



慶應義塾大学大学院医学研究科

Keio University

Graduate School of Medicine



Keio University School of Medicine

100th Anniversary

1917 - 2017



福澤 諭吉

Yukichi Fukuzawa

Keio University Founder / 1835 - 1901



北里 柴三郎

Shibasaburo Kitasato

First Dean of the School of Medicine / 1853 - 1931

In 1917, world-renowned microbiologist Dr. Shibasaburo Kitasato was appointed as the first dean of the School of Medicine. The young Kitasato had dedicated his career to making medicine more accessible to the public, founding his own institute of medicine with the help of Keio founder Yukichi Fukuzawa.

Established in 1956, the Graduate School of Medicine has continued to vigorously pursue its ideal of educating medical scientists and clinical researchers who will help define future international standards in an environment that unites basic science and clinical medicine.

Blazing a Path for the Future of Medicine Bringing Together and Educating World-Class Minds

The value of a university lies in its ability to produce new ideas, and through scholarship create things that are of value to society. The top-level researchers in the Keio University Graduate School of Medicine pursue advanced research across a wide range of fields including the biological sciences, basic medical science, clinical medicine, and social medicine. Research conducted with an enthusiasm for science can lead to remarkable advances in drug discovery, and when conducted with clinical specimens it can provide the seeds for new scientific discoveries, breakthroughs in thinking, and improved methods for the diagnosis, treatment, and prevention of disease. Advancing the biological understanding of humans through clinical studies and other research is the fundamental characteristic of the Graduate School of Medicine. In parallel, the importance of social medicine is also on the rise, as public policy is increasingly informed by the analysis of big data from fields such as molecular epidemiology and public health.

Dr. Shibasaburo Kitasato, the first dean of Keio University School of Medicine, sought to achieve a greater coordination between basic and clinical sciences that would unite the school as one family. The close connection between basic science and clinical medicine is a major reason why Keio remains one of Japan's most prominent institutions of learning. The Graduate School of Medicine continuously promotes cooperative research between the life sciences, basic medical science, clinical medicine, and social medicine in order to educate students who can actively contribute to the world. Furthermore, it continues to invest in new research facilities and equipment while increasing the number of courses conducted in English, fostering an interdisciplinary education and research system, pursuing links with renowned domestic and overseas research institutions, and forging research ties between academia and industry. The number of students who publish their degree theses in respected international journals is increasing, and many students pursue international study abroad opportunities. We hope these students will go on to tackle some of the world's most challenging medical problems.

Keio is leading the vanguard of the future of medicine, and we hope more motivated individuals will consider joining us to take on this challenge together.



Yutaka Kawakami, MD, PhD

Dean, Graduate School of Medicine

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30th Inoue Research Award for Young Scientists (2014)

The cerebral cortex of mammals (including humans) consists of neurons arranged in an orderly, layered structure. This layered structure is formed by neurons which become differentiated from stem cells and then migrate a long distance from their birthplace to their final location. Our research investigated an extracellular matrix glycoprotein called reelin which is a necessary component of cortex formation. Reelin is found in the region which is the final resting place of migrating excitatory neurons. We paid particular attention to the region underneath the area where reelin is found. In this region, which we dubbed the Primitive Cortical Zone (PCZ), young neuronal cells are densely packed.

We demonstrated the importance of the activation of the protein integrin in the formation of the layered structure in the cortex. Reelin activates the integrin in the migrating neurons, and allows them to penetrate the PCZ. Although neuronal implantation is already being investigated for applications in regenerative medicine, we hope our findings will become useful as a basis for regenerative medicine techniques which will enable proper neuronal structure in the brain.

Message to Prospective Students

I entered the Graduate School of Medicine with the goal of understanding the process of cortex formation at the molecular level. My professor, Dr. Kazunori Nakajima, urged me to "try and take the plunge with a 24 hour research experience at least once!" One of the instructors told me that "even if you fail 10 times, keep working because you'll get it right on the 11th try." It was because of these words of encouragement that I was able to continue my research. Even though I ended up slightly off of my original target, the process of conducting research was profound, and the joy and satisfaction I felt by discovering new things is irreplaceable.



Message
01

Katsutoshi Sekine

(2011 Graduate)
National Cancer Center Hospital,
Visiting Doctor

PhD Degree Theses:

Katsutoshi Sekine, Takao Honda, Takeshi Kawauchi, Ken-ichiro Kubo, and Kazunori Nakajima. 2011. "The Outermost Region of the Developing Cortical Plate is Crucial for Both the Switch of the Radial Migration Mode and the Dab1-Dependent "Inside-Out" Lamination in the Neocortex." *The Journal of Neuroscience* 31(25): 9426-9439.

Katsutoshi Sekine, Takeshi Kawauchi, Ken-ichiro Kubo, Takao Honda, Joachim Herz, Mitsuharu Hattori, Tatsuo Kinashi, and Kazunori Nakajima. 2012. "Reelin Controls Neuronal Positioning by Promoting Cell-Matrix Adhesion via Inside-Out Activation of Integrin $\alpha 5 \beta 1$." *Neuron* 76(2): 353-369.

From Bench to Bedside

Medical Researchers With a Bright Future

Special Messages

6th Japan Society for the Promotion of Science Ikushi Prize (2015)

I entered this lab because I had an interest in the immune response to stroke. After a stroke, inflammation in the brain causes swelling. This swelling puts pressure on the surrounding brain tissue which can lead to more blockages as well as the worsening of neurological symptoms. We discovered that a large multi-protein oligomer known as an inflammasome was necessary for the production of interleukin-1 beta (IL-1 β), which is an important cytokine responsible for inflammation; and we revealed a new inflammasome activation mechanism called Bruton's tyrosine kinase (BTK) played a role in this inflammation. We were able to demonstrate a new treatment for stroke by administering a BTK inhibitor known as Ibrutinib to stroke-affected mice which improved the neurological symptoms associated with stroke, and reduced inflammation in the stroke-affected regions of the brain.

Message to Prospective Students

I feel as though I grew tremendously during my time in the graduate school while receiving encouragement and inspiration from the many excellent faculty members and my fellow students. In the Graduate School of Medicine, you are not only limited to your narrow field of specialization. You are able to absorb a breadth of knowledge from the cutting edge of a number of different fields. Research is absolutely essential for the advancement of medicine. By conducting research, one is able to directly experience the feeling of contributing to this advancement.



Message
03

Minako Itoh

(2015 Graduate)
Keio University School of Medicine,
Department of Microbiology and Immunology,
Project Assistant Professor

PhD Degree Thesis:

Minako Ito, Takashi Shichita, Masahiro Okada, Ritsuko Komine, Yoshihiko Noguchi, Akihiko Yoshimura and Rimppei Morita. 2015. "Bruton's Tyrosine Kinase is Essential for NLRP3 Inflammasome Activation and Contributes to Ischemic Brain Injury." *Nature Communications* 6: 7360.

AOFOG Young Scientist Award (2015)

I recently was awarded the Young Scientist Award from the Asia & Oceania Federation of Obstetrics & Gynecology (AOFOG). I received this award for my research thesis which appeared in the Journal of Obstetrics and Gynecology Research, an international journal published by the AOFOG. This thesis was judged to be the best thesis to appear in the journal over a 2-year span, and the award is conferred only on the first author. In recent years, fertility treatments have been improving. However, despite the large number of people with hereditary infertility disorders such as Rokitansky syndrome (MRKH), and those who have undergone hysterectomies due to tumors, surrogacy remains illegal in Japan. Therefore a large number of families are unable to produce natural offspring. It was once thought that fertility could not be restored through uterus transplantation. In my award-winning thesis, I successfully restored menstruation using an experimental uterus transplant procedure performed on the crab-eating macaque, a primate that is anatomically similar to humans. I believe this is very exciting news for women in Japan who suffer from uterine infertility, and we plan to continue to refine this technique.

Message to Prospective Students

I entered the Graduate School with the intention of becoming an oncologist, and was able to study cancer care from a cross-disciplinary approach in a wide range of fields. I feel that the foundations that I learned in clinical research and clinical statistics are being put to full use in my current research and clinical activities. Cross-disciplinary knowledge is particularly essential for uterus transplantation as well as in the clinical research of other new procedures. My research continues to progress smoothly as a direct result of my experiences in the Graduate School. In the Graduate School, if you constantly seek to challenge yourself and approach your research with a sense of enthusiasm, results will naturally follow. Give it your best shot and work hard!



Iori Kisu

(2012 Graduate)

Keio University School of Medicine,
Department of Obstetrics and Gynecology,
Project Assistant Professor

PhD Degree Thesis:

Iori Kisu, Kouji Banno, Yusuke Kobayashi, Asuka Ono, Kenta Masuda, Arisa Ueki, Hiroyuki Nomura, et al. 2011. "Narrow Band Imaging Hysteroscopy: A Comparative Study Using Randomized Video Images." International Journal of Oncology 39: 1057-1062.

At Keio University Graduate School of Medicine, students are conducting internationally recognized exceptional research, and many students have received awards for their work. Students from all over the world are also joining the ranks at Keio and are contributing to successes in medical research.

Keio University provides an excellent international educational system. Studying at Keio enriched my knowledge, especially in ocular surface and allergy diseases. This knowledge enabled me to present our work in several international and Japanese conferences, publish 11 papers as a first author, and collaborate in another 25 papers. Therefore, I was able to complete my PhD program in three years instead of four years. Moreover, I received Keio University's Design the Future Award and other scholarships, which was a great support during my PhD studies.

In addition, I had invaluable opportunities to visit the research and clinical facilities of several international prestigious universities such as Karolinska Institute and the University of Illinois. Being a student at Keio, I had the honor to meet Nobel laureates visiting our university among other international cooperation activities. Furthermore, I was able to enjoy the rich Japanese culture and various social events with my research group and the supportive Nihongo Club at Shinanomachi Campus. After graduation, while pursuing my research career at Keio University, I challenged the Japanese national medical license test and passed it in 2016. In the future I would like to be a bridge between Japan and the Middle East to promote exchanges in the clinical and research fields.

Joining Keio University was a turning point that enriched my academic and private life, and made my stay in Japan an unforgettable experience.



Osama Ibrahim

(2010 Graduate)

The University of Tokyo Hospital,
Resident



Graduate School of Medicine

Admission Capacity

Master's Program (2-year) : **20 Students**

<http://www.med.keio.ac.jp/en/admissions/wasters/>

PhD Program (4-year) : **80 Students**

<http://www.med.keio.ac.jp/en/admissions/doctoral/>



Admission Policy

The Graduate School welcomes the following students who possess abundant knowledge and research ability without regard to nationality:

Highly motivated students who desire to become world-class researchers in medicine and medical science

- Students who can comfortably read, comprehend, and critique English journal articles in the life sciences and medical fields
- Students who possess abundant basic knowledge of the medical and life sciences

Curriculum Policy

● Master's Program

The Master's Program is open to applicants with a background outside of medicine, and aims to train high-quality specialists and researchers in a variety of fields related to medicine. During the first year, students take lectures in basic medicine and conduct research in preparation for their master's thesis. The curriculum is designed to imbue the student with the ability to acquire a deep understanding of the fields of medical science and medical care most relevant to their chosen occupation goals; both in their current state and future outlook.

● PhD Program (Medical Science Specialty)

The curriculum is designed in accordance with the principles of practical learning. Accordingly, all required courses are taught in English in order to equip students for careers in the international arena. Students can attend seminars that are hosted regularly by the Keio Medical Society, which consist of lectures, presentations, and discussions held in English with leading researchers from Japan and abroad. PhD students develop internationally-minded, practical research skills. Students can also conduct research for their degree at leading partner institutes in Japan.

● PhD Program (Applied Medicine Specialty)

This specialty comprises two unique sub-specialties in clinical oncology and clinical research. In each, students participate in lectures, write reports, and gain practical research experience in a wide range of domains.

Diploma Policy

● Master's Program

In the Master's Program, the student must submit a master's degree thesis and undergo a review. In the fall of the second year, a presentation assembly is held in order for students to present their research progress and receive advice and instruction from experts other than their supervisor.

● PhD Program

In the PhD Program, a progress audit is held in the third year; and after submitting a doctoral thesis (in English) of which the candidate is the first author (published article or a collection comprising multiple theses), a final assessment is held that is open to all Keio-affiliated personnel. Students who demonstrate exceptional research achievements can apply for their degree during their third year.

Curriculum and Eligibility

● Master's Program (2-year) [Admission Capacity: 20 Students] Training Researchers and Specialists for Success in a Variety of Fields Related to Medicine

The Graduate School of Medicine Master's Program strongly emphasizes:

- 1)-Acquiring the basic knowledge and abilities necessary for growth and success in the student's chosen medicine-related field as a specialist or researcher.
- 2)-Adequately equipping the student to have a nuanced understanding of the current state of his or her medicine-related field as well as its future outlook.
- 3)-Being intimately familiar with all aspects of illness including ramifications on patients, families, and medical caregivers.

The program is designed for students of the natural sciences or humanities/social sciences. It seeks to imbue students with deep knowledge of medicine gained through direct study and research in Keio's hospital and research labs in order to become successful professionals or to continue on to the PhD Program.

● PhD Program (4-year) [Admission Capacity: 80 Students] Training Creative, Independent Researchers in a Wide Range of Fields

This program is designed for graduates of a 6-year medical, dentistry, veterinary, or pharmacy school; as well as graduates of a master's degree program. The goal of the Medical Science Specialty is to train students to conduct creative research in the fields of basic medical science and clinical medicine, as well as research into the mechanisms of diseases and the development of new therapeutic approaches. The Applied Medicine Specialty is designed mainly for practicing physicians and other medical professionals. Its aim is to guide students in using their clinical knowledge and analytical skills to plan and conduct comprehensive clinical trials and interdisciplinary research especially in the fields of oncology and cardiology.

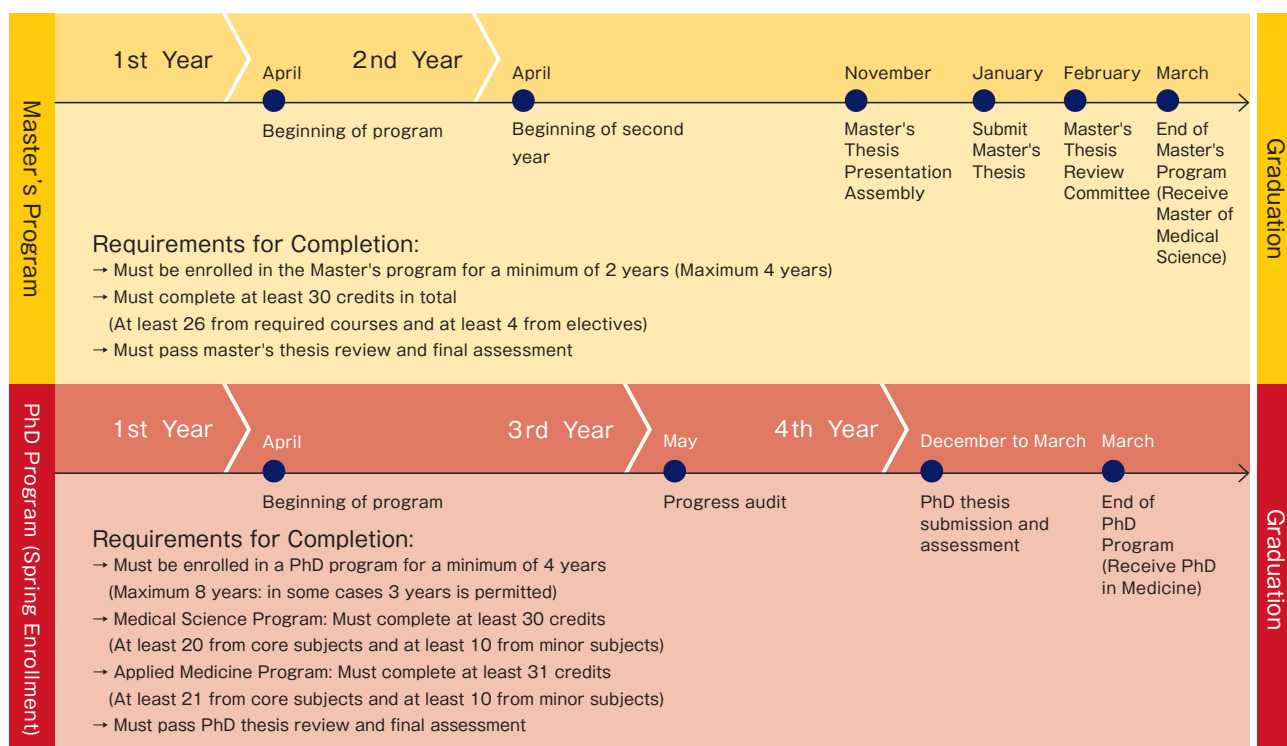
The program seeks to advance cooperative research with outside research institutions and organizations; and seeks to encourage high-quality, fruitful research through the uninhibited interaction between doctoral students and other researchers at Keio, as well as with researchers from industry. Students can also experience first hand the process of acquiring patents and creating intellectual property in this collaborative environment.

Research Facilities

To conduct excellent and fruitful medical research, it is essential to have full access to a complete range of research equipment and facilities, in addition to ample ingenuity and motivation. In the Keio University Graduate School of Medicine, students and researchers can make full use of a range of collaborative research facilities such as the Shinanomachi Media Center (Kitasato Memorial Medical Library), RI Center, Laboratory Animal Center, and Collaborative Research Resources. A rich collection of books and over 11,000 medical e-journals (the largest collection in Japan) are available in the Kitasato Memorial Medical Library. A range of animals from small mice to those of larger sizes are bred and raised in the Laboratory Animal Center. Over 100 pieces of analysis equipment necessary for all manners of life sciences research including omics, imaging, and disease modeling are available in the Collaborative Research Resources. Equipment such as micro-array analysis devices, next-generation sequencers, cell sorters, laser confocal microscopes, super-resolution microscopes, micro-CTs for small animals, mass spectrometers, histological analysis devices and other advanced equipment are fully available to students in our Master's and PhD Programs.



Degree Granting Process





Cancer Professional Development Program

The Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) has organized the Human Resource Development Plan for Cancer from 2007 to 2011, and the Promotion Plan for the Platform of Human Resource Development for Cancer from 2012 to 2016. Under the support of these programs, Keio has offered various

courses in order to develop high-quality cancer care specialists. From 2017, Keio will offer the following programs in order to develop leaders in cancer care who can advance cutting-edge cancer team treatment anywhere in the world.

Outline of the Cancer Professional Curriculum in the Graduate School of Medicine

● Master's Program

Cancer Rehabilitation Therapist / Researcher Course

This Master's Program course focuses on those who have attained a professional qualification in physical therapy, occupational therapy, or speech-language-hearing therapy. In addition to required courses, students study rehabilitation medicine and cancer rehabilitation. Students are also trained as rehabilitation specialists focusing on prevention and treatment methods for various functional disorders that arise in cancer patients. Students acquire practical clinical and research abilities, thereby enabling them to participate in interdisciplinary cancer teams and lead the future of cancer rehabilitation.

● PhD Program (Applied Medicine Specialty)

[Clinical Oncology Track] Refining students clinical expertise and knowledge through training in planning optimal treatment strategies for cancer patients as a leader of an oncology team

Medical clinical oncology specialist course / Surgical oncology specialist course / Radiation oncology specialist course / Palliative care specialist course / Rehabilitation specialist course / Medical physicist course

[Clinical Research Track] Advancing translational research from basic research to clinical applications
Cancer translational research course

While designing and conducting clinical research under the guidance of their supervising professor, students also take courses in a range of topics from cancer diagnosis to treatment, as well as in fundamental topics in cancer medicine. In addition, students rotate in multiple hospital departments (including chemotherapy, molecular targeted therapy, radiation oncology, minimally-invasive surgery, palliative care, and rehabilitation medicine) and experience actual treatment practices and procedures in order to acquire interdisciplinary treatment knowledge. After four years, students are prepared to become high-level specialists who are capable of leading cutting-edge advancements in cancer care.

Cancer Professional (Master's) Program Outline

1st Year	Spring Semester	In addition to required courses, additional credits are taken in Cancer Professional (PhD) Program courses
	Autumn Semester	Choose and begin research under the supervision of the student's supervising professor Clinical training in Keio University Hospital
2nd Year	Whole Year	Clinical training and research in Keio University Hospital Training at an advanced cancer treatment partner institution (if desired)

Cancer Professional (PhD) Program Outline

1st Year	Choose and begin research under the supervision of the student's supervising professor Take courses in basic cancer biology and a range of clinical cancer medicine
2nd Year	Clinical department rotations (Plan and carry out rotations in departments of your choosing for 11 months) By rotating through various departments, students are able to experience actual treatment procedures in areas such as chemotherapy, molecular targeted therapy, radiation therapy, minimally-invasive surgery, palliative care, and rehabilitation
3rd Year	Clinical training and research in Keio University Hospital Training at an advanced cancer treatment partner institution (if desired)
4th Year	Apply for PhD degree



Clinical Research Professional Program

The Applied Medicine specialty course trains students to become professionals in designing and conducting clinical and epidemiological research focused on humans. Generally this program is suitable for those with the following research interests:

- 1 Clinical studies and epidemiological research in the field of clinical medicine
- 2 Medical technology research in all fields of medicine
- 3 Epidemiological research in the field of preventive medicine

To conduct high-quality clinical research, nursing staff and pharmacists, not only the physician, are crucial. Furthermore, a research coordinator, data manager, biostatistician, and others from a range of fields are all essential. Accordingly, this program is open to talented individuals from various fields, not only trained physicians. This program requires a certain level of experience and clinical expertise, so please consult with your desired supervising professor before the application period opens. Students can enter either the Medical Science or the Applied Medicine specialty, conduct research as outlined above, and attain the degree of PhD in Medicine. Please discuss this with your desired supervising professor.



Shinanomachi Campus: A Global Medical Hub

Opening its Doors to the World

In the PhD Program, courses are conducted in English providing a truly international and practical learning environment that does not draw a distinction between Japanese students and international students. PhD students are also strongly encouraged to study abroad and participate in overseas academic conferences in order to gain the skills necessary to succeed in the international arena.

In seminars hosted regularly by the Keio Medical Society and various departments, students can learn from leading researchers from Japan and abroad about the latest advances in medical research. At Keio, such international connections are considered essential for research.

In 2014 Keio University was selected to join the Japanese government's Top Global University Project as one of Japan's top universities providing a world-class level of research and education. Under this program, Keio is integrating its efforts through three transdisciplinary research and education initiatives focusing on longevity, security, and creativity in order to confront the numerous challenges facing modern society. Through collaboration in research and education as well as exchanges of faculty centered around these three conceptual clusters, Keio seeks to deepen ties with other leading universities across the world while advancing truly cutting-edge, interdisciplinary research. The Graduate School of Medicine is taking a leading role in the longevity

cluster, and has welcomed Guest Professors (Global) from strategic partner universities around the world to teach seminars and serve as advisors for graduate students.

Since the 1996, the Keio University Medical Science Fund has awarded the Keio Medical Science Prize yearly to recognize the outstanding and creative achievements of researchers in the fields of medicine and life sciences, in particular those contributing to scientific developments in medicine. The fund also provides grants to support the international research activities of young researchers, as well as to assist graduate students in attending academic conferences abroad.

Recent recipients of the Keio Medical Science Prize are:

2013: Victor Ambros, University of Massachusetts Medical School

2014: Karl Deisseroth, Howard Hughes Medical Institute, Stanford University

2015: Jeffrey I. Gordon, Washington University School of Medicine in St. Louis



Strengthening International Ties

In 2012, the Graduate School of Medicine PhD Program established a joint summer school program with Peking University and Karolinska Institutet, with King's College London joining in 2014. Every year, students take courses and participate in lab work at one of the participating universities and can earn transferable credits. There are plans to develop this program into a double degree program in the future.

The host schools and themes are:

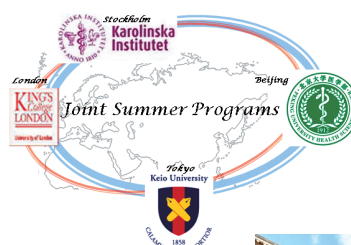
2012: Keio University / Cell Biology and Metabolism

2013: Karolinska Institutet / Infection, Inflammation, and Immunology

2014: Peking University / Cancer

2015: King's College London / Cardiovascular

2016: Keio University / Stem Cell Research and Regenerative Medicine




Since 2008, Keio has partnered with the University of Texas MD Anderson Cancer Center and St. Luke's International Hospital in Tokyo to establish a joint educational platform called the Academy of Cancer Experts (ACE). The ACE's seminars and workshops are held in English and are taught by MD Anderson faculty members. The ACE's overarching goal is to train cancer research specialists who are equipped to take on the challenges that cancer poses to Japanese society, and it is steadily attracting Applied Medicine PhD students who are intent on leading the next generation of cancer research and treatment.




Faculty

List of PhD and Master's Program professors


Professor Sadakazu Aiso

Affiliation	Anatomy	
Specialized Area	Morphogenetic mechanisms of tissue and cells	
Research Content	Molecular and genetic elucidation as well as morphological study of the process by which tissue and cells are formed through cell differentiation, especially focusing on the function of D-amino acids.	


Professor Hideyuki Okano

Affiliation	Physiology	
Specialized Area	CNS development and regeneration	
Research Content	Elucidating the clinical states of neurological disorders, and research into regenerative medicine of the CNS using neural stem cells and iPS cell technology. Development of genetically modified primate techniques, creation of new models of neurological and mental disorders, and the elucidation of the mechanisms of brain development and higher level brain function.	


Professor Masato Yasui

Affiliation	Pharmacology	
Specialized Area	Water Biology and Medicine: understanding in vivo water dynamics and the roles of aquaporins	
Research Content	A double-sided analysis of the structure-function relationship of aquaporins (water channels) consisting of a biochemical approach and molecular dynamic simulations. Furthermore, researching aquaporin regulation mechanisms and high-order functions, and building a basis for drug development.	


Professor Haruhiko Shiomi

Affiliation	Molecular Biology	
Specialized Area	RNA biology	
Research Content	Understanding molecular mechanisms underlying genomic quality control in light of stem cell formation and maintenance through characterizations of molecular pathways leading to transposon silencing including RNAi. In addition, understanding diseases caused by defects in RNAi and its related pathways.	


Professor Toru Takebayashi

Affiliation	Preventive Medicine and Public Health	
Specialized Area	Preventive medicine; environmental and occupational medicine	
Research Content	To achieve primary prevention for all in every community, my main research topic is tailor-made preventive medicine based on epidemiology with population-based cohort studies, combining multi-omics technologies, metabolomics in particular. Furthermore, pursuing social prevention efforts through establishing environmental and occupational standards for protecting population and workers' health through a scientific risk assessment process.	


Professor Kazunori Nakajima

Affiliation	Anatomy	
Specialized Area	Mechanisms of cerebral cortical development	
Research Content	We are interested in the cellular and molecular mechanisms of how the cells in the central nervous system, in particular the cells in the cerebral cortex, are born, migrate to their final destinations, develop unique structures such as layers, and finally form such a complex network to enable the various higher brain functions. We are also investigating how these developmental processes are disturbed by various perturbations.	


Professor Michisuke Yuzaki

Affiliation	Physiology	
Specialized Area	Synapse formation and plasticity as the basis of higher brain functions and neuropsychiatric disorders	
Research Content	Synapses are not only formed during development, but also continuously modified according to neuronal activities throughout adulthood. Synaptic plasticity is believed to be the basis of all higher brain functions, including learning and memory. Moreover, recent genetic studies have revealed that many neuropsychiatric disorders are caused by defects in genes encoding synaptic molecules. Thus, we aim to understand mechanisms by which synapses are formed, maintained and eliminated by neuronal activities using electrophysiological, molecular biological, and behavioral approaches.	


Visiting professor Makoto Suematsu

Affiliation	Biochemistry	
Specialized Area	Pathological biochemistry (gas biology): Biology of biocontrol via gas, microcirculation, metabolic system biology	
Research Content	Investigating new molecular mechanisms of metabolic control by gas molecules, while simultaneously advancing metabolic systems biology through the practical use of mass spectrometry and metabolome study.	

Professor Kazuyuki Omae


Affiliation	Preventive Medicine and Public Health	
Specialized Area	Occupational and environmental epidemiology and toxicology	
Research Content	Health risk assessment of occupational and environmental toxic chemicals by using optimal research methods (epidemiology, experiments on laboratory animals), and the application of the research outcomes to the control of health problems.	

Professor Tomonori Okamura


Affiliation	Preventive Medicine and Public Health	
Specialized Area	Public health; lifestyle-related disease; epidemiology; nutrition; community medicine; international collaborative research	
Research Content	We are seeking to identify new biomarkers that predict incidence of lifestyle-related diseases, and also developing novel lifestyle modification (diet, etc.) that will prevent various diseases through large-scale cohort studies and international collaborative studies. Also we are performing regional intervention research through health training and community education, health policy making studies (Health Japan 21, Data Health), and establishing clinical guidelines based on epidemiologic evidence.	




Professor Satoshi Iwata

Affiliation	Infectious Diseases	
Specialized Area	Bacterial infectious diseases; pediatric infectious diseases; anti-microbial agents; infection control; immunizations/vaccinations; intestinal flora	
Research Content	Aiming for the improvement of the diagnosis, treatment, and prevention of infectious diseases through epidemiological analysis and clinical pharmacological analysis of various infectious diseases such as respiratory tract infections and urinary tract infections; central nervous system infections; bacteremia; medical device- related infections; drug-resistant bacterial infections; and also through the spread of vaccination.	


Professor Yae Kanai

Affiliation	Pathology	
Specialized Area	Pathology; Cancer epigenetics; Integrative disease omics analysis	
Research Content	To participate in genome medicine and preventive/pre-emptive medicine by understanding the molecular mechanisms of diseases, therapeutic and diagnostic targets are explored based on integrative disease omics analysis, especially epigenome analysis, in human cancers derived from various organs, histopathologically-recognized precancerous lesions and cancer-prone metabolic and/or inflammatory disorders.	


Professor Kenya Honda

Affiliation	Microbiology and Immunology	
Specialized Area	Immunology; microbiology; intestinal microbiota	
Research Content	Clarifying effects of the intestinal microbiota on the host physiology. Also investigating the mechanisms of host response to pathogens.	


Professor Masaki Q. Fujita

Affiliation	Legal Medicine	
Specialized Area	Forensic pathology; sudden death study	
Research Content	Investigating the pathogenesis and predisposition of sudden unexpected death syndrome in young Asian males by performing genetic and comparative epidemiological studies. Establishing objective diagnosis methods in forensic medicine.	

Professor Minoru Ko

Affiliation	The Sakaguchi Laboratory - Department of Systems Medicine	
Specialized Area	Stem cells; early embryos; systems medicine; genomics, informatics	
Research Content	Elucidating the structure and dynamics of gene regulatory networks; studying tissue regeneration and rejuvenation; promoting the extension of healthspan through the application of systematic and computational approaches to medicine.	


Professor Yutaka Kawakami

Affiliation	Institute for Advanced Medical Research	
Specialized Area	Investigation of immune- associated diseases (cancer, auto-immune disorders, etc.) and their modulation	
Research Content	Investigation of immune-associated diseases such as cancer and auto-immune disorders, and developing gene therapies and immunotherapies; Investigation of tumor immuno-microenvironment (immune cells, cancer stem cells, epithelial-mesenchymal transition (EMT), etc.) and developing molecular targeted therapies.	


Professor Michiie Sakamoto

Affiliation	Pathology	
Specialized Area	Tumor pathology, Liver pathology, Molecular pathology, Pathology informatics	
Research Content	Analyze molecular mechanisms of human cancer development and progression. Establish precisional pathologic diagnosis, quantitative pathologic diagnosis and information technology based pathology.	


Professor Akihiko Yoshimura

Affiliation	Microbiology and Immunology	
Specialized Area	Molecular immunology; understanding disease centered around cytokines and inflammation	
Research Content	<ol style="list-style-type: none"> 1. Analysis of immune regulation mechanisms by CIS/SOCS family genes and cytokines. 2. Analysis of cytokines and their signal transduction in various inflammatory diseases. 3. Functional analysis of Spred/Sprouty protein family. 4. T-cell reprogramming. 	


Visiting professor Shigeo Koyasu

Affiliation	Microbiology and Immunology	
Specialized Area	Immunology; cell biology	
Research Content	Analyzing the regulation mechanisms of natural and acquired immunity using molecular cell biological techniques and mouse models. Recently focusing on innate lymphoid cells.	


Professor Hiroaki Miyata

Affiliation	Health Policy and Management	
Specialized Area	Health policy and management; Quality of healthcare; Epidemiology; Evaluation; Social science method	
Research Content	Health policy research and clinical research for i. Quality improvement initiative, ii. Healthcare technology/diagnosis/treatment innovation , iii. Sustainable, optimal healthcare system.	


Professor Yoshiaki Kubota

Affiliation	The Sakaguchi Laboratory - Department of Vascular Biology	
Specialized Area	Understanding the Formation of Vascular Networks	
Research Content	Unlocking the mysteries of the dynamics of how the blood vessel network is able to reach remote locations of the body using the latest imaging techniques. On this foundation, developing completely new molecular targeted treatments for cancer and ischemia, etc.	

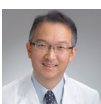
Professor Hideyuki Saya

Affiliation	Institute for Advanced Medical Research	
Specialized Area	Molecular mechanisms of malignant tumor formation	
Research Content	<ol style="list-style-type: none"> 1) Developing new treatment strategies and property analysis of cancer stem cells; 2) Molecular analysis of the mechanisms of invasion, metastasis, and reoccurrence of cancer; 3) Analysis of the heterogeneous properties of cancer tissue structure and the plasticity of cancer cells. 	


Professor Keiichi Fukuda

Affiliation	Cardiology	
Specialized Area	Development of treatment methods for intractable heart failure through the regeneration of cardiac muscle cells	
Research Content	Cardiomyocyte regeneration using iPS stem cells to understand disease pathology, develop new treatments, and advance research in regenerative medicine. Developing multifaceted research into the correlation of heart failure and sympathetic nerve function, the mechanisms of heart valve disease, and new treatment methods of pulmonary hypertension.	


Professor Takanori Kanai

Affiliation	Gastroenterology and Hepatology	
Specialized Area	Basic and clinical research of gastrointestinal immunity disorders	
Research Content	Clinical development of new drugs and treatments for IBD as well as liver and pancreatic immunity disorders. Developing preventive medicine that seeks to unify immunology, genetics, and nutritional science.	


Professor Shinichiro Okamoto

Affiliation	Hematology	
Specialized Area	Analysis of hematopoietic tumors, and the development of new treatments for hematopoietic malignancies using hematopoietic stem cell transplants and molecular targeting therapy	
Research Content	Selective potentiation of pretreatments with molecular targeted therapies; selective regulation of immunoreaction to allograft transplant; mechanisms of anti-tumor effects of the alloimmune response to umbilical cord blood transplant; QOL after transplant; myeloma; new molecular targeted treatments and clinical research on MDS, and furthermore, analysis of the mechanisms of bone marrow and lymph node tumor pathogenesis.	


Professor Hiroshi Itoh

Affiliation	Nephrology, Endocrinology and Metabolism	
Specialized Area	Translational research of lifestyle diseases, metabolic syndrome and renal blood vessel complications	
Research Content	Clarifying the endocrine and metabolic molecular mechanisms of metabolic syndrome associated with high blood pressure, diabetes, obesity, etc., and kidney blood vessel complications; translational research towards developing new treatments and applications from the perspectives of prevention, anti-aging medicine, and regenerative medicine.	


Professor Tatsuo Kuroda

Affiliation	Pediatric Surgery	
Specialized Area	Cellular kinetics of pediatric cancer; pediatric cancer stem cells, fetal surgery	
Research Content	Basic research on cellular kinetics and cancer stem cells of pediatric cancers associated with clinical trials of new treatment strategies. Development of fetal diagnostic and surgical techniques.	


Professor Hisao Asamura

Affiliation	General Thoracic Surgery	
Specialized Area	General thoracic surgery; thoracic oncology; TNM stage classification of cancer (UICC); cancer registry and database development; minimally invasive thoracic surgery	
Research Content	Multidisciplinary therapy of lung cancer, thymic epithelial tumor, pleural mesothelioma, and other thoracic malignancies; clinical trials including surgery for thoracic malignancies; TNM stage classification (UICC); development of minimally-invasive surgical techniques for lung cancers; lung cancer registry.	

Professor Tomoko Betsuyaku

Affiliation	Pulmonary Medicine	
Specialized Area	Basic and clinical research concerning understanding and developing new treatments for respiratory illnesses	
Research Content	Molecular biological research concerning the pathology and pathogenesis mechanisms of lung cancer and inflammatory lung diseases such as chronic obstructive pulmonary disease (COPD), interstitial pneumonia, and bronchial asthma; establishing new diagnostic methods and treatments, and searching for markers which reflect a patient's condition.	


Professor Norihiro Suzuki

Affiliation	Neurology	
Specialized Area	Understanding and developing treatments for cerebrovascular disease; dementia; degenerative neurological disorders, and headaches	
Research Content	1) Research and development of new treatments for acute phase cerebrovascular disease and migraines; 2) Basic research into cerebrovascular nerve control; 3) Pursuing a neurotransmitter receptor approach to migraine and cluster headaches; 4) Creation and clinical applications of iPS cells in degenerative neurological disorders; 5) Investigating the causes of myasthenia gravis from autoantibodies; 6) Clarifying demyelination and axonal involvement in multiple sclerosis (MS), and research into the causes and treatment methods of neurological internal diseases.	


Professor Tsutomu Takeuchi

Affiliation	Rheumatology	
Specialized Area	The molecular mechanisms and regulation of autoimmune disorders, and the development of targeted treatments	
Research Content	Molecular analysis of the pathogenesis of autoimmune diseases (rheumatoid arthritis, systemic lupus erythematosus, etc.) and translational research towards the development of molecular targeting clinical applications.	


Professor Yuko Kitagawa

Affiliation	General and Gastroenterological Surgery	
Specialized Area	Gastroenterology; surgical oncology; endoscopic surgery; multidisciplinary solid tumor therapy; surgical infections; bodily reactions to invasive surgery; sentinel node navigation surgery	
Research Content	Research utilizing an approach based on the sentinel node theory. Analyzing the mechanisms of metastasis of lymph node cancers and their regulation. Applying microscopic metastasis and capillary blood cancer cell detection methods to realize individualized, multidisciplinary treatment methods for digestive organ cancers. Research into reactions to invasive surgery, and surgery-related infections.	

Professor Hideyuki Shimizu


Affiliation	Cardiovascular Surgery	
Specialized Area	Cardiovascular surgery; Endovascular stent-graft; minimally invasive cardiac surgery; organ protection methods; artificial heart and blood vessels	
Research Content	Developing surgical methods with a basis in implementing major surgery and minimally invasive treatments for cardiac and aortic diseases; and research on perioperative organ protection methods. Development of new treatments and diagnostic methods for aortic aneurysm and aortic dissection.	

Professor Kazunari Yoshida


Affiliation	Neurosurgery	
Specialized Area	Surgical treatments for brain tumors; multidisciplinary treatments for malignant brain tumors; basicranial surgery; histological analysis of brain tumors	
Research Content	Developing surgical techniques based on surgical anatomy and analysis of clinical imaging of cranial diseases and brain tumors. Developing multidisciplinary therapies and diagnostics for malignant brain tumors (particularly germ cell tumors). Analysis of brain tumor malignancy using biological and histochemical techniques.	




Professor Morio Matsumoto

Affiliation	Orthopedic Surgery	
Specialized Area	Spine Surgery, Minimally Invasive Spine Therapies, Scoliosis	
Research Content	Developing prosthetics necessary for spinal surgery. Identifying scoliosis susceptible genes and developing new assessment and surgical methods. Multicenter collaborative research on spine disorders. Researching spine aging through MRI machines. Researching the invasiveness of spine surgery.	


Professor Meigen Liu

Affiliation	Rehabilitation Medicine	
Specialized Area	Rehabilitation Medicine, Neuroscience, Exercise Physiology	
Research Content	1) Developing rehabilitation methods to induce plasticity of the central nervous system; 2) Development and clinical applications of brain machine interface; 3) Evaluation and prognosis prediction of injury; 4) Research concerning the exercise stress of disabled persons; 5) Advancing the research of cancer rehabilitaiton.	


Professor Takao Takahashi

Affiliation	Pediatrics	
Specialized Area	Developmental Neurobiology, the Cell Cycle, Neural Stem Cells, Cerebral Cortex Assembly	
Research Content	Research concerning mechanisms of developmental disorders of higher cortical function with a focus on proliferation/differentiation behavior of neural stem cells/progenitors in normal and abnormal histogenesis of the neocortex.	


Professor Daisuke Aoki

Affiliation	Gynecology	
Specialized Area	Gynecologic Oncology, Gynecologic Pathology, Molecular Cytogenetics, Hereditary Cancer, Fertility-Preserving Therapy in Gynecological Cancer, Cancer Screening	
Research Content	Pursuing new preventive and therapeutic methods as well as the diagnostics of hereditary gynecologic cancers based on the analysis of genetics, epigenetics, and molecular cytogenetics; and also investigating the diagnostic performance of profiles of biomarkers in cancer cells.	


Professor Kazuo Tsubota

Affiliation	Ophthalmology	
Specialized Area	Regenerative Medicine, Corneal Transplantation, Dry Eye, Refractive Surgery, Myopia, Presbyopia, Anti-Aging Medicine, Health Science, Food Science	
Research Content	Cornea regeneration; developing new treatments for and elucidating the mechanisms of dry eye associated with visual display terminals (VDT) and Sjogren's syndrome. Recently pursuing anti-aging medicine for age-related macular degeneration, cataracts, visus senilis, nearsightedness, glaucoma, etc., while also expanding our outlook towards the health sciences and food sciences.	


Professor Mototsugu Oya

Affiliation	Urology	
Specialized Area	Understanding the Oncogenesis of Urological Cancers and Developing Novel Cancer Therapies	
Research Content	Aiming for an integrative understanding of the development of cancer from precancerous lesions and the mechanisms of metastasis; developing innovative new treatments with a focus on the cellular-biological features in cytokine production and neoangiogenesis, etc.	


Professor Masaya Nakamura

Affiliation	Orthopedic Surgery	
Specialized Area	Spine and Spinal Cord Surgery, Spinal Cord Disorder Therapies, Neuroscience (Spinal Cord Regeneration, Growth factors, Neuroimaging)	
Research Content	Multicenter collaborative research on spine and spinal cord disorders. Developing regenerative medicine for musculoskeletal disorders, especially for spinal cord injury and new assessment methods through MRI and CT. Working on (1) iPS cell-based transplant therapies, (2) hepatocyte growth factors, (3) suppression of axonal growth inhibitors.	

Professor Kazuo Kishi

Affiliation	Plastic and Reconstructive Surgery	
Specialized Area	Skin Regeneration (Including Skin Appendages)	
Research Content	Developing skin reproduction methods that utilize adult animal cells based on the phenomenon of skin regeneration in fetal mice, and analyzing its cellular and molecular mechanisms.	

Professor Tomonobu Hasegawa

Affiliation	Pediatrics	
Specialized Area	Molecular Mechanisms of Human Growth and Sexual Differentiation	
Research Content	Analyzing the molecular mechanisms of human growth and sex differentiation (and disorders thereof) using human diseases and mouse models, while also developing new treatments for disorders of growth and sex development.	


Professor Mamoru Tanaka

Affiliation	Obstetrics	
Specialized Area	Perinatal Medicine, Reproductive Medicine, Clinical Genetics, Embryology	
Research Content	Molecular biology concerning mammalian development; fetal medicine ranging from diagnostics to therapies; research and development of treatments of perinatal diseases utilizing mesenchyme stem cells.	


Professor Masayuki Amagai

Affiliation	Dermatology	
Specialized Area	Autoimmunity, Allergies, Skin Barrier, Skin Immunity	
Research Content	Elucidating pathophysiological and immunological mechanisms in tissue-specific autoimmune disorders, and clarifying fundamental mechanisms of peripheral tolerance by analyzing the skin as an immune organ. Clarifying the mechanisms of allergy diseases at the molecular level from the point of view of skin barrier dysfunction, and developing novel therapeutic and preventive strategies. Elucidating the pathophysiological mechanisms of severe forms of drug eruption.	


Professor Kaoru Ogawa

Affiliation	Otorhinolaryngology, Head and Neck Surgery	
Specialized Area	Protection and Repair of Inner Ear Sensory Cells, The Central Suppression Mechanisms of Tinnitus	
Research Content	Pursuing new treatments for chronic sensorineural hearing loss and tinnitus which are refractory in nature; 1) Regeneration of inner ear sensory cells (for hearing and balance); and 2) Research concerning cellular protective mechanisms against various kinds of damage such as acoustic trauma.	


Professor Masaru Mimura

Affiliation	Neuropsychiatry	
Specialized Area	Neuropsychology and Geriatric Psychiatry	
Research Content	Elucidating and developing treatments and rehabilitation techniques targeted at higher-level brain function disorders and cognitive impairments caused by brain damage. Analyzing cognitive impairments of psychoneural disorders related to depression using functional neuroimaging.	


Professor Naoyuki Shigematsu

Affiliation	Radiotherapy	
Specialized Area	Radiation Oncology, Radiation Therapy, Radiation Biology	
Research Content	<p>Radiation oncology; radiation biology</p> <p>In clinical research, performing adaptive magnification of stereotactic radiation therapy, intensity modulated radiotherapy, image-guided radiotherapy, as well as radiation within tissue and cavities in various types of cancer treatments. Also evaluating the effectiveness of chemotherapy combined with radiation therapy.</p> <p>In basic research, examining chromosome and genetic mutation as a result of radiation exposure; and molecular biological investigation to predict the efficacy of radiation therapy.</p>	


Professor Taneaki Nakagawa

Affiliation	Dentistry and Oral Surgery	
Specialized Area	Periodontology	
Research Content	1) Research on periodontopathic bacteria; 2) Research on oral tissue regeneration using mesenchymal stem cells and iPS cells; 3) Analysis of the sensitivity of antimicrobial agents against periodontopathic bacteria; 4) Clinical research on sonic toothbrush cleaning.	


Professor Yusuke Tanigawara

Affiliation	Pharmacokinetics and Pharmacodynamics	
Specialized Area	Pharmacokinetics, Clinical Pharmacology	
Research Content	Researching drug disposition, pharmacodynamics, pharmacogenomics and pharmacometric modeling & simulation methods. The research includes elucidating the individual differences in drug response and development of optimal dosing methodology and drug response biomarkers, aiming towards personalized medical treatments.	


Professor Jun Kudoh

Affiliation	Collaborative Research Resources (Laboratory of Gene Medicine)	
Specialized Area	Medical genomics; Gene medicine	
Research Content	Developing genomic analytical methods in order to examine and explain the genetic/hereditary causes of monogenic and multifactorial disorders; as well as their pathogenic mechanisms at the molecular level.	


Professor Michito Hirakata

Affiliation	Center for Medical Education	
Specialized Area	Medical pedagogy; Rheumatology; Clinical Immunology	
Research Content	Medical pedagogy: 1) Reform of the admission system, 2) Development of "Medical Professionalism", 3) Introduction of simulation, 4) Implementation of competency-based education, and 5) Establishment of continuous basic- and postgraduate- educational programs, to improve the Quality of Medical Education. Rheumatology: Investigating the production mechanism, clinical significance, and disease state mechanism of "autoantibodies", which are characteristic features of autoimmune disorders such as rheumatic diseases and connective tissue diseases.	


Professor Masahiro Jinzaki

Affiliation	Radiology	
Specialized Area	Diagnostic Radiology	
Research Content	<ol style="list-style-type: none">1. Constructing optimum image diagnostic algorithms in the field of cardiology and urology.2. Aiming for further human-body visualization by developing new devices or techniques (microcirculatory system, lymphatic system, and peripheral nervous system).3. Assessing clinical application of four-dimensional dynamic imaging.	


Professor Hiroshi Morisaki

Affiliation	Anesthesiology	
Specialized Area	Sepsis and Myocardial Function; Gastrointestinal Defense Mechanisms; Volatile Anesthetics and Microcirculatory Disorders; Epidural Anesthesia and Immune System	
Research Content	Clarifying the underlying mechanisms of host defense system against invasive stress. We are currently engaged in both basic and clinical research regarding protective approaches for myocardial dysfunction during sepsis and gut barrier function in the critically ill, and modulation of the immune system by epidural and/or inhalational anesthesia.	


Professor Mitsuru Murata

Affiliation	Laboratory Medicine	
Specialized Area	Genetic Testing, Clinical Lab Standardization, Understanding and Preventing Thrombotic Disorders, Basic Platelet Research	
Research Content	Researching, standardizing and spreading the use of clinical tests in medical practice using genome information and genetic analysis techniques. Elucidating the mechanisms of blood clot formation from a molecular perspective, and through identifying hereditary and acquired risk factors, establishing effective preventions and treatments. Basic research of blood platelet formation and establishing evaluation methods of platelet function.	

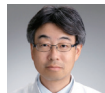
Professor Junichi Sasaki

Affiliation	Department of Emergency and critical care	
Specialized Area	Acute medicine, traumatology, burn care, surgical infections, infection prevention and control, biological reactions and pharmacokinetics under invasive stress	
Research Content	Analysis of biological reactions under invasive stress conditions using two-hit animal models (endotoxin administration after burn priming, etc.) and analysis of pharmacokinetics as it relates to antimicrobial and antifungal drugs in critically ill patients Regenerative medicine in critical care (such as the application of cell technology for burn treatment)	

Professor Koichi Matsuo


Affiliation	Collaborative Research Resources (Laboratory of Cell and Tissue Biology)	
Specialized Area	Bone cell biology	
Research Content	Elucidating the development and homeostasis of the skeleton through cell-cell interaction.	

Professor Hidekazu Suzuki


Affiliation	Center for Medical Education	
Specialized Area	Medical Education; Gastroenterology and Hepatology; Medical Bioinformatics; Clinical and Molecular Oncology; Clinical Pharmacology and Nutrition; Primary Care Medicine	
Research Content	Course director of MD-PhD program; Professional medical education; Graduate medical education; Big clinical data-driven research; Clinical trial; Regulatory medicine; Diagnostic and therapeutic approach to organic and functional gastrointestinal diseases; Pathophysiology, diagnosis and treatment of Helicobacter pylori infection; Clinical pharmacology and nutrition.	




Professor Matsuhiko Hayashi

Affiliation	Apheresis and Dialysis Center	
Specialized Area	Water and Electrolyte Metabolism, Kidney Differentiation and Regeneration, Understanding the Components of Vascular Calcification	
Research Content	Analysis of the physiological regulation mechanisms at the molecular level of the acid/base equilibrium and calcium/phosphorus metabolism of the kidneys. Also, by way of developing treatments for progressive renal damage, elucidating regenerative mechanisms of acute renal damage and researching the causes of vascular calcification observed with impaired renal function.	

Professor Naohisa Yahagi


Affiliation	Cancer Center (Advanced Minimally Invasive Therapy Unit)	
Specialized Area	Minimally Invasive treatment for early Gastrointestinal Cancers	
Research Content	Developing new procedures for advanced minimally-invasive treatments such as endoscopic resection and laparoscopic resection. And developing new therapeutic instruments for advanced minimally-invasive treatments, including NOTES (natural orifice transluminal endoscopic surgery) and LECS (laparoscopy and endoscopy combined surgery).	

Professor Kenjiro Kosaki


Affiliation	Center for Medical Genetics	
Specialized Area	Clinical Genetics, Teratology, Pediatrics	
Research Content	1) Clinical genomics including diagnosis and management of rare diseases and genetic counseling. 2) Elucidation of genetic causes of genetic diseases with a focus on "undiagnosed diseases".	

List of Master's Program professors


Professor Taiji Furuno

Affiliation	Physics	
Specialized Area	Interfaces in Biophysical Chemistry, Bioimaging	
Research Content	Creating two-dimensional (2D) protein arrays using the air-water interface and immobilizing them after transfer onto a solid surface; and performing structural evaluations under physiological conditions using an atomic force microscope. Currently performing immobilization of an oriented dense 2D packing of Streptavidin, and research concerning the application toward protein microarrays (or protein chips).	


Professor Hiroyoshi Inoue

Affiliation	Chemistry	
Specialized Area	Radiology, Pharmaceutical Chemistry, Natural Products	
Research Content	I am responsible for radiation health and safety at Keio University's Shinanomachi Campus. Our research is primarily interested in developing ways to safely concentrate and dispose of radioisotopes. In addition, we are interested in developing biosensors using isotopic marking and aptamer technology for age related disease diagnostics and food monitoring. Another aspect of our research focuses on the identification of useful functional components from nature and ways to develop these for synthetic applications.	

Professor Hiroshi Nakamura

Affiliation	Business	
Specialized Area	Industrial Organization (Life Science and Health Care Industries), Strategic Management	
Research Content	- Organizational reform and management strategies of companies in order to bring about innovation in the life science industries - Policies concerning the creation of innovative products while reducing economic/financial burden on patients and governments - Cooperation among different types of occupations and functions in health care	


Professor Haruhiko Ogata

Affiliation	Center for Diagnostic and Therapeutic Endoscopy	
Specialized Area	Pathogenesis and development of treatment for inflammatory bowel disease, endoscopic diagnosis and treatment of gastrointestinal disease.	
Research Content	Understanding the pathogenesis of inflammatory bowel disease by image enhancing and in vivo observation of the gastrointestinal mucosa using endoscopic devices equipped with super-magnifying functionality and capsule endoscopes equipped with additional functionality that can achieve pan-enteric surveillance.	


Professor Hideo Matsumoto

Affiliation	Institute for Integrated Sports Medicine	
Specialized Area	Sports Medicine, Sports Science, Knee Surgery, Biomedical Engineering	
Research Content	Research aimed at improvement of sports performance and prevention of sports injuries and disorders, using 3D motion analysis in sports and activities of daily living. Research and development of artificial joints for sports recovery in athletes. Research of sports medicine including sports and health, sports nutrition, and sports psychology.	


Professor Mayumi Kajimura

Affiliation	Biology	
Specialized Area	Coupling of brain blood circulation and metabolism	
Research Content	The phenomenon of the connection between local nerve action and metabolism in cerebral blood flow is known as neurovascular coupling (NVC). We seek to elucidate the actual molecular action of NVC which forms the basis of cerebral metabolic regulation through the evaluation of spatial-temporal uneven information of low-molecular metabolites (such as when, where, and how much).	

Professor Masatoshi Nara

Affiliation	Letters	
Specialized Area	Ethics, Medical Ethics	
Research Content	Applying ethical theories and methodologies to analyze ethical problems raised in clinical medicine and medical research. Recently focusing on ethical problems in reproductive medicine, misconduct in medical research, protection of personal information, and conflict of interest.	

Professor Tomofumi Anegawa

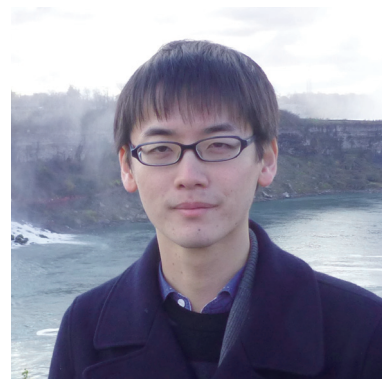
Affiliation	Business	
Specialized Area	Health Economics, Applied Economics	
Research Content	Applying economics to analyze medical care, education, energy, and other related industries. In particular, studying the economics of drugs, the medical device industry and intellectual property rights, and geographical variation in medical care. Furthermore, establishing a grand design for cross-disciplinary and multi-generational research and education both in and outside of Japan.	

Student Voices

Master's Program

I entered the Master's Program after completing a 4-year pharmaceutical program. Currently, I am pursuing basic biological research in my field of interest, namely, in cellular differentiation and morphogenesis; while also using accumulated experimental data in order to provide insights into treatment decision making in clinical medical care. My clinical research theme allows me to have daily interaction with clinicians and professors in the same space, which enables me to work at the intersection of basic and clinical medicine. It is truly a fascinating environment in which to pursue my research. The broad curriculum allowed me to learn both basic biological sciences and clinical medicine, while also gaining knowledge about fields outside of my specialty through interaction with other students.

I am also participating in the Keio Program for Leading Graduate School. Under the mentorship of members of government and industry, graduate students like me are working together to solve some of the largest challenges facing society. This has been instrumental in allowing me to gain a broad view of the great importance of medicine in society.



2nd Year Master's Student

Kota Toshimitsu

Department of Internal Medicine, Division of
Gastroenterology & Hepatology



3rd Year PhD Student

Miho Iida

Department of Obstetrics and Gynecology

PhD Program

As a specialist focused on the overall health of women, I have had the privilege of interacting with many patients individually in the clinical setting while also gaining insight into the importance of preventive medicine in society at large. In my first year, I joined a large-scale cohort study led by the Department of Preventive Medicine and Public Health, and pursued research on new preventive measures for post-menopausal metabolic syndrome. By using advanced metabolomic analysis techniques developed by the Keio University Institute for Advanced Biosciences, we were able to uncover the connection between amino acid metabolism and post-menopausal metabolic syndrome that had been previously unknown in the cutting-edge fields of research being applied to epidemiology.

One of the most appealing aspects of the PhD Program is the ability to meet specialists in many fields. When conducting high-quality, cross-disciplinary clinical research, I received direct guidance from a variety of specialists in order to ensure that I possessed the requisite skills and abilities at each stage from planning, executing, and analyzing my research. I am certain that the insight I gained from this will be of invaluable importance in my future career as a physician.

International Student in the PhD Program

After obtaining my master's degree in neuropsychology, I applied and was selected to study in any Japanese university of my choice under the MEXT scholarship. I decided to enroll in the PhD program of the Keio University School of Medicine without much hesitation. It has now been two years since I started my PhD program in the Department of Neuropsychiatry under the supervision of Professor Masaru Mimura and Doctor Kenji Tanaka, who always provide strong support for my projects. I also always appreciate the meetings organized by Keio University. I had several opportunities to meet and discuss with experts in my field coming from the most prestigious universities in the world.

Finally, I would say that being an international student can sometimes be challenging, but I have always found support and help from the Office of Student Services, as well as from the students and researchers.



3rd Year PhD Student

Youcef Bouchekioua

Department of Neuropsychiatry
MEXT Scholarship International Student

Scholarships

A variety of scholarships are available for students who wish to study at Keio University.
Please read the criteria carefully to check which ones you are eligible for.

■ Before Enrollment

Two major scholarships for students seeking admission to the Graduate School of Medicine are:

- MEXT (The Japanese Ministry of Education, Culture, Sports, Science and Technology) Scholarship

Embassy recommendation / University recommendation

Please visit: <http://www.ic.keio.ac.jp/en/study/mext/index.html>

- Keio Design the Future Award

The Graduate School of Medicine will recommend one nominee to the Award Committee from among the students who passed the entrance examination. If the student passes the final selection by the Award Committee, they will receive reimbursement of all academic fees and a monthly stipend after entering Keio.

Please visit: <http://www.ic.keio.ac.jp/en/life/scholarship/dfaward.html>

■ After Enrollment

There are three main categories according to sponsors and some scholarships are only for privately financed international students.

For scholarships now available for current students (privately financed international students),

Please visit: <http://www.ic.keio.ac.jp/en/life/scholarship/available.html>

■ Offered by Keio University

For all graduate students:

Name of Scholarship	Eligibility	Yearly Stipend	Application Period
Keio Graduate School Scholarship	Graduate students who have high motivation for academic achievement, an excellent academic record, good character, and financial difficulty in paying study-related expenses.	Maximum: JPY 600,000	April or May
Shinzo Koizumi Foundation Scholarship	Graduate students except for final year who have high motivation for academic achievement, an excellent academic record, good character, and financial difficulty in paying study-related expenses.	JPY 360,000	October or November

School-Specific Scholarships for Graduate School of Medicine students :

Name of Scholarship	Purpose	Eligibility	Yearly Stipend	Application Period
Master's Program Scholarship	To encourage master's students to pursue their education further in Keio's PhD programs.	2nd year Master's students who will continue to a PhD program in the following year.	Maximum: JPY 1,000,000	February
Keio Research Encouragement Scholarship	To develop future international research leaders in various fields.	Highly motivated 1st year Master's students showing great research promise.	JPY 300,000	April
Doctoral Program Scholarship	To encourage and support students in their PhD studies.	1st and 2nd year PhD students; also 3rd and 4th year doctoral students who exhibit excellence in research.	Maximum: JPY 600,000	July
Ichiro Ushioda Memorial Scholarship	To train high-quality researchers in the PhD programs.	PhD students with excellent character and academic performance.	Maximum: JPY 360,000	November
Fumon and Fusako Ohtsuka Special Memorial Scholarship	To develop future leaders of medicine in Japan.	PhD students with excellent character and academic performance.	Maximum: JPY 1,000,000	November

■ Offered by JASSO

JASSO is an independent administrative institution established under MEXT (The Japanese Ministry of Education, Culture, Sports, Science and Technology). JASSO provides a scholarship to self-supporting international students.

Name of Scholarship	Eligibility	Monthly Stipend	Application Period
Monbukagakusho Honors Scholarship	Privately Financed International Students	JPY 48,000	April

■ Offered by private foundations and local governments

For scholarship offered by private foundations and local governments, please visit the International Center's website:

<http://www.ic.keio.ac.jp/en/life/scholarship/>

Degree Figures | Tuition and Fees

Master's Degrees Awarded [As of April 1, 2016, number of female graduates indicated in parentheses]

1994 - 2015 Total*	Master's Degree	335 (175)
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*The Master's Program was established in 1994

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Degrees	22 (11)	18 (8)	23 (11)	28 (9)	19 (11)	17 (11)	16 (9)	15 (11)	24 (12)	13 (4)

PhD Degrees Awarded [As of April 1, 2016, () indicates number of women in the total]

1952 - 1991 Total	Doctor of Medical Science	2,257 (140)
1991 - 2015 Total	PhD in Medicine	2,445 (418)

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Degrees	92 (17)	87 (17)	108 (31)	103 (23)	101 (23)	83 (15)	131 (27)	119 (27)	112 (27)	117 (33)

Tuition and Fees (2016)

Master's	Registration Fee	Tuition Fee	Total First-Year Fees
	JPY 60,000	JPY 1,300,000	JPY 1,360,000

PhD	Registration Fee	Tuition Fee	Total First-Year Fees
	JPY 60,000	JPY 1,100,000	JPY 1,160,000

Maps and Contact Information

Shinanomachi Campus 35 Shinanomachi, Shinjuku-ku, Tokyo 160-8582

【TEL】 Office of Student Services
(Admissions): 03-5363-3662 (Scholarships): 03-5363-3665
【MAIL】 Inquiries: medgrad@info.keio.ac.jp

【TRAIN】 JR Chuo/Sobu Line (1 minute walk from Shinanomachi Station)

