Welcome to
Keio University School of Medicine

Masayuki Amagai, MD, PhD
Dean, Keio University School of Medicine
Professor and Chair, Department of Dermatology

April 14, 2018
National Academy of Medicine (NAM) Induction Ceremony for New Members
Keio University is Japan’s First Modern Institution of Higher Education

Yukichi Fukuzawa: the Founder of Keio University who is a visionary and intellectual leader.

<table>
<thead>
<tr>
<th>Years</th>
<th>Private universities</th>
<th>National universities</th>
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<tbody>
<tr>
<td>1858</td>
<td>Keio</td>
<td></td>
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<tr>
<td>1875</td>
<td>Doshisha</td>
<td>Tokyo</td>
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<tr>
<td>1882</td>
<td>Waseda</td>
<td>Kyoto</td>
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<tr>
<td>1885</td>
<td>Chuo</td>
<td>Tohoku</td>
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<tr>
<td>1920</td>
<td>Meiji</td>
<td>Kyushu</td>
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<tr>
<td>1920</td>
<td>Hosei</td>
<td>Hokkaido</td>
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<tr>
<td>1931</td>
<td>Osaka</td>
<td>Nagoya</td>
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<tr>
<td>1939</td>
<td>Showa</td>
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*Yukin-Maru (Ship to the US) members in 1860. Fukuzawa at the far right.*

(Source: The Eastern Culture Association)}

Founder Yukichi Fukuzawa and the 10,000 yen Banknote
Facts and Figures

- **Est. 1858**: Japan’s First Modern Institution of Higher Learning
- **10**: Undergraduate Faculties
- **14**: Graduate Schools
- **2,250+**: Full-time University Faculty members
- **15 to 1**: Student-to-faculty Ratio
- **70+**: Countries & Regions Represented in Our Student Body
- **24**: Degree Programs Offered in English
- **28**: Double Degree Programs
- **370,000+**: Almuni worldwide
- **3**: Prime Ministers
- **2**: Astronauts

Keio University
Keio was selected as one of the 13 Top research universities for the Top Global University Project by the government in 2014 and will be receiving financial support for a maximum of 10 years.

Keio has formed the research and educational initiatives of Longevity, Security, and Creativity as its own Global Initiatives.

Keio established Keio Global Research Institute (KGRI) to showcase and facilitate interdisciplinary research under the three initiatives in 2016.
The goal of our medical education is to “prevent sectionalism in medicine, and strengthen the connection between basic medical science and clinical medicine” in order to train doctors who possess the spirit of both basic and clinical medicine based on science.

PHYSICIAN SCIENTIST

Physicians equipped with the research capabilities necessary to practice patient-oriented care.

Shibasaburo Kitasato

Yukichi Fukuzawa
1917: The founding spirit of Keio University School of Medicine and Hospital “to realize the unification of basic medical science and clinical medicine” remains vibrant despite natural disaster and war.
New Hospital Building as Centennial Project (May 7, 2018 open)

74,609 m²
The ground 11 floor / basement second floor
Earthquake Proof (Quake-absorbing structure)
800 beds for inpatients
80% of outpatient clinic
27 operation rooms
Cafe Lounge Forest
Outpatient Reception
From bench to bed, and from bed to bench

PET-CT-PET Development
Hybrid Operating Room
Early Detection Facilities

Preventive Medicine Center
Immunotherapy Center
(From August 2012)

Laparoscopic Sentinel Lymph Node Biopsy

Center for Integrated Medical Research
(Regenerative・CPC・Centenarian)
International Collaboration

On-line lecture series to be launched in October 2018 following the Keio-Cologne Symposium in February

Keio Graduate School of Economics and Faculty of Economics

Köln-Keio Collaboration
Webinar Lecture Series on Longevity Studies

Mita Campus

(A) Joint course for undergraduate and graduate programs

Shinanomachi Campus
Keio Graduate School of Medicine

(B) Doctoral Program “special lecture in medicine”

Onomichi Cerebral and Cardiovascular Center

Universität zu Köln
Graduate School Medicine and social sciences fields

Osaka

Global University Leaders Forum 2018
at World Economic Forum

International Collaboration

Experience Japan Exhibition at the Royal Society London in November 2017

Japan-Korea Millennium Forum in October 2017

Collaboration with Yokohama and Kawasaki Cities to host the Team GB Preparation Camp for Tokyo 2020 Olympic Games
Prize Laureates
(Nobel Prize Winner in red)
1996- Stanley B. Prusiner and Shigetada Nakanish
1997- Robert A. Weinberg and Tadatsugu Taniguchi
1998- Moses Judah Folkman and Katsuhiko Mikoshiba
1999- Elizabeth Helen Blackburn and Shinya Yoshikawa
2000- Arnold J. Levine and Yusuke Nakamura
2001- Tony Hunter and Masatoshi Takeichi
2002- Barry Marshall and Koichi Tanaka
2003- Ronald M. Evans and Yasushi Miyashita
2004- Roger Y. Tsien
2005- Yoshinori Fujiiyoshi
2006- Thomas A. Steitz
2007- Brian J. Druker and Hiroaki Mitsuya
2008- Fred H. Gage and Shimon Sakaguchi
2009- Jeffrey M. Friedman and Kenji Kangawa
2010- Jules A. Hoffmann and Shizuo Akira
2011- Philip A. Beachy and Keiji Tanaka
2012- Steven A. Rosenberg and Hiroyuki Mano
2013- Victor R. Ambros and Shigekazu Nagata
2014- Karl Deisseroth and Hiroshi Hamada
2015- Jeffrey I. Gordon and Yoshinori Ohsumi
2016- Svante Pääbo and Tasuku Honjo
2017- John E. Dick and Seiji Ogawa
Gut microflora and Immune system

Linked development of T cell subsets with bacteria strains in gut.

**CD8 T cells**

Bacteria of oral origin (Atarashi, Science 2017)

20 strains of human bacteria (Atarashi, Cell 2015)

**TH17 cells**

**TH1 cells**

**IgA+ cells**

**ILCs**

46 strains of mouse Clostridia (Atarashi, Science 2011)

17 strains of human Clostridia (Atarashi, Nature 2013)

SFB (Ivanov, Atarashi Cell 2009)

Foxp3+ Treg cells

Kenya Honda
Development of organoid technology to assess biological functions of human tissues

Human tissues in normal/cancer → Organoids → Drug susceptibility
Live imaging
Genetic perturbation
Tumorigenic assay

In vitro transformation of human colon organoids

Human normal colon organoids

+APC KO
+KRASG12V
+SMAD4 KO
+TP53KO

Engineered colon cancer organoids

Visualization of human normal/cancer stem cells in tissue environments

Human Colon Cancer
Shimokawa M et al. Nature 2017

Human Normal Colon
Day3
Day6
Day28


Toshiro Sato


Sugimoto S et al. Cell Stem Cell 2018
Minimally invasive surgery with endoscopic and laparoscopic approaches for gastric cancer

Yuko Kitagawa
(Surgery)

Total gastrectomy

Minimum surgery
Antigen-specific therapeutic strategies using peripheral tolerance for autoimmune diseases

Pemphigus: IgG-mediated autoimmune disease to skin

Bone Marrow (BM)  Thymus  Periphery (LN, Skin)

Dsg3-specific T cells  Dsg3-  Dsg3+

Deletion

first check point  second check point