

LAUREATES


Award-Winning Scholars at Kyoto University

1949 - 2013

Hideki Yukawa
Sin-itiro Tomonaga
Kenichi Fukui
Susumu Tonegawa
Ryoji Noyori
Toshihide Maskawa
Makoto Kobayashi
Shinya Yamanaka
Kiyosi Itô
Osamu Hayaishi
Mikio Sato
Heisuke Hironaka
Yoshio Masui
Yasutomi Nishizuka
Shigefumi Mori
Chushiro Hayashi
Masatoshi Nei
Kimishige Ishizaka
Makoto Nagao
Masatoshi Takeichi
Denis Le Bihan
Makoto Kumada
Sueo Kawabata
Huzihiro Araki
Tetsuya Sato
Hiroshi Matsumoto
Kohei Tamao
Satoru Fujishige
Tamio Hayashi
Tetsuji Miwa
Kazuyuki Hirao
Susumu Kitagawa
Mitsuo Sawamoto
Keiji Maruoka
Mitsuhiro Shishikura
Hiraku Nakajima
Hiroshi Ooguri
Shin-ichi Matsumoto
Tokindo S. Okada
Shigetada Nakanishi
Koichi Tanaka
Tasuku Honjo
Ken-ichi Inui
Yoshinori Fujiyoshi
Kenji Kangawa
Shigekazu Nagata
Shuh Narumiya
Mitsuru Hashida
Shimon Sakaguchi
Kazutoshi Mori
Junichiro Itani
Yoneo Ishii
Toshisada Nishida
Kazuyoshi Yoshikawa
Kenichiro Osumi
Hisateru Mitsuda
Tadao Umesao
Kazuhiko Nishijima
Toshio Sawada
Yorio Hinuma
Mitsuhiro Yanagida
Yasuyuki Yamada
Susumu Fuma
Kazuya Kato
Keiji Morokuma
Tohru Eguchi



KYOTO UNIVERSITY



LAUREATES

Award-Winning Scholars
at Kyoto University

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President's Message

Kyoto University was established in 1897 as the second imperial university in Japan. Located in the Yoshida district, near Mount Hiei and the Kamogawa River, the university developed a unique brand of scholarship, cultivated an outstanding pool of knowledge and talent, and became one of Japan's foremost academic centers. That legacy has continued to the present day. Over 110 years since its founding, Kyoto University's domestic and international presence as a leading research institution has continued to develop and spread geographically to locations such as Uji Campus, Katsura Campus, the Research Reactor Institute in Osaka Prefecture's Kumatori, and the Primate Research Institute in Inuyama, Aichi Prefecture.

As in the past, the students and scholars gathered on Yoshida Campus today share a common characteristic: they are driven by a yearning to search for the truth and a respect for academic freedom. Those qualities are

reflected in their innovative approaches to research, and in the results that they yield.

This publication introduces a partial selection of the Kyoto University-affiliated scholars whose research has been acknowledged by prestigious international awards. Although the awards are bestowed for achievements that have already been made, they are given in anticipation of the contribution that the work will bring in the future. Compiling this selection of the awards garnered to date by KU scholars into a single volume gave us pause to reflect on the accomplishments of our predecessors and colleagues, and reaffirmed our conviction in the importance of maintaining Kyoto University as a haven for open-minded intellectual curiosity. Unswayed by transient and superficial trends in education and research, Kyoto University will seek to maintain its authentic spirit of academic freedom and diversity, and strive to meet the needs of our time.

Hiroshi Matsumoto

President of Kyoto University



Introduction

This brochure aims to introduce Kyoto University researchers who have been awarded major international accolades since 1949, the year that Professor Hideki Yukawa received the Nobel Prize, to 2013, providing profiles of the individuals researchers, as well as their award-winning research.

As of December 2013, there are eight Kyoto University-affiliated Nobel laureates: Hideki Yukawa (1949), Sin-itiro Tomonaga (1965), Kenichi Fukui (1981), Susumu Tonegawa (1987), Ryoji Noyori (2001), Toshihide Maskawa (2008), Makoto Kobayashi (2008), and Shinya Yamanaka (2012). Kyoto University is also proud to have fostered two Fields Medalists, four

Albert Lasker Award winners, and one Gauss Prize winner. This degree of excellence is unparalleled among Japanese universities, and leads to the question of what has inspired such a high level of creativity. The answer may lie in the fundamental principle of “academic freedom” which has guided the university since its founding.

We have tried to include in this publication as much information as possible about each researcher, as well as to share anecdotes about their research. We hope that this brochure will convey to our readers the freedom, depth, and diversity of Kyoto University’s academic environment.

Chapters 7 and 8 introduce recipients of the Order of Culture and the Imperial Prize of the Japan Academy, Japan’s highest honors to those who have made distinguished contributions to science, technology, the arts, and culture. Although these are domestic awards conferred on Japanese nationals, they have been included in this brochure in order to ensure that the achievements of Kyoto University researchers in the humanities and social science fields are appropriately represented. Due to the nature of those fields, most research papers by Japanese scholars are published in Japanese, and therefore less likely to be recognized internationally. Kyoto University is renowned as one of Japan’s leading universities in the humanities and social science fields, and Chapters 7 and 8 reflect some of these great academic achievements.

Please Note

Each award-winning scholar is introduced on a full page within this brochure. In cases where researchers have received multiple awards, the content focuses on the higher profile award at the discretion of the editors. The brochure also introduces award-winning alumni who have not been employed by Kyoto University.

The Structure of this Brochure

This brochure comprises the following eight chapters:

- Chapter 1 Nobel Prize
- Chapter 2 Gauss Prize, Wolf Prize, Fields Medal, and Albert Lasker Award
- Chapter 3 Kyoto Prize, Japan Prize, Honda Prize
- Chapter 4 International Awards in Science and Engineering
- Chapter 5 International Awards in Medicine and Life Science
- Chapter 6 International Awards in Humanities and Social Science
- Chapter 7 Order of Culture, Japan
- Chapter 8 Imperial Prize of the Japan Academy

Request to Kyoto University Researchers

While every effort has been made to provide information about all of Kyoto University’s major international award winners to date, it is possible that some information may have been overlooked, as there have not been any previous materials compiling such information produced by Kyoto University.

All reasonable care has been taken to ensure the accuracy of the information contained in this brochure, which covers a broad range of academic fields spanning science and the humanities over a period of almost seven decades. If any information is missing or erroneous, please kindly notify the editors so that subsequent editions may be revised.

About Kyoto University

Kyoto University was originally founded as Kyoto Imperial University on 18 June 1897. It was the second imperial university to be established in Japan.

Mission Statement

"Kyoto University states its mission to sustain and develop its historical commitment to academic freedom and to pursue harmonious coexistence within human and ecological community on this planet."

For further details, please visit the website below:
www.kyoto-u.ac.jp/en/profile/ideals/basic/index.htm



University Profile

Students (as of 1 May 2014)

Undergraduate students: 13,580
Master's course students: 4,794
Professional course students: 721
Doctoral course students: 3,645

International students (as of 1 May 2014): 1,779
Students studying abroad (FY2013): 2,507

Faculty and Staff (as of 1 May 2014)

Faculty members: 2,836
Non-teaching staff members: 2,657

International faculty members
(as of 1 May 2014): 275
International researchers hosted annually
(FY2013): 851

Facilities and Environment (as of 1 April 2014)

Faculties: 10
Graduate Schools: 18
Research Institutes: 14
Intra-University Networks and Organizations: 6
Education and Research Centers: 17
Overseas Offices and Facilities: 50

Finance

FY2013 revenues: JPY 174,807 million
FY2013 expenses: JPY 169,271 million

International Accolades (as of 1 April 2014)

Nobel Prizes: 8
Fields Medals: 2
Gauss Prize: 1
Lasker Awards: 4
Japan Prizes: 2
Kyoto Prizes: 4

For details, please see the document below:
www.kyoto-u.ac.jp/contentarea/ja/issue/ku_eprofile/documents/2013/facts_2013.pdf



Chapter

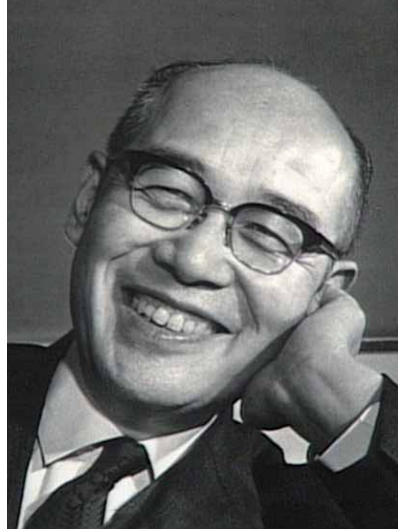
1

Nobel Prize

"On 27 November 1895, Alfred Nobel signed his last will and testament, giving the largest share of his fortune to a series of prizes in Physics, Chemistry, Physiology or Medicine, Literature and Peace - the Nobel Prizes." "In this excerpt of the will, Alfred Nobel dictates that his entire remaining estate should be used to endow prizes to those who, during the preceding year, shall have conferred the greatest benefit to mankind." (Nobel Foundation site: www.nobelprize.org)

Nobel Prize in Physics 1949

Nobel Foundation



Theoretical Physics

Awarded for

his prediction of the existence of mesons on the basis of theoretical work on nuclear forces

Hideki Yukawa [1907 - 1981]

Doctor of Science
Professor Emeritus, Kyoto University and Osaka University

Achievements

Professor Yukawa contributed to the theory of elementary particle physics. From 1934 to 1935, he assumed that the fundamental interactions are carried by particles, and predicted the existence of a certain particle, which was later called "meson," for the strong interaction between protons and neutrons. He also predicted that the mass of a meson is 200 times that of the electron. Moreover he originally attempted to reveal the mechanism of the weak interaction, though this attempt was failed. In 1937, a new particle with the predicted meson mass was discovered. Professor Powell experimentally discovered a meson mediating the nuclear force in 1947, which verified the validity of Yukawa's theory.

Profile

During his research life, he not only wrote a lot of scientific papers, but also fostered many excellent students. The news of his recipient of Nobel Prize encouraged the Japanese society of those days which had not been fully recovered from the World War II. In his later years, he became a member of Pugwash Conferences on Science and World Affairs, and made efforts to realize the world peace and the abolition of nuclear weapons.

Timeline

- 1929 Graduated from Kyoto Imperial University Faculty of Science
- 1936 Associate Professor, Osaka Imperial University Faculty of Science
- 1937 Participated in the Solvay Conferences on Physics
- 1938 Received Doctor of Science from Osaka Imperial University
- 1939 Professor, Kyoto Imperial University
- 1948 Visiting Professor, Institute for Advanced Study, USA
- 1950 Professor, Columbia University
- 1955 Board of Japanese National Commission for UNESCO
- 1955 President, the Physical Society of Japan
- 1970 Retired from Kyoto University and entitled Professor Emeritus
- 2005 UNESCO made a medal of Yukawa for his memorial

Other Awards and Prizes (selected)

- 1940 Imperial Prize, the Japan Academy, Japan
- 1943 Order of Culture, Japan (as the youngest receipt)
- 1963 Foreign Member, the Royal Society, UK
- 1964 Lomonosov Gold Medal, Russian Academy of Sciences, Russia
- 1967 Medal of Merit, Order of the Federal Republic of Germany
- 1967 Medal of the Pontifical Academy of Sciences, Italy
- 1977 Grand Cordon of the Order of the Rising Sun, Japan

Hideki Yukawa

Nobel Prize in Physics 1965

Nobel Foundation



Theoretical Physics

Awarded for

the fundamental work in quantum electrodynamics, with deep-ploughing consequences for the physics of elementary particles

Sin-itiro Tomonaga [1906 - 1979]

Doctor of Science
Professor Emeritus, Tokyo University of Education

Achievements

In 1943, Professor Tomonaga formulated the theory of quantum fields in a relativistically covariant form to establish the "super-many-time theory," completing the quantum field theory. In the 1930s to 1940s, researchers of the quantum mechanics of fields faced a serious problem: Theoretical calculation of the electron mass gave infinity, inconsistent with the measurement. In 1946, Tomonaga solved this problem by the "renormalization theory."

Profile

Sin-itiro Tomonaga was a classmate of Hideki Yukawa (see p. 9) at Kyoto Imperial University and he stayed on as an assistant for three years at the University, upon completion of his bachelor's degree. In 1965, Tomonaga was awarded the Nobel Prize in Physics for his fundamental work in quantum electrodynamics, which greatly enhanced understanding of the physics of elementary particles.

Timeline

- 1929 Graduated from Kyoto Imperial University Faculty of Science
- 1937 Studied in Leipzig, Germany
- 1939 Received Doctor of Science from Tokyo Imperial University
- 1941 Professor, Tokyo University of Arts and Science
- 1951 Professor, Tokyo University of Education (-1969)
- 1951 Visited the Institute of Advanced Study, USA
- 1955 Established the Institute of Particle and Nuclear Studies at the University of Tokyo
- 1956 President, Tokyo University of Education (-1961)
- 1963 President, Science Council of Japan (-1969)
- 1969 Retired from Tokyo University of Education and entitled Professor Emeritus

Other Awards and Prizes (selected)

- 1948 Japan Academy Prize, the Japan Academy, Japan
- 1952 Order of Culture, Japan
- 1964 Lomonosov Gold Medal, Russian Academy of Sciences, Russia
- 1976 Grand Cordon of the Order of the Rising Sun, Japan

Sin-itiro Tomonaga

Nobel Prize in Chemistry 1981

Nobel Foundation



Chemistry

Awarded for
his work concerning the course of chemical reactions

Kenichi Fukui [1918 - 1998]

Doctor of Engineering
Professor Emeritus, Kyoto University

Achievements

Professor Fukui strived to theoretically elucidate chemical reactions using quantum mechanics. Classical theory of chemical reactions based on electrical attraction between a positively charged atom and a negatively charged atom cannot explain all chemical reactions. Quantum mechanics dictates the existence of orbitals, which represent the energy and distribution of electrons in a molecule. Fukui discovered that some of these orbitals play critical roles in chemical reactions, and then provided a perfect description of the essence of chemical reactions. In 1952, he published this description, which he called the frontier electron theory (later renamed the frontier orbital theory). The frontier orbital theory is useful in understanding and predicting numerous chemical reactions, and remains essential in today's chemistry. In 1981, Fukui was awarded the Nobel Prize in Chemistry for his achievement.

Profile

Kenichi Fukui was one of the most distinguished chemists in Japan and was a professor at Kyoto University from 1951 to 1982. He believed that the basic science research is very important, that research experience requires originality, and that people should foster a peaceful relationship between science and society. A number of his students have also contributed to the field of chemistry being inspired by his teachings. He always liked jotting down his research ideas.

Timeline

1941	Graduated from Kyoto Imperial University Faculty of Engineering
1945	Associate Professor, Kyoto Imperial University
1948	Received Doctor of Engineering from Kyoto University
1951	Professor, Kyoto University
1971	Dean, Faculty of Engineering, Kyoto University
1982	Retired from Kyoto University and entitled Professor Emeritus
1982	President, Kyoto Institute of Technology
1988	Professor Emeritus, Kyoto Institute of Technology
1995	President, Japan Society for the Promotion of Science

Other Awards and Prizes (selected)

1962	The Japan Academy Medal, Japan
1981	Order of Culture, Japan
1988	Grand Cordon of the Order of the Rising Sun, Japan
1989	Foreign Member, the Royal Society, UK

Nobel Prize in Physiology or Medicine 1987

Nobel Foundation



Molecular Biology, Neuroscience

Awarded for
his discovery of the genetic mechanism for the generation of antibody diversity

Susumu Tonegawa [1939 -]

Ph.D. in Molecular Biology
Picower Professor of Biology and Neuroscience, MIT
Director, RIKEN-MIT Center for Neural Circuit Genetics
Director, RIKEN Brain Science Institute
Founding Director, Center for Learning and Memory, MIT
Founding Director, Picower Institute for Learning and Memory, MIT

Achievements

Lymphocytes play a major role in the immune system by expressing over one trillion antibody receptors that recognize pathogens and other foreign substances. Humans have no more than 30,000 genes, and how they generate this vast antibody repertoire was considered one of the greatest mysteries of life science in the 20th century. Tonegawa discovered the genetic mechanism for producing this antibody diversity, called somatic recombination.

Profile

Susumu Tonegawa received his bachelor's degree from Kyoto University in 1963. After working at the Salk Institute for Molecular Biology of Tumor Viruses and the Basel Institute for Immunology, where he discovered the genetic basis of antibody diversity, he was appointed Professor at the Massachusetts Institute of Technology (MIT) in 1981. He changed his research field from immunology to neuroscience and became the Founding Director of the Center for Learning and Memory in 1994, which evolved into the Picower Institute of Learning and Memory. Since 2009, he serves as Director of the RIKEN Brain Science Institute in Japan while maintaining his positions as Picower Professor and Howard Hughes Investigator at MIT.

Timeline

1963	Graduated from Kyoto University Faculty of Science
1968	Received Ph.D. from UCSD
1969	Postdoctoral Researcher, Salk Institute
1971	Member, Basel Institute for Immunology, Switzerland
1981	Professor, MIT
1988	Investigator, Howard Hughes Medical Institute
1994	Director, Center for Learning and Memory at MIT
2002	Director, Picower Institute for Learning and Memory at MIT
2009	Director, RIKEN Brain Science Institute
2013	Investigator (reappointed), Howard Hughes Medical Institute

Other Awards and Prizes (selected)

1978	The Cloetta Prize of Foundation Professor Dr. Max Cloetta, Switzerland
1982	Louisa Gross Horwitz Prize, Columbia University, USA
1983	Canada Gairdner International Award, the Gairdner Foundation, Canada
1983	Person of Cultural Merit, Japan
1984	Order of Culture, Japan
1984	Fellow, American Academy of Arts and Sciences, USA
1986	Robert-Koch Prize, the Koch Foundation, Germany
1986	Foreign Associate, National Academy of Sciences, USA
1987	Albert Lasker Basic Medical Research Award, Lasker Foundation, USA
1989	Distinguished Basic Investigator Award, American College of Rheumatology, USA
1989	Rabbi Shai Shacknai Memorial Prize in Immunology and Cancer Research, Israel
1991	Order of the Southern Cross, Brazil
1994	Professorship, Amgen, Inc., USA
1994	Honorary member, and awarded the Golden Medal "Medicus Magnus," Polish Academy of Medicine, Poland
1999	Mike Hogg Award, the University of Texas M.D. Anderson Cancer Center, USA
1999	Professorship, Whitehead Family Funds
2002	Professorship, Picower Foundation
2002	Presidential Lecturer, Society for Neuroscience Annual Meeting, USA
2007	Gold Medal, Spanish National Research Council, Cajal Institute, Madrid, Spain
2008	UCL Prize Lecturer in Clinical Science, University College London, UK
2010	David M. Bonner Lifetime Achievement Award, UCSD, USA

Nobel Prize in Chemistry 2001

Nobel Foundation



Organic Chemistry

Awarded for

his work on chirally catalyzed hydrogenation reactions

Ryoji Noyori [1938 -]

Doctor of Engineering
Member of the Japan Academy
President of RIKEN
University Professor, Nagoya University

Photo: RIKEN

Achievements

Professor Noyori initiated and developed asymmetric catalysis using organometallic molecular catalysts. His methods allow for efficient synthesis of biologically active chiral organic compounds and are now practiced widely in research and industry.

Profile

Ryoji Noyori received his doctorate degree in engineering from Kyoto University, worked as a postdoctoral fellow at Harvard University, and taught at Nagoya University. Currently, he is a University Professor at Nagoya and President of RIKEN. Noyori has chaired various government committees for science and technology as well as higher education. He is a member of the Japan Academy and the Pontifical Academy of Sciences; a foreign member of the National Academy of Sciences, USA, the Russian Academy of Sciences, the National Academy of Sciences, Korea, the Royal Society, UK, and the Chinese Academy of Sciences; and also an honorary academician of the Academia Sinica, Taiwan.

Timeline

1961	Bachelor degree, Kyoto University
1963	Master's degree, Kyoto University
1963	Instructor, Kyoto University
1967	Doctorate in Engineering, Kyoto University
1968	Associate Professor, Nagoya University (-1972)
1969	Postdoctoral Fellow, Harvard University (-1970)
1972	Professor, Nagoya University
1997	Dean, Graduate School of Science, Nagoya University (-1999)
2002	President, Chemical Society of Japan (-2003)
2003	University Professor, Nagoya University (-present)
2003	President, RIKEN (-present)
2005	Chair, Science and Technology Council, Ministry of Education, Culture, Sports, Science and Technology (-present)
2005	Member, Science Council of Japan (-2007)
2006	Chair, Education Rebuilding Council (-2008)

Other Awards and Prizes (selected)

1993	Tetrahedron Prize for Creativity in Organic Chemistry, UK
1995	Japan Academy Prize, the Japan Academy, Japan
1997	Arthur C. Cope Award, American Chemical Society, USA
1998	Person of Cultural Merit, Japan
1999	King Faisal International Prize for Science, Kingdom of Saudi Arabia
2000	Order of Culture, Japan
2001	Wolf Prize in Chemistry, Wolf Foundation, Israel
2001	Roger Adams Award in Organic Chemistry, American Chemical Society, USA
2010	Lomonosov Gold Medal, Russian Academy of Sciences, Russia

Nobel Prize in Physics 2008

Nobel Foundation



Theoretical Physics

Awarded for

the discovery of the origin of the broken symmetry which predicts the existence of at least three families of quarks in nature

Toshihide Maskawa [1940 -]

Doctor of Science
Member of the Japan Academy
Professor Emeritus, Kyoto University
Director General, KMI, Nagoya University
Head, Maskawa Institute, Kyoto Sangyo University

Photo: Nagoya University

Achievements

Professor Maskawa, with Professor Makoto Kobayashi (see p.15), explained broken symmetry between particle and antiparticle known as CP violation within the Standard Model (SM) of elementary particle theory. In 1973, they found a natural explanation of CP violation with at least six quarks within the SM. The 5th and 6th quarks were discovered in 1977 and 1995, respectively. A large CP violation in B meson system, which is deduced from their model, was first observed in 2001. In 2008, Maskawa and Kobayashi were awarded the Nobel Prize in Physics for their contribution to particle physics.

Profile

Toshihide Maskawa received a Doctor of Science in 1967 from Nagoya University. In the early 1970s, when he was an assistant professor at Kyoto University, he collaborated with Makoto Kobayashi, who were jointly awarded the Nobel Prize in Physics in 2008. From 1997 until 2003, he was the director of the Yukawa Institute for Theoretical Physics, and is a professor emeritus of Kyoto University. He is currently the Director General of KMI, Nagoya University, and is Head of the Maskawa Institute at Kyoto Sangyo University.

Timeline

1967	Received Doctor of Science from Nagoya University
1967	Assistant Professor, Nagoya University
1970	Assistant Professor, Kyoto University
1976	Associate Professor, Institute for Nuclear Study, the University of Tokyo
1980	Professor, Yukawa Institute for Theoretical Physics, Kyoto University
1990	Professor, Kyoto University
1997	Director, Yukawa Institute for Theoretical Physics, Kyoto University
2003	Retired from Kyoto University and entitled Professor Emeritus
2003	Professor, Kyoto Sangyo University
2009	Head, Maskawa Institute, Kyoto Sangyo University
2010	Director General, Kobayashi-Maskawa Institute for the Origin of Particles and the Universe (KMI)

Other Awards and Prizes (selected)

1985	Japan Academy Prize, the Japan Academy, Japan
1985	J. J. Sakurai Prize for Theoretical Particle Physics (inaugural award), American Physical Society, USA
2001	Person of Cultural Merit, Japan
2007	High Energy and Particle Physics Prize, European Physical Society
2008	Order of Culture, Japan

Nobel Prize in Physics 2008

Nobel Foundation



Theoretical Physics

Awarded for

the discovery of the origin of the broken symmetry which predicts the existence of at least three families of quarks in nature

Makoto Kobayashi [1944 -]

Doctor of Science
Member of the Japan Academy
Honorary Professor Emeritus, High Energy Accelerator Research Organization
University Professor, Nagoya University
Fellow, International Institute for Advanced Studies

Achievements

Professor Kobayashi explained the mechanism underlying the breakdown of symmetry between particles and antiparticles together with Professor Toshihide Maskawa (see p.14). In 1973, they wrote an article titled "CP Violation in the Renormalizable Theory of Weak Interaction." In this work, they predicted the possible existence of six kinds of quarks. This had been confirmed experimentally by 1995. In 2008, he and Professor Maskawa were awarded the Nobel Prize in Physics for their contribution to the advancement of particle physics.

Profile

Makoto Kobayashi received a Doctor of Science in 1972 from Nagoya University. In the early 1970s, when he was an assistant professor at Kyoto University, he collaborated with Professor Toshihide Maskawa on research that resulted in the work for which they were jointly awarded the Nobel Prize in Physics in 2008. Presently, he is an honorary professor emeritus at KEK (High Energy Accelerator Research Organization).

Timeline

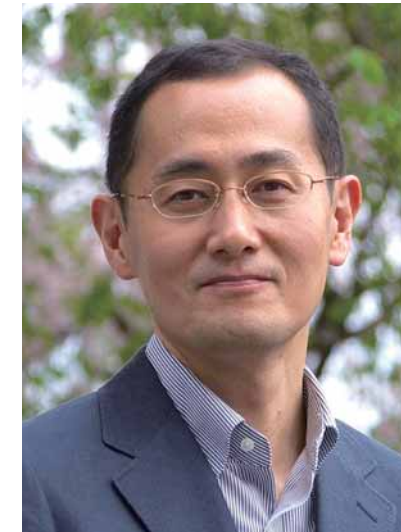
1972	Received Doctor of Science from Nagoya University
1972	Assistant Professor, Kyoto University
1979	Associate Professor, KEK
1985	Professor, KEK
2003	Director, Institute of Particles and Nuclear Studies at KEK
2004	Trustee, KEK
2006	Retired from KEK and entitled Professor Emeritus
2006	Fellow, International Institute for Advanced Studies
2007	Executive Director, the Japan Society for the Promotion of Science
2007	Chair of Advisory Board, Kobayashi-Maskawa Institute for the Origin of Particles and the Universe
2008	Honorary Professor Emeritus, KEK
2009	University Professor, Nagoya University

Other Awards and Prizes (selected)

1985	Japan Academy Prize, the Japan Academy, Japan
1985	J. J. Sakurai Prize for Theoretical Particle Physics (inaugural award), American Physical Society, USA
2001	Person of Cultural Merit, Japan
2007	High Energy and Particle Physics Prize, European Physical Society
2008	Order of Culture, Japan

Nobel Prize in Physiology or Medicine 2012

Nobel Foundation



Medical Physiology

Awarded for

the discovery that mature cells can be reprogrammed to become pluripotent

Shinya Yamanaka [1962 -]

M.D. and Ph.D. in Medicinal Science
Member of the Japan Academy
Director and Professor,
The Center for iPS Cell Research and Application (CiRA), Kyoto University
Senior Investigator, Gladstone Institutes,
University of California in San Francisco (UCSF)

Achievements

Professor Yamanaka and his research team reported the world's first generation of mouse iPS cells (induced pluripotent stem cells) in 2006 and the generation of human iPS cells in 2007. The team also reported the establishment of mouse iPS cells using plasmid DNA vectors in 2008, one of the first methods to generate such cells without requiring gene insertion. Yamanaka was awarded the prize jointly with Sir John B. Gurdon, a Fellow of the Royal Society and professor at and founder of the Wellcome Trust/Cancer Research UK Gurdon Institute, the University of Cambridge.

Profile

Shinya Yamanaka at first pursued a career as an orthopedic surgeon and later began conducting stem cell research for medical applications. He moved to Kyoto University in 2004, and since 2008 has served as the director of the University's Center for iPS Cell Research and Application (CiRA).

Timeline

1987	Graduated from Kobe University School of Medicine, M.D.
1987	Resident, National Osaka Hospital (-1989)
1989	Studied Pharmacology at Osaka City University Graduate School (-1993)
1993	Received Ph.D. in Medicine at Osaka City University
1993	Postdoc, Gladstone Institutes, University of California in San Francisco (UCSF) (-1996)
1996	Assistant Professor, Osaka City University (-1999)
1999	Associate Professor, Nara Institute of Science and Technology (NAIST) (-2003)
2003	Professor, NAIST (-2005)
2004	Professor, Institute for Frontier Medical Sciences, Kyoto University (-2007)
2007	Senior Investigator, Gladstone Institutes, UCSF
2007	Professor, UCSF
2007	Professor, Institute for Integrated Cell-Material Sciences (WPI-iCeMS), Kyoto University (-2012)
2008	Director, Center for iPS Cell Research and Application (CiRA) at WPI-iCeMS, Kyoto University (-2010)
2010	Director, CiRA, Kyoto University
2012	President, International Society for Stem Cell Research (-2013)
2012	Professor, CiRA, Kyoto University
2012	Principal Investigator, iCeMS, Kyoto University

Other Awards and Prizes (selected)

2008	Robert Koch Award, The Robert Koch Foundation, Germany
2008	The Shaw Prize in Life Science and Medicine
2008	Medal with Purple Ribbon, Japan
2009	Canada Gairdner International Award, The Gairdner Foundation, Canada
2009	Albert Lasker Basic Medical Research Award, Lasker Foundation, USA
2010	Imperial Prize and Japan Academy Prize, the Japan Academy, Japan
2010	International Balzan Prize, the International Balzan Prize Foundation
2010	Kyoto Prize, Inamori Foundation, Japan
2011	Wolf Prize in Medicine, Wolf Foundation, Israel
2011	King Faisal International Prize in Medicine, King Faisal Foundation, Kingdom of Saudi Arabia
2011	Foreign Associate, National Academy of Science, USA
2012	Millennium Technology Prize, Technology Academy Finland, Finland
2012	Order of Culture, Japan
2013	Breakthrough Prize in Life Sciences, the Breakthrough Prize in Life Sciences Foundation

AWARD HISTORY

1949-1977

1949
Hideki Yukawa
Nobel Prize in Physics

1950
Hajime Tanabe
Order of Culture, Japan
Shoichi Sakata
Imperial Prize

1952
Soichiro Sasaki
Order of Culture, Japan
Seiichi Mizuno
Imperial Prize
Toshio Nagahiro
Imperial Prize

1953
Toru Haneda
Order of Culture, Japan

1954
Jitsuzo Tamura
Imperial Prize and Japan Academy Prize
Yukio Kobayashi
Imperial Prize and Japan Academy Prize

1956
Izuru Shinmura
Order of Culture, Japan
Masuzo Shikata
Imperial Prize and Japan Academy Prize
Isamu Tachi
Imperial Prize and Japan Academy Prize

1961
Toraō Suzuki
Order of Culture, Japan

1962
Yoshinari Kuwada
Order of Culture, Japan

1965
Sin-itiro Tomonaga
Nobel Prize in Physics
Shin-ichi Matsumoto
Schaudinn-Hoffman-Plakette

1967
Makoto Kumada
Frederic Stanley Kipping Award in Silicon Chemistry

1968
Tatsuo Nishida
Imperial Prize and Japan Academy Prize

1970
Heisuke Hironaka
Fields Medal
Seizo Okamura
Imperial Prize and Japan Academy Prize

1977
Ichiro Sakurada
Order of Culture, Japan

Chapter

2

Carl Friedrich Gauss Prize

"The prize is to honor scientists whose mathematical research has had an impact outside mathematics – either in technology, in business, or simply in people's everyday lives." (International Mathematical Union site: www.mathunion.org)

Wolf Prize

"Since 1978, five or six prizes have been awarded annually in the Sciences. Prize fields comprise: AGRICULTURE, CHEMISTRY, MATHEMATICS, MEDICINE and PHYSICS. In the Arts, the prize rotates annually among ARCHITECTURE, MUSIC, PAINTING and SCULPTURE." (Wolf Foundation site: www.wolffund.org.il)

Fields Medal

"The Fields Medal is awarded every four years on the occasion of the International Congress of Mathematicians to recognize outstanding mathematical achievement for existing work and for the promise of future achievement." (International Mathematical Union site: www.mathunion.org)

Albert Lasker Basic Medical Research Award

"The Albert Lasker Basic Medical Research Award honors scientists whose fundamental investigations have provided techniques, information, or concepts contributing to the elimination of major causes of disability and death." (The Lasker Foundation site: www.laskerfoundation.org)

Carl Friedrich Gauss Prize 2006

International Mathematical Union



Mathematics

Awarded for

stochastic Analysis, a field of mathematics based primarily on his groundbreaking work, which has found significant applications outside of mathematics, and contributed to the development of diverse human scientific activities.

Kiyosi Itô [1915 - 2008]

Doctor of Science
Professor Emeritus, Kyoto University
Doctor of Science, Tokyo Imperial University
Docteur Honoris Causa, Université Paris VI
Doctor Honoris Mathematica, ETH, Zürich
Doctor of Science Honoris Causa, University of Warwick

Achievements

Professor Itô made outstanding contributions to probability theory. His epoch-making theory of stochastic differential equation, first published in 1942, described non-deterministic random evolutions. Known as *Ito Calculus*, it replaced the Newton-Leibniz calculus for random processes and has found applications in other fields of mathematics as well as in other disciplines, including various fields in physics, control theory in engineering, population genetics in biology and, most recently, mathematical finance in economics.

Profile

Kiyosi Itô was born in Mie, Japan. Besides being renowned for his brilliant mathematical achievements during a productive career spanning over sixty years, he has been a truly inspirational teacher to many mathematicians in Japan and abroad. He has received numerous national and international awards and honors.

Timeline

1938	Graduated from Tokyo Imperial University Faculty of Science
1939	Statistical Officer, Statistics Bureau of the Cabinet Secretariat, Japan
1943	Assistant Professor, Nagoya Imperial University
1945	Doctor of Science, Tokyo Imperial University
1952	Professor, Kyoto University
1954	Fulbright Fellow, Institute for Advanced Study, Princeton
1961	Professor, Stanford University
1966	Professor, Aarhus University
1969	Professor, Cornell University
1976	Director, Research Institute for Mathematical Sciences, Kyoto University
1979	Retired from Kyoto University and entitled Professor Emeritus
1979	Professor, Gakushuin University
1985	Retired from Gakushuin University
1989	Membre Associé Étranger, Académie des Sciences, France
1991	Member, the Japan Academy
1995	Honorary Member, Moscow Mathematical Society
1998	Foreign Member, National Academy of Sciences, USA

Other Awards and Prizes (selected)

1978	Imperial Prize and Japan Academy Prize, the Japan Academy, Japan
1987	Wolf Prize in Mathematics, Wolf Foundation, Israel
1998	Kyoto Prize, Inamori Foundation, Japan
2003	Person of Cultural Merit, Japan
2008	Order of Culture, Japan

Wolf Prize in Medicine 1986

Wolf Foundation



Biochemistry

Awarded for

his discovery of the oxygenase enzymes and elucidation of their structure and biological importance.

Osamu Hayaishi [1920 -]

M.D. and Ph.D in Medicine
Member of the Japan Academy
Professor Emeritus, Kyoto University
Chief Director, Osaka Bioscience Institute

Achievements

Professor Hayaishi significantly contributed to research in the biomedical sciences and enzymology by discovering oxygenases, respiratory enzymes that are broadly spread in nature. Before his discovery, dehydrogenation was considered to be the only mechanism of biological oxidation. In showing the biological fixation of molecular oxygen, he introduced a new concept for the mechanism of biological oxidation.

Profile

Osamu Hayaishi is one of the pioneers in the medical chemistry field. After his discovery of oxygenases in the USA, he was appointed at Kyoto University, where he extended his study to include the metabolic pathways of oxygenases. He was selected as among the Persons of Cultural Merit in Japan in 1972. He was decorated with the Order of Culture and the Grand Cordon of the Order of the Sacred Treasure in Japan in 1972 and 1993, respectively.

Timeline

1946	Assistant Professor, Osaka University
1949	Received Doctor of Medicine from Osaka University
1949	Research Fellow, the University of Wisconsin
1950	Research Fellow, the University of California
1951	Research Fellow, National Institute of Health, USA
1952	Professor, Department of Medicine, the University of Washington
1954	Dean, Department of Toxicology, National Institute of Health, USA
1958	Professor, Faculty of Medicine, Kyoto University
1961	Professor, Faculty of Medicine, Osaka University (-1963)
1968	Professor, Vanderbilt University
1970	Professor, Faculty of Medicine, the University of Tokyo (-1974)
1979	Dean, Faculty of Medicine, Kyoto University
1983	Retired from Kyoto University and became Professor Emeritus
1987	Director, Osaka Bioscience Institute
1998	Honorary Director, Osaka Bioscience Institute
2004	Chief Director, Osaka Bioscience Institute

Other Awards and Prizes (selected)

1967	Japan Academy Prize, the Japan Academy, Japan
1972	Person of Cultural Merit, Japan
1972	Order of Culture, Japan
1972	Foreign Associate, National Academy of Science, USA
1974	Member, the Japan Academy
1975	Vermeil Medal of the City of Paris, France
1976	New York Academy Biochemistry Award, The New York Academy of Sciences, USA
1993	Grand Cordon of the Order of the Sacred Treasure, Japan

Wolf Prize in Mathematics 2002/2003

Wolf Foundation

Mathematics

Awarded for

the creation of “algebraic analysis”, including hyperfunction and microfunction theory, holonomic quantum field theory, and a unified theory of soliton equations

Mikio Sato [1928 -]

Doctor of Science
Professor Emeritus, Kyoto University

Photo: not available

Achievements

Professor Sato created many new main streams in mathematics with his original, profound, and brilliant ideas. In the earlier stage of his research, he introduced the theory of hyperfunctions by extending the usual notion of functions via relative cohomology groups with coefficients in a sheaf. He likewise established the foundation of microlocal analysis and correspondences between solutions for soliton equations and infinite dimensional Grassmannian manifolds. The latter result led to the discovery of his famous tau function.

Profile

Mikio Sato has been a leading scholar in mathematics and has fostered many brilliant students. These students, who are known as “Sato School,” play important roles in the mathematical community. Although he has not written many research papers, he has freely shared his numerous ideas gushing like a spring with his students, which have developed and deepened much further. Indeed, his lecture notes and interviews reveal his original insights.

Timeline

- 1952 Graduated from the University of Tokyo
- 1963 Received Doctor of Science from the University of Tokyo
- 1970 Professor, Research Institute for Mathematical Sciences, Kyoto University
- 1987 Director, Research Institute for Mathematical Sciences, Kyoto University
- 1992 Retired from Kyoto University and entitled Professor Emeritus

Other Awards and Prizes (selected)

- 1976 Japan Academy Prize, the Japan Academy, Japan
- 1984 Person of Cultural Merit, Japan
- 1997 Rolf Schock Prize, Sweden

Mikio Sato

Fields Medal 1970

International Mathematical Union

Mathematics

Awarded for

the resolution of singularities of algebraic varieties over a field of characteristic zero

Heisuke Hironaka [1931 -]

Ph.D. in Science and Doctor of Science
Member of the Japan Academy
Professor Emeritus, Kyoto University and Harvard University

Photo: Yamaguchi University

Heisuke Hironaka

Achievements

The most remarkable achievement of Professor Hironaka is his breakthrough in proving the existence of a resolution of singularities for algebraic varieties in a field of characteristic zero. This problem was one of the most fundamental ones in algebraic geometry. Before his achievement, many mathematicians approached this problem, and several results were produced in relation to one-, two-, and three-dimensional algebraic varieties. He proved the above for arbitrary dimensions. He developed various original algebraic techniques for his proof, and these are also applied to a wide range of other problems in mathematics.

Profile

Heisuke Hironaka was greatly influenced by Alexander Grothendieck, a professor in his times at Institut des Hautes Études Scientifiques (IHÉS) who laid the foundations of modern algebraic geometry. Professor Hironaka established the Heisuke Hironaka Fund in 2002 to promote connections between IHÉS and Japanese mathematicians. He has also continuously encouraged young people who are interested in mathematics; the Japan Association for Mathematical Sciences, founded by Professor Hironaka, provides fellowships for Japanese students aiming to pursue doctoral studies overseas.

Timeline

- 1956 Received Master's degree from Kyoto University
- 1960 Received Ph.D. at Harvard University
- 1960 Lecturer, Brandeis University
- 1963 Associate Professor, Brandeis University
- 1963 Received Doctor of Science from Kyoto University
- 1964 Professor, Columbia University
- 1968 Professor, Harvard University
- 1975 Professor, Research Institute for Mathematical Sciences, Kyoto University
- 1984 President, Japan Association for Mathematical Sciences
- 1992 William Elwood Byerly Professor Emeritus, Harvard University
- 1996 President, Yamaguchi University (-2002)
- 2008 Visiting Professor, Seoul National University

Other Awards and Prizes (selected)

- 1975 Order of Culture, Japan
- 2004 L'ordre national de la Légion d'honneur, France

Albert Lasker Basic Medical Research Award 1998

Lasker Foundation



Cellular Biology

Awarded for

(to Lee Hartwell, Paul Nurse, and Yoshio Masui) their pioneering genetic and molecular studies that revealed the universal machinery for regulating cell division in all eukaryotic organisms, from yeasts to frogs to human beings*

Yoshio Masui [1931 -]

Doctor of Science
Professor Emeritus, University of Toronto

Achievements

Professor Masui discovered a protein, called the maturation promoting factor (MPF), in the cytoplasm of cells that control cell division in fertilized frog eggs. His discovery with Drs. Lee Hartwell and Paul Nurse, who were jointly awarded as well, greatly contributed to modern understanding of the universal mechanism for regulating cell division in all eukaryotic organisms.

Profile

Yoshio Masui studied biology at Kyoto University and received his Doctor of Science degree in 1961. Beginning in 1955, he taught biology at Konan University. In 1966, he took a sabbatical from his position as assistant professor and attended Clement Markert's laboratory at Yale University, where he began his work on frog oocytes. Three years later, he moved to the University of Toronto as an associate professor, and in the same year, he discovered that MPF is a protein. In 1978, he became a professor at the University of Toronto. He received the Gairdner Foundation International Award in 1992.

Timeline

1955	Received Master's degree from Kyoto University
1955	Taught as Assistant Professor at Konan University
1961	Received Doctor of Science from Kyoto University
1965	Associate Professor, Konan University
1969	Associate Professor, University of Toronto
1978	Professor, University of Toronto
1997	Professor Emeritus at University of Toronto

Other Awards and Prizes (selected)

1992	Gairdner Foundation International Award, the Gairdner Foundation, Canada
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Albert Lasker Basic Medical Research Award 1989

Lasker Foundation



Biochemistry

Awarded for

his profound contributions to the understanding of signal transduction in cells, and for his discovery that carcinogens trigger cell growth by activating protein kinase C

Yasutomi Nishizuka [1932 - 2004]

M.D. and Ph.D. in Medicine
Professor Emeritus, Kobe University

Achievements

Professor Nishizuka discovered protein kinase C (PKC) from bovine brain and elucidated its regulating mechanism by Ca^{2+} and phorbol ester. Using techniques in molecular biology, his team and succeeding teams reported 11 isotypes of PKCs, which form a group of proteins called "PKC family." Further biochemical and molecular biological studies constructed the field of PKC as a part of biology, and currently, PKC family proteins are known to regulate fundamental cellular and tissue functions.

Profile

Yasutomi Nishizuka was trained at Kyoto University as a biochemist under the supervision of Professor Osamu Hayaishi (see p.20). In addition to his highly recognized work on PKCs at Kobe University, Professor Nishizuka also contributed to the field of biochemistry through training many talented young scientists. In 1995, he was appointed President of Kobe University amid the chaos brought by the Hanshin-Awaji Earthquake that affected the university as well. He is revered for being a leader of the University during its recovery from the tragedy.

Timeline

1963	Received Ph.D. in Medicine from Kyoto University
1964	Associate Professor, Kyoto University Faculty of Medicine
1969	Professor and Chairperson of the Department of Biochemistry, Kobe University Faculty of Medicine
1989	Professor, Kobe University Faculty of Science (-1995)
1990	Visiting Professor, Stanford University School of Medicine (-1995)
1994	Professor, Institute for Virus Research, Kyoto University (-1995)
1995	President, Kobe University
2001	Retired from Kobe University and entitled Professor Emeritus
2001	President, Hyogo Medical Center for Adults

Other Awards and Prizes (selected)

1986	Japan Academy Prize, the Japan Academy, Japan
1987	Person of Cultural Merit, Japan
1988	Canada Gairdner International Award, the Gairdner Foundation, Canada
1988	Alfred P. Sloan Jr. Prize, the General Motors Cancer Research Foundation, USA
1992	Kyoto Prize, Inamori Foundation, Japan
1992	Physiology Award from the Netherlands
1994	Dale Medal, Society for Endocrinology, UK
1995	Wolf Prize in Medicine, Wolf Foundation, Israel
1995	Ernst Schering Prize, Ernst Schering Research Foundation, Germany
1996	Banerjee Medal, the Asiatic Society, India

* Authority: Lasker Foundation (http://www.laskerfoundation.org/awards/1998_b_description_p.htm)

Fields Medal 1990

International Mathematical Union



Mathematics

Awarded for

his remarkable contribution to classification theory in algebraic geometry

Shigefumi Mori [1951 -]

Doctor of Science
Member of the Japan Academy
Professor, Kyoto University
University Professor, Nagoya University

Achievements

Professor Mori pursued his research on algebraic varieties especially of higher dimensions, and his first eminent work was the affirmative answer to the Hartshorne Conjecture in 1978. He started working on the Minimal Model Program, which is often called the Mori Program, and completed its three dimensional case in 1988. He received the Fields Medal in 1990 for these remarkable achievements.

Profile

Shigefumi Mori became an Assistant Professor at Kyoto University in 1975, an Assistant Professor at Harvard University (1977-80), and a Lecturer at Nagoya University in 1980. Since then he spent much time in the United States at the Institute for Advanced Study (1981-82), Columbia University (1985-87), and University of Utah (1991-93) as a Visiting Member/Professor. He was elected as Member of the Japan Academy in 1998.

Timeline

1973	Graduated from Kyoto University Faculty of Science
1975	Assistant Professor, Kyoto University
1978	Received Doctor of Science from Kyoto University
1982	Associate Professor, Nagoya University
1988	Professor, Nagoya University
1990	Professor, Research Institute for Mathematical Sciences, Kyoto University

Other Awards and Prizes (selected)

1990	Frank Nelson Cole Prize in Algebra, American Mathematical Society, USA
1990	Japan Academy Prize (jointly with Dr. Shigeru Itaka and Dr. Yujiro Kawamata), the Japan Academy, Japan
1990	Person of Cultural Merit, Japan
2010	University Professor, Nagoya University

Shigefumi Mori

Chapter

3

Kyoto Prize

"The Prize is presented annually in each of the following three categories: Advanced Technology, Basic Sciences, and Arts and Philosophy." * Selection is made without regard to nationality, race, sex, age, or religion." (Inamori Foundation site: www.inamori-f.or.jp/index_e.html)

Japan Prize

"The Japan Prize is awarded annually to scientists and engineers from around the world who have made significant contributions to the advancement of science and technology, thereby furthering the cause of peace and prosperity of mankind. Each year two fields of scientific endeavor are honored." (The Japan Prize Foundation site: www.japanprize.jp/en/)

Honda Prize

"The Honda Prize is an inter-national award that acknowledges the efforts of an individual or group who contribute new ideas which may lead the next generation in the field of ecotechnology. The Honda Foundation has given one award every year for a variety of research results." (Honda Foundation site: www.honda-foundation.jp/en/)

Kyoto Prize, Basic Sciences 1995

Inamori Foundation



Astrophysics

Awarded for

his contribution to astrophysics through the theoretical studies of the stellar formation and evolution and the formation system

Chushiro Hayashi [1920 - 2010]

Doctor of Science
Professor Emeritus, Kyoto University

Achievements

Professor Hayashi contributed to the maturation of modern astrophysics, applying scientific principles such as nuclear physics and fluid dynamics to the analysis of astronomical phenomena. He successfully calculated the relationship between star luminosity and temperature, called "Hayashi track," which explains the process of star evolution for the pre-main-sequence.

Profile

Chushiro Hayashi was born in Kyoto, Japan. He graduated from Tokyo Imperial University in 1942. In 1945, he joined the Yukawa Laboratory at Kyoto Imperial University and stayed there until he retired in 1984. While he continued research as a professor at Kyoto University for 27 years, he also educated many influential astrophysicists.

Timeline

1945	Entered the laboratory of Hideki Yukawa at Kyoto Imperial University
1954	Received Doctor of Science from Kyoto University
1954	Associate Professor, Kyoto University
1957	Professor, Kyoto University
1977	Dean, Faculty of Science, Kyoto University
1984	Professor Emeritus, Kyoto University

Other Awards and Prizes (selected)

1970	Eddington Medal, Royal Astronomical Society, UK
1971	Imperial Prize and Japan Academy Prize, the Japan Academy, Japan
1982	Person of Cultural Merit, Japan
1986	Order of Culture, Japan
2004	The Catherine Wolfe Bruce Gold Medal, Astronomical Society of the Pacific, USA

Chushiro Hayashi

Kyoto Prize, Basic Sciences 2013

Inamori Foundation



Evolutionary Biology

Awarded for

his outstanding research on the evolution of biological populations using quantitative analyses of genetic variation and evolutionary time

Masatoshi Nei [1931 -]

Doctor of Agriculture and Science
Professor, Pennsylvania State University

Achievements

Professor Nei facilitated the research on evolutionary divergence, genetic diversity, and the mode of gene selection in a quantitative manner by devising various statistical methods, such as Nei's genetic distance and neighbor-joining method of phylogenetic construction. Using these methods, he has made important contributions to molecular evolutionary biology as well as many other scientific disciplines, including ecology and conservation biology.

Profile

Masatoshi Nei is an evolutionary biologist who teaches at Pennsylvania State University. His innovative proposal of genetic distance, which quantifies genetic divergence between species or between populations within a species, has been recognized internationally as Nei's genetic distance. He received his Doctor of Agriculture degree from Kyoto University in 1959. He also served as an assistant professor of the University's Faculty of Agriculture from 1958 to 1962. He has been a member of the American Academy of Arts and Sciences and National Academy of Sciences since 1990 and 1997, respectively.

Timeline

1959	Received Doctor of Agriculture from Kyoto University
1958	Assistant Professor, Kyoto University
1962	Researcher, National Institute of Radiological Sciences, Japan
1965	Head, Population Genetics Laboratory, National Institute of Radiological Sciences, Japan
1969	Associate Professor, Brown University
1971	Professor, Brown University
1972	Professor, University of Texas at Houston
1977	Received Doctor of Science from Kyushu University
1990	Director, Institute of Molecular Evolutionary Genetics, Pennsylvania State University
1990	Professor, Pennsylvania State University

Other Awards and Prizes (selected)

1990	Fellow, American Academy of Arts and Sciences, USA
1997	Member, National Academy of Sciences, USA
2002	International Prize for Biology, Japan Society for the Promotion of Science, Japan
2006	Thomas Hunt Morgan Medal, Genetics Society of America, USA

Masatoshi Nei

Japan Prize 2000

The Japan Prize Foundation



Immunology

Awarded for

his discovery of Immunoglobulin E (IgE) and mechanisms of IgE-mediated allergic reactions

Kimishige Ishizaka [1925 -]

M.D. and Ph.D. in Medicine
Member of the Japan Academy
President Emeritus, La Jolla Institute for Allergy and Immunology

Photograph: Naruaki Onishi
Reference: "Biohistory" Scientist Library

Achievements

Professor Ishizaka discovered immunoglobulin E (IgE) as the cause for allergic reactions, contributing to the current understanding of the pathogenesis of allergy at the molecular level. His innovative method for identifying IgE, which is typically the least abundant isotype of immunoglobulin, also contributed greatly to the identification of other less abundant proteins. Further, he discovered that an antigen-antibody complex formed by a bridge between two antibody molecules exerts a physiological activity, thereby contributing to the understanding of cellular and molecular biological processes in allergy progression.

Profile

In the course of his work in several laboratories in the USA, such as those at the California Institute of Technology, University of Colorado, and Johns Hopkins University School of Medicine, Kimishige Ishizaka attained considerable achievements in the field of allergy and immunology. He achieved much of his scientific accomplishments together with his wife, Teruko Ishizaka, who was also an immunologist. Professor Ishizaka received the First Order of Merit and the Order of the Sacred Treasure in Japan in 1999.

Timeline

1948 Received Ph.D. in Medicine from the University of Tokyo
1953 Chief, Department of Serology, Division of Immunoserology, National Institute of Health, Japan (-1959)
1957 Research Fellow, California Institute of Technology (-1959)
1962 Assistant Professor, Medical School, University of Colorado (-1965)
1962 Chief, Department of Immunology, Children's Asthma Research Institute and Hospital (-1970)
1970 O'Neill Professor of Medicine and Microbiology, School of Medicine, The Johns Hopkins University (-1981)
1970 Professor, The Johns Hopkins University Faculty of Arts and Science (-1989)
1974 Professor, Kyoto University
1981 Director, Sub-department of Immunology, The Johns Hopkins University School of Medicine
1981 President, La Jolla Institute for Allergy and Immunology, and Adjunct Professor, Department of Medicine, University of California, San Diego (UCSD) (-1996)

Other Awards and Prizes (selected)

1972 Passano Laureate, The Passano Foundation, Inc., USA
1973 Paul Ehrlich and Ludwig Darmstaedter Prize, Goethe University Frankfurt, Germany
1973 Canada Gairdner International Award, the Gairdner Foundation, Canada
1974 The First Scientific Achievement Award of International Association of Allergology, USA
1974 Imperial Prize and Japan Academy Prize, the Japan Academy, Japan
1974 Order of Culture, Japan
1974 Person of Cultural Merit, Japan
1976 Distinguished Scientist Award, American Academy of Allergy Asthma & Immunology, USA
1977 Award for Distinguished Achievement, Modern Medicine, USA
1979 Borden Award, Association of American Medical Colleges, USA
1982 Pioneer of Modern Allergy Award, American College of Allergy, USA
1983 Foreign Associate, National Academy of Sciences, USA
1985 American College of Physicians Award, American College of Physicians, USA
1999 Grand Cordon of the Order of the Sacred Treasure, Japan

Kimishige Ishizaka

Japan Prize 2005

The Japan Prize Foundation



Computer Science

Awarded for

his pioneering contributions to natural language processing and intelligent image processing

Makoto Nagao [1936 -]

Doctor of Engineering
Professor Emeritus, Kyoto University
The 23rd President of Kyoto University

Achievements

Professor Nagao developed a practical machine translation system, which followed his proposed new machine translation principle called example-based machine translation. His innovative system generated a significant impact on machine translation research in numerous countries. He also introduced feedback analysis into image processing in face recognition, and his contribution had a considerable influence over subsequent research efforts. Meanwhile, by comprehensively using technologies in natural language and image processing, he proposed a concept of the digital library that would store both text materials and image and sound information. His system, which has been put into practical use, has contributed significantly to the promotion of the digital library.

Profile

In 1966, Makoto Nagao received his Doctor of Engineering degree from Kyoto University, where he served as an associate professor two years later. Following his appointment as a visiting professor at Grenoble University in 1969-70, he returned to Kyoto University as a professor in 1973. He established the International Association for Machine Translation in 1991 and the Association for National Language Processing in Japan in 1994. In recognition of his outstanding merits, he was elected as the 23rd president of Kyoto University, serving from 1997 to 2003.

Timeline

1961 Assistant Professor, Kyoto University
1966 Received Doctor of Engineering from Kyoto University
1968 Associate Professor, Faculty of Engineering, Kyoto University
1973 Professor, Kyoto University
1986 Director, Data Processing Center, Kyoto University (-1990)
1997 Dean, Faculty of Engineering, Kyoto University
1997 President, Kyoto University (-2003)
2004 President, National Institute of Information and Communications Technology

Other Awards and Prizes (selected)

1993 IEEE Emanuel R. Piore Award, IEEE (Institute of Electrical and Electronics Engineers), USA
1997 IAMT Award of Honor, International Association for Machine Translation, USA
1997 Medal with Purple Ribbon, Japan
1999 Honorary Degree of Doctor of Science, the University of Nottingham, UK
1999 C&C Prize, NEC C&C Foundation, Japan
2003 Lifetime Achievement Award, Association for Computational Linguistics, USA

Makoto Nagao

Japan Prize 2005

The Japan Prize Foundation



Cell and Developmental Biology

Awarded for

the fundamental contribution in elucidating the molecular mechanisms of cell-cell adhesion

Masatoshi Takeichi [1943 -]

Doctor of Science
Member of the Japan Academy
Professor Emeritus, Kyoto University
Director, RIKEN Center for Developmental Biology

Achievements

Professor Takeichi identified the first members of the cadherin family of calcium-dependent cell-cell adhesion molecules in the late 1970s to early 1980s, a breakthrough that allowed scientists to investigate thoroughly the mechanisms by which complex multicellular structures form and are held together.

Profile

Masatoshi Takeichi graduated and received his Master's degree in Biology from Nagoya University. While completing his doctoral study, he moved to Tokindo Okada's laboratory (see p.54) at Kyoto University with his supervisor Goro Eguchi. Through his work, he found that calcium is crucial for cell-cell adhesion. Several years later, after his research experience at the Department of Embryology at Carnegie Institution for Science, he finally identified calcium-dependent cell-cell adhesion molecules.

Timeline

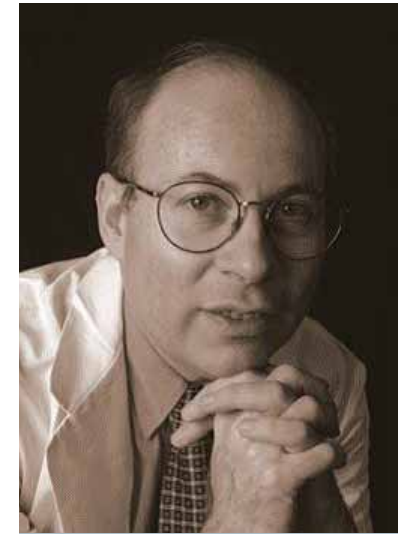
1970 Assistant Professor, Kyoto University
1973 Received Doctor of Science from Kyoto University
1978 Associate Professor, Kyoto University
1986 Professor, Faculty of Science, Kyoto University (-1999)
1992 Visiting Professor, National Institute for Basic Biology, Japan (-1998)
1993 Head, Center for Molecular and Developmental Biology, Kyoto University (-1999)
1999 Professor, Graduate School of Biostudies, Kyoto University
2002 Retired from Kyoto University
2002 Visiting Professor, Kyoto University (-2002)
2002 Director, RIKEN Center for Developmental Biology
2007 Professor Emeritus, Kyoto University

Other Awards and Prizes (selected)

1995 The Princess Takamatsu Cancer Research Fund Prizes, the Princess Takamatsu Cancer Research Fund, Japan
1996 Japan Academy Prize, the Japan Academy, Japan
2001 Ross Harrison Prize, International Society of Developmental Biologists
2001 Keio Medical Science Prize, Keio University Medical Science Fund, Japan
2004 Person of Cultural Merit, Japan
2007 Foreign Associate, National Academy of Sciences, USA
2012 Honorary Doctorate, Ghent University, Belgium
2012 Thomson Reuters Citation Laureate, Thomson Reuters

Honda Prize 2012

The Honda Foundation



Neuroscience

Awarded for

his pioneering efforts in the development of water diffusion measurement by magnetic resonance imaging (MRI) and its application in clinical practice, especially for acute stroke diagnosis

Denis Le Bihan [1957 -]

M.D. and Ph.D. in Medicine and Physics
Visiting Professor, Kyoto University
Founding Director, NeuroSpin (Ultrahigh Field MRI Institute), Saclay, France

Achievements

Professor Le Bihan developed an imaging method for water diffusion measurement by magnetic resonance imaging (MRI). The diffusion MRI method has saved numerous patients suffering acute stroke as it significantly reduces detection time for diagnosis and treatment. The method can also provide information on nerve fibers, showing the wiring of the brain. It enables healthcare professionals to determine preoperatively the extent of tumor resection, dramatically reducing accidental damage to other regions during surgery.

Profile

Denis Le Bihan is a pioneer, as he has clinically and scientifically established the basis of diffusion MRI in clinical application, thereby contributing to widespread use of MRI. He is a Knight of the French National Order of Merit, a full member of the French Academy of Sciences and Academy of Technologies, as well as of the European Academy of Sciences.

Timeline

1984 Received M.D. at the University of Paris VI
1987 Received Ph.D. in Physics at the University of Paris XI
1987 Visiting Associate, Diagnostic Radiology Department, Clinical Center, National Institutes of Health (NIH), USA (-1990)
1987 Chief, Diagnostic Radiology Research Section, Clinical Center of the NIH, USA
1991 Clinical Associate Professor, Georgetown University Hospital
1994 Chief, Research and Methodology Section, Service Hospitalier Frédéric Joliot, Atomic Energy Commission (CEA), France
1999 Director, Laboratory of Anatomical and Functional Neuroimaging at Service Hospitalier Frédéric Joliot, CEA, France
2000 Director, Federative Research Institute on Functional Neuroimaging, France
2005 Visiting Professor, Kyoto University
2007 Founding Director, NeuroSpin (Ultrahigh Field MRI Institute), Saclay, France

Other Awards and Prizes (selected)

1991 Sylvia Sorkin Greenfield Award in Medical Physics, American Association of Physics in Medicine, USA
1994 Award of the European Society of Magnetic Resonance in Medicine and Biology
1995 Kodak Award of the Institute of France for Scientific Achievement in Imaging Research, France
2001 Gold Medal, International Society of Magnetic Resonance in Medicine, USA
2002 Honorary Lecturer of the European Congress of Radiology 2002, European Society of Radiology
2002 Richard Lounsbery Award, United States National Academies of Sciences and the French Academy of Sciences
2003 Louis D. Foundation Award, Institut de France, France
2004 Elected Honorary Member, American Society of NeuroRadiology, USA
2009 Elected Fellow, the European Society for Magnetic Resonance in Medicine and Biology
2010 JA Vezina Award, Elected Honorary Member, French Canadian Society of Radiology, Canada
2010 Holst Award, University of Eindhoven/Philips Research, Netherlands

AWARD HISTORY

1978-1995

1978
Michitaro Tanaka
Order of Culture, Japan

1979
Kinji Imanishi
Order of Culture, Japan

1981
Kenichi Fukui
Nobel Prize in Chemistry

1984
Junichiro Itani
Huxley Memorial Medal and Lecture
Shigeki Kaizuka
Order of Culture, Japan

1986
Osamu Hayaishi
Wolf Prize in Medicine

1987
Susumu Tonegawa
Nobel Prize
in Physiology or Medicine
Yoneo Ishii
Class III Commander of the Most
Exalted Order of the White Elephant
Takeo Kuwabara
Order of Culture, Japan

1989
Yasutomi Nishizuka
Albert Lasker
Basic Medical Research Award
Sueo Kawabata
Moët-Hennessy
Louis-Vuitton International Prize
Tokino S. Okada
Ross Harrison Prize
Tomi Saeki
Imperial Prize and Japan Academy Prize
Yorio Hinuma
Imperial Prize and Japan Academy Prize

1990
Shigefumi Mori
Fields Medal

1992
Mitsuhiro Shishikura
Salem Prize

1993
Kenichiro Osumi
Order of Culture, Japan

1994
Shigekazu Nagata
Emil von Behring-Preis
Hisateru Mitsuda
Order of Culture, Japan
Tadao Umesao
Order of Culture, Japan

1995
Chushiro Hayashi
Kyoto Prize, Basic Sciences

Chapter

4

Frederic Stanley Kipping Award

"To recognize distinguished contributions to the field of silicon chemistry and, by such example, to stimulate the creativity of others." (American Chemical Society site: www.acs.org)

The Henri Poincaré Prize

"The Prize was created in 1997 to recognize outstanding contributions in mathematical physics, and contributions which lay the groundwork for novel developments in this broad field." (International Association of Mathematical Physics site: www.iamp.org)

Booker Gold Medal

"The Medal is awarded for outstanding contributions to telecommunications or a related discipline of direct interest to URSI (International Union of Radio Science)." (International Union of Radio Science site: www.ursi.org/en/)

Arthur C. Cope Scholar Award

"Purpose: To recognize and encourage excellence in organic chemistry. Sponsor: The Arthur C. Cope Fund." (American Chemical Society site: www.acs.org)

George W. Morey Award

"The award recognizes new and original work in the field of glass science and technology. The criterion for winning the award is excellence in publication of work, either experimental or theoretical, done by an individual." (The American Ceramic Society site: ceramics.org)

Macro Group UK Medal for Outstanding Achievement in Polymer Science

"Awarded to a scientist, from any country, who is recognised internationally for his/her continued, outstanding achievements in the field of polymer science." (Royal Society of Chemistry site: www.rsc.org)

Frank Nelson Cole Prize in Algebra

"The Frank Nelson Cole Prize in Algebra is awarded every three years for a notable paper in algebra published during the preceding six years." (American Mathematical Society site: www.ams.org)

Moët-Hennessy Louis-Vuitton International Prize

"Science for Art Prizes awarded annually by LVMH Moët Hennessy Louis Vuitton Inc." "The unusual award was established in 1987 to help bring together the professions of science, art and industry." (Stanford University site: news.stanford.edu/pr/94/941013Arc4001.html)

John Dawson Prize

"To commemorate the late John Dawson a specialized award for pioneering advances to plasma physics obtained through simulations will be presented. This is a historical award for past (pre-ICNSP'05) achievements. Official nomination letters for the Dawson Prize (individual or group award) must be sent to the Conference Chairman by July 7, 2005. The letters have to clearly describe the scope of work and its impact." (Numerical Simulation Research Project site: www.nsrp.nifs.ac.jp/)

Delbert Ray Fulkerson Prize

"The Fulkerson Prize is awarded for outstanding papers in the area of discrete mathematics." (American Mathematical Society site: www.ams.org)

Dannie Heineman Prize for Mathematical Physics

"This prize is awarded solely for valuable published contributions made in the field of mathematical physics with no restrictions placed on a candidate's citizenship or country of residence." (The American Physical Society site: www.aps.org)

Thomson Reuters Citation Laureates

"Annually, Thomson Reuters citation analysts mine proprietary data from the company's research platform, Web of Knowledge™, to identify the most influential researchers in the categories of chemistry, physics, physiology or medicine, and economics." (Thomson Reuters site: thomsonreuters.com)

Salem Prize

"The prize, in memory of Raphael Salem, is awarded yearly to young researchers for outstanding contributions to the field of analysis." (American Mathematical Society site: www.ams.org)

Leonard Eisenbud Prize

"Thus, for example, the prize might be given for a contribution to mathematics inspired by modern developments in physics or for the development of a physical theory exploiting modern mathematics in a novel way." (American Mathematical Society site: www.ams.org)

Frederic Stanley Kipping Award in Silicon Chemistry 1967

American Chemical Society



Organic Chemistry

Awarded for

his research on organosilicon chemistry

Makoto Kumada [1920 - 2007]

Doctor of Engineering
Professor Emeritus, Kyoto University

Achievements

Professor Kumada is considered to be the father of polysilane chemistry. In 1953, by methylating the distillation residue from the direct method, which represents an industrial synthetic method of organosilicon compounds, with a Grignard reagent and isolating hexamethyldisilane ($\text{Me}_3\text{Si-SiMe}_3$), he demonstrated that components containing Si-Si bonds were contained in this distillation residue. As a result of Prof. Kumada's discovery, the chemistry of Si-Si bond-containing polysilanes was greatly advanced worldwide. In recognition of this, he was awarded the F. S. Kipping Award in 1967. He was the first Japanese to be honored by the American Chemical Society.

Profile

In addition to the polysilane chemistry, Makoto Kumada's internationally-renowned research achievements spans many fields, including the chemistry of high-coordinate organosilicon compounds, transition metal catalyzed cross-coupling reactions, and catalytic asymmetric synthesis. Prof. Kumada shaped the frontier of the flood of organometallic chemistry and high-precision organic synthetic chemistry research that rapidly developed from the mid-20th century. The nickel catalyzed cross-coupling reaction reported in 1972 represented the beginning of that field, and his name is etched in history as the Kumada-Tamao-Corriu reaction. Furthermore, Prof. Kumada was an excellent educator, and fostered many outstanding researchers that have led organic chemistry in Japan thereafter, including Professors Hideki Sakurai, Mitsuo Ishikawa, Keiji Yamamoto, Akira Hosomi, Kohei Tamao (see p. 40), Mitsuo Kira, Tamio Hayashi (see p. 42), and Jun-ichi Yoshida.

Timeline

1943	Graduated from Kyoto Imperial University
1943	Worked at Tokyo Shibaura Electric Co., Ltd.
1950	Assistant Professor, Osaka City University
1952	Associate Professor, Osaka City University
1956	Professor, Osaka City University
1962	Professor, Kyoto University
1983	Retired from Kyoto University and entitled Professor Emeritus

Other Awards and Prizes (selected)

1994	Imperial Prize and Japan Academy Prize, the Japan Academy, Japan
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Makoto Kumada

Moët-Hennessy Louis-Vuitton International Prize 1989

LVMH Moët Hennessy Louis Vuitton Inc.



Polymer Chemistry

Awarded for

research on objective measurement of textile tactile properties

Sueo Kawabata [1931 - 2001]

Doctor of Engineering
Professor Emeritus, Kyoto University

Achievements

Professor Kawabata significantly contributed to the research on solid mechanics of polymeric materials, including rubber, composites, and fibrous materials. In particular, he developed a technique for the micro-measurement of the mechanical properties of single fibers. He was conferred with the titled prize for his establishment of an objective measurement method of fabric hand, replacing its subjective judgment based on human sensitivity and experience. This method is called the Kawabata evaluation system and is used widely around the world.

Profile

Apart from Sueo Kawabata's great work, he constantly strived to train and foster younger generations in accordance with his own belief. He also highly contributed to the foundation of and education systems at the graduate school of the University of Shiga Prefecture. After his retirement from The University of Shiga Prefecture, he attempted to establish a research institute for studying fibers and textiles in Nara, his hometown.

Timeline

1960	Received Doctor of Engineering from Kyoto University
1961	Assistant Professor, Kyoto University
1964	Research fellow, California Institute of Technology (-1995)
1965	Associate Professor, Kyoto University
1983	Professor, Kyoto University
1994	Retired from Kyoto University and entitled Professor Emeritus
1995	Professor, The University of Shiga Prefecture

Other Awards and Prizes (selected)

1987	Warner Memorial Medal, the Textile Institute, UK
1992	Millson Award for Invention, the American Association of Textile Chemists and Colorists, USA
1993	Award for Excellence, the Literati Club, London, UK
1995	Contribution Award to Textile Science, Technical University of Liberec, Czech Republic
1995	Honorary Fellow, the Textile Institute, UK

Sueo Kawabata

Henri Poincaré Prize 2003

International Association of Mathematical Physics



Mathematics, Physics

Awarded for

his lifetime contributions to the foundations of quantum field theory, quantum statistical mechanics, and the theory of operator algebras

Huzihiro Araki [1932 -]

Ph.D. in Science and Doctor of Science
Professor Emeritus, Kyoto University

Achievements

Professor Araki studied fundamental problems in quantum physics using highly developed mathematical machinery from the 1960s. He established significant relationships between his foundation of algebraic quantum field theory and type III factors under von Neumann algebra. These pioneering works created a deep stream in mathematical physics and structural theory of von Neumann algebra. He has likewise contributed to the basics of quantum statistical mechanics, and his results are applied to quantum information theory, which has recently experienced significant development.

Profile

Besides his other prolific works, Huzihiro Araki has contributed to many branches of mathematical and general society. He organized numerous conferences and served on various committees; he served as a member of the screening committee for the Fields Medal of ICM (International Congress of Mathematicians) 1982 and played a significant role as a general secretary of ICM 1990. In addition, he has written several articles for the enlightenment of mathematics, and these are continuing to have a major impact on younger generation of researchers.

Timeline

1957	Received Master's degree from Kyoto University
1960	Received Ph.D. from Princeton University
1961	Received Doctor of Science from Kyoto University
1966	Professor, Kyoto University
1979	President, the International Association of Mathematical Physics
1993	Director, Research Institute for Mathematical Sciences, Kyoto University
1996	Retired from Kyoto University and entitled Professor Emeritus
1996	Professor, Tokyo University of Science (-2001)

Other Awards and Prizes (selected)

1990	Grand Prix du Jury du Conseil Scientifique de l'Union des Assurances de Paris, France
2007	Humboldt Research Award, Alexander von Humboldt Foundation, Germany

John Dawson Prize 2005

International Conference on the Numerical Simulation of Plasmas



Theoretical Physics

Awarded for

pioneering advancement of plasma physics obtained through simulations to understand nuclear fusion and plasma

Tetsuya Sato [1939 -]

Doctor of Engineering
Professor Emeritus,
National Institute for Fusion Science Graduate University for Advanced Studies
Professor, University of Hyogo

Achievements

Professor Sato applied simulation science to the theoretical physics field to develop the understanding of nuclear fusion plasma and geoscience.

Profile

Tetsuya Sato is a recognized authority of simulation science. A Kyoto University graduate, he shifted his research interest from classic theoretical physics to geophysics science using computer science. He has been appointed as director of numerous scientific institutes for nuclear fusion and geoscience. The "Earth simulator," which he directed, was the fastest supercomputer from 2002 to 2005. His style of research has also been acclaimed for its creativity by the Japan Fashion Association.

Timeline

1967	Assistant Professor, Kyoto University
1970	Received Doctor of Engineering from Kyoto University
1974	Associate Professor, the University of Tokyo
1980	Professor, Hiroshima University
1988	Professor, Nagoya University (held concurrently)
1989	Director and Professor, Center for Theory and Computer Simulation, National Institute for Fusion Science
1991	Professor, the Graduate University for Advanced Studies (held concurrently)
1995	Professor, Nagoya University (held concurrently)
2001	Director, the Earth Simulator Center, Japan Agency for Marine-Earth Science and Technology
2002	Professor Emeritus, National Institute for Fusion Science
2003	Professor Emeritus, the Graduate University for Advanced Studies
2011	Dean/Professor, the Graduate School of Simulation Studies, University of Hyogo
2013	Professor Emeritus, University of Hyogo

Other Awards and Prizes (selected)

2003	21 st Century Achievement Awards, USA
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Booker Gold Medal 2008

International Union of Radio Science



Space Science

Awarded for

outstanding contributions to the understanding of nonlinear plasma wave processes, promotion of computer simulations in space plasma physics, and international leadership in plasma wave research

Hiroshi Matsumoto [1942 -]

Doctor of Engineering
President and Professor Emeritus, Kyoto University

Achievements

Professor Matsumoto researched Space Radio Science and Space Plasma Space Solar Power Transmission. In 1985, Matsumoto and his colleagues successfully developed a computer simulation code for three-dimensional electromagnetic particles (called KEMPO) in space plasma physics, and contributed to plasma wave research. He conducted the Geotail satellite mission, which observes the Earth's magnetosphere, contributing to global geospace science. He also conducted theoretical, computational, and experimental research on waves in nonlinear plasmas and contributed to the development of microwave power transmission for solar power satellites.

Profile

Hiroshi Matsumoto received Doctor of Engineering from Kyoto University in 1973. He researched Space Radio Science and Space Plasma Space Solar Power Transmission at the Radio Atmospheric Research Center of Kyoto University. He tirelessly studied each area and won numerous awards for his scientific works and strong leadership. Since 2008, he has been the president of Kyoto University.

Timeline

1967	Received Master's degree from Kyoto University
1967	Assistant Professor, Faculty of Engineering, Kyoto University
1974	Associate Professor, Faculty of Engineering, Kyoto University
1981	Associate Professor, Radio Atmospheric Science Center, Kyoto University
1987	Professor, Radio Atmospheric Science Center, Kyoto University
1992	Director, Radio Atmospheric Science Center, Kyoto University
1999	President, Union Radio-Scientifique Internationale (-2002)
2002	Director, Radio Science Center for Space and Atmosphere, Kyoto University
2005	Executive Vice-President, Kyoto University
2006	Professor Emeritus, Kyoto University
2008	President, Kyoto University

Other Awards and Prizes (selected)

1993	NASA Group Achievement Award for GEOTAIL Plasma wave instruments, USA
1998	NASA Group Achievement Award for GEOTAIL PWI, NASA, USA
1998	NASA Group Achievement Award for Polar PWI, NASA, USA
1999	AGU Fellow, American Geophysical Union, USA
2000	ISAP2000 Paper Award, International Forum for Sustainable Asia and the Pacific, Japan
2003	IEEE Fellow, IEEE (Institute of Electrical and Electronics Engineers), USA
2004	Associateships of the Royal Astronomical Society, Royal Astronomical Society, UK
2004	President Award, Kinki Information Communication Conference, Japan
2006	Gagarin Medal, Russian Federation of Cosmonautics, Russia

Frederic Stanley Kipping Award in Silicon Chemistry 2002

American Chemical Society



Organic Chemistry

Awarded for

his lifelong research work including his discovery of a hydrogen peroxide oxidation of silicon-carbon bonds

Kohei Tamao [1942 -]

Doctor of Engineering
Professor Emeritus, Kyoto University
Science Advisor of RIKEN, and Director of Global Research Cluster, RIKEN

Achievements

Professor Tamao introduced, in the late 1970s, a new concept in bond activation involving high coordination in modern synthetic organic chemistry. Based on these developments, he discovered a hydrogen peroxide oxidation of silicon-carbon bonds. This oxidation reaction, now known as Tamao (or Tamao-Fleming) oxidation, represents the only existing general method for the synthesis of alcohols from organosilicon compounds, greatly enhancing the synthetic utility of organosilicon compounds.

Profile

Kohei Tamao and his supervisor Makoto Kumada (see p.35) have developed a type of cross coupling reaction, called Kumada-Tamao-Corriu coupling. The reaction is notable for being among the first reported catalytic cross-coupling methods. Tamao also has consistently displayed leadership in the development of new fields of molecular, material and element science by blending a keen sense of modern synthetic organic chemistry with classic main-group element chemistry.

Timeline

1970	Assistant Professor, Faculty of Engineering, Kyoto University
1971	Received Doctor of Engineering from Kyoto University
1986	Associate Professor, Kyoto University
1993	Professor, Institute for Chemical Research, Kyoto University
2005	Professor Emeritus, Kyoto University
2005	Director, RIKEN Frontier Research System
2008	Director, RIKEN Advanced Science Institute
2013	Science Advisor, RIKEN
2013	Director, Global Research Cluster, RIKEN

Other Awards and Prizes (selected)

1994	Fellow, the Royal Society of Chemistry, FRSC CChem
1999	The Chemical Society of Japan (CSJ) Award, the Chemical Society of Japan, Japan
2004	Medal with Purple Ribbon, Japan
2007	Japan Academy Prize, the Japan Academy, Japan
2011	Person of Cultural Merit, Japan

Delbert Ray Fulkerson Prize 2003

American Mathematical Society



Mathematical Science

Awarded for

developing a combinatorial strongly polynomial algorithm for minimizing submodular functions

Satoru Fujishige [1947 -]

Doctor of Engineering
Professor Emeritus, Osaka University and Kyoto University

Achievements

Professor Fujishige provided a combinatorial, strongly polynomial time algorithm for submodular function minimization in collaboration with Satoru Iwata and Lisa Fleischer in 1999 (which was also independently achieved by Alexander Schrijver). This resolved a long-standing open problem in the history of submodular function minimization algorithms in discrete optimization.

Profile

Satoru Fujishige received Doctor of Engineering from Kyoto University in 1975. He then became research associate and one year later assistant professor to work with Professor Masao Iri at the University of Tokyo, where he started research in combinatorial and discrete optimization, especially on matroids, networks, and submodular functions. After research at University of Tsukuba and Osaka University, he became a professor at Research Institute for Mathematical Sciences at Kyoto University in 2003.

Timeline

1975	Research Associate, the University of Tokyo
1976	Assistant Professor, the University of Tokyo
1979	Associate Professor, University of Tsukuba
1982	Visiting Scholar, University of Bonn
1988	Professor, University of Tsukuba
1997	Professor, Osaka University
2003	Professor Emeritus, Osaka University
2003	Professor, Kyoto University
2009	Director, Research Institute for Mathematical Sciences, Kyoto University
2012	Professor Emeritus, Kyoto University

Arthur C. Cope Scholar Award 2008

American Chemical Society



Organic Chemistry

Awarded for

his design of Chiral Transition Metal Catalysts and Development of New Catalytic Asymmetric Reactions

Tamio Hayashi [1948 -]

Doctor of Engineering
Professor Emeritus, Kyoto University
Principal Scientist, Institute of Materials Research and Engineering, Singapore
Professor, National University of Singapore, Singapore

Achievements

Professor Hayashi developed new selective organic transformations catalyzed by transition metal complexes, especially catalytic asymmetric reactions. He has been highly successful in his conceptual design of new chiral ligands and their use for catalytic asymmetric reactions.

Profile

Tamio Hayashi studied organosilicon chemistry under his supervisor Makoto Kumada (see p.35) at Kyoto University, and then he started his studies on organotransition metal chemistry directed towards organic synthesis. He has published 410 original papers with a total citation number of around 29,000 (H-index 89) as of January 2014. In ISI Highly Cited.com, a part of the ISI Web of Knowledge, Tamio Hayashi has been listed as one of the 272 most highly cited chemists in the world since 2003.

Timeline

1975	Received Doctor of Engineering from Kyoto University
1975	Assistant Professor, Kyoto University
1976	Postdoctoral Fellow, Colorado State University
1989	Professor, Hokkaido University
1994	Professor, Kyoto University
2012	Retired from Kyoto University and entitled Professor Emeritus
2012	Principal Scientist, Institute of Materials Research and Engineering, Singapore
2013	Professor, National University of Singapore, Singapore

Other Awards and Prizes (selected)

1991	IBM Japan Science Prize, IBM, Japan
2003	The Chemical Society of Japan (CSJ) Award, the Chemical Society of Japan, Japan
2004	Thomson Scientific Research Front Award, Thomson Reuters
2007	Ryoji Noyori Prize, The Society of Synthetic Organic Chemistry, Japan
2010	The Khwarizmi International Award, Iranian Research Organization for Science and Technology, Iran
2010	Medal with Purple Ribbon, Japan

Dannie Heineman Prize for Mathematical Physics 2013

American Physical Society



Mathematics

Awarded for

profound developments in integrable systems and their correlation functions in statistical mechanics and quantum field theory, making use of quantum groups, algebraic analysis and deformation theory*

Tetsuji Miwa [1949 -]

Doctor of Science
Professor, Kyoto University

Achievements

Professor Miwa is famous for solitons and exactly solvable lattice models in connection with the representation theory of affine Lie algebras. In collaboration with Michio Jimbo and other people, he studied the correlation functions of the integrable quantum spin chains.

Profile

In 1973, Tetsuji Miwa moved from the University of Tokyo, where he graduated from, to the Research Institute for Mathematical Sciences, Kyoto University, and joined the algebraic analysis group led by Mikio Sato (see p.21). He worked with Mikio Sato and Michio Jimbo on the isomonodromic deformation theory and its application to the 2-dimensional Ising model. In 2000, he moved to the mathematics department and stayed till his retirement in 2013. Since then, he joined the newly established Institute for Liberal Arts and Sciences, Kyoto University.

Timeline

1981	Received Doctor of Science from Kyoto University
1993	Professor, Research Institute for Mathematical Sciences, Kyoto University
2000	Professor, Graduate School of Science, Kyoto University
2013	Professor, Institute for Liberal Arts and Sciences, Kyoto University

* Authority: American Physical Society
(http://www.aps.org/programs/honors/prizes/prizerecipient.cfm?first_nm=Michio&last_nm=Jimbo&year=2013)

George W. Morey Award 2000

The American Ceramic Society



Materials Science

Awarded for

the best innovative contribution to the field of Glass and Optical Materials in the world

Kazuyuki Hirao [1951 -]

Doctor of Engineering
Professor, Kyoto University

Achievements

Professor Hirao has contributed enormously to the development of photonics glasses. He has proposed novel methods for the functional expressions applied in optical functional devices produced with inorganic materials. He has published more than 600 scholarly publications in inorganic material sciences, applied physics, theoretical chemistry, and laser chemistry. His laboratory is one of the most advanced in the world for laser processing and research.

Profile

Kazuyuki Hirao is a pioneer in materials science for glasses using new technology. He owns more than 155 patents from his innovation and has delivered more than 200 lectures on his expertise. Especially, he is renowned as the inventor of optical waveguides inside glasses irradiated by a femtosecond laser.

Timeline

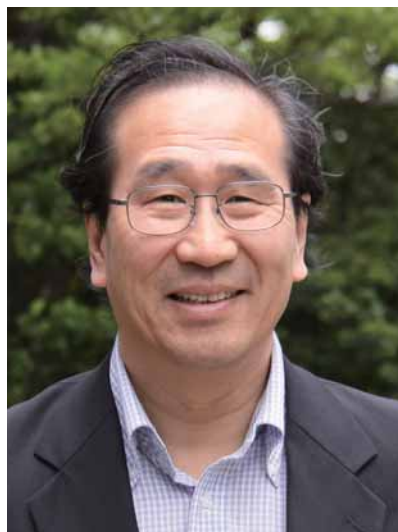
1979	Received Doctor of Engineering from Kyoto University
1979	Assistant Professor, Kyoto University
1987	Associate Professor, Kyoto University
1998	Professor, Kyoto University (-present)
2005	Leader, Kyoto Intellectual Cluster Group (-present)
2006	Director, Kyoto City Innovation Center (-present)
2013	Director of Nano Technology Hub, Center for the Promotion of Interdisciplinary Education and Research (C-PIER), Kyoto University

Other Awards and Prizes (selected)

1990	Gottardi Prize, International Commission on Glass
2005	Otto Schott Research Award, the Ernst Abbe Fund, Germany
2006	Fellow, the American Ceramic Society, USA
2008	International Academic Contribution Award, China
2012	Medal with Purple Ribbon, Japan

Thomson Reuters Citation Laureates 2010

Thomson Reuters



Material Chemistry

Awarded for

the design and development of porous metal-organic frameworks, whose applications include hydrogen and methane storage, gas purification, and gas separation

Susumu Kitagawa [1951 -]

Doctor of Engineering
Professor, Kyoto University
Director, Institute for Integrated Cell-Material Sciences (WPI-iCeMS), Kyoto University

Achievements

Professor Kitagawa is a pioneer in the field of porous coordination polymers (PCPs) — also known as metal-organic frameworks — which are nano- to meso-sized cage-like structures with hollow pores capable of accommodating gas molecules. PCPs can be applied to a wide range of industrial processes. As proof of Kitagawa's significant contributions to PCP research, his work published over the past two decades have been cited among the top 0.1% of papers in his field, earning him a Thomson Reuters Citation Laureates for 2010.

Profile

Susumu Kitagawa received his Doctor of Engineering from Kyoto University in 1979. For the next 13 years, he continued his research at Kinki University before becoming a professor at Tokyo Metropolitan University. After joining Kyoto University in 1998 as a professor, he then went on to become deputy director of the Institute for Integrated Cell-Material Sciences (WPI-iCeMS) in 2007, and was named director in 2013.

Timeline

1979	Received Doctor of Engineering from Kyoto University
1979	Assistant Professor, Kinki University
1983	Lecturer, Kinki University
1986	Visiting Scientist, Texas A&M University
1988	Associate Professor, Kinki University
1992	Professor, Tokyo Metropolitan University
1998	Professor, Graduate School of Science, Kyoto University
1999	Professor, Graduate School of Engineering, Kyoto University (-present)
2007	Deputy Director, Institute for Integrated Cell-Material Sciences (WPI-iCeMS), Kyoto University
2013	Director, Institute for Integrated Cell-Material Sciences (WPI-iCeMS), Kyoto University

Other Awards and Prizes (selected)

2007	Earl L. Muettterties Memorial Lecturers, University of California, Berkeley, USA
2009	The Chemical Society of Japan (CSJ) Award, the Chemical Society of Japan, Japan
2011	Medal with Purple Ribbon, Japan
2012	Honorary Fellow, Chemical Research Society of India, India
2013	Reona Ezaki Award, the Science and Technology Promotion Foundation of Ibaraki, Japan
2013	De Gennes Prize, Royal Society of Chemistry, UK
2013	Kyoto University Shi-Shi Award, Kyoto University, Japan

Macro Group UK Medal for Outstanding Achievement in Polymer Science 2012

Royal Society of Chemistry



Polymer Chemistry

Awarded for

his seminal work on the development of metal catalysed living radical polymerisation also on living cationic polymerisation and the synthesis of designed functional polymers

Mitsuo Sawamoto [1951 -]

Ph.D. in Engineering
Professor, Kyoto University

Achievements

Professor Sawamoto has conducted studies in the field of polymer chemistry and polymer synthesis, including cationic and radical polymerization. He has contributed greatly to the establishment of controlled polymerization by dormant species, which is widely accepted as a standard principle in precise polymerization. This achievement created a new approach toward research in polymer science.

Profile

Mitsuo Sawamoto is globally recognized, and his work has drawn the keen interest of various scholars; his academic papers are highly cited in Japan, for example. Indeed, between 1997 and 2001, he was one of the most cited scholars globally in organic chemistry. This attention can be attributed to the quality of his research, which has influential impact on basic research efforts as well as applications to society.

Timeline

1979	Received Doctor of Engineering from Kyoto University
1979	Postdoctoral Fellow, Kyoto University
1980	Visiting Scholar, the University of Akron
1981	Assistant Professor, Kyoto University
1991	Lecturer, Kyoto University
1993	Associate Professor, Kyoto University
1994	Professor, Kyoto University

Other Awards and Prizes (selected)

2001	Arthur K. Doolittle Award, American Chemical Society, USA
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Arthur C. Cope Scholar Award 2011

American Chemical Society



Organic Chemistry

Awarded for

discovering and commercially developing chiral phase-transfer catalyst (Maruoka Catalyst®) for artificial amino acid synthesis

Keiji Maruoka [1953 -]

Ph.D. in Chemistry
Professor, Kyoto University

Achievements

Professor Maruoka made an important and significant contribution to modern phase-transfer chemistry. He designed and synthesized non-natural, C2 symmetric chiral phase-transfer catalysts derived from optically pure binaphthol. He also succeeded in simplifying these phase transfer catalysts with high performance and the general applicability. Those catalysts are commercially available as Maruoka Catalyst® and Simplified Maruoka Catalyst®, respectively, for large-scale production of artificial amino acids.

Profile

In 1976, Keiji Maruoka graduated from Kyoto University. In 1980, he received his Ph.D. from University of Hawaii. After researches at Nagoya University and Hokkaido University, currently he is a professor of chemistry in Kyoto University since 2000. He has a wide range of research interests in synthetic organic chemistry, particularly asymmetric organocatalysis. He involves "High-Performance Organocatalyst Project" which aims at the design and synthesis of a series of truly efficient organocatalysts for practical organic transformations.

Timeline

1980	Received Ph.D. in Chemistry at the University of Hawaii
1980	Assistant Professor, Nagoya University
1985	Lecturer, Nagoya University
1990	Associate Professor, Nagoya University
1995	Professor, Hokkaido University (-2001)
2000	Professor, Kyoto University
2009	Hold "Organocatalytic Chemistry Special Laboratory"

Other Awards and Prizes (selected)

2004	Nagoya Silver Medal, Banyu Life Science Foundation International, Japan
2007	The Chemical Society of Japan (CSJ) Award, The Japan Chemical Society, Japan
2007/2008	Novartis Chemistry Lectureship Award, Novartis
2011	Humboldt Research Award, Alexander von Humboldt Foundation, Germany
2011	Medal with Purple Ribbon, Japan

Salem Prize 1992

American Mathematical Society



Mathematics

Awarded for

proving a conjecture of Fatou from 1920 and for also proving that the boundary of the Mandelbrot set has Hausdorff dimension two, with the conformation of a conjecture by Mandelbrot and Milnor

Mitsuhiro Shishikura [1960 -]

Doctor of Science
Professor, Kyoto University

Achievements

Professor Shishikura researches in the field of complex dynamics, which is the dynamical systems defined by complex analytic functions. He developed the theory the quasiconformal surgery and as an application, he solved conjectures by Fatou and by Sullivan on the number of non-repelling periodic cycles and Fatou components. He proved that the boundary of the Mandelbrot set, a fractal set which is well-known for its complexity and beauty, has Hausdorff dimension two. This confirmed the conjecture proposed by Mandelbrot and Milnor.

Profile

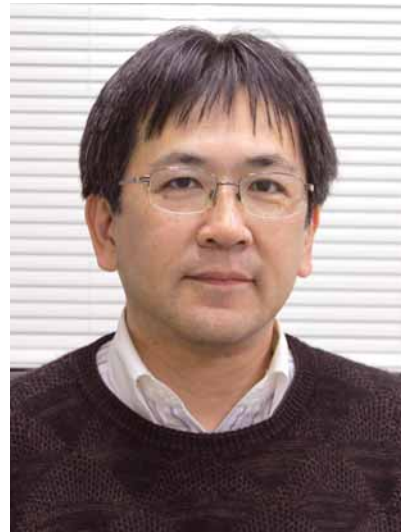
In 1988, Mitsuhiro Shishikura received his Doctor of Science from Kyoto University. From 1989 to 1994, he worked at the Tokyo Institute of Technology as associate and assistant professor. In 1994, he moved to the University of Tokyo as an associate professor. In 1999, he became a professor at Hiroshima University. Since 2001, he has been a professor at Kyoto University.

Timeline

1988	Received Doctor of Science, Kyoto University
1988	Research Fellow, Max-Planck-Institut für Mathematik, Germany
1988	Member, Institute for Advanced Study, USA
1989	Assistant Professor, Tokyo Institute of Technology
1992	Associate Professor, Tokyo Institute of Technology
1994	Assistant Professor, the University of Tokyo
1999	Professor, Hiroshima University
2001	Professor, Kyoto University

Frank Nelson Cole Prize in Algebra 2003

American Mathematical Society



Mathematics

Awarded for
his work in representation theory and geometry

Hiraku Nakajima [1962 -]

Doctor of Science
Professor, Kyoto University

Achievements

Professor Nakajima contributed to the representation of theory and geometry. He used his notion of “quiver varieties” to construct irreducible integrable highest weight modules for Kac-Moody algebras associated with a symmetric Cartan matrix, and finite dimensional representations of quantum loop algebras. He also constructed representations of the Heisenberg algebra on the direct sum the homology of the Hilbert schemes of points on a quasi-projective surface.

Profile

Hiraku Nakajima received Doctor of Science from the University of Tokyo in 1991. He was originally interested in geometry of moduli spaces, and gradually moved to representation theory after the discovery of quiver varieties. His landmark papers, for which he was awarded the Cole Prize, were written in 1997, 1998, and 2001.

Timeline

- 1987 Assistant Professor, the University of Tokyo
- 1991 Doctor of Science from the University of Tokyo
- 1992 Associate Professor, Tohoku University
- 1995 Associate Professor, the University of Tokyo
- 1997 Associate Professor, Graduate School of Science, Kyoto University
- 2000 Professor, Graduate School of Science, Kyoto University
- 2008 Professor, Research Institute for Mathematical Sciences, Kyoto University

Hiraku Nakajima

Leonard Eisenbud Prize 2008

American Mathematical Society



Mathematical Science

Awarded for
discovering of the relation between the number of black hole microstates and the Gromov-Witten invariants

Hirosi Ooguri [1962 -]

Doctor of Science
Fred Kavli Professor, California Institute of Technology
Principal Investigator, Kavli Institute for the Physics and Mathematics of the Universe, the University of Tokyo
Advisory Board Member, Research Institute for Mathematical Sciences, Kyoto University

Achievements

Professor Ooguri was awarded the inaugural Leonard Eisenbud Prize for Mathematics and Physics from the American Mathematical Society with his two collaborators for their “beautiful and highly unexpected proposal that the counting of black hole states, in certain string theories obtained by compactification on a Calabi-Yau manifold X , can be expressed in terms of the topological string partition function of X .”

Profile

Hirosi Ooguri is a leading theoretical physicist working on quantum field theory and quantum gravity. He is developing theoretical tools to apply superstring theory to fundamental questions in high-energy physics, astrophysics, and cosmology. He was an Associate Professor at Kyoto University in 1990-1994 and a Full Professor at the University of California at Berkeley in 1994-2000. Since 2000, he has been at California Institute of Technology, where he is now Fred Kavli Professor of Theoretical Physics and Mathematics and the Deputy Chair of the Division of Physics, Mathematics, and Astronomy.

Timeline

- 1986 Received Master's degree from Kyoto University
- 1986 Assistant Professor, the University of Tokyo
- 1988 Research Associate, Institute for Advanced Study, Princeton
- 1989 Assistant Professor, the University of Chicago
- 1989 Received Doctor of Science from the University of Tokyo
- 1990 Associate Professor, Research Institute for Mathematical Sciences (RIMS), Kyoto University
- 1994 Professor of Physics at the University of California at Berkeley
- 1996 Senior Faculty Scientist, the Lawrence Berkeley National Laboratory
- 2000 Professor of Theoretical Physics, California Institute of Technology
- 2007 Fred Kavli Professor of Theoretical Physics, California Institute of Technology
- 2007 Principal Investigator, Kavli Institute for the Physics and Mathematics, the University of Tokyo
- 2011 Member of the Board of Trustees, Aspen Center for Physics
- 2013 Member of the Advisory Board of RIMS, Kyoto University

Other Awards and Prizes (selected)

- 2009 Humboldt Research Award, Alexander von Humboldt-Foundation, Germany
- 2012 Simons Investigator Award (inaugural award), Simons Foundation, USA

Hirosi Ooguri

AWARD HISTORY

1996-2007

1996
Shigetada Nakanishi
Keio Medical Science Prize

1998
Yoshio Masui
Albert Lasker
Basic Medical Research Award

1999
Susumu Fuma
Imperial Prize and Japan Academy Prize

2000
Kimishige Ishizaka
Japan Prize
Kazuyuki Hirao
George W. Morey Award

2001
Ryoji Noyori
Nobel Prize in Chemistry

2002
Kohei Tamao
Frederic Stanley Kipping Award
in Silicon Chemistry
Koichi Tanaka
Keio Medical Science Prize
Mikio Sato
Wolf Prize in Mathematics

2003
Huzihiro Araki
Henri Poincaré Prize
Satoru Fujishige
Delbert Ray Fulkerson Prize
Hiraku Nakajima
Frank Nelson Cole Prize in Algebra
Kazuhiko Nishijima
Order of Culture, Japan

2005
Makoto Nagao
Japan Prize
Masatoshi Takeichi
Japan Prize
Tetsuya Sato
John Dawson Prize
Yoshinori Fujiyoshi
Keio Medical Science Prize
Toshio Sawada
Order of Culture, Japan
Kazuya Kato
Imperial Prize and Japan Academy Prize

2006
Kiyosi Itô
Carl Friedrich Gauss Prize

2007
Mitsuru Hashida
AAPS Research Achievement Award
in Pharmaceuticals and Drug Delivery

Chapter

5

Schaudinn-Hoffman-Plakette

"Die Plakette wird an hervorragende Ärzte und Wissenschaftler vergeben, die sich um die Erforschung, Behandlung und Bekämpfung von infektiösen Erkrankungen der Haut und der angrenzenden Schleimhäute, vor allem der Geschlechtskrankheiten, besonders verdient gemacht haben." (The German Society of Dermatology site: www.derma.de)

Ross Harrison Prize

"The Ross Harrison Prize was established in 1981 to recognize scientists whose contributions have significantly advanced the field of developmental biology, and has come to be acknowledged as the premier recognition of achievement in the field. The Harrison Prize is awarded once every four years" (The International Society of Developmental Biologists site: www.developmental-biology.org)

Keio Medical Science Prize

"The Keio Medical Science Prize gives recognition to the outstanding and creative achievements of researchers in the fields of medicine and life sciences, in particular those contributing to scientific developments in medicine." (Keio University Medical Science Fund site: www.ms-fund.keio.ac.jp)

Robert-Koch Award

"The Robert Koch Award with prize money of 100,000 € is one of the most prestigious scientific commendations in Germany. It is awarded annually, under the patronage of the German Minister of Health, for outstanding and internationally recognised scientific achievements." (Robert-Koch-Stiftung e.V. site: www.robert-koch-stiftung.de)

AAPS Research Achievement Award in Pharmaceuticals and Drug Delivery

"AAPS Awards Program provides a wonderful opportunity for scientists and graduate students to be recognized and honored for their valuable contributions to the pharmaceutical sciences." (American Association of Pharmaceutical Scientists site: www.aaps.org)

Emil von Behring-Preis

"Der Preis soll verliehen werden für besondere wissenschaftliche Leistungen auf medizinischen, veterinärmedizinischen und naturwissenschaftlichen Gebieten mit besonderer Bevorzugung der Immunbiologie und Seuchenbekämpfung." (Philipps-Universität Marburg site: www.uni-marburg.de)

University College Dublin Ulysses Medal

"The UCD Ulysses Medal is the highest honour that the university can bestow." "It is awarded to individuals whose work has made an outstanding global contribution." (University College Dublin site: www.ucd.ie)

Canada Gairdner International Award

"The Canada Gairdner International Awards recognize and celebrate the work of the world's best biomedical researchers." "The Canada Gairdner Awards are supported by the governments of Canada, Alberta and Ontario." (The Gairdner Foundation site: www.gairdner.org)

Schaudinn-Hoffmann-Plakette 1965

Germany



Dermatology

Awarded for

his contribution to the advancement of dermatology from histopathological and cell immunological approaches

Shin-ichi Matsumoto [1884 - 1984]

M.D. and Ph.D. in Medicine
Professor Emeritus, Kyoto University
Founder President, Osaka Medical College

Photo: Osaka Medical College

Achievements

Professor Matsumoto studied spirochetes to understand the mechanism of syphilis from various approaches, including histopathology and cell immunology. He also conducted research on skin carcinoma, transdermal and transmucosal immunization, immunization for bacterial infection, symmetric hyperkeratosis, and several other types of skin diseases.

Profile

Shin-ichi Matsumoto was renowned for his comprehensive study of syphilis and other contributions to dermatology. After his career at Kyoto Imperial University, he strived toward the establishment of the Osaka Medical College and served as the school's dean for more than 20 years. He was an honorary member of dermatology associations in other countries, such as Germany, the USA, Denmark, Hungary, Greece, Italy, and Australia.

Timeline

- 1909 Graduated from Kyoto Imperial University College of Medicine
- 1913 Associate Professor, Kyoto Imperial University College of Medicine
- 1919 Professor, Kyoto Imperial University Faculty of Medicine
- 1938 Dean, Faculty of Medicine, Kyoto Imperial University
- 1944 Retired from Kyoto Imperial University
- 1946 Professor Emeritus, Kyoto University
- 1946 President, Osaka Medical College
- 1956 President, Japanisch-Deutsches Kulturinstitut

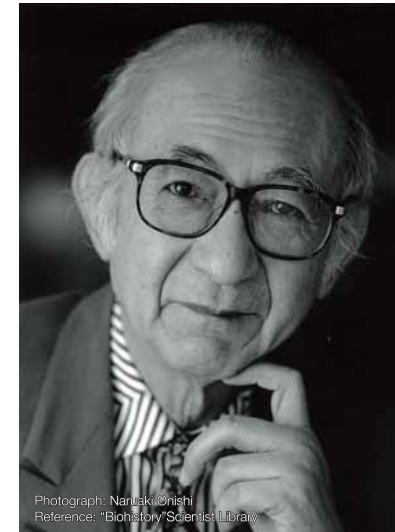
Other Awards and Prizes (selected)

- 1955 Großes Verdienstkreuz, Germany
- 1966 Person of Cultural Merit, Japan
- 1976 Grand Cordon of the Order of the Sacred Treasure, Japan

Shin-ichi Matsumoto

Ross Harrison Prize 1989

International Society of Developmental Biologists



Developmental Biology

Awarded for

his contribution to the research field of developmental biology

Tokino S. Okada [1927 -]

Doctor of Science
Professor Emeritus, Kyoto University

Photograph: Nantak, Onishi
Reference: "Biohistory" Scientist Library

Achievements

Professor Okada has contributed to the advancement of developmental biology. He focused on transdifferentiation, one of the unique features of cells in which one mature cell transforms into another type of mature cell. He used his original methodology for culturing lens cells to demonstrate the transdifferentiation and celler plasticity of a neural retina cell into a lens cell; his serial observation lasted 100 days. Including this discovery, Professor Okada's work in organ regenerations has influenced the field of developmental biology, in which a series of focused research are conducted, such as on embryonic and induced pluripotent stem cells.

Profile

After graduation from Kyoto University, Tokindo S. Okada conducted research in Edinburgh in the UK and in the USA, and then returned to Kyoto University to start a laboratory at the then newly opened Department of Biophysics. He introduced cell culture and immunocytochemical techniques in Japan to promote further studies. In addition to his research activities, he mentored young scientists with his unique philosophy in science. After his early retirement from the National Institute for Basic Biology, he has actively voiced his views on the relationship between science and culture. He has also served as President of the Kyoto City music art cultural Promoting Foundation. Currently, he is an honorary advisor of JT Biohistory Research Hall and has authored a number of science books.

Timeline

- 1954 Assistant Professor, Kyoto University
- 1957 Visiting Researcher, University of Edinburgh
- 1959 Received Doctor of Science from Kyoto University
- 1960 Lecturer, Kyoto University
- 1961 Associate Professor, Kyoto University
- 1964 Research Fellow, Carnegie Institution for Science
- 1967 Professor, Kyoto University (-1990)
- 1979 President of the Japanese Society of Developmental Biologists (-1982)
- 1981 President of the International Society of Developmental Biologists (-1985)
- 1984 Director, National Institute for Basic Biology, National Institutes of Natural Sciences
- 1989 Professor Emeritus, Kyoto University
- 1989 President of National Institutes of Natural Sciences (-1990)
- 1993 Founding Director, JT Biohistory Research Hall (-2002)
- 2002 Honorary Advisor, JT Biohistory Research Hall

Other Awards and Prizes (selected)

- 1989 Alcon Novartis Hida Memorial Award, Alcon Novartis Hida Memorial Award, Alcon, Novartis, Japan
- 1990 Medal with Purple Ribbon, Japan
- 1995 Person of Cultural Merit, Japan
- 2007 Order of Culture, Japan

Tokino S. Okada

Keio Medical Science Prize 1996

Keio University Medical Science Fund



Neuroscience, Molecular Biology

Awarded for

discovering structures and functions of receptor molecules

Shigetada Nakanishi [1942 -]

M.D. and Ph.D. in Medical Science
Member of the Japan Academy
Professor Emeritus, Kyoto University
Director, Osaka Bioscience Institute

Achievements

Professor Nakanishi elucidated the characteristic precursor architectures of various neuropeptides and vasoactive peptides by introducing recombinant DNA technology. Subsequently, he established a novel functional cloning strategy for membrane receptors and ion channels and characterized molecular structures and the regulatory mechanisms of NMDA-type and G protein-coupled type of glutamate receptors as well as several peptide receptors. He also greatly contributed to the understanding of fundamental mechanisms of functional neural networks.

Profile

Shigetada Nakanishi was initially trained as a biochemist and shifted his research interest into molecular biology and neuroscience. He was Professor of Kyoto University from 1981 to 2005 and is currently the Director of Osaka Bioscience Institute. His main area of research has been molecular neuroscience, focusing on molecular mechanisms of glutamate receptor functions and integrative synaptic mechanisms of the neural network.

Timeline

- 1966 Graduated from Kyoto University Faculty of Medicine, M.D.
- 1971 Completed his Doctor's degree in Medicine at Kyoto University
- 1971 Visiting Associate, National Cancer Institute, National Institutes of Health, USA (-1974)
- 1974 Received Ph.D. in Medical Science from Kyoto University
- 1974 Associate Professor, Kyoto University
- 1981 Professor, Faculty of Medicine, Kyoto University (-2005)
- 1999 Professor, Graduate School of Biostudies, Kyoto University (-2005)
- 2000 Dean, Faculty of Medicine, Kyoto University (-2002)
- 2005 Professor Emeritus, Kyoto University
- 2005 Director, Osaka Bioscience Institute

Other Awards and Prizes (selected)

- 1995 Distinguished Achievement Award, Bristol-Myers Squibb, USA
- 1995 Foreign Honorary Member, American Academy of Arts and Sciences, USA
- 1997 Imperial Prize and Japan Academy Prize, the Japan Academy, Japan
- 2000 Foreign Associate, National Academy of Sciences, USA
- 2006 Person of Cultural Merit, Japan
- 2007 The Gruber Neuroscience Prize, the Gruber Foundation, USA
- 2009 Member, the Japan Academy, Japan

Shigetada Nakanishi

Keio Medical Science Prize 2002

Keio University Medical Science Fund



Organ Transplantation

Awarded for

the establishment and development of the living-donor liver transplantation system

Koichi Tanaka [1942 -]

M.D. and Ph.D. in Medicine
Professor Emeritus, Kyoto University
President, Kobe International Frontier Medical Center

Achievements

Professor Tanaka pioneered the living-donor liver transplantation system, which has become the standard of care for treating patients with severe liver failure in Japan. In response to ethical issues over the use of organs from deceased donors — that limited liver transplantations, resulting in low supplies of donated organs and a high mortality of patients with end-stage liver failure — Tanaka established an advanced transplantation method and perioperative management. As a result of his determination and innovative efforts to implement this procedure and safety standards, he has played a central role in the global dissemination and education of living-donor liver transplantations. Over 1000 cases have been carried out under his supervision or with his consultation.

Profile

Koichi Tanaka is actively engaged in the development of therapeutics for pediatric patients needing surgical treatments. The living-donor liver transplantation system is one of his major achievements and was introduced internationally with his strong leadership. He was appointed as a professor of Transplantation and Immunology and a director of Kyoto University Hospital from 1995-2005. Currently, he serves as the president of Kobe International Frontier Medical Center (KIFMEC).

Timeline

- 1966 Graduated from Kyoto University Faculty of Medicine, M.D.
- 1966 Resident, Kyoto University Hospital (-1968)
- 1968 Surgeon, Shimane Prefectural Hospital (-1975)
- 1975 Assistant Professor, Department of Surgery, Kyoto University Hospital (-1995)
- 1981 Received Ph.D. from Kyoto University
- 1985 Lecturer, Department of Surgery, Kyoto University Hospital (-1993)
- 1995 Associate Professor, Department of Surgery, Kyoto University Hospital (-1995)
- 1995 Professor and Director, Department of Transplantation and Immunology, Kyoto University Hospital (-2005)
- 2001 Hospital Director, Kyoto University Hospital (-2005)
- 2004 President, Institute of Biomedical Research and Innovation (IBRI) (-2010)
- 2005 Professor Emeritus, Kyoto University
- 2005 Vice President, Kobe City General Hospital (2005.4-2005.11)
- 2005 Technical Advisor, Kobe City General Hospital (2005.12-present)
- 2006 Received an honorary degree in Medicine and Surgery from Padua University, Italy
- 2009 President, Foundation for Kobe International Medical Alliance (-2012)
- 2010 Technical Advisor, Foundation for Biomedical Research and Innovation (-2012)
- 2012 Vice-President, Foundation for Kobe International Medical Alliance (-present)
- 2013 President, Kobe International Frontier Medical Center

Other Awards and Prizes (selected)

- 2004 Lifetime Achievement Award, Asian Society of Transplantation
- 2013 Maharshi Sushruta Gnyaanpeeth Sanmaan Award for Research in Transplantation Biology, Smt. G. R. Doshi Smt. K. M. Mehta Institute of Kidney Diseases and Research Center and H. L. Trivedi Institute of Transplantation Sciences, India

Koichi Tanaka

Robert-Koch Award 2012

The Koch Foundation



Biochemistry and Molecular Immunology

Awarded for

his pioneering work in immune response and the understanding of viral infections

Tasuku Honjo [1942 -]

M.D. and Ph.D. in Medical Science
Member of the Japan Academy
Professor Emeritus and Visiting Professor, Kyoto University
Chairman, Board of Directors, Shizuoka Prefectural University Corporation

Achievements

Professor Honjo elucidated the mechanism of producing antibodies by class switch recombination of the immunoglobulin gene, and discovered the AID (activation-induced cytidine deaminase) enzyme.

Profile

Tasuku Honjo is well known for his discovery of activation-induced cytidine deaminase that is essential for class switch recombination and somatic hypermutation. He has established the basic conceptual framework of class switch recombination starting from the discovery of DNA deletion (1978) and S regions (1980), followed by elucidation of the whole mouse immunoglobulin heavy-chain locus. His contribution further extended to cDNA cloning of IL-4 and IL-5 cytokines involved in class switching and IL-2 receptor alpha chain. Aside from class switching recombination, he discovered PD-1 (programmed cell death 1), a negative coreceptor at the effector phase of immune response and showed that PD-1 modulation contributes to treatments of viral infection, tumor and autoimmunity. In addition, he is known to be a discoverer of RBP-J, a nuclear protein that interacts with the intracellular domain of Notch in the nucleus. Notch/RBP-J signaling has been shown to regulate a variety of cell lineage commitment including T and B cells.

Timeline

1966 Graduated from Kyoto University Faculty of Medicine, M.D.
1967 Joined Kyoto University Graduate School of Medicine
1975 Received Ph.D. in Medical Science from Kyoto University
1971 Fellow of Carnegie Institution of Washington, USA
1973 Visiting Fellow and Associate, National Institute of Child Health and Human Development, NIH, USA
1974 Assistant Professor, the University of Tokyo
1979 Professor, Faculty of Medicine, Osaka University
1984 Professor, Faculty of Medicine, Kyoto University
1988 Director, Center for Molecular Biology and Genetics, Kyoto University
1996 Dean, Faculty of Medicine, Kyoto University
2004 Dean, Graduate School of Medicine, Kyoto University
2004 Director, Japan Society for the Promotion of Science
2005 Professor Emeritus, Kyoto University
2006 Professor, Graduate School of Medicine, Kyoto University
2006 Executive Member, Council for Science and Technology Policy, Cabinet Office, Government of Japan
2012 Chairman, Board of Directors, Shizuoka Prefectural University Corporation

Other Awards and Prizes (selected)

1985 The Baelz Prize, Boehringer Ingelheim, Germany
1996 Imperial Prize and Japan Academy Prize, the Japan Academy, Japan
2000 Persons of Cultural Merit, Japan
2001 Foreign Associate, National Academy of Sciences, USA
2003 Members of the Leopoldina, the German National Academy of Sciences, Germany
2013 Order of Culture, Japan

AAPS Research Achievement Award in Pharmaceutics and Drug Delivery 2008

American Association of Pharmaceutical Scientists



Pharmacology, Pharmaceutical Science

Awarded for

explaining the mechanism of drug transport in the human body

Ken-ichi Inui [1947 -]

Ph.D. in Pharmaceutical Sciences
President, Kyoto Pharmaceutical University
Professor Emeritus, Kyoto University

Achievements

Professor Ken-ichi Inui explained how a drug is transported across biomembranes in the human body. He has conducted excellent research on drug transporters in the small intestine, kidney and liver to clarify the molecular mechanisms of drug absorption and disposition, and its clinical application, so-called "From Bench To Bedside". The landmark achievement of his research was to overcome interindividual variation in pharmacokinetics and establish personalized pharmacotherapy, focusing on functional and molecular information on transporters.

Profile

Ken-ichi Inui was appointed Professor and Director of the Department of Pharmacy, Kyoto University Hospital, Graduate School of Medicine, and Professor of the Department of Clinical Pharmacy, Graduate School of Pharmaceutical Sciences, Kyoto University. Throughout his career as a professor of clinical pharmacy, he educated many pharmacist-scientists.

Timeline

1972 Assistant Professor, School of Medicine, Hiroshima University
1977 Received Ph.D. from Kyoto University
1978 Research Fellow, Harvard University
1979 Assistant Professor, Kyoto University Hospital
1984 Lector, Kyoto University Hospital
1987 Associate Professor, Kyoto University Hospital
1990 Professor, Tokyo Medical and Dental University
1994 Professor, Kyoto University Hospital
2010 Retired from Kyoto University and entitled Professor Emeritus
2010 President, Kyoto Pharmaceutical University

Other Awards and Prizes (selected)

1996 Fellow, American Association of Pharmaceutical Scientists (AAPS), USA

Keio Medical Science Prize 2005

Keio University Medical Science Fund



Chemical Biology

Awarded for

the development of high-resolution electron cryo-microscopy for the determination of membrane protein structures

Yoshinori Fujiyoshi [1948 -]

Doctor of Science
Professor, Nagoya University
Emeritus Professor, Kyoto University

Achievements

Resolving the three-dimensional structure of membrane proteins was one of the biggest challenges in understanding cellular dynamic functions. Professor Fujiyoshi observed membrane proteins using the original electron microscope with cryopreservation system. Subsequently, he succeeded in resolving the structures of proteins, such as Aquaporine-0, -1, -4, Connexin 26, nicotinic acetylcholine receptor, voltage-sensitive sodium channel, and IP₃ receptor. At present, Fujiyoshi-type electron microscopes dominate the methods for membrane protein analysis at higher resolution.

Profile

Yoshinori Fujiyoshi has strived to understand the functions of the brain and other nerve systems based on structural and functional information of key molecules. With his unique approaches, he has elucidated the functions of more membrane proteins than listed above. His method for understanding physiological functions from protein structures lent new insight for biologists. In this field, currently known as "structural physiology," Fujiyoshi is recognized as the originator.

Timeline

1982	Received Doctor of Science from Kyoto University
1985	Associate Professor, Kyoto University
1987	Senior Research Scientist, Protein Engineering Research Institute, Japan
1988	Research Director, Protein Engineering Research Institute, Japan
1994	Research Director, Matsushita Electronic Industrial Co., Ltd.
1996	Professor, Kyoto University (-2013)
1998	Multisome Team Leader, RIKEN Harima Institute (held concurrently)
1999	Structural Genomics Team Leader, Japan Biological Information Research Centre (held concurrently)
2003	Group Leader, RIKEN Harima Institute (held concurrently)
2012	Director and Professor, Cellular and Structural Physiology Institute, Nagoya University
2013	Emeritus Professor, Kyoto University

Other Awards and Prizes (selected)

2006	Medal with Purple Ribbon, Japan
2008	Japan Academy Prize, the Japan Academy, Japan

Keio Medical Science Prize 2009

Keio University Medical Science Fund



Biochemistry

Awarded for

the discovery and clinical application of ghrelin and other novel bioactive peptides

Kenji Kangawa [1948 -]

Doctor of Science
Director General, National Cerebral and Cardiovascular Center Research Institute
Professor, Kyoto University

Achievements

Professor Kangawa and his colleagues applied their proprietary method for the purification of an endogenous ligand for the growth hormone secretagogue receptor from gastric tissue and then determined its structure. The identified ligand was named ghrelin and demonstrated a potent appetite-stimulating effect in addition to its growth hormone secretagogue activity. A ghrelin-based drug is currently in the clinical trial stage as a therapeutic agent for anorexia nervosa (cibophobia). Dr. Kangawa's team identified other important molecules, including atrial natriuretic peptide (ANP), brain natriuretic peptide (BNP), and adrenomedullin. ANP and BNP are currently used as therapeutic and diagnostic agents in clinical settings.

Profile

Kenji Kangawa started his career as a biochemist in hormone identification when he was under the supervision of Professor Hisayuki Matsuo in Osaka University, who developed a micro-sequencing method for peptides and identified luteinizing hormone-releasing hormone. Professor Kangawa further developed the technology for peptide hormone identification at Miyazaki Medical College. Subsequently, he completed further achievements in the discovery of a number of peptide hormones at the National Cerebral and Cardiovascular Center (NCVC) Research Institute. In addition to these efforts, he actively plays a leading role in the translational research of the aforementioned bioactive peptides at NCVC and Kyoto University.

Timeline

1976	Received Doctor of Science from Osaka University
1977	Assistant Professor, Miyazaki Medical College
1990	Associate Professor, Miyazaki Medical College
1993	Director, Department of Biochemistry, National Cerebral and Cardiovascular Center (NCVC) Research Institute, Japan
1996	Professor, Kyoto University (held concurrently, -present)
2007	Director General, NCVC Research Institute, Japan

Other Awards and Prizes (selected)

2002	International Okamoto Award, Japan Vascular Disease Research Foundation, Japan
2005	Asia and Oceania Medal, The Society for Endocrinology, UK
2006	Wertheimer Award, The International Association for the Study of Obesity
2008	Japan Academy Prize, the Japan Academy, Japan

Emil von Behring-Preis 1994

Philipps-Universität Marburg



Molecular Biology

Awarded for

contribution to the research of apoptosis and its molecular mechanism

Shigekazu Nagata [1949 -]

Doctor of Science
Member of the Japan Academy
Professor, Kyoto University
Professor Emeritus, Osaka University

Achievements

Professor Nagata has dedicated his career to the research on molecular biology, especially in resolving the mechanism of programmed cell death or apoptosis. He identified cytokines and receptors, such as Fas and Fas ligand, which cause cell death during an animal's ontogenesis or cellular metabolism. He also discovered a process in which certain types of proteases and DNases contribute to apoptotic cell death and macrophages recognize those cells with phosphatidylserine on the surface. Furthermore, he found that a malfunction in apoptotic processes causes autoimmune disease and several other diseases. Professor Nagata's unceasing studies of apoptosis continue to influence research from basic to clinical practice.

Profile

Professor Nagata received his doctor degree from Tokyo University and then trained as a postdoctoral fellow at the University of Zürich. As a member of Charles Weissmann's laboratory, he succeeded in the first cloning and expression of the interferon gene. His interest in interferon's function motivated him to start his study of apoptosis. His continuous efforts with collaborators worldwide have yielded significant scientific results at Osaka Bioscience Institute, Osaka University, and Kyoto University.

Timeline

1977 Received Doctor of Science from the University of Tokyo
1977 Research Associate, Institute of Medical Science, the University of Tokyo
1977 Postdoctoral Fellow, Institute of Molecular Biology, University of Zürich
1982 Assistant Professor, the University of Tokyo
1987 Head, Department of Molecular Biology, Osaka Bioscience Institute, Japan
1995 Professor, Graduate School of Medicine, Osaka University
2002 Professor, Graduate School of Frontier Bioscience, Osaka University (-2007)
2007 Entitled Professor Emeritus, Osaka University
2007 Professor, Graduate School of Medicine, Kyoto University

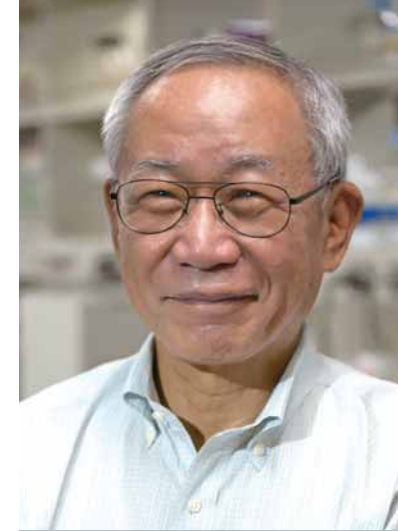
Other Awards and Prizes (selected)

1997 Le Prix Antoine Lacassagne, French Cancer League, France
1998 The Princess Takamatsu Cancer Research Fund Prizes, The Princess Takamatsu Cancer Research Fund, Japan
2000 Imperial Prize and Japan Academy Prize, the Japan Academy, Japan
2001 Person of Cultural Merit, Japan
2012 Honorary Doctorate, University of Zürich, Switzerland
2012 Debrecen Award, Debrecen University, Hungary
2013 Keio Medical Science Prize, Keio University Medical Science Fund, Japan

Shigekazu Nagata

University College Dublin Ulysses Medal 2008

University College Dublin



Pharmacology and Cell Biology

Awarded for

his scientific research and discoveries in the area of cell biology, which have resulted in over 370 peer-reviewed publications and significant research awards

Shuh Narumiya [1949 -]

M.D. and Ph.D. in Biochemistry
Professor, Kyoto University

Achievements

Professor Narumiya identified a family of eight types of receptors for prostaglandins and clarified their physiological actions and action mechanisms. He also discovered signal transduction of the small GTPase Rho and clarified how actin is organized in the cell and the body.

Profile

Born in Shiga, Japan, Shuh Narumiya enjoyed history and literature as a child. After he obtained his degrees in M.D. and Ph.D. at Kyoto University School of Medicine, he studied pharmacology at Wellcome Research Laboratories in England under Sir John Vane. He has more than 400 scholarly publications in pharmacology, biochemistry and cell biology and has contributed to both basic and clinical medicine. As the Dean, he significantly improved medical education and advanced research activities at University and in Japan.

Timeline

1973 Graduated from Kyoto University Faculty of Medicine, M.D.
1979 Received Ph.D. in Medical Sciences from Kyoto University
1979 Postdoctoral Fellow, the Wellcome Research Laboratories, England
1981 Assistant Professor, Kyoto University
1987 Associate Professor, Kyoto University
1992 Professor, Kyoto University
2004 Dean, Faculty of Medicine, Kyoto University (-2007)
2007 Director, the Center of Innovation in Immunoregulative Technology and Therapeutics, Kyoto University
2010 Director, Medical Innovation Center, Kyoto University school of Medicine

Other Awards and Prizes (selected)

1999 Dolan B. Pritchett Memorial Lecturer, University of Pennsylvania, USA
2000 Giovanni Lorenzini Gold Medal, Italy
2005 Medal with Purple Ribbon, Japan
2006 Imperial Prize and the Japan Academy Prize, the Japan Academy, Japan
2009 Inflammation Research Lifetime Achievement Award, the International Association of Inflammation Societies

Shuh Narumiya



Pharmaceutical Science

Awarded for

development and evaluation of novel drug delivery systems for proteins and genes

Mitsuru Hashida [1951 -]

Ph.D. in Pharmaceutical Science
Professor, Kyoto University

Achievements

Professor Hashida has been a major player in the field of drug delivery for more than 35 years. His research on the delivery of DNA and proteins into cells using liposomes and analysis of oral and transdermal drug absorption has led to over 500 published scientific articles in which he has been either the main author or co-author.

Profile

Mitsuru Hashida received his Ph.D. from Kyoto University in 1979 and went on to become a faculty member in 1980. He has spent most of his academic life at Kyoto University, where he has served time as the Dean of the Faculty of Pharmacy. He has also been the Chairman of the Board of Pharmaceutical Sciences in the International Pharmaceutical Federation (FIP), and a member of the Science Council of Japan. Currently, he is a Professor of the Graduate School of Pharmaceutical Sciences and Institute for Integrated Cell-Material Sciences (WPI-iCeMS) at Kyoto University.

Timeline

- 1979 Postdoctoral Research Associate, the University of Kansas
- 1980 Assistant Professor, Kyoto University
- 1983 Associate Professor, Kyoto University
- 1992 Professor, Kyoto University (-present)
- 2002 Dean, Graduate School of Pharmaceutical Sciences, Kyoto University (-2006)
- 2008 Principal Investigator, Institute for Integrated Cell-Material Sciences (WPI-iCeMS), Kyoto University (held concurrently)

Other Awards and Prizes (selected)

- 1998 FIP Distinguished Scientist Award, International Pharmaceutical Federation

Mitsuru Hashida



Immunology

Awarded for

the discovery of regulatory T cells and their roles in immunological diseases

Shimon Sakaguchi [1951 -]

M.D. and Ph.D. in Medical Science
Professor, Kyoto University
Adjunct Professor, WPI Immunology Frontier Research Center, Osaka University

Achievements

Professor Sakaguchi discovered regulatory T cells, a population of lymphocytes, which control a variety of physiological and pathological immune responses, and has elucidated the molecular and cellular basis of their development and function for the treatment and prevention of immunological diseases in humans.

Profile

Shimon Sakaguchi is an immunologist investigating how the immune system protects the body from invading microbes while avoiding abnormal or excessive immune responses, such as autoimmunity and allergy, harmful to the host. After graduating from Kyoto University School of Medicine, he conducted his research at Johns Hopkins University, Stanford University, and Scripps Research Institute in the USA. After returning to Japan, he continued his study at several research institutes and universities. He enjoys visiting various countries for lecturing, and enjoys visiting art museums in his spare time during his travels.

Timeline

- 1976 Resident, Kyoto University Medical School and Hospital
- 1978 Visiting Investigator, Aichi Cancer Center Research Institute
- 1981 Senior Research Fellow, Kyoto University Medical School
- 1981 Joint Appointment, the Blood Transfusion Service, Kyoto University Hospital
- 1983 Postdoctoral Fellow, Johns Hopkins University
- 1986 Lucille P. Markey Scholar
- 1987 Visiting Scientist, Stanford University Medical Center
- 1989 Assistant Professor, Scripps Research Institute
- 1992 Investigator, Science and Technology Agency of Japan
- 1994 Head, Department of Immunopathology, Tokyo Metropolitan Institute of Gerontology
- 1999 Professor and Chair, Institute for Frontier Medical Sciences, Kyoto University
- 2007 Director, Institute for Frontier Medical Sciences, Kyoto University (-present)
- 2007 Adjunct Professor, WPI Immunology Frontier Research Center, Osaka University (held concurrently)

Other Awards and Prizes (selected)

- 2004 William B. Coley Award, Cancer Research Institute, USA
- 2012 Foreign Associate, the National Academy of Sciences, USA

Shimon Sakaguchi

Canada Gairdner International Award 2009

The Gairdner Foundation



Molecular Biology

Awarded for

the dissection and elucidation of a key pathway in the unfolded protein response which regulates protein folding in the cell

Kazutoshi Mori [1958 -]

Ph.D. in Pharmaceutical Sciences
Professor, Kyoto University

Achievements

The unfolding or misfolding of proteins constitutes a fundamental threat to all living cells. Professor Mori has elucidated the molecular mechanisms through which cells adjust their capacity for protein folding and quality control according to the need in the endoplasmic reticulum (ER), where all secretory and transmembrane proteins gain correct tertiary and quaternary structures. The mechanism is now known as "the unfolded protein response or ER stress response," to which Professor Mori's contribution from its discovery is broadly appreciated.

Profile

Kazutoshi Mori graduated from the Graduate School of Pharmaceutical Sciences of Kyoto University. He spent his early days as a researcher at University of Texas Southwestern Medical Center at Dallas in the USA, and began working on the unfolded protein response. He returned to Kyoto University as Associate Professor at the age of 40 years and became Professor at the age of 45 years. His achievements are evidenced by a number of international and domestic awards, including the Wiley Prize.

Timeline

1985	Instructor, Gifu Pharmaceutical University
1989	Postdoctoral Fellow, University of Texas Southwestern Medical Center at Dallas
1993	Deputy Research Manager, HSP Research Institute
1996	Research Manager, HSP Research Institute
1999	Associate Professor, Graduate School of Biostudies, Kyoto University
2003	Professor, Graduate School of Science, Kyoto University

Other Awards and Prizes (selected)

2005	Wiley Prize in Biomedical Science, the Wiley Foundation
2010	Medal with Purple Ribbon, Japan

Kazutoshi Mori

Chapter

6

Huxley Memorial Medal and Lecture

"It is awarded annually, by ballot of the Council, to a scientist, British or foreign, distinguished in any field of anthropological research in the widest sense." (The Royal Anthropological Institute site: www.therai.org.uk)

Class III Commander of the Most Exalted Order of the White Elephant

"The Most Exalted Order of the White Elephant" is "The Order was established in 1861 by King Rama IV. Originally, there was no sash but later added onto by the decree of King Rama V. This Order consists of eight classes" (The Secretariat of the Cabinet, Government of Thai site: www.cabinet.thaigov.go.th/eng/)

L.S.B. Leakey Foundation Prize

"This prize is awarded to prominent anthropologists for their contributions to multidisciplinary studies on human origins." "The Leakey Foundation will award 2008 L.S.B. Leakey Foundation Prize for Multidisciplinary Research on Ape and Human Evolution to two distinguished chimpanzee research pioneers" (Mahale Wildlife Conservation Society site: mahale.main.jp)

Prix du Rayonnement de langue et de littérature françaises

"Prix annuels, créés en 1960. Destinés à des personnalités françaises ou étrangères ayant rendu à la langue et aux lettres des services particuliers." (Académie française site: www.academie-francaise.fr)

Huxley Memorial Medal and Lecture 1984

The Royal Anthropological Institute



Primateology and Anthropology

Awarded for

his studies on the ecology and social rules of primates

Junichiro Itani [1926 - 2001]

Doctor of Science
Professor Emeritus, Kyoto University

Achievements

Professor Itani first carried out long-term observations of wild Japanese macaques in Japan, and then expanded the scope of his research to include chimpanzees and gorillas in Africa. His original research revealed the rules in and organizational structures of monkey groups as well as their tendency for cultural patrimony. He became the first Japanese to receive the Huxley Award in Anthropology from the Royal Anthropological Institute in London, often known as the Nobel Prize in anthropology.

Profile

Junichiro Itani joined the Faculty of Science at Kyoto University in 1981. Before taking this position, he studied Japanese macaques in Oita Prefecture, where he found ways to feed them and learned to recognize individual monkeys. In his later career, he founded the Primate Research Institute and the Center for African Area Studies, which conduct comprehensive research on both primates and humans.

Timeline

1952	Graduated from Kyoto University
1956	Research Fellow, Japan Monkey Center
1962	Received Doctor of Science from Kyoto University
1961	Associate Professor, Kyoto University
1981	Professor, Kyoto University
1985	Director, the Center for African Area Studies, Kyoto University
1990	Retired from Kyoto University and entitled Professor Emeritus
1990	Professor, Kobe Gakuin University (-1999)

Other Awards and Prizes (selected)

1992	Medal with Purple Ribbon, Japan
1997	The Third Order of the Sacred Treasure, Japan

Junichiro Itani

Class III Commander of the Most Exalted Order of the White Elephant 1987

Thai Government



History and Southeast Asian Studies

Awarded for

pioneering work of Southeast Asian study, especially, interdisciplinary study of Thailand including Theravada Buddhism

Yoneo Ishii [1929 - 2010]

Doctor of Law
Professor Emeritus, Kanda University of International Studies and Kyoto University

Achievements

Professor Ishii was one of the leading scholars of Southeast Asian studies in Japan. In particular, he was known for his historical studies on Theravada Buddhism, the results of which were included in his book *Sangha, "State and Society: Thai Buddhism in History."* The book was evaluated as a pioneering work in religious and social studies on the relationships between Buddhism and successive kings in Thailand. In later years, he also studied ancient codes and conducted comparative research on the history of law.

Profile

Yoneo Ishii actively pursued his academic interests both at home and abroad. He became a faculty member at the Center for Southeast Asian Studies in 1965 after serving as a diplomat in the Ministry of Foreign Affairs. He also served as president of the International Association of Historians of Asia.

Timeline

1953	Entered Tokyo University of Foreign Studies to study Siamese
1955	Worked as a diplomat at the Ministry of Foreign Affairs of Japan
1957	Studied at Chulalongkorn University, Thailand
1965	Associate Professor, Center for Southeast Asian Studies, Kyoto University
1968	Professor, Center for Southeast Asian Studies, Kyoto University
1981	Received Doctor of Law from Kyoto University
1985	Director, Center for Southeast Asian Studies, Kyoto University
1990	Professor, Sophia University
1993	Director, the Institute of Asian Cultures, Sophia University
1999	President, Kanda University of International Studies
1999	Director, National Institute for the Humanities
1999	Director, Japan Center for Asian Historical Records at National Archives of Japan

Other Awards and Prizes (selected)

1995	Medal with Purple Ribbon, Japan
2000	Person of Cultural Merit, Japan
2007	Honorary Ph.D. from Chulalongkorn University, Thailand

Yoneo Ishii

L.S.B. Leakey Foundation Prize 2008

The Leakey Foundation



Primateology and Anthropology

Awarded for

his pioneering research on social structures and behavioral patterns of chimpanzees

Toshisada Nishida [1941 - 2011]

Doctor of Science
Professor Emeritus, Kyoto University

Photo: Japan Monkey Centre

Achievements

Professor Nishida was known as the leading researcher on Tanzanian chimpanzees in the Mahale Mountains. He established a research site in the area to carry out long-term research on the social structures, behavioral ecology, and other aspects of wild chimpanzees. His persistence in fieldwork led to important discoveries, which include the identification of a definite social structure he called "unit group" (or community) and determination of a female transfer system among chimpanzee unit groups. He also received the 2008 Lifetime Achievement Award of the International Primatological Society, in which he also served as president from 1996 to 2000.

Profile

Toshisada Nishida was one of the trailblazers of Japanese primatology. When he was a doctoral student, he joined the Kyoto University's Ape Expedition to Africa organized by two other primatologists, Kinji Imanishi and Junichiro Itani (see p.67). As a professor at Kyoto University Graduate School of Science, he trained a generation of Japanese students while serving as the president of Primate Society of Japan from 2001 to 2004.

Timeline

- 1969 Received Doctor of Science from Kyoto University by wild chimpanzee study
- 1969 Assistant Professor, the University of Tokyo
- 1974 Lecturer, the University of Tokyo
- 1981 Associate Professor, the University of Tokyo
- 1988 Professor, Kyoto University
- 1996 President, International Primatological Society (-2000)
- 2004 Retired from Kyoto University and became Professor Emeritus
- 2004 Director, Japan Monkey Centre

Other Awards and Prizes (selected)

- 2008 Lifetime Achievement Award, International Primatological Society

Toshisada Nishida

Prix du Rayonnement de langue et de littérature françaises 2010

Académie française



Literature

Awarded for

his life-long study of a French novelist, Marcel Proust, and his book, "Proust et l'art pictural (Proust and Pictorial Art)," published in 2010

Kazuyoshi Yoshikawa [1948 -]

Ph.D. in Literature
Professor Emeritus, Kyoto University
Professor Emeritus, Tokyo Metropolitan University

Achievements

Professor Yoshikawa received the 2010 Prix du Rayonnement de la langue et de la littérature françaises of the Prix de l'Académie Française, an honorary prize awarded to those who made significant contributions to the French language and literature through literary work written in French. Professor Yoshikawa is the first Japanese recipient of the prize. His book, "Proust et l'art pictural," is a creative and comprehensive investigation of meanings and roles of European paintings and painters presented in Proust's novel, "In Search of Lost Time." This book also received Prix littéraire Cabourg-Balbec (2011), and Imperial Prize and Japan Academy Prize (2012).

Profile

Kazuyoshi Yoshikawa is an international authority on research on Marcel Proust, one of the most influential French novelists in the 20th century. For the past two decades, he has studied how European paintings in "In Search of Lost Time" play key roles in the work's construction. He also received the Officier grade of the Ordre des Palmes Académiques for this scholarly work as well as for his long-term contribution to cultural and academic exchanges between Japan and France. Professor Yoshikawa also served as the chairperson of La Société japonaise de langue et littérature françaises between 2009 and 2013.

Timeline

- 1970 Graduated from the University of Tokyo
- 1977 Graduated from the University of Tokyo, Graduate School
- 1977 Received Ph.D. in Literature from Paris Sorbonne University
- 1977 Assistant, the University of Tokyo
- 1981 Associate Professor, Tokyo Women's Christian University
- 1988 Associate Professor, Tokyo Metropolitan University
- 1993 Professor, Tokyo Metropolitan University
- 2006 Professor Emeritus, Tokyo Metropolitan University
- 2007 Professor, Kyoto University (-2013)
- 2009 President, the Japanese Society of French Language and Literature (-2013)
- 2013 Professor Emeritus, Kyoto University

Other Awards and Prizes (selected)

- 2010 Officier des Palmes Académiques, France
- 2011 Madeleine d'Or for Proust et l'art pictural, Le Cercle Littéraire Proustien de Cabourg-Balbec, France
- 2012 Imperial Prize and Japan Academy Prize, the Japan Academy, Japan

Kazuyoshi Yoshikawa

AWARD HISTORY

2008-2013

2008

Toshihide Maskawa
Nobel Prize in Physics
Makoto Kobayashi
Nobel Prize in Physics
Hiroshi Matsumoto
Booker Gold Medal
Tamio Hayashi
Arthur C. Cope Scholar Award
Hiroshi Ooguri
Leonard Eisenbud Prize
Ken-ichi Inui
AAPS Research Achievement Award
in Pharmaceuticals and Drug Delivery
Shuh Narumiya
University College Dublin Ulysses Medal
Shimon Sakaguchi
Keio Medical Science Prize
Toshisada Nishida
L.S.B. Leakey Foundation Prize
Keiji Morokuma
Imperial Prize and Japan Academy Prize

2009

Kenji Kangawa
Keio Medical Science Prize
Kazutoshi Mori
Canada Gairdner
International Award
Yorio Hinuma
Order of Culture, Japan
Tohru Eguchi
Imperial Prize and Japan Academy Prize

2010

Susumu Kitagawa
Thomson Reuters Citation Laureates
Kazuyoshi Yoshikawa
Prix du Rayonnement de langue
et de littérature françaises

2011

Keiji Maruoka
Arthur C. Cope Scholar Award
Mitsuhiro Yanagida
Order of Culture, Japan

2012

Shinya Yamanaka
Nobel Prize in Physiology or Medicine
Denis Le Bihan
Honda Prize
Mitsuo Sawamoto
Macro Group UK Medal
for Outstanding Achievement in Polymer Science
Tasuku Honjo
Robert-Koch Award
Yasuyuki Yamada
Order of Culture, Japan

2013

Masatoshi Nei
Kyoto Prize, Basic Sciences
Tetsuji Miwa
Dannie Heineman Prize
for Mathematical Physics

Chapter

7

Order of Culture, Japan

"This order is awarded to individuals who have made outstanding contributions in developing the Japanese culture." "Established in 1937, this medal features the five petals of a mandarin orange blossom with three magadama (comet-shaped stones) swirled in the center. The attachment features a mandarin orange and leaf." "the mandarin orange tree is used in the Order of Culture because this symbolism connects deeply with the timelessness of culture." (Cabinet Office, Government of Japan site: www.cao.go.jp/index-e.html)

List of the Awardees of the Order of Culture, Japan at Kyoto University

The following is a list of Kyoto University researchers who have received the Order of Culture since 1949. Only the eight Laureates shown in bold are profiled in this chapter due to limitations of space. The other awardees will be introduced in a revised edition.

Year	Laureate	Title at the time of receiving the Award	Award Field
2013	Tasuku Honjo (see p.57)	Professor Emeritus and Visiting Professor of Kyoto University	Biochemistry and Molecular Immunology
2012	Yasuyuki Yamada Shinya Yamanaka (see p.16)	Professor Emeritus of Kyoto University Professor, The Center for iPS Cell Research and Application	Plant Cell and Molecular Biology, Plant Biotechnology Medical Physiology
2011	Mitsuhiro Yanagida	Professor Emeritus of Kyoto University	Molecular Biology
2009	Yorio Hinuma	Professor Emeritus of Kyoto University	Virology
2008	Toshihide Maskawa (see p.14) Makoto Kobayashi (see p.15) Kiyosi Itô (see p.19)	Professor Emeritus of Kyoto University Honorary Professor Emeritus, High Energy Accelerator Research Organization Professor Emeritus of Kyoto University	Theoretical Physics Theoretical Physics Mathematics
2007	Tokindo S. Okada (see p.54)	Professor Emeritus of Kyoto University	Developmental Biology
2005	Toshio Sawada	Professor Emeritus of Kyoto University	Agricultural Engineering
2003	Kazuhiko Nishijima	Professor Emeritus of Kyoto University	Particle Physics
2000	Ryoji Noyori (see p.13)	Professor, Nagoya University	Organic Chemistry
1994	Hisateru Mitsuda Tadao Umesada	Professor Emeritus of Kyoto University Former Professor, Institute for Research in Humanities	Nutritional Chemistry Ethnology
1993	Kenichiro Osumi	Professor Emeritus of Kyoto University	Commerce Law
1987	Takeo Kuwabara	Professor Emeritus of Kyoto University	Western Culture
1986	Chushiro Hayashi (see p.27)	Professor Emeritus of Kyoto University	Astrophysics
1984	Shigeki Kaizuka Susumu Tonegawa (see p.12)	Professor Emeritus of Kyoto University Professor, MIT	Historical Science on China Molecular Biology
1981	Kenichi Fukui (see p.11)	Professor, Faculty of Engineering	Chemistry
1979	Kinji Imanishi	Professor Emeritus of Kyoto University	Primatology
1978	Michitaro Tanaka	Professor Emeritus of Kyoto University	Philosophy and Classics
1977	Ichiro Sakurada	Professor Emeritus of Kyoto University	Applied Chemistry, Polymer Chemistry
1975	Heisuke Hironaka (see p.22)	Professor Emeritus of Kyoto University	Mathematics
1974	Kimishige Ishizaka (see p.29)	Professor, The Johns Hopkins University and Kyoto University	Immunology
1972	Osamu Hayaishi (see p.20)	Professor, Faculty of Medicine	Biochemistry
1962	Yoshinari Kuwada	Professor Emeritus of Kyoto University	Plant Cytology
1961	Torao Suzuki	Professor Emeritus of Kyoto University	Chinese Literature
1956	Izuru Shimura	Professor Emeritus of Kyoto University	Linguistics
1953	Toru Haneda	Professor Emeritus of Kyoto University	Oriental History
1952	Soichiro Sasaki Sin-Itiro Tomonaga (see p.10)	Professor Emeritus of Kyoto University Professor, Tokyo University of Education	Constitutional and Administrative Law Theoretical Physics
1950	Hajime Tanabe	Professor Emeritus of Kyoto University	Philosophy

Order of Culture, Japan 1993

Japanese Government



Commercial Law

Awarded for

his excellent academic and judicial work in the field of commercial laws

Kenichiro Osumi [1904 - 1998]

Doctor of Law
Professor Emeritus, Kyoto University

Achievements

Professor Osumi was renowned for his pioneering studies on commercial laws or, more specifically, corporate laws in Japan. He was one of the first legal scholars who introduced the principle of "piercing the corporate veil" to Japan and advanced theoretical debates on the rights and duties of a corporation. After retiring from Kyoto University in 1966, he became a judge of the Supreme Court and set many new precedents in the area of commercial laws.

Profile

Kenichiro Osumi joined the School of Law at Kyoto Imperial University in 1928. He was known for actively fostering young legal scholars and jurists during his time in the academe. In 1995, the Osumi Kenichiro Prize was established from his donation. This annual award recognizes excellent academic works on commercial laws.

Timeline

1928	Graduated from Kyoto Imperial University Faculty of Law
1928	Assistant Professor, Kyoto Imperial University
1930	Associate Professor, Kyoto Imperial University
1933	Professor, Ritsumeikan University
1934	Associate Professor, Kyoto Imperial University
1938	Professor, Kyoto Imperial University
1953	Received Doctor of Law from Kyoto University
1966	Retired from Kyoto University and entitled Professor Emeritus
1966	Judge of the Supreme Court, Japan
1974	Professor, Kobe Gakuin University

Other Awards and Prizes (selected)

1973	Grand Cordon of the Order of the Sacred Treasure, Japan
1977	Japan Academy Prize, the Japan Academy, Japan



Order of Culture, Japan 1994

Japanese Government



Agricultural and Food Chemistry

Awarded for

his contribution to developing vitamin-enriched rice and related studies in nutrition

Hisateru Mitsuda [1914 - 2006]

Doctor of Agriculture
Professor Emeritus, Kyoto University

Achievements

Professor Mitsuda explained how vitamins are synthesized in a living body for respiration and then invented various diets for curing poverty-caused vitamin deficiency and malnutrition. These products have contributed to reducing the number of patients with vitamin deficiencies, such as beriberi, in Japan. He also adopted findings from research on the hibernation process of cold-blooded animals for the preservation of grains and beans under carbon dioxide-rich and cold atmosphere.

Profile

An alumnus of Kyoto University, Hisateru Mitsuda's lifelong research interest was on vitamins. As a scientist of vitamins, he recognized the importance of vitamin supplementation in human daily diet and developed vitamin-enriched rice. This product has been sold since 1951 and remains popular in the Japanese market. According to Professor Mitsuda, scientists must give something back to society to compensate the taxpayers, a philosophy that represents his research style of balancing basic and applied sciences.

Timeline

1944	Graduated from Kyoto Imperial University Faculty of Agriculture
1944	Associate Professor, Kyoto University
1952	Professor, Institute for Chemical Research, Kyoto University
1955	Professor, Faculty of Agriculture, Kyoto University
1978	Professor Emeritus, Kyoto University
1978	President, Koshien University (-1983)

Other Awards and Prizes (selected)

1971	Babcock-Hart Award, Institute of Food Technologies, Institute of Food Technologies, USA
1974	Bor S. Luh International Award, Institute of Food Technologies, USA
1980	Medal with Purple Ribbon, Japan
1981	Award for the Advancement of Application of Agricultural and Food Chemistry, American Chemical Society, USA
1981	Japan Academy Prize, the Japan Academy, Japan
1989	Person of Cultural Merit, Japan

Hisateru Mitsuda

Order of Culture, Japan 1994

Japanese Government



Ethnology, Comparative Study of Civilizations

Awarded for

his contribution to the development of ethnology in Japan

Tadao Umesao [1920 - 2010]

Doctor of Science
Professor Emeritus, Kyoto University,
Graduate University for Advanced Studies and
National Museum of Ethnology, Japan

Achievements

Professor Umesao was known for his unique social theories on civilizations based on his ethnological surveys in Asia, Africa and Europe. One of his most influential books, "An Ecological View of History: Japanese Civilization in the World Context," explained the development of West European and Japanese civilizations progressed almost in parallel by applying the concept of "succession". An intellectual giant, Professor Umesao had an accomplished career that crossed the boundaries of zoology and ethnology. He wrote dozens of books in total, some of which became long-sellers among the public. His collected works (22 volumes and supplement) were published in 1989-1994 by Chuokoronsha Inc..

Profile

Tadao Umesao was initially trained as an animal ecologist at Kyoto University, where he participated in a series of academic expeditions organized by famous zoologist Kinji Imanishi. He joined the Institute for Research in Humanities in 1965 and later became the founding director-general of the National Museum of Ethnology in Osaka.

Timeline

1943	Graduated from Kyoto Imperial University School of Science
1949	Associate Professor, Osaka City University
1961	Received Doctor of Science from Kyoto University
1963	Academic Research Fellow of Africa, Kyoto University
1965	Assistant Professor, Kyoto University
1969	Professor, Kyoto University
1974	Founding Director-General, National Museum of Ethnology, Japan
1988	Honorary Member, Institute for Research in Humanities, Kyoto University
1993	Special-Advisor and Professor Emeritus, National Museum of Ethnology, Japan
1993	Professor Emeritus, the Graduate University for Advanced Studies
1996	Professor Emeritus, Kyoto University

Other Awards and Prizes (selected)

1988	Commandeur, Ordre des Palmes Académiques, France
1988	Medal with Purple Ribbon, Japan
1991	Person of Cultural Merit, Japan
1999	Grand Cordon of Order of the Sacred Treasure, Japan

Tadao Umesao

Order of Culture, Japan 2003

Japanese Government



Physics

Awarded for

his contribution to the formulation of the Gell-Mann-Nishijima formula in particle physics

Kazuhiko Nishijima [1926 - 2009]

Doctor of Science
Professor Emeritus, the University of Tokyo and Kyoto University

Achievements

Professor Nishijima contributed significantly to particle physics research. He studied the physics of strange particles and introduced the quantum number, "strangeness." In 1953, he related the baryon number, strangeness, and isospin of hadrons to the electric charge of a particle. This concept is currently expressed in the Gell-Mann-Nishijima formula. The concept of strangeness had been generalized as a flavor, which became recognized as one of the fundamental quantum numbers in modern particle physics. He also contributed greatly to the development of field theory.

Profile

Apart from his pioneering work in particle physics, Kazuhiko Nishijima was known to deliver clear and extremely intellectual lectures. One can learn their atmosphere in many textbooks written by him. In addition, he not only fostered many brilliant students at the University of Tokyo but also strived to cultivate students in developing countries as a director of the Nishina Memorial Foundation. His unique personality won the sympathy of many other physicists, and they had been supported spiritually by him.

Timeline

- 1948 Graduated from the University of Tokyo Faculty of Science
- 1950 Assistant Professor, Osaka City University
- 1955 Received Doctor of Science from Osaka University
- 1959 Associate Professor, Osaka City University
- 1961 Professor, the University of Illinois at Urbana-Champaign
- 1966 Professor, the University of Tokyo
- 1979 Dean, Faculty of Science, the University of Tokyo
- 1986 Professor and Director, Yukawa Institute of Theoretical Physics, Kyoto University
- 1990 Retired from Kyoto University and entitled Professor Emeritus
- 1990 Professor, Chuo University (-1997)

Other Awards and Prizes (selected)

- 1993 Person of Cultural Merit, Japan

Kazuhiko Nishijima

Order of Culture, Japan 2005

Japanese Government



Agriculture

Awarded for

his contribution to the development of irrigation, drainage, and reclamation engineering

Toshio Sawada [1919 -]

Doctor of Agriculture
Professor Emeritus, Kyoto University
The 20th President of Kyoto University

Achievements

Professor Sawada was decorated with the Order of Culture for his theoretical and practical achievements in designing dams, water canals, and reclamation facilities for irrigation. In particular, he established a design method to reinforce dams by mixing rocks and concrete, which has been widely applied in dam construction throughout Japan. He has also received other prestigious awards from academic societies in Japan, including the Japanese Society of Irrigation, Drainage and Reclamation Engineering as well as the Association of Japanese Agricultural Scientific Societies.

Profile

Toshio Sawada was the 20th president of Kyoto University (1979-1985). After his retirement, he served as president of the Japan Society for the Promotion of Science, and also as a member of the Japan Academy.

Timeline

- 1950 Associate Professor, Kyoto University
- 1955 Received Doctor of Agriculture from Kyoto University
- 1959 Professor, Kyoto University
- 1971 Dean, Faculty of Agriculture, Kyoto University
- 1979 President, Kyoto University (-1985)
- 1985 Professor Emeritus, Kyoto University

Other Awards and Prizes (selected)

- 1986 Verdienstorden der Bundesrepublik Deutschland, German Government, Germany
- 1987 Japan Academy Prize, the Japan Academy, Japan
- 1994 Person of Cultural Merit, Japan
- 2003 International Society of Paddy and Water Environment Engineering Award, International Society of Paddy and Water Environment Engineering, Japan

Toshio Sawada

Order of Culture, Japan 2009

Japanese Government



Medicine, Virology

Awarded for
his contribution to microbiology

Yorio Hinuma [1925 -]

M.D. and Ph.D. in Medicine
Professor Emeritus, Tohoku University,
Kumamoto University and Kyoto University

Achievements

Professor Hinuma was conferred with the Order of Culture for his discovery of a retrovirus called the human T-lymphotropic virus type I (HTLV-I), which causes adult T cell leukemia. This finding supported the hypothesis that viral infection of cells cause human cancer, and thereby opened a new field in cancer research.

Profile

Yorio Hinuma was a pediatrician who later became a virologist to understand the mechanism of virus-derived leukemia. After graduating from Tohoku University, he served as a research fellow at the Children's Hospital of Philadelphia, USA. He joined the Institute for Virus Research at Kyoto University in 1980. After retirement from Kyoto University, he was appointed as an executive member of the pharmaceutical company, Shionogi & Co., Ltd..

Timeline

1950	Graduated from Tohoku University Faculty of Medicine, M.D.
1954	Assistant Professor, Tohoku University
1957	Received Doctor in Medicine from Tohoku University
1958	Research Fellow, the Children's Hospital of Philadelphia
1960	Associate Professor, Tohoku University
1965	Visiting Scholar, Roswell Park Memorial Institute, USA
1968	Professor, Tohoku University
1971	Professor, Kumamoto University
1980	Professor, Institute for Virus Research, Kyoto University
1988	Retired from Kyoto University and entitled Professor Emeritus
1988	Director, Shionogi Pharmaceutical Research Center, Shionogi & Co. Ltd.

Other Awards and Prizes (selected)

1986	Person of Cultural Merit, Japan
1989	Japan Academy Prize, the Japan Academy, Japan

Yorio Hinuma

Order of Culture, Japan 2011

Japanese Government



Molecular Biology

Awarded for
explaining eukaryotic cell cycles and chromosome partitioning

Mitsuhiro Yanagida [1941 -]

Doctor of Science
Professor, Okinawa Institute of Science and Technology Graduate University
Professor Emeritus, Kyoto University

Achievements

Professor Yanagida unraveled the mechanisms of eukaryotic cell cycle with a focus on chromosome partitioning. In his early work, he used bacteriophages and electron microscope to shed light on DNA structure, and then changed his research objective to focus on fission yeast for further analysis of chromosome and cell division. He employed a genetic method to identify genes in the cell cycle as well as fluorescent microscopic technology to stain chromosome DNA. His presentation of the dynamic movement of fluorescent-stained chromosomes during cell division with video image offered a significant visual impact to molecular biologists. His study of centromere and its regulating genes revealed the big picture of cell cycle, which contains many universal mechanisms seen in higher organisms, including humans. Yanagida continues his research to obtain a deeper understanding of the cell cycle.

Profile

Mitsuhiro Yanagida is an enthusiastic molecular biologist whose research focuses on the cell cycle. After graduating from the University of Tokyo, he pursued research at the University of Geneva and University of Maryland. He was appointed as a professor at Kyoto University when he was 37 years old, and then he started his research on chromosomes and the cell cycle using fission yeast. He has mentored many students from his laboratory to shape them into talented molecular biologists.

Timeline

1964	Graduated from the University of Tokyo Faculty of Science
1967	Research Assistant, the University of Geneva
1970	Received Doctor of Science from the University of Tokyo
1971	Associate Professor, Kyoto University
1978	Professor, Faculty of Science, Kyoto University
1999	Professor, Graduate School of Biostudies, Kyoto University
2004	Retired from Kyoto University and entitled Professor Emeritus
2004	Specialty-Appointed Professor, Graduate School of Life Sciences, Kyoto University
2011	Professor, Okinawa Institute of Science and Technology Graduate University

Other Awards and Prizes (selected)

2000	Foreign Member, the Royal Society, UK
2002	Medal with Purple Ribbon, Japan
2003	Imperial Prize and Japan Academy Prize, the Japan Academy, Japan
2004	Person of Cultural Merit, Japan
2010	Honorary Fellow, the Society of Biology, UK
2012	Foreign Associate, National Academy of Science, USA

Mitsuhiro Yanagida

Order of Culture, Japan 2012

Japanese Government



Agriculture, Plant Cell Biology

Awarded for

his research on molecular cell biology and plant biotechnology

Yasuyuki Yamada [1931 -]

Doctor of Agriculture
Member of the Japan Academy
Professor Emeritus, Kyoto University, Nara Institute of Science and Technology,
and Zhejiang University of Technology

Achievements

Working with plant culture systems, Professor Yamada opened up a new area of plant research and has made several outstanding contributions to our understanding of the functional expression and biosynthesis of secondary metabolites in higher plants. Furthermore, he established a novel experimental, large scale culture system for the production of alkaloids from plants.

Profile

Yasuyuki Yamada gained his doctorate at Kyoto University and was a Fulbright Research Fellow at Michigan State University from 1962 to 1965. Professor Yamada is the recipient of many awards and honors, among them the Academy Prize from the Japanese Academy, as well as membership in that society. He is an elected foreign member of both the Swedish Royal Society of Sciences and the National Academy of Sciences, USA. He also has received the Japanese national award "Person of Cultural Merit" (Bunka Korosha), and the highest citizen's award, the "Order of Culture" (Bunka Kunsho).

Timeline

1962	Fulbright Program Fellow, Michigan State University, USA
1963	Received Doctor of Agriculture from Kyoto University
1967	Associate Professor, Kyoto University
1982	Professor, Kyoto University
1985	Adjunct Professor, Osaka University
1986	Science Advisor, Ministry of Education, Science, Sport and Culture, Japan
1994	Professor, Nara Institute of Science and Technology
1995	Professor Emeritus, Kyoto University
1995	Member, the Japan Academy
1997	President, Nara Institute of Science and Technology
2001	Professor Emeritus, Nara Institute of Science and Technology
2004	Professor Emeritus, Zhejiang University of Technology, China

Other Awards and Prizes (selected)

1989	Honorary Doctorate, Uppsala University, Sweden
1991	Japan Academy Prize, the Japan Academy, Japan
1994	Foreign Member, Royal Society of Sciences, Sweden
1999	Foreign Associate, National Academy of Science, USA
1999	Person of Cultural Merit, Japan
2001	Honorary Doctorate, Michigan State University, USA

Yasuyuki Yamada

Chapter

8

Imperial Prize of the Japan Academy

"The Imperial and Japan Academy Prizes are awarded to persons who have achieved notable research landmarks or who have authored particularly outstanding academic papers or books. Conferring these prizes on such persons is one of the Academy's most important functions. For them, an award ceremony has been held every year since 1911, with 2013 marking the 103rd such ceremony. Since 1949, the ceremony has been graced by the presence of His Majesty the Emperor of Japan. Then from 1990, both the Emperor and Empress have attended." (The Japan Academy site: www.japan-acad.go.jp)

Awardees of Both the Imperial Prize and the Japan Academy Prize at Kyoto University

The following is a list of Kyoto University researchers who have received both the Imperial Prize and the Japan Academy Prize of the Japan Academy since 1949. Only the four Laureates shown in bold are profiled in this chapter due to limitations of space. The other awardees will be introduced in a revised edition.

Year	Laureate	Title at the time of receiving the Award	Award Topic
2012	Kazuyoshi Yoshikawa (see p.70)	Professor, Graduate School of Letters	<i>Proust et l'art pictural</i>
2010	Shinya Yamanaka (see p.16)	Professor, The Center for iPS Cell Research and Application	The Generation of Induced Pluripotent Stem (iPS) Cells
2009	Tohru Eguchi	Professor, Yukawa Institute for Theoretical Physics	Study of Elementary Particle Theory based on Methods of Mathematical Physics
2008	Keiji Morokuma	Research Leader, Fukui Institute for Fundamental Chemistry	Theoretical Studies of Design of Structure, Function and Reactivity of Molecules
2006	Shuh Narumiya (see p.62)	Professor, Graduate School of Medicine	Studies on the Prostaglandin Receptors
2005	Kazuya Kato	Professor, Graduate School of Science	Research on Arithmetic Geometry
2003	Mitsuhiro Yanagida (see p.80)	Professor, Graduate School of Biostudies	Regulation of Cell Cycle and Chromosome Segregation
2000	Shigekazu Nagata (see p. 61)	Professor, Osaka University	Studies on Molecular Mechanism of Apoptosis
1999	Susumu Fuma	Professor, Graduate School of Letters	A Study of Benevolent Societies and Benevolent Halls in China
1997	Shigetada Nakanishi (see p.55)	Professor, Graduate School of Medicine	Studies on Molecular Mechanisms of Neurotransmission
1996	Tasuku Honjo (see p.57)	Professor, Graduate School of Medicine	Studies on Regulation of Immunoglobulin Class Switching
1994	Makoto Kumada (see p.35)	Professor Emeritus of Kyoto University	Studies on Organosilicon Chemistry (Joint Research)
1989	Tomi Saeki	Professor Emeritus of Kyoto University	Studies on the History of Salt Administration in China
	Yorio Hinuma (see p.79)	Professor Emeritus of Kyoto University	Studies on Viral Etiology of Adult T Cell Leukemia
1978	Kiyosi Itô (see p.19)	Professor, Research Institute for Mathematical Science	A Study of Stochastic Differential Equations
1974	Kimishige Ishizaka (see p.29)	Professor, The Johns Hopkins University and Kyoto University	Discovery of Immunoglobulin E and Mechanism of Reagin Type Allergy
1971	Chushiro Hayashi (see p.27)	Professor, Faculty of Science	Nuclear Synthesis and Stellar Evolution
1970	Seizo Okamura	Professor, Research Reactor Institute	Studies on Radiation-Induced Polymerization
1968	Tatsuo Nishida	Professor, Faculty of Letters	A Study of the Hsi-Hsia Language
1956	Masuzo Shikata, Isamu Tachi		Studies on Polarography
1954	Jitsuzo Tamura, Yukio Kobayashi		Tombs and Mural Paintings of Ch'ing-Ling. Liao Imperial Mausoleums of Eleventh Century A.D. in Eastern Mongolia

Imperial Prize 1999

The Japan Academy



History

Awarded for

his historical studies of benevolent societies in China

Susumu Fuma [1948 -]

Doctor of Letters
Professor Emeritus, Kyoto University

Achievements

Professor Fuma focuses on Chinese social history during the Ming and Qing periods. His book "*Benevolent Societies and Benevolent Halls in China*" looks into the history of local charity institutions run by private citizens until the era of the Chinese Communist Party. He received the Imperial Prize in 1999 for his detailed research on the systems of welfare and local governance in pre-modern China.

Profile

Susumu Fuma joined the Faculty of Letters at Kyoto University in 1987 after spending seven years at Toyama University. His research covers a wide range of topics, including the history of Chinese diplomacy and cultural exchange in East Asia.

Timeline

1974	Graduated from Kyoto University Graduate School of Letters
1974	Research Associate, Kyoto University
1979	Lecturer, Toyama University
1981	Associate Professor, Toyama University
1987	Associate Professor, Kyoto University
1995	Professor, Kyoto University
1997	Received Doctor of Letters from Kyoto University
2013	Retired from Kyoto University and entitled Professor Emeritus

Other Awards and Prizes (selected)

1999	Japan Academy Prize, the Japan Academy, Japan
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Susumu Fuma

Imperial Prize 2005

The Japan Academy

Mathematics

Awarded for

research on arithmetic geometry

Kazuya Kato [1952 -]

Doctor of Science
Professor, Chicago University
Professor Emeritus, the University of Tokyo

Photo: not available

Achievements

The achievements of Professor Kato span many branches of number theory and geometry. Particularly, his results on Iwasawa theory of modular forms are highly valued for their originality and influence. This remarkable achievement has yielded significant progress in Birch-Swinnerton-Dyer conjecture, which describes number theoretical objects via L-functions. He has also greatly contributed to higher dimensional class field theory, p -adic Hodge theory, logarithmic algebraic geometry, and ramification theory for algebraic varieties.

Profile

Kazuya Kato has been leading the world of arithmetic and algebraic geometry over the years. His deep insights and unique humanity have attracted many mathematicians and other scholars. He sometimes makes efforts to share complicated mathematical concepts and stories in arithmetic algebraic geometry using metaphors from folktales and poems. An example is his song on prime numbers, which is included in the special volume of *Documenta Mathematica* published in honor of his 50th birthday. This song is increasingly gaining renown.

Timeline

1980	Received Doctor of Science from the University of Tokyo
1982	Lecturer, the University of Tokyo
1984	Associate Professor, the University of Tokyo
1990	Professor, the University of Tokyo
1992	Professor, Tokyo Institute of Technology
1997	Professor, the University of Tokyo
2001	Professor, Kyoto University
2009	Professor, the University of Chicago
2012	Professor Emeritus, the University of Tokyo

Other Awards and Prizes (selected)

2005	Japan Academy Prize, the Japan Academy, Japan
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Imperial Prize 2008

The Japan Academy

Theoretical Chemistry

Awarded for

his scientific achievements in uncovering the structure, function, and reactivity of molecules by using theoretical and computational approaches

Keiji Morokuma [1934 -]

Doctor of Engineering
Professor Emeritus, Emory University, Institute for Molecular Science,
and Graduate University for Advanced Studies
Senior Research Fellow,
Fukui Institute for Fundamental Chemistry, Kyoto University



Achievements

Professor Morokuma is a leading scholar in the development and application of theoretical and computational methods for chemistry. His research covers a wide range of topics in quantum chemistry and molecular science, including development of the Kitaura-Morokuma energy analysis for molecular interaction, and theoretical studies of catalytic reactions, photochemical reactions and carbon nanostructures, as well as development of the so-called our own n -layered integrated molecular orbital and molecular mechanics method, popularly known as ONIOM. This method deals with chemical reactions of complex molecular systems and has been applied widely in the field of chemistry.

Profile

After obtaining his D. Eng. degree from Kyoto University under Professor Kenichi Fukui (see p.11), 1981 Nobel Laureate in Chemistry, Keiji Morokuma pursued his academic career in both the U.S. and Japan. He has authored over 780 scientific publications and received numerous scientific awards. He remains active as a Senior Research Fellow at the Fukui Institute for Fundamental Chemistry at Kyoto University.

Timeline

1962	Assistant Professor, Kyoto University
1963	Received Doctor of Engineering from Kyoto University
1964	Research Fellow of Fulbright Scholarship, Columbia University
1967	Assistant Professor, the University of Rochester
1971	Professor, the University of Rochester
1976	Professor, Institute for Molecular Science, Japan
1978	Director, Computer Center, Institute for Molecular Science, Japan
1993	Director, Cherry L. Emerson Center for Scientific Computation and William H. Emerson Professor, Department of Chemistry, Emory University
2006	Professor Emeritus, Emory University
2006	Research Leader, Fukui Institute for Fundamental Chemistry, Kyoto University
2012	Senior Research Fellow, Fukui Institute for Fundamental Chemistry, Kyoto University

Other Awards and Prizes (selected)

1978	Award, International Academy of Quantum Molecular Science
1991	The Chemical Society of Japan (CSJ) Award, The Chemical Society of Japan, Japan
1993	Schrödinger Medal, The World Association of Theoretical and Computational Chemists
2005	Fukui Medal, Asia-Pacific Association of Theoretical and Computational Chemists
2008	Japan Academy Prize, the Japan Academy, Japan
2012	Person of Cultural Merit, Japan

Imperial Prize 2009

The Japan Academy



Particle Physics

Awarded for

his study of elementary particle theory based on methods of mathematical physics

Tohru Eguchi [1948 -]

Doctor of Science
Professor, Rikkyo University
Professor Emeritus, the University of Tokyo and Kyoto University

Achievements

Professor Eguchi has contributed to various mathematical aspects of particle physics as a theoretical physicist. One of his remarkable results is the discovery of Eguchi-Hanson space in his collaboration with Professor Andrew J. Hanson. This breakthrough is referred to as asymptotically locally Euclidean space by the work of Professors Gary W. Gibbons and Stephen W. Hawking. Professor Eguchi also produced important results on gauge theory, conformal field theory, and topological string theory. In particular, "Virasoro conjecture," which he proposed together with Professors Kentaro Hori and Chuan-Sheng Xiong, has significantly influenced related areas in mathematics, and has been proven by mathematicians.

Profile

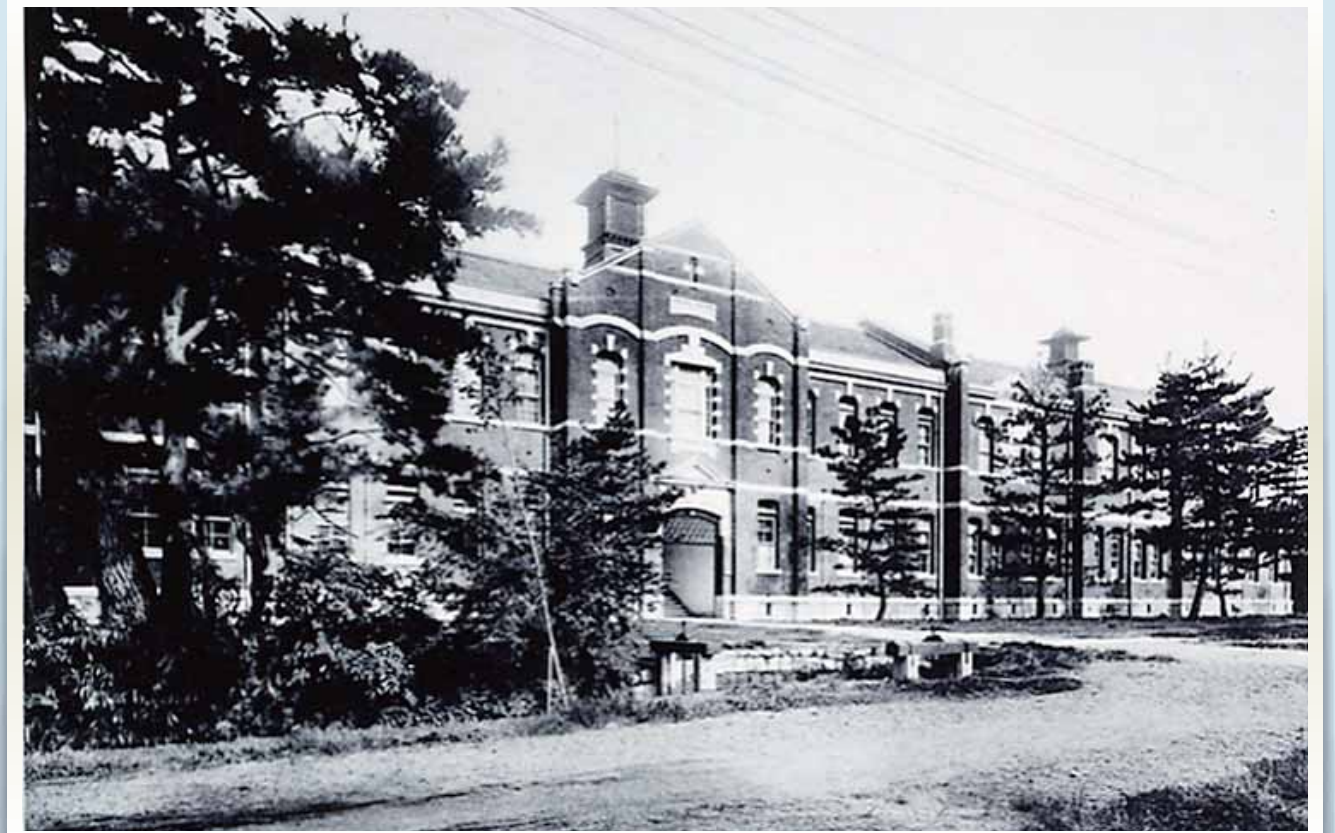
Tohru Eguchi has been leading not only many theoretical physicists but also mathematicians in the world. Apart from his great academic achievements, he has endeavored to bridge physics and mathematics, thereby influencing many mathematicians who are at the forefront of their fields. He has also produced plenty of brilliant disciples, and they have been playing important roles in international academic communities.

Timeline

1975	Received Doctor of Science from the University of Tokyo
1975	Research Fellow, the University of Chicago and Stanford
1978	Assistant Professor, the University of Chicago
1980	Associate Professor, the University of Tokyo
1991	Professor, the University of Tokyo
2007	Director, Yukawa Institute for Theoretical Physics, Kyoto University
2008	Professor Emeritus, the University of Tokyo
2012	Professor, Rikkyo University
2012	Professor Emeritus, Kyoto University

Other Awards and Prizes (selected)

1980	Silver Prize, Gravity Research Foundation, USA
2009	Japan Academy Prize, the Japan Academy, Japan



Main Building of the Original Department of Science (completed in 1914)

A Brief History of Kyoto University

- 1897 Founded as Kyoto Imperial University.
College of Science and Engineering established.
- 1899 Colleges of Law and Medicine established.
University Library and University Hospital established.
- 1906 College of Letters established.
- 1914 College of Science and Engineering divided into College of Science and College of Engineering.
- 1919 Colleges reorganized into five faculties under the new University Ordinance.
Faculty of Economics established.
- 1923 Faculty of Agriculture established.
- 1926 Institute for Chemical Research established.
- 1939 Institute for Research in Humanities established.
- 1941 Chest Disease Research Institute and Institute of Atomic Energy established.
- 1944 Wood Research Institute established.
- 1946 Research Institute for Food Science established. (-2001)
- 1947 Renamed Kyoto University.
- 1949 Reorganized on four-year schooling basis (with the exception of six years for medicine) under the new education system.
Faculty of Education established.
Branch School established for general education of freshmen and sophomores.
- 1951 Disaster Prevention Research Institute established.
- 1953 Graduate courses under the new system were opened.



Faculty of Law and Faculty of Economics (completed in 1933), now known as the Main Building



Primate Research Institute Main Building (completed in 1968) and Experimental Area



Molecular Biology Research Building (completed in 1993)



Research Building of the Yukawa Institute for Theoretical Physics (completed in 1995)

- 1953 Yukawa Institute for Theoretical Physics established.
- 1954 Branch School renamed College of Liberal Arts and Sciences.
- 1956 Institute for Virus Research established.
- 1960 Faculty of Pharmaceutical Sciences established.
- 1962 Institute of Economic Research established.
- 1963 Research Institute for Mathematical Sciences and Research Reactor Institute established.
- 1965 Center for Southeast Asian Studies established.
- 1966 Center for Student Health established.
- 1967 Primate Research Institute established.
- 1969 Data Processing Center established.
- 1971 Radioisotope Research Center established.
- 1972 Research Center for Sports Science established. (-2003)
- 1975 College of Medical Technology established. (-2007)
- 1976 Plasma Physics Laboratory and Radiation Biology Center established.
- 1977 Environment Preservation Center and Center for Archaeological Operations established.
- 1978 Educational Center for Information Processing established.
- 1980 Research Center for Biomedical Engineering established. (-1998)
- 1981 Radio Atmospheric Science Center established.
- 1986 Center for African Area Studies established.
- 1988 Center for Molecular Biology and Genetics established. (-2004)

- 1990 Center for Student Exchange established.
- 1991 Graduate School of Human and Environmental Studies and Center for Ecological Research established.
- 1992 College of Liberal Arts and Sciences reorganized and renamed Faculty of Integrated Human Studies.
- 1994 Research Center for Higher Education established.
- 1995 Venture Business Laboratory established.
- 1996 Graduate School of Energy Science established.
- Institute of Atomic Energy and Plasma Physics Laboratory merged into the Institute of Advance Energy.
- Student Counseling Center established. (-1999)
- 1997 Kyoto University Museum established.
- The Educational Center for Information Processing reorganized and renamed Center for Information and Multimedia Studies.
- 1998 Graduate School of Asian and African Area Studies and Graduate School of Informatics established.
- Chest Disease Research Institute reorganized and renamed Institute for Frontier Medical Sciences.
- 1999 Graduate School of Biostudies and Counseling Center established.
- 2000 Radio Atmospheric Science Center reorganized and renamed Radio Science Center for Space and Atmosphere.
- University Archives established.
- 2001 International Innovation Center established.
- Center for Data Collection and Analysis established. (-2004)
- 2002 Graduate School of Global Environmental Studies established.
- Center for Data Processing and Center for Information and Multimedia Studies reorganized and renamed Academic Center for Computing and Multimedia Studies.



Graduate School of Human and Environmental Studies Building (completed in 1996)



Faculty of Engineering, Science Department Buildings



The iCeMS research building near Hyakumanben



The Center for iPS Cell Research and Application (CIRA)

- 2002 Research Center for Low Temperature and Materials Sciences and Fukui Institute for Fundamental Chemistry established.
- 2003 Seto Marine Biological Laboratory, University Forest, Subtropical Plant Institute and Fisheries Research Station merged into the Field Science Education and Research Center.
Research Center for Higher Education reorganized and renamed Center for the Promotion of Excellence in Higher Education.
Institute for the Promotion of Excellence in Higher Education and Law School established.
The College of Medical Technology merged into Graduate School of Medicine.
- 2004 Kyoto University incorporated in accordance with the National University Corporation Law.
Wood Research Institute and Radio Science Center for Space and Atmosphere unified as Research Institute for Sustainable Humansphere.
Center for Southeast Asian Studies given Institute status.
- 2005 Organization for the Promotion of International Relations, Environment, Safety, and Health Organization, International Innovation Organization, Institute for Information Management and Communication, and Library Network established.
Center for Student Exchange reorganized and renamed International Center.
- 2006 School of Government established.
Graduate School of Management established.
Center for Integrated Area Studies established.
Institute of Sustainability Science established.

- Kyoto University Pioneering Research Unit for Next Generation established.
Center for Women Researchers established.
- 2007 Kokoro Research Center established.
Advanced Medical Engineering Research Unit established. (-2010)
International Innovation Organization reorganized and renamed Kyoto University Office of Society-Academia Collaboration for Innovation.
International Innovation Center reorganized and renamed Innovative Collaboration Center.
Institute for Integrated Cell-Material Sciences established.
- 2008 Wildlife Research Center established.
Center for Archaeological Operations reorganized and renamed Center for Cultural Heritage Studies.
- 2009 Young Researcher Development Center established.
- 2010 Center for the Promotion of Interdisciplinary Education and Research established.
Center for iPS Cell Research and Application established.
Micro/Nano Fabrication Hub in Kyoto University established.
- 2011 Radioisotope Research Center and Center for Student Health merged with Environment, Safety, and Health Organization.
Environment Preservation Center merged with Environment, Safety, and Health Organization.
International Center merged with Organization for the Promotion of International Relations.
- 2012 Young Researcher Development Center renamed the Hakubi Center for Advanced Research.

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KYOTO UNIVERSITY