Aging Hallmarks Consortium Grantees Meeting

Biological Sciences Section of the Gerontological Society of America 2024 Annual Meeting

Seattle, WA

November 12, 2024

9:00 AM - 5:00 PM PST

Sheraton Grand Seattle, Metropolitan A Ballroom

Organizers:

Yih-Woei Fridell, Andras Orosz, Max Guo

Division of Aging Biology, National Institute on Aging

Workshop Background and Goals

Aging, a complex process involving many cellular changes, is largely viewed as the biological deterioration and functional decline affecting all organisms including human. Breakthrough findings in recent decades have identified molecular and cellular pathways that can alter the course of lifespan and healthspan when manipulated in experimental model systems. These advances had laid the foundation for the proposed framework of hallmarks of aging capturing major molecular and cellular processes that contribute to aging and importantly, specify a mechanistic qualification where amelioration of the proposed hallmarks is expected to extend the healthspan of the organism. However, recent discoveries demonstrating that "fixing" one hallmark at a time may not significantly alter the aging process suggest that interventions could be more effectively devised through understanding the inter-play among the aging hallmarks. In 2023, NIA issued three inter-connected RFAs and funded 26 projects: (1) Inter-Organelle Communication as a Platform to Interrogate the Interactions of Hallmarks of Aging (RFA-AG-23-012); (2) Mapping Interconnectivity Among Hallmarks of Aging under Lifespan Modifications (RFA-AG-23-013); (3) Studies of Cytosolic DNAs in the Interactions of Aging Hallmarks (RFA-AG-23-015).

The goal of the workshop aims to gather the awardees funded through these three RFAs to present their research findings to date. This workshop will be the inaugural meeting of the Aging Hallmarks Consortium, to kick off regular meetings consisted of grantees of the three RFAs, and team members, and investigators working on these topics but funded independently of these RFAs.

Opening Remarks	
9:00 AM – 9:05 AM	Stacy Carrington-Lawrence, Ph.D. Deputy Director, Acting Director, Division of Aging Biology, National Institute on Aging

Session 1: Inter-Organelle Communication as a Platform to Interrogate the Interactions of Hallmarks of Aging **Session Chair: Kristopher Burkewitz, Ph.D.** Vanderbilt University	
9:05 AM – 9:20 AM	**Eric H Baehrecke, Ph.D.** ***VPS13D, Organelle Contact, and the Cellular Basis of Neurodegenerative Disease*** University of Massachusetts Chan Medical School
9:20 AM – 9:35 AM	**Xin Jie Chen, Ph.D. and Patricia M Kane-Popp, Ph.D.** ***Mitochondria-to-Lysosome Proteostatic Signaling and Tissue Atrophy*** SUNY Upstate Medical University
9:35 AM – 9:50 AM	**Kai Zhou, Ph.D., Julie Andersen, Ph.D. and Malene Hansen, Ph.D.** **Novel mitochondria-to-lysosome crosstalk contributes to lysosomal dysfunction during aging.** The Buck Institute
9:50 AM – 10:05 AM	**Rajat Singh, M.D.** ***Impact of aging on mitochondria-ER contacts and mitochondrial dynamics*** UCLA
10:05 AM – 10:20 AM	**Kristopher Burkewitz, Ph.D.** **New roles for ER-phagy and ER remodeling in aging** Vanderbilt University
10:20 AM – 10:35 AM	**Amit R Reddi, Ph.D.** **Lifespan Regulation by Inter-Organellar Heme Signaling** Georgia Institute of Technology
10:35 AM – 10:50 AM	**Nuno Raimundo, Ph.D.** ***Mitochondria-lysosome Crosstalk in Senescence*** Penn State College of Medicine
10:50 AM – 11:10 AM	**Session Discussion**
11:10 AM – 12:20 PM	**LUNCH BREAK**

Session 2: Mapping Interconnectivity Among Hallmarks of Aging under Lifespan Modifications **Session Chair: Blanka Rogina, Ph.D.** University of Connecticut Health Center	
12:20 PM – 12:35 PM	**Fabrisia Ambrosio, Ph.D.** Harvard University **Andrew Mugler, Ph.D.** Pittsburgh University ***Genetic information flow in the Hallmarks of Aging: from system-level analytics to mechanistic interventions***
12:35 PM – 12:50 PM	**Andrey A Parkhitko, Ph.D.** Pittsburgh University **Marc Tatar, Ph.D.** Brown University ***Mutation in the insulin receptor kinase insert domain maintains metabolic health and extends lifespan via phenocopying methionine restriction***
12:50 PM – 1:05 PM	**Corina Amor Vegas, M.D., Ph.D.** **Prophylactic and long-lasting therapeutic efficacy of senolytic CAR T cells against age-related phenotypes** Cold Spring Harbor Laboratory
1:05 PM – 1:20 PM	**Blanka Rogina, Ph.D.** **Caloric Restriction and Aging in *Drosophila*** University of Connecticut Health Center
1:20 PM – 1:35 PM	**David A. Sinclair, Ph.D.** **Using cellular AI and age-programmable organoids to derive a global interaction map of aging hallmarks** Harvard Medical School
1:35 PM – 1:50 PM	**Pankaj Kapahi, Ph.D.** **Methylglyoxal-induced Glycation Stress as a Driver of Age-Associated Disorders through increased senescence and inflammation** The Buck Institute
1:50 PM – 2:05 PM	**Aditi Gurkar, Ph.D.** **DNA damage induced acetyl-CoA dynamics as a central hub for senescence and aging** University of Pittsburgh
2:05 PM – 2:20 PM	**Zheng Chen, Ph.D.** ***Regulatory Role of RORs at the Interface of Circadian Rhythms and Aging*** The University of Texas Health Science Center at Houston
2:20 PM – 2:40 PM	**Session discussion**

2:40PM – 2:55 PM	**BREAK**

Session 3: Studies of Cytosolic DNAs in the Interactions of Aging Hallmarks **Session Chair: Zhixun Dou, Ph.D.** Massachusetts General Hospital, Harvard Medical School	
2:55 PM – 3:10 PM	**Joao Passos, Ph.D.** **Exploring the role of mitochondria in cellular senescence: mechanisms and implications** Mayo Clinic
3:10 PM – 3:25 PM	**Colleen Jackson-Cook, Ph.D.** **Cytosolic DNA, Telomeres/Subtelomeres, and Epigenetics: A Longitudinal Twin Study to Assess the Role of Genetics and Environment on Their Frequency and Inter-relationships** Virginia Commonwealth University
3:25 PM – 3:40 PM	**Shruti Sharma, Ph.D.** **Homeostatic maintenance of tissues and longevity with aging rely on innate immunity** Tufts University School of Medicine
3:40 PM – 3:55 PM	**Susana Gonzalo Hervas, Ph.D.** **A non-canonical STING-STAT1 pathway drives cellular and organismal aging** St Louis University
3:55 PM – 4:10 PM	**Ali J Marian, M.D.** **DNA Double-Stranded Breaks in the Pathogenesis of Heart Failure** The University of Texas Health Science Center
4:10 PM – 4:25 PM	**Zhixun Dou, Ph.D.** **Nucleus-to-cytoplasm Shuttling of Chromatin Fragments** Massachusetts General Hospital, Harvard Medical School
4:25 PM – 4:45 PM	**Session discussion**
4:45 PM – 5:00 PM	**Closing Thoughts and Adjourn**