Press Release

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September 29, 2020
Keio University

Announcement of The Keio Medical Science Prize 2020

Keio University, Japan's oldest private university located in Tokyo, annually awards The Keio Medical Science Prize to recognize researchers who have made an outstanding contribution to the fields of medicine or the life sciences. It is the only prize of its kind awarded by a Japanese university, and 8 laureates of this prize have later won the Nobel Prize. The 25th Keio Medical Science Prize is awarded to **Dr. Aviv Regev** from Genentech, a member of the Roche Group, and Broad Institute of MIT and Harvard, and **Dr. Atsushi Miyawaki** from RIKEN, Japan's largest comprehensive research institution.
With the outbreak of the new coronavirus infection, the first online events since the establishment of the prize will be held. The lectures and interviews of both laureates will be available online.

1. Laureates

Aviv Regev, Ph.D.

Executive Vice President,
Genentech Research and Early Development

"Single Cell Analysis Technology to Understand the Complexity of Life"

Atsushi Miyawaki, M.D., Ph.D.

Laboratory Head,
RIKEN Center for Brain Science
RIKEN Center for Advanced Photonics

"Unveiling Life Science through Innovative Molecular Imaging"

2. Award Commemorative Events

Thursday, October 1:
Announcement of Laureates, Release of Laureates' Message Videos on the Prize's Website

Late November:
Awards Interview (Video Release in December)

Middle of December:
Keio Medical Science Prize Lecture (Web Live Streaming)

For more information, please visit Keio Medical Science Prize website: https://www.ms-fund.keio.ac.jp/en/prize/

The Keio Medical Science Prize

1. Background

In the fall of 1994, Dr. Mitsunada Sakaguchi, a 1940 alumnus of the School of Medicine, donated five billion yen to Keio University with the expressed desire that it be used to commend outstanding researchers, to encourage medical research and its creative progress at Keio through grants, and to promote worldwide medical advances. In keeping with Dr. Sakaguchi's commitment, Keio launched The Keio University Medical Science Fund on April 1, 1995. Dr. Sakaguchi made an additional donation of two billion yen in July 1999, bringing the fund to a total of seven billion yen.

2. Initiatives

- The Keio Medical Science Prize
- International Activities in Medicine and the Life Sciences
- The Keio Medical Science Rising Star Award
- Research Grants for Medicine and the Life Sciences
- Sakaguchi Laboratory

3. Objective

The Keio Medical Science Prize gives recognition to the outstanding and creative achievements of researchers in the fields of medicine and the life sciences, in particular those contributing to scientific developments in medicine. It aims to promote worldwide advances in medicine and the life sciences, encourage the expansion of researcher networks throughout the world, and contribute to the well-being of humankind.

4. Prize

Laureates receive a certificate of merit, medal, and a monetary award of 10 million yen. The award events and Keio Medical Science Lectures are held online this year.

5. Nomination and Selection

The Keio Medical Science Prize is an international award, and each year academics and researchers from around the world are invited to nominate a candidate. Laureates are then selected through a rigorous review process by about ninety Japanese academics from both within and outside of Keio University.

6. 2019 Prize Laureates

Hans C. Clevers, M.D., Ph.D.
"Wnt signaling in Stem Cells and Organogenesis"
Tadamitsu Kishimoto, M.D., Ph.D.
"IL-6: From Molecule to Medicine"

7. Nobel Prize Winning Laureates

2016	Tasuku Honjo (The Nobel Prize in Physiology or Medicine 2018) Identification of PD-1 and Establishment of Cancer Immunotherapy Principle by PD-1 Blockade
2015	Yoshinori Ohsumi (The Nobel Prize in Physiology or Medicine 2016) Discoveries of Mechanisms for Autophagy
2010	Jules A. Hoffmann (The Nobel Prize in Physiology or Medicine 2011) Discovery of Insect-innate Immune System and Toll Receptors
2006	Thomas A. Steitz (The Nobel Prize in Chemistry 2009) Structural Basis of Large Ribosomal Subunit Function and Drug Development
2004	Roger Y. Tsien (The Nobel Prize in Chemistry 2008) Visualization and Control of Molecules within Living Cells
2002	Barry J. Marshall (The Nobel Prize in Physiology or Medicine 2005) Establishment of Diagnostic Techniques and Treatment for Helicobacter Pylori
1999	Elizabeth Helen Blackburn (The Nobel Prize in Physiology or Medicine 2009) Telomeres and Telomerase
1996	Stanley B. Prusiner (The Nobel Prize in Physiology or Medicine 1997) Discovery of Prions and Prion Diseases

The Keio Medical Science Prize 2020 Laureate

"Single Cell Analysis Technology to Understand the Complexity of Life"

Aviv Regev, Ph.D.
Executive Vice President,
Genentech Research and Early Development

Single cell genomics is a new technology that has opened up the possibility of examining biological systems in unprecedented detail, revealing unique characteristics of individual cells and their interactions that play critical roles in health and disease. Dr. Aviv Regev has developed key computational and experimental methods for single cell analysis, leading the field ever since it was first introduced in the early 2010s. In 2013, Dr. Regev published a groundbreaking study of single cell analysis of 18 individual mouse dendritic cells, which laid the foundation for single cell analysis, describing key aspects, such as how to formulate the core biological questions that single cell genomics can address. Dr. Regev co-developed Drop-Seq, which enables large scale single cell analysis, and further developed Perturb-Seq to explore the impact of thousands of gene disruptions in combination with the CRISPR technology. Dr. Regev has also delivered new biologically and medically relevant insights into single cell technology. She has identified rare cell types, such as novel bipolar cells in the retina, pulmonary ionocytes relevant to cystic fibrosis, and disease-specific cell types in ulcerative colitis. Also, she has devised new computational approaches to obtain a deeper understanding of the interactions between tumors and their microenvironment. Beyond her own work, Dr. Regev has been playing a central role in developing the international community Human Cell Atlas. Single cell analysis has revolutionized our understanding of many aspects of biology and medicine, and her achievement is undoubtedly worthy of the Keio Medical Science Prize.

Education

1998-2002	Ph.D. Computational Biology, Tel Aviv University, Tel Aviv, Israel
1992-1997	M.Sc. (direct, Summa cum laude) Tel Aviv University, Tel Aviv, Israel

Positions

2020-	Executive Vice President, Genentech Research and Early Development
2014-2020	HHMI Investigator
2015-2020	Chair of the Faculty (Executive Leadership Team), Broad Institute
2015- (on leave)	Professor, Department of Biology, MIT
2012-2020	Founding Director, Klarman Cell Observatory, Broad Institute
2013-2020	Director, Cell Circuits Program, Broad Institute
2011-2015	Associate Professor with Tenure, Department of Biology, MIT
2009-2014	Early Career Scientist, Howard Hughes Medical Institute
2006- (on leave)	Core Member, Broad Institute of MIT and Harvard
2006-2011	Assistant Professor, Department of Biology, MIT
2003-2006	Bauer Fellow, Center for Genomics Research, Harvard University

Major Honors/Awards

2020	Lurie Prize in Biomedical Sciences
2019	US National Academy of Sciences, Elected Member
2019	FASEB Excellence in Science Mid-Career Investigator Award
2017	Paul Marks Prize, Memorial Sloan Kettering Cancer Center
2017	Innovator Award, International Society for Computational Biology

Comments from Dr. Aviv Regev

I am deeply grateful to the Keio Medical Science Prize committee for this wonderful honor, to be received together with Prof. Atsushi Miyawaki. It recognizes the rapid rise and impact of single cell genomics, a new field that has yielded a broad range of fundamental discoveries into the function of cells and tissues in health and disease, helps discover new therapeutic avenues, and empowered an international initiative, including key scientific leaders in Japan, to construct a Human Cell Atlas as a reference map of our bodies' cells.

The Keio Medical Science Prize 2020 Laureate

"Unveiling the Life Science through the Innovative Molecular Imaging"

Atsushi Miyawaki, M.D., Ph.D.
Laboratory Head,
RIKEN Center for Brain Science
RIKEN Center for Advanced Photonics

Bioimaging is a visualization technology that vividly depicts dynamic changes of small molecules in living cells, and provides the foundation for the recent progresses in the fields of medical and life sciences. Dr. Atsushi Miyawaki has developed innovative fluorescent imaging probes that enable visualization of microscopic molecular dynamic events occurring in cells, such as during the cell cycle (Fucci) and mitophagy (mito-SRAI). In addition, in order to enable detection of signals from deep within organs, Dr. Miyawaki has developed Sca*l*e, an optical clearing reagent for biological imaging, and AkaBLI, a new bioluminescence in vivo imaging system. These new technologies are widely used by researchers around the world, and have had a great impact on the development of the fields of medical and life sciences. In this way, Dr. Miyawaki has brought new developments to research in the fields of medicine and life sciences, and is conducting original research that opens up a new paradigm.

Education

1991	Ph.D. Osaka University School of Medicine, Japan
1987	M.D. Keio University School of Medicine, Japan

Positions

2013-	Team Leader, Biotechnological Optics Research Team, RIKEN Center for Advanced Photonics
2012-	Visiting Professor Graduate School of Nanobioscience, Yokohama City University, Japan
2010-2011	Visiting Professor, Faculty of Science, Toho University, Japan
2010-	Director, RIKEN CBS-Olympus Collaboration Center (previously named RIKEN BSI-Olympus Collaboration Center)
2009-2014	Visiting Professor, Keio University School of Medicine, Japan
2008-2018	Deputy Director, RIKEN Brain Science Institute, Japan
2007-2010	Deputy Director, BSI Olympus Collaboration Center
2007-	Visiting Professor, Graduate School of Advanced Science and Engineering, Waseda University, Japan
2006-2011	Visiting Professor, National Institute for Basic Biology, The National Institute of Natural Sciences, Japan
2006	Visiting Professor, Tokyo University School of Science, Japan
2006-2013	Research Director, ERATO MIYAWAKI Life Function Dynamics Project, Japan Science and Technology Agency, Japan
2005-2010	Visiting Professor, Institute of Molecular and Cellular Biosciences, The University of Tokyo, Japan
2004-2009	Group Director, Advanced Technology Development Group, RIKEN Brain Science Institute, Japan
1999-	Laboratory Head, Lab for Cell Function Dynamics, RIKEN Center for Brain Science (previously named RIKEN Brain Science Institute), Japan
1997-1998	Research Pharmacologist, The University of California, San Diego, USA
1995-1997	HFSP, Long-term Fellowship, The University of California, San Diego, USA
1993-1998	Assistant Professor, The Institute of Medicine Science, The University of Tokyo, Japan
1991-1993	Researcher, The Institute of Medicine Science, The University of Tokyo, Japan

Major Honors/Awards

2017	Uehara Prize
2017	Medal with Purple Ribbon
2015	W. Alden Spencer Award, Columbia University
2013	Fujihara Award
2006	Japan Society for the Promotion of Science Prize (Biological Science)

Comments from Dr. Miyawaki

In May 1983, as I was perusing several works at Kitasato Library, I came across an article written by Dr. Lubert Stryer titled, “Fluorescence Energy Transfer as a Spectroscopic Ruler,” and was immensely inspired by it. Since then, I have traversed various academic fields in pursuit of nascent technologies and concepts that could potentially revolutionize molecular imaging. I have mostly employed fluorescence and bioluminescence to better understand how the necessary molecules for life behave inside individual cells. Thanks to the many friends and mentors who supported me in my tireless pursuit of interdisciplinary studies, I have been able to channel my efforts to the creation of a new research field. Among my mentors are Dr. Katsuhiko Mikoshiba and Dr. Roger Y. Tsien, who received this prize in 1998 and 2004, respectively. It is a great honor for me to be chosen as the recipient of this year’s Keio Medical Science Prize together with Dr. Aviv Regev.

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