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 Kaeberlein, 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 pathophysologies. 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 and 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
## Welcome and Keynote Address

**Joan Mannick**, resTORbio, USA

*Is mTOR an Evolutionarily Conserved Pathway that Regulates 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*

**Emi Inagaki**, Washington University in St. Louis, USA

*eNAMPT as an Adipose-Derived NAD+ Biosynthetic Enzyme that Systemically Regulates Aging*

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

*Stem Cells Orchestrates Hair Follicle Aging Program*

**Takashi Kadowaki**, University of Tokyo, Japan

*Mitochondrial Control of Healthy Aging*

**Joan Mannick**, resTORbio, USA

*The Function of Mitochondrial Sirtuins in Metabolism and Aging*

**Matt Kaeberlein**, University of Washington, USA

*The Importance of mTOR Signaling in Aging and Longevity Control*

**Michael Ristow**, Swiss Federal Institute of Technology Zurich - ETH, Switzerland

*Mitochondrial Control of Healthy Aging*

**Thomas R. Hauener**, Buck Institute for Research on Aging, USA

*The Role of Sirtuins in Aging and Age-Associated Diseases*

**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?*

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### Signal Transduction I – Evolutionarily Conserved Players

**Shin-ichi 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. Lucanich**, 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*

**Hirosi Itoh**, Keio University School of Medicine, Japan

*Application of NMN (Nicotinamide Mononucleotide) to Anti-Aging in Humans*

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### Signal Transduction II – Mitochondria

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

*The Function of Mitochondrial Sirtuins in Metabolism and Aging*

**Matt Kaeberlein**, University of Washington, USA

*The Importance of mTOR Signaling in Aging and Longevity Control*

**Michael Ristow**, Swiss Federal Institute of Technology Zurich - ETH, Switzerland

*Mitochondrial Control of Healthy Aging*

**Takashi Kadowaki**, University of Tokyo, Japan

*Adiponectin as an Anti-Aging Regulation*

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*Stem Cells Orchestrates Hair Follicle Aging Program*

**Takashi Kadowaki**, University of Tokyo, Japan

*Mitochondrial Control of Healthy Aging*

**Joan Mannick**, resTORbio, USA

*Is mTOR an Evolutionarily Conserved Pathway that Regulates Aging?*

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### Workshop 2: Mitochondria and NAD Metabolism

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

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

**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*

**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 Kaebelerlein*, 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

**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

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**