

International Recognition of KU Research

Dr. Shinya Yamanaka is the eighth Kyoto University-affiliated Nobel laureate. Beginning in 1949 with Japan's first Nobel laureate, theoretical physicist Dr. Hideki Yukawa, the string of honors bestowed upon our researchers is a concrete testament to Kyoto University's status as one of the most dynamic and accomplished research universities in Asia.

Bringing iPS Cell Technology from the Laboratory to the Hospital

The work of Nobel Laureate Dr. Yamanaka and CiRA.

Dr. Shinya Yamanaka, director of the Center for iPS Cell Research and Application (CiRA) and principal investigator of the Institute for Integrated Cell-Material Sciences (iCeMS) was awarded the 2012 Nobel Prize in Physiology or Medicine for the discovery that mature

cells can be reprogrammed to become pluripotent. The prize was jointly awarded to Dr. Yamanaka and the British scientist Sir John Gurdon.

In 2006, Dr. Yamanaka's research group reported their discovery that mouse somatic cells can be reprogrammed into the embryonic state by introducing only four genes to the cells. The resulting cells were named induced pluripotent stem cells (iPSCs).

In 2007, his group announced the successful generation of human iPSCs. iPSC technology makes it possible to derive pluripotent cells in a comparatively simple and highly reproducible manner, opening up possible applications in understanding pathology, drug discovery, and cell therapies.

To realize these applications as quickly as possible, the Center for iPS Cell Research and Application (CiRA) was established in January 2008, with Dr. Yamanaka as its director. At CiRA, twenty-eight research groups are currently working on various studies spanning basic sciences to applied research. The groups aim to achieve the following four goals by 2020:

- 1) Establish basic iPSC technologies and secure intellectual properties;
- 2) Create iPSC stocks for use in regenerative medicine;
- 3) Conduct preclinical and clinical studies on selected diseases such as Parkinson's disease and blood diseases;
- 4) Contribute to the development of therapeutic drugs using patient-specific iPSCs.

This year, as Japan's national center for the promotion of iPSC research, CiRA will continue work on its iPS Cell Stock Project, a project which seeks to create a stockpile of clinical-grade iPSCs to meet the demand for cells in transplants, and its pioneering efforts to tackle the legal, ethical, and social issues surrounding iPSC technology.

WEB www.cira.kyoto-u.ac.jp/e/index.html



The Center for iPS Cell Research and Application (CiRA)



Award Winning Researchers

The following is a list of Kyoto University researchers who have received international awards — a testimony to the university's intellectually fertile environment and culture of academic freedom.

Nobel Prize

in Physics

- 1949 **Hideki Yukawa** (theoretical physicist)
 1965 **Sin-Itiro Tomonaga** (physicist)
 2008 **Makoto Kobayashi** (physicist)
 2008 **Toshihide Maskawa** (physicist)

in Chemistry

- 1981 **Kenichi Fukui** (chemist)
 2001 **Ryoji Noyori** (chemist)

in Physiology or Medicine

- 1987 **Susumu Tonegawa** (biologist)
 2012 **Shinya Yamanaka** (physician and biologist)

Fields Medal

- 1970 **Heisuke Hironaka** (mathematician)
 1990 **Shigefumi Mori** (mathematician)

Gauss Prize

- 2006 **Kiyosi Itō** (mathematician)

Lasker Award

- 1987 **Susumu Tonegawa** (biologist)
 1989 **Yasutomi Nishizuka** (biochemist)
 1998 **Yoshio Masui** (cell biologist)
 2009 **Shinya Yamanaka** (physician and biologist)

Japan Prize

- 2005 **Makoto Nagao** (information technologist)
 2005 **Masatoshi Takeichi** (developmental biologist)

*Photos provided by the Japan Prize Foundation

Kyoto Prize

- 1995 **Chushiro Hayashi** (astrophysicist)
 1998 **Kiyosi Ito** (mathematician)
 2010 **Shinya Yamanaka** (physician and biologist)

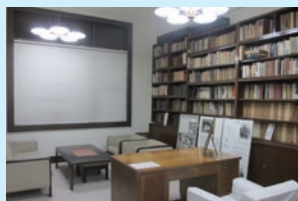
*Photos provided by the Inamori Foundation



POINTS OF INTEREST

The Yukawa Memorial Room

The Yukawa Memorial Room is the former office of Dr. Hideki Yukawa who was awarded the Nobel Prize in 1949 for proposing the meson theory. Dr. Yukawa was appointed as the first director of the Research Institute for Fundamental Physics founded in 1953, which was later renamed as the Yukawa Institute for Theoretical Physics (YITP). He led the institute until his retirement from Kyoto University in 1970. The Yukawa Memorial Room is located on the first floor in the Yukawa Hall of YITP, and is open to the public. The institute also has the Yukawa Hall Archival Library, which collects and archives materials of historical value, including all of Dr. Yukawa's academic papers, as well as a large collection of draft manuscripts, letters and other related materials.



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WEB www.yukawa.kyoto-u.ac.jp/english/