

September 11, 2017
Keio University

Announcement of The Keio Medical Science Prize 2017

Keio University 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 7 laureates of this Prize have later won the Nobel Prize. The 22nd Keio Medical Science Prize is awarded to **Prof. John E. Dick** and **Prof. Seiji Ogawa**.

1. Laureates

John E. Dick, PhD FRS



Canada Research Chair in Stem Cell Biology and Senior Scientist, Princess Margaret Cancer Centre, University Health Network; and Professor, Department of Molecular Genetics, University of Toronto
“Identification of cancer stem cells”

Seiji Ogawa, PhD



Research Professor, Kansei Fukushi Research Center, Tohoku Fukushi University
“Development of functional MRI”

2. Award Ceremony and Events

The award ceremony and commemorative lectures will be held on November 30, 2017 at Keio University School of Medicine, located on Keio University's Shinanomachi Campus.

Award Ceremony and Commemorative Lectures

Date & Time: November 30, 2017, 14:00-17:30

Venue: Kitasato Memorial Hall, Keio University School of Medicine, Shinanomachi Campus, Tokyo, Japan

Language: English and Japanese

Simultaneous translation available (English-Japanese/Japanese-English)

Admission: Open to the public

Attachments: (1) The Keio Medical Science Prize
(2) The Keio Medical Science Prize Laureate 2017

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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
- Grants for International Activities in Medicine and the Life Sciences
- Medical School Faculty and Alumni Grants
- 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 ceremony and commemorative lectures are held at Keio University.

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. **2016 Prize Laureates**

Svante Pääbo

Molecular Elucidation of Human Origin

Tasuku Honjo

Elucidation of molecular mechanism of autophagy

Identification of PD-1 and Establishment of Cancer Immunotherapy Principle by PD-1 Blockade

7. **Nobel Prize Winning Laureates**

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|------|--|
| 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 2017 Laureate

“Identification of cancer stem cells”

John E. Dick, PhD FRS

Canada Research Chair in Stem Cell Biology and Senior Scientist, Princess Margaret Cancer Centre, University Health Network ; and Professor, Department of Molecular Genetics, University of Toronto

Tissue stem cells exhibit the capacity for self-renewal and differentiation into cells of various types. These multipotent stem cells are the principal source of the cells in adult tissue. The idea that stem cells might also be present in cancer tissues, i.e., the "cancer stem cell hypothesis," was first proposed long ago, but bona fide cancer stem cells were not isolated for many years. Professor John E. Dick was the first to isolate cells expressing hematopoietic stem cell surface markers from human leukemia cells, and transplant them into immunocompromised mice. This provided the first evidence that human leukemia can be maintained in mice, and the first indication that stem cells are present and active in leukemia. Beginning with these findings, the field of cancer stem cell research has continued to advance and it has since become clear that cancer stem cells play roles in solid tumors as well. Cancer stem cells are more resistant to therapeutic interventions than normal cancer cells, and serve as source cells in cancer recurrence and metastasis. Professor Dick 's contribution is immeasurable, as he gave rise to the idea that cancer stem cells must be destroyed for cancers to be eradicated.

1974	Registered Radiological Technologist, Misericordia General Hospital
1978	B.Sc. (Hons) Dept. of Microbiology, University of Manitoba
1984	Ph.D. Microbiology and Biochemistry, University of Manitoba
1978-1984	Graduate Student, Dr. J. Wright, Department of Microbiology and Manitoba Institute of Cell Biology, University of Manitoba, NSERC Scholarship, MHRC Scholarship
1984-1986	Post-doctoral Fellow, Dr. A. Bernstein, Ontario Cancer Institute and Mount Sinai Hospital, Research Institute, University of Toronto MRC Post-doctoral Fellowship
1986-1991	Scientist, Department of Genetics, Research Institute Hospital for Sick Children, Toronto
1987-1991	Assistant Professor, Department of Molecular and Medical Genetics, University of Toronto, Toronto
1989-1996	Research Scientist of the National Cancer Institute of Canada
1991-1995	Associate Professor, Department of Molecular and Medical Genetics, University of Toronto
1991-2002	Senior Scientist, Department of Genetics, Research Institute, Hospital for Sick Children, Toronto
1995-Present	Professor, Department of Molecular Genetics, University of Toronto, Toronto
1996-2001	Medical Research Council of Canada Scientist
2002-Present	Canada Research Chair in Stem Cell Biology, Senior Scientist, Princess Margaret Cancer Centre, University Health Network, Toronto
2007-Present	Investigator, McEwen Centre for Regenerative Medicine, University Health Network, Toronto
2007- 2017	Director, Program in Cancer Stem Cells, Ontario Institute for Cancer Research, (OICR), Toronto
2017-Present	Director, Translational Research Initiative in Leukemia, Ontario Institute for Cancer Research, (OICR), Toronto

Comments from Professor Dick

It is with gratitude that I accept the Keio Medical Science Prize. Science is not done in isolation and I have had the good fortune to be surrounded by wonderful colleagues in Toronto who set the highest standards for scientific thought that continuously challenged me to tackle biological challenges with rigour and clear thinking. All of our work on the biology of normal and leukemic human stem cells was the cumulative effort of many students and post-docs who contributed so much to the thinking and execution of the experimental findings. I dedicate this award to them.



The Keio Medical Science Prize 2017 Laureate

“Development of functional MRI”

Seiji Ogawa, PhD

Research Professor, Kansei Fukushi Research Center, Tohoku Fukushi University

Professor Seiji Ogawa developed a technique for detecting MRI (magnetic resonance imaging) signals that depends on blood oxygenation levels in the brain, which he named BOLD (for Blood Oxygen Level Dependent). Professor Ogawa has shown that BOLD signals can be used in functional mapping of the human brain following sensory stimulation, establishing the basic principles underlying functional MRI (fMRI). fMRI in turn has paved the way to the mapping of human brain activity non-invasively and without the use of radioactive isotopes. The ability to measure whole brain activity, which enables the investigation of distributed patterns of activity as well as functional localization of the brain, is one of key advantages of fMRI. New applications of fMRI, such as decoding of brain activity and identification of biomarkers of neuropsychiatric disease, continue to be developed. Professor Ogawa's pioneering work on fMRI is a milestone technology that plays indispensable roles in contemporary neuroscience.

1957	B.S., Applied Physics University of Tokyo, Tokyo, Japan
1967	PhD in Chemistry, Stanford University, Stanford, California, USA
1962 - 1964	Research Associate, Radiation Research Laboratories Mellon Institute, Pittsburgh, PA
1967 -1968	Postdoctoral Fellow, Stanford University, Stanford, CA
1968 -1983	Member of the Technical Staff Principal Investigator, Biophysics Research Bell Laboratories, AT&T, Murray Hill, NJ
1984 -2001	Distinguished Member of the Technical Staff, Biophysics Research/Biological Computation Research Bell Laboratories, AT&T/ Lucent Technologies, Murray Hill, NJ
2001 - 2004	Visiting Professor, Biophysics/Physiology Department Albert Einstein College of Medicine, Yeshiva University Bronx, New York
2001 - 2008	Director, Ogawa Laboratories for Brain Function Research Hamano Life Science Research Foundation, Tokyo, Japan
2008 - Present	Professor (special appointment), Kansei Fukushi Research Center, Tohoku Fukushi University, Sendai, Japan
2008 - 2012	Visiting Professor, Graduate School of Human Relations, Keio University, Tokyo, Japan
2008 - 2013	Visiting Professor, Neuroscience Research Institute, Gachon University, Incheon, Korea
2009 - 2016	Visiting Professor, Biophysics/Physiology Department Albert Einstein College of Medicine, Yeshiva University, Bronx, New York
2011 - 2015	R&D Advisor, National Institute of Information and Communication Technology

Comments from Professor Ogawa

It is a great honor to receive the prestigious Keio Medical Science Prize and to join the ranks of the renowned previous laureates. The MRI phenomenon I encountered during my fundamental research a quarter of century ago has seen applications in brain science far beyond my expectations at the time. The successful development of the neuro-imaging field is the product of efforts by great many talented scientists around the world.