Poster Session 2

WEDNESDAY, FEBRUARY 12

Inter-Tissue Signaling

***Dorota Skowronska-Krawczyk**, UC San Diego, USA

***Louis R. Lapierre**, Brown University, USA

William B. Mair, Harvard School of Public Health, USA
Metabolic Communication and Longevity

Coleen T. Murphy, Princeton University, USA
CREB and TGF-beta Non-Autonomously Regulate Reproductive Aging through Hedgehog/Patched Signaling

Fabio Demontis, St. Jude Children's Research Hospital, USA
Systemic Nutrient Signaling via Myokines

Minho M. Shong, Chungnam National University School of Medicine, South Korea
Role of Mammalian Mitokine GDF15 in Mammalian Metabolism

Alana M. Horowitz, University of California San Francisco, USA
Short Talk: Circulating Blood Factors Confer the Rejuvenating Benefits of Exercise on the Aged Brain

Hua Bai, Iowa State University, USA
Short Talk: Peroxisome-Mediated Inter-Tissue Communication during Drosophila Aging

Mikolaj Ogrodnik, Mayo Clinic, USA
Short Talk: Relationship Between Lipid Metabolism and Inflammation of Senescent Cells and Its Impact on Obesity- and Aging-Related Brain Dysfunctions

Chris Morrow, University of Wisconsin - Madison, USA
Short Talk: Aggresome-Mediated Quiescent Neural Stem Cell Activation

Stem Cells

***Saul A. Villeda**, University of California, San Francisco, USA

***Fabio Demontis**, St. Jude Children's Research Hospital, USA

Heinrich Jasper, Genentech, Inc. & Buck Institute for Research on Aging, USA
Intestinal Stem Cells and Aging in Flies and Beyond

Pekka Katajisto, University of Helsinki, Finland
Role of Stem Cell Niche in Intestinal Aging

Pura Munoz Canoves, Universitat Pompeu Fabra, Spain
Identification of an Age-Resistant Quiescent Muscle Stem-Cell State

Indranil Sinha, Brigham and Women's Hospital, USA
Short Talk: Aging-Associated Loss Of ARNT Limits Skeletal Muscle Regeneration

Daniel E. Colquhoun, Monash University, Australia
Short Talk: Hmga1a Suppresses mTOR Signaling Following Activation to Allow for Lifelong Maintenance of Neural Stem/Progenitor Cells

Helen Tauc, Genentech, USA
Short Talk: Investigating Changes in Epigenetic and Transcriptional States of Aging Drosophila Intestinal Stem Cells

THURSDAY, FEBRUARY 13

Metabolism

***Erik Ben van den Akker**, Leiden University Medical Center, Netherlands

***Ok Sarah Shin**, Korea University School of Medicine, South Korea

Meng C. Wang, Baylor College of Medicine/HHMI, USA
Metabolite Signals in Longevity Regulation

Dario Riccardo Valenzano, Max-Planck Institute for Biology of Ageing, Germany
Systemic Regulation of Aging via the Gut Microbiota

Anne Brunet, Stanford University, USA
Identifying Mechanisms of Brain Aging

P. Elaine Slagboom, Leiden University, Netherlands
Hall Marks of Human Aging in the Molecular Profiles of Intervention and Cohort Studies

Hillary Miller, University of Michigan, USA
Short Talk: Serotonin Signaling in Food Perception and Dietary Restriction

Shi Quan Wong, Brown University, USA
Short Talk: Neuronal HLH-30/TFEB in Stress and Longevity

Maria Ermolaeva, Leibniz Institute on Aging, Germany
Short Talk: The Longevity Benefits of Metformin Are Age and Gender Dependent

Eduardo Nunes Chini, Mayo Clinic, USA
Short Talk: The Ecto-Enzyme CD38 Links Cellular Senescence and NAD Metabolism During Aging

Neurodegenerative Diseases

***Michael A. Bonaguidi**, University of Southern California, USA

***Chia-Chen Lu**, Fu Jen Catholic University, Taiwan

Saul A. Villeda, University of California, San Francisco, USA
Mechanisms of Brain Aging and Rejuvenation

Chee-Yeun Chung, Yumanity Therapeutics, USA
From Yeast to Neurons to Patients: A Novel Drug Discovery Platform for Neurodegenerative Diseases

Priyanka Narayan, MIT, USA
Short Talk: Identifying and Reversing APOE4-Induced Cellular Pathologies

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Kathryn A. Jewett, University of Washington, USA

Short Talk: Non-Cell Autonomous Mechanisms Regulating Protein Aggregation in a Drosophila Model of Parkinson's Disease

Kaspar Russ, Lundbeck and Lund University, Denmark

Short Talk: TNF α and α -Synuclein Assemblies Differently Regulate Human Astrocyte Reactivity: Implications for Parkinson's Disease

Meeting Wrap-Up: Outcomes and Future Directions

Heinrich Jasper, Genentech, Inc. & Buck Institute for Research on Aging, USA

FRIDAY, FEBRUARY 14

Departure