



Aging and Mechanisms of Aging-Related Disease

May 15–19, 2017 | Pacifico Yokohama | Yokohama | Japan

Scientific Organizers:

Kazuo Tsubota, Keio University School of Medicine, Japan

Shin-ichiro Imai, Washington University School of Medicine, USA

Matt Kaerberlein, University of Washington, USA

Joan Mannick, resTORbio, USA

Sponsored by Astellas Pharma Inc., Journal of Molecular Cell Biology (JMCB) and Nestlé Institute of Health Sciences

Populations are aging rapidly worldwide, particularly in Asia, driving a strong interest in aging/longevity research. This Keystone Symposia meeting will capture the cutting-edge front of this exciting field of science, covering essential aspects of aging/longevity research, including critical signaling pathways and regulators, inter-tissue communication, stem cells, stress and damage responses, cellular senescence, physiological rhythms, human genetics and mental well-being (happiness). Because aging is a systemic phenomenon, it is important to address various layers of the aging/longevity-controlling hierarchy, particularly focusing on metabolic regulation, including mitochondria, NAD⁺, oxidative stress, inflammation, protein homeostasis, autophagy and many other age-associated pathophysiological processes. The outcome of these studies needs to be translated to resolve social and economic issues caused by rapidly aging societies. Novel therapeutic and preventive interventions have been explored and developed as a growing attempt to meet the unmet needs of our aging societies, and these new aspects of aging/longevity research and the gaps in knowledge between the basic science and practical applications will also be covered in the meeting. There is a growing body of evidence that our modern lifestyle, such as the heavy use of blue light in smart phones and tablet computers, affects physiological rhythms and metabolism, promoting age-associated diseases such as obesity, diabetes, cancer and depression. Therefore, it is now time to think differently about what we can do to deal with all these problems in light of recent progress in this exciting field of science.

Session Topics:

- Signal Transduction I – Evolutionarily Conserved Players
- Workshop 1: Cutting-Edge Front of Aging/Longevity Science
- Signal Transduction II – Mitochondria
- Stem Cell Aging and Humoral Factors
- Workshop 2: Mitochondria and NAD Metabolism
- Intertissue Communication and Rhythm
- Cellular Senescence
- Stress, Damage and Epigenetic Changes
- Age-Associated Complications
- Workshop 3: Epigenetics and Stress Response
- Interventions for Aging and Longevity

Scholarship Application & Discounted Abstract Deadline: January 17, 2017

Abstract Deadline: February 15, 2017

Discounted Registration Deadline: March 15, 2017



Note: Scholarships are available for graduate students and postdoctoral fellows and are awarded based on the abstract submitted.

Meeting Hashtag: #KSaging

For more details, visit www.keystonesymposia.org/17E2

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MONDAY, MAY 15

Arrival and Registration

TUESDAY, MAY 16

Welcome and Keynote Address

***Joan Mannick**, resTORbio, USA

Johan Auwerx, École Polytechnique Fédérale de Lausanne – EPFL, Switzerland

Cross-species Genetic Mapping of Targets in Mitochondria, Metabolism and Aging

Signal Transduction I – Evolutionarily Conserved Players

***Shin-ichiro Imai**, Washington University School of Medicine, USA

Leonard P. Guarente, Massachusetts Institute of Technology, USA
The Role of Sirtuins in Aging and Age-Associated Diseases

Joan Mannick, resTORbio, USA

Is mTOR an Evolutionarily Conserved Pathway that Regulates Aging?

Noboru Mizushima, University of Tokyo, Japan

Autophagy in Intracellular Quality Control

Motoshi Hayano, Harvard Medical School, USA

Short Talk: Do Epigenetic Changes Cause Aging in Animals?

Louis R. Lapierre, Brown University, USA

Short Talk: Blocking Lipid Secretion Promotes Lipophagy and Longevity

Workshop 1: Cutting-Edge Front of Aging/Longevity Science

***Kazuo Tsubota**, Keio University School of Medicine, Japan

Naoko Ohtani, Osaka City University Graduate School of Medicine, Japan

Gut Microbiota Promotes Obesity-Associated Liver Cancer through PGE2-Mediated Suppression of Antitumor Immunity

Mark S. Lucanic, Buck Institute for Research on Aging, USA
Caenorhabditis Intervention Testing Program: Screening Pro-Longevity Chemicals for Reproducible and Robust Positive Effects across Diverse Genetic Backgrounds

Shuhei Nakamura, Osaka University, Japan
Rubicon Regulates Lifespan via Modulating Autophagy Activity

Kazuto Kawamura, Okinawa Institute of Science and Technology, Japan

Forward Genetic Screen for Adult-Onset Motor Deficits in C. elegans

Alaattin Kaya, Harvard Medical School, USA
Molecular Basis of Longevity Traits in Yeast Lifespan

Hiromi Rakugi, Osaka University, Japan
From Bench to Society in Geriatric Medicine

Hiroshi Itoh, Keio University School of Medicine, Japan
Application of NMN (Nicotinamide Mononucleotide) to Anti-Aging in Humans

Signal Transduction II – Mitochondria

***Ana Maria Cuervo**, Albert Einstein College of Medicine, USA

Marcia C. Haigis, Harvard Medical School, USA

The Function of Mitochondrial Sirtuins in Metabolism and Aging

Matt Kaerberlein, University of Washington, USA

The Importance of mTOR Signaling in Aging and Longevity Control

Michael Ristow, ETH Zürich, Switzerland

Mitochondrial Control of Healthy Aging

Takashi Kadowaki, University of Tokyo, Japan

Adiponectin as an Anti-Aging Regulation

Nicholas L. Bentley, University of New South Wales, Australia

Short Talk: Elevating Mitochondrial NAD Biosynthesis Enhances Hepatic Energy Metabolism, and Improves Glucose Tolerance in Aged Mice

Poster Session 1

WEDNESDAY, MAY 17

Stem Cell Aging and Humoral Factors

***Thomas A. Rando**, Stanford University School of Medicine, USA

Heinrich Jasper, Buck Institute for Research on Aging, USA

Inflammation and Immune Modulation: Tackling Age-related Stem Cell Dysfunction

Rajendra S. Apte, Washington University School of Medicine, USA
Photoreceptor Metabolism in the Aging Eye

Emi K. Nishimura, Tokyo Medical and Dental University, Japan
Stem Cells Orchestrate Hair Follicle Aging Program

Tapash Jay Sarkar, Stanford University, USA

Short Talk: Scalable Rejuvenation through Transient Reprogramming

Yaisa Andrews-Zwilling, SanBio, Inc., USA

Short Talk: Transplanted Modified Bone Marrow-Derived Mesenchymal Stem Cells, SB623, Ameliorate Chronic Behavioral and Pathological Deficits in Stroke Rats

Workshop 2: Mitochondria and NAD Metabolism

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

Mitsukuni Yoshida, Washington University in St. Louis, USA
eNAMPT as an Adipose-Derived NAD⁺ Biosynthetic Enzyme that Systemically Regulates Aging

Emi Inagaki, Keio University, Japan

NAD-Related Metabolites and their Possible Application for Corneal Disease

Anthony Joseph Covarrubias, Buck Institute, USA

The Role of Macrophages in NAD⁺ Homeostasis during Aging

Masakatsu Yamashita, Ehime University School of Medicine, Japan
Metabolic Regulation of T Cell Senescence by Menin

Pénélope Andreux, Amazentis, Switzerland

Translation of Urolithin A Effects on Mitochondria and Muscle from Worms to Rodents to Humans

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Caroline C. Escoubas, Harvard School of Public Health, USA
The Role of Mitochondrial Dynamics in AMPK-Mediated Learning and Memory

Intertissue Communication and Rhythm

***Matt Kaerberlein**, University of Washington, USA

Shin-ichiro Imai, Washington University School of Medicine, USA
Nicotinamide Mononucleotide, a Key Systemic NAD⁺ Intermediate in Mammalian Aging and Longevity Control

Satchidananda Panda, The Salk Institute for Biological Studies, USA
Circadian Regulation for the Prevention and Treatment of Metabolic Diseases

Francisca O. Peixoto, IRB Barcelona, Spain
Short Talk: Aged Stem Cells Reprogram their Daily Rhythmic Functions to Adapt to Tissue-Specific Stress

Victoria A. Acosta Rodriguez, University of Texas Southwestern Medical Center, USA
Short Talk: Calorically Restricted Mice Self-Impose a Temporal Pattern of Food Intake

Poster Session 2

THURSDAY, MAY 18

Cellular Senescence

***Eisuke Nishida**, Kyoto University, Japan

John Sedivy, Brown University, USA
Activation of Somatic Retrotransposition in Cellular Senescence and Aging

Jan M. van Deursen, Mayo Clinic, USA
How Senescent Cells Contribute to Aging and Disease

Tohru Minamino, Niigata University Graduate School of Medical and Dental Sciences, Japan
Cellular Senescence and Age-Associated Diseases

Yun-Chen Chiang, University of North Carolina at Chapel Hill, USA
Short Talk: The Role of p16INK4a in Shaping the T Cell Receptor Repertoire Diversity

Kyoko Miura, Hokkaido University, Japan
Short Talk: Unique Response of Cancer- and Senescence-Resistant Rodent "Naked Mole-Rat" to Cellular Senescence Induction

Stress, Damage and Epigenetic Changes

***Emi K. Nishimura**, Tokyo Medical and Dental University, Japan

Rochelle Buffenstein, Calico Life Sciences LLC, USA
Sustained Maintenance of Proteostasis in the Long-Lived Naked Mole-Rat

Jan H. J. Hoeijmakers, Erasmus MC, Netherlands
DNA Damage, Aging and Nutritional Interventions

Jing-Dong Jackie Han, Shanghai Institutes of Biological Sciences, China
Integrative Data Analysis for Development and Aging

Poster Session 3

FRIDAY, MAY 19

Keynote Address

***Leonard P. Guarente**, Massachusetts Institute of Technology, USA

Thomas A. Rando, Stanford University School of Medicine, USA
Epigenetic Regulation of Stem Cell Aging

Age-Associated Complications

***Satchidananda Panda**, The Salk Institute for Biological Studies, USA

Yousin Suh, Albert Einstein College of Medicine, USA
Enhancer Mechanisms in Human Aging and Aging-Related Disease

Kazuo Tsubota, Keio University School of Medicine, Japan
Age-Associated Eye Diseases and their Treatment

Masashi Yanagisawa, University of Tsukuba, Japan
Towards the Mysteries of Sleep

Ana Maria Cuervo, Albert Einstein College of Medicine, USA
Selective autophagy and age-associated diseases

Liang Dai, L'Oreal Research and Innovation, Singapore
Short Talk: The Role of Pre-LaminA in Skin Aging

Lauren Tindale, BC Cancer Agency, Canada
Short Talk: Lipid and Alzheimer's Disease Genes Associated with Healthy Aging and Longevity in Healthy Oldest-Old

Workshop 3: Epigenetics and Stress Response

***Jing-Dong Jackie Han**, Shanghai Institutes of Biological Sciences, China

Clea Barcena, University of Oviedo, Spain
Methionine Restriction Extends Mouse Lifespan by Modulating Bile Acid Signaling

Chung-Yi Liang, National Yang-Ming University, Taiwan
Functional Regulation of the DAF-16/FoxO Transcription Factor by Acetylation in Stress Responses and Longevity

Nitish Mittal, Biozentrum, University of Basel, Switzerland
The Gcn4 Transcription Factor Reduces Protein Synthesis Capacity to Extend Lifespan

Claire H. Wilson, University of South Australia, Australia
Caspase-2, a Regulator of Metabolic and Stress Response Pathways during Aging

Harumi Fujita, Keio University School of Medicine, Japan
Genetic Characterization of a Patient with a Progeroid Phenotype and Mosaic Variegated Aneuploidy

Min-Hao Kuo, Michigan State University, USA
Intracellular Triacylglycerol Promotes Longevity Independently of Energy Expenditure

Parag Kundu, Nanyang Technological University, Singapore
Gut Microbiome of Aging-Host: Friend or Foe?

Interventions for Aging and Longevity

***Masashi Yanagisawa**, University of Tsukuba, Japan

Eisuke Nishida, Kyoto University, Japan
Life-Span Regulation by Environmental Stresses in C. elegans

Hideyuki Okano, Keio University School of Medicine, Japan
Preemptive Medicine for Dementia and Neurodegenerative Diseases using iPSC-Technologies and Genetically Modified Non-human Primates

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Gary Krishnan, Eli Lilly and Company, USA

Short Talk: Changes in Human Skeletal Muscle Transcriptome after Exercise Provides a Guide-Post for the Identification of Novel Exercise Mimetic Therapies to Treat Aging-Related Loss in Muscle Function

Arya Biragyn, NIA, National Institutes of Health, USA

Short Talk: Aging Microbiota Change in Primates and Mice Converts Innate B1a Cells into Pathogenic 4BL Cells that Induce Cytolytic CD8⁺T Cells

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

SATURDAY, MAY 20

Departure