

The 2019 Harvard / Paul F. Glenn

Symposium on Aging

May 20, 2019

GLENN FOUNDATION
FOR MEDICAL RESEARCH



BLAVATNIK INSTITUTE
HARVARD MEDICAL SCHOOL

The Paul F. Glenn Center for the Biology of Aging Research

Welcome to the Annual Harvard/Paul F. Glenn Symposium on Aging. Each year, the Paul F. Glenn Center for Aging Research hosts the Harvard Symposium on Aging with a mission to present new advances in aging research and to stimulate collaborative research in this area. The symposium has grown over the years to be a major forum for aging research at Harvard Medical School. We have been fortunate to have many of the leaders in the aging field speak at the symposia and today is no exception.

We wish to acknowledge the generosity and vision of Paul F. Glenn, Mark Collins and Leonard Judson for their unwavering support of aging research through the Glenn Foundation for Medical Research. Thanks to their support, we now have a vibrant community of researchers who study aging and age-related diseases at Harvard Medical School.

The reasons for accelerating research into the molecular biology of aging are clear. First and foremost, the number of aged individuals in developed countries is growing rapidly, which will place an unprecedented burden on the social fabric and economic infrastructure. Because chronic illness in the elderly is a major medical cost, enormous savings would be achieved if the healthy lifespan were extended through a greater understanding of age-related diseases. A study by the RAND Corporation concluded that advances in medicine arising from aging research would be one of the most cost-effective approaches to age-related disease. Advances in aging research have shown that it is possible to extend the healthy lifespan of laboratory animals through genetic and pharmacological means. We anticipate that significant strides will be made in understanding how human health and lifespan are regulated, leading to novel therapeutic approaches to the diseases of aging, such as diabetes, cancer, Alzheimer's and heart disease.

Today's attendees come not only from the Harvard research community, but from across the nation and from overseas for this event. On behalf of The Paul F. Glenn Center for the Biology of Aging Research and Harvard Medical School, we welcome you to the 2019 Annual Harvard/Paul F. Glenn Symposium on Aging.

David Sinclair and Bruce Yankner
Co-Directors, Paul F. Glenn Center for Aging Research

Symposium on Aging Agenda

May 20, 2019
1:00 PM - 5:00 PM

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| 1:00 p.m. | Welcome
George Q. Daley, M.D., Ph.D.,
Dean of the Faculty of Medicine
Harvard Medical School |
| 1:15 p.m. | Mr. Mark Collins, President
Glenn Foundation for Medical Research |
| 1:30 p.m. | Coleen Murphy, Ph.D.
Princeton University |
| 2:15 p.m. | Manolis Kellis, Ph.D.
MIT |
| 3:00 p.m. | Beth Stevens, Ph.D.
Harvard Medical School |
| 3:45 p.m. | Nir Barzilai, M.D.
Albert Einstein College |
| 4:30 p.m. | Public Social |

Coleen Murphy, PhD



Coleen T. Murphy is a Professor of Genomics and Molecular Biology at Princeton University and the Director of the Glenn Center for Aging Research at Princeton. She graduated from the University of Houston with a B.S. in Biochemistry and Biophysics, then earned her doctorate in Biochemistry at Stanford University, studying the structure-function determinants of the motor protein myosin. Dr. Murphy became interested in applying new quantitative technologies to approach the question of

aging during her postdoctoral work in Dr. Cynthia Kenyon's lab (UCSF), developing microarray approaches to identify the set of genes downstream of the insulin signaling/FOXO longevity pathway, revealing a vast array of downstream cellular processes, including stress response, proteostasis, metabolism, immunity, autophagy, and intercellular signaling, to extend cellular and organismal maintenance with age.

In her own lab, Dr. Murphy's team has developed *C. elegans* models of human "quality of life" aging phenotypes, such as cognitive aging and reproductive aging; these processes are remarkably well-conserved at the molecular level, and her group has identified genetic pathways that can extend these processes with age through the development of quantitative assays and genomic approaches to study these aging phenomena.

Dr. Murphy is an HHMI Faculty Scholar and an NIH Pioneer Awardee, as well as the recipient of Pew, Keck, Sloan, McKnight, March of Dimes, and NIH Innovator awards.

Manolis Kellis, PhD



Manolis Kellis is a Professor of Computer Science at MIT, an Institute Member of the Broad Institute of MIT and Harvard, a member of the Computer Science and Artificial Intelligence Lab at MIT, and head of the MIT Computational Biology Group (compbio.mit.edu). His research spans an unusually broad spectrum of areas, including disease genetics, epigenomics, gene circuitry, non-coding RNAs, comparative genomics, and phylogenomics. He has helped direct several large-scale genomics projects, including the Roadmap Epigenomics project, the ENCODE project, the Roadmap Epigenomics Project, the Genotype Tissue-Expression (GTEx) project, and comparative genomics projects in mammals, flies, and yeast. He has mentored many students and postdocs who now hold faculty positions at Stanford, Harvard, CMU, Johns Hop-kins, Sanger, UCLA, UC Davis, UC Irvine, and other top institutions. He received the US Presidential Early Career Award in Science and Engineering (PECASE) by US President Barack Obama, the NSF CAREER award, the Alfred P. Sloan Fellowship, the Technology Review TR35 recognition, the AIT Niki Award, and the Sprowls award for the best Ph.D. thesis in computer science at MIT. He has authored over 190 journal publications, which have been cited more than 70,000 times. He lived in Greece and France before moving to the US, and he studied and conducted research at MIT, the Xerox Palo Alto Research Center, and the Cold Spring Harbor Lab.

For more info, see: compbio.mit.edu and kellislab.com

Insulin Signaling and Quality of Life with Age

Single-cell Dissection of Alzheimer's Disease

Beth Stevens, PhD



Beth Stevens is an Associate Professor at Harvard Medical School in the FM Kirby Neurobiology Center at Boston Children's Hospital, an Institute Member of the Broad Institute and Stanley Center for Neuropsychiatric Research, and Howard Hughes Medical Institute Investigator.

Her research seeks to understand the mechanisms that regulate the disappearance of synapses by focusing on how immune-related molecules mediate this process. Her most recent work seeks to uncover the role that microglial cells, the immune cells of the central nervous system, and their connectivity play in neurodevelopmental and neuropsychiatric disorders. She and her team recently identified how microglia affect synaptic pruning, the critical developmental process of cutting back on synapses that occurs between early childhood and puberty. Problems with pruning is hypothesized to contribute to developmental disorders such as schizophrenia and autism. In addition, her work is providing novel insight into the mechanisms by which microglia contribute to synaptic and cognitive dysfunction in neurodegenerative diseases, including Alzheimer's that could lead to new therapies and biomarkers. Stevens was named a MacArthur Fellow in 2015. She has also shared the National Alliance on Mental Illness (NAMI) Research Award with Steven McCarrolla and Michal Carroll in 2016 for their collaborative work on C4 and Schizophrenia

Stevens received her B.S. at Northeastern University. She carried out her graduate research at the National Institutes of Health and received her Ph.D. from University of Maryland, College Park. She completed her postdoctoral research at Stanford University with Ben Barres.

Microglia Function and Dysfunction in the Aged Brain

Nir Barzilai, MD



Dr. Barzilai is a chaired Professor of Medicine and Genetics and Director of the biggest Center in the world to study the Biology of Aging. He is the recipient of an NIH Merit Award aiming to extend the healthy life span in rodents by biological interventions. He also studies families of centenarians that have provided genetic/ biological insights on the protection against aging. Several drugs are developed based, in part, on these paradigm-changing studies. He is a recipient of numerous prestigious awards, including the recipient of the 2010 Irving S. Wright Award of Distinction in Aging Research and is the 2018 recipient of the IPSEN Longevity award. He is leading the TAME (Targeting/Taming Aging with Metformin) multi central study to prove that concept that multi morbidities of aging can be delayed in humans and change the FDA indications to allow for next generation interventions. He has been featured in major papers, TV program and documentaries and has been Consulting or presented the promise for targeting aging at The Singapore Prime Minister Office, several International Banks, Pepsico, Milkin Institute, The Economist and Wired Magazine.

How to Die Young at a Very Old Age



Nearby locations for lunch:

1. Elements Café

located at Harvard Medical School, New Research Building

2. Bertucci's

(at Children's), 1 Blackfan Circle (Exit rear of Harvard Medical School)

3. Galleria Longwood Food Court

342 Longwood Avenue

