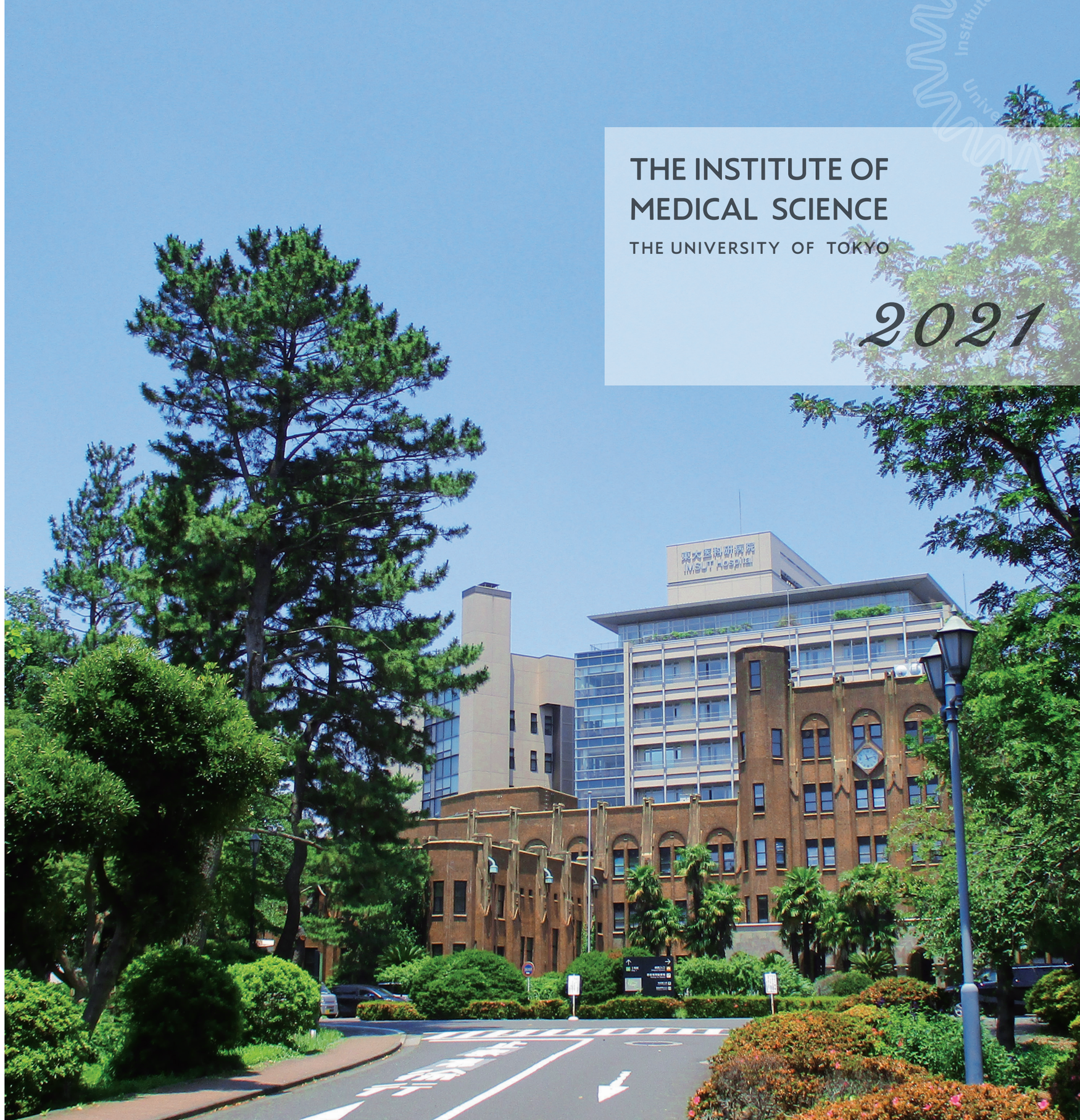
THE UNIVERSITY OF TOKYO



THE INSTITUTE OF MEDICAL SCIENCE

THE UNIVERSITY OF TOKYO

2021

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4-6-1 Shirokanedai, Minato-ku, Tokyo 108-8639, Japan
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TEL +81-3-3443-8111
FAX +81-3-5449-5402
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August 2021

Serving Global Welfare with Knowledge

The Institute of Medical Science, The University of Tokyo (IMSUT) was established by Dr. Shibasaburo Kitasato in 1892 as the Institute of Infectious Diseases (IID). In 1967 it was then reorganized and underwent a name change from IID to IMSUT. With a 129-year history beginning in Meiji and spanning the Taisho, Showa, Heisei and Reiwa eras, IMSUT explores the universal truth of biological phenomena and the principles of diseases. Through this exploration, we aim to contribute to all of human society by offering development of innovative disease prevention and treatment strategies and their social implementation. To that end, we emphasize a free and interdisciplinary research environment in which various disciplines such as computer science, the natural sciences, engineering, agriculture, pharmacy, medicine, ethics, public policy studies, etc. can mutually inspire and build off each other with "medical science" as a keyword. Individual researchers and healthcare professionals promote creative research, technology development and advanced medical treatment driven by their intellectual curiosity. Specifically, aiming at controlling infectious diseases, cancer, and other intractable diseases such as immune disorders or neuromuscular diseases, we will develop project-type research on genomic medicine, regenerative medicine, aging medicine, and disease model animals. Also we are promoting advanced medical approaches such as gene/virus therapy, cell therapy, pioneering vaccine development and AI medical care, taking advantage of a variety of collaborative and co-creative endeavors. In order to achieve the above tasks, IMSUT has three core research departments promoting basic and translational research based on the free pursuit of ideas: the Department of Basic Medical Science, the Department of Cancer Biology, and the Department of Microbiology and Immunology. To address the most important issues necessary for social implementation of diverse research results, we have established seven research centers and five research facilities. Examples include the Human Genome Center, which houses a supercomputer (SHIROKANE) with the highest computing performance in Japan specializing in the life sciences, and the Advanced Clinical Research Center. Moreover, IMSUT hospital, which is the only national university institute-affiliated hospital in Japan, is conducting clinical trials and advanced medical treatments based on world-leading research results. On top of that, in 2018, among the national university-affiliated research institutes of Japan serving the life science field, IMSUT was officially authorized by the Minister of Education, Culture, Sports, Science and Technology, Japan, as the only International Joint Usage/Research Center. The mission of IMSUT as the center is to accelerate basic and clinical research in a global framework. Currently, in addition to our main Shirokanedai Campus, we dispatch faculty members to the Research Center for Asian Infectious Diseases (Beijing) and the Amami Laboratory of Injurious Animals (Amami Oshima), etc. A total of more than 1,000 academic, administrative, technical, and hospital staff and researchers, etc., play active roles, including over 200 students belonging to 8 graduate schools of our university.

Dean
Yuji Yamanashi, Ph.D.

THE INSTITUTE
OF MEDICAL SCIENCE
THE UNIVERSITY
OF TOKYO

Contents

IMSUT Organization

Department Heads' Meeting

Dean
Professor Yuji Yamanashi

Vice Dean for General Affairs
Professor Makoto Nakanishi

Vice Dean for Finance
Professor Atsushi Iwama

Vice Dean for Research Support
Professor Yoichi Furukawa

Senior Faculty Meeting

General Faculty Meeting

Committees

Research Departments

Department of Microbiology and Immunology
Chair Professor Yasushi Kawaguchi

- Division of Infectious Genetics
- Division of Molecular Virology
- Division of Vaccine Science
- Division of Malaria Immunology

Department of Cancer Biology
Chair Professor Yoshinori Murakami

- Division of Molecular Pathology
- Division of Genetics
- Division of Cancer Cell Biology
- Division of Aging and Regeneration

Department of Basic Medical Sciences
Chair Professor Mutsuhiro Takekawa

- Division of Neuronal Network
- Division of Cell Signaling and Molecular Medicine
- Division of RNA and Gene Regulation

Research Facilities

Human Genome Center
Director Professor Seiya Imoto

- Laboratory of Genome Database
- Division of Health Medical Intelligence
- Laboratory of Molecular Medicine
- Division of Metagenome Medicine
- Laboratory of Genome Technology
- Laboratory of Sequence Analysis
- Laboratory of Functional Analysis *in silico*
- Department of Public Policy
- Division of Medical Data Informatics

Center for Experimental Medicine and Systems Biology
Director Professor Yasuhiro Yamada

- Division of Stem Cell Pathology
- Laboratory of Innate Immunity
- Laboratory of Reproductive Systems Biology
- Laboratory of Genetically Engineered Mouse Research
- Division of Genome Engineering
- Core Laboratory for Developing Advanced Animal Models

Advanced Clinical Research Center
Director Professor Toshio Kitamura

- Division of Cellular Therapy
- Division of Infectious Diseases
- Division of Clinical Genome Research
- Division of Innovative Cancer Therapy
- Division of Advanced Medicine Promotion
- Division of Advanced Genome Medicine
- Division of Bioethics
- Division of Frontier Surgery
- Division of Hematopoietic Disease Control

Center for Stem Cell Biology and Regenerative Medicine
Director Professor Hideki Taniguchi

- Division of Regenerative Medicine
- FACS Core Laboratory
- Division of Stem Cell and Molecular Medicine
- Stem Cell Bank
- Division of Stem Cell Transplantation
- Division of Stem Cell Signaling
- Division of Stem Cell Processing
- Division of Experimental Pathology
- Division of Stem Cell Biology
- Division of Mammalian Embryology
- Division of Stem Cell Aging Medicine
- Division of Somatic Stem Cell Research

International Research Center for Infectious Diseases
Director Professor Yasushi Kawaguchi

- Department of Special Pathogens
- Department of Infectious Disease Control (Division of Viral Infection) (Division of Systems Virology)
- Pathogenic Microbes Repository Unit

International Research and Development Center for Mucosal Vaccines
Director Professor Ken Ishii

- Division of Mucosal Barriology
- Division of Innate Immune Regulation
- Division of Clinical Vaccinology
- Division of Mucosal Vaccines
- Division of Mucosal Symbiosis

Center for Gene & Cell Therapy
Director Professor Takashi Okada

- Division of Molecular and Medical Genetics

Laboratory Animal Research Center
Director Professor Tomoji Mashimo

- Division of Animal Genetics
- Animal Center

Amami Laboratory of Injurious Animals
Director Professor Tomoji Mashimo

Medical Proteomics Laboratory
Director Professor Mutsuhiro Takekawa

Research Center for Asian Infectious Diseases
Director Professor Yasushi Kawaguchi

Laboratory of Molecular Genetics
Director Professor Yuji Yamanashi

(Frontier Research Unit)

IMSUT Distinguished Professor Units

- Division of Stem Cell Therapy
- Division of Mucosal Immunology
- Division of Virology

IMSUT Hospital

Director
Professor Hiroshi Yotsuyanagi

Deputy Director
Professor Tomoki Todo

Deputy Director
Clinical Professor Tokiko Nagamura-Inoue

Medical Care Unit

Departments of Internal Medicine

- Department of Hematology/Oncology
- Department of Infectious Diseases and Applied Immunology
- Department of Rheumatology and Allergy
- Department of Oncology and General Medicine
- Department of Applied Genomics
- Department of Diagnostic Pathology
- Department of Radiology
- Department of Gastroenterology
- Department of Palliative Medicine/Advanced Clinical Oncology

Departments of Surgery

- Department of Surgery
- Department of Surgical Neuro-Oncology
- Department of Anesthesia
- Department of Urology
- Department of Joint Surgery

Care Support Unit

- Department of Medical Informatics
- Department of Pathology
- Department of Radiological Technology
- Department of Clinical Genomics
- Department of Cell Processing and Transfusion
- Department of Clinical Nutrition
- Surgical Center
- Radiation Control Office
- Department of Medical Supply Center
- Regional Medical Liaison Office
- Department of Laboratory Medicine

Clinical Safety and Infection Control Unit

- Center for Clinical Safety and Infection Control

Clinical Research Support Unit

- Center for Translational Research
- Therapeutic Vector Development Center
- Center for Antibody and Vaccine Therapy
- IMSUT CORD

Department of Nursing | Department of Pharmacy | Department of AIDS Vaccine Development

Corporate Sponsored Research Program, Social Cooperation Research Programs

- Project Division of RNA Medical Science
- Project Division of International Advanced Medical Research
- Project Division of Fundamental Study on Cutting Edge of Genome Medicine
- Project Division of Advanced Biopharmaceutical Science
- Project Division of Cancer Biomolecular Therapy
- Project Division of Genomic Medicine and Disease Prevention
- Division of Clinical Precision Research Platform

Common Research Facilities

Technical Office

Dean's Office

Administration Office

General Manager Shoichi Matsui

- Administrative Affairs Division — **Manager** Nobuyuki Suetake
- Research Support Division — **Manager** Takaaki Fukuoka
- Hospital Division — **Manager** Hideki Hirano

IMSUT historia

Institute for Infectious Diseases

1892
Foundation of the Institute for Infectious Diseases (IID), as a private institute by Dr. Shibasaburo Kitasato

1894
Relocation to Atagocho, Shiba-ku and opening of the affiliated hospital

1899
Reorganization as a national institute under the control of the Ministry of Internal Affairs

1905
Relocation of the institute to Shirokane-dai, Minato-ku

1906
Completion of the new building

1914
Reorganization under the Ministry of Education

1915
Discovery of Rat-bite Fever Spirochete by Dr. Kenzo Futaki

1916
Incorporation into Tokyo Imperial University

1897
Discovery of *Shigella* by Dr. Kiyoshi Shiga

* Photo courtesy of The Kitasato Institute

1930
Determination of the Etiology of Tsutsugamushi Disease (Rickettsia) by Dr. Mataro Nagayo

1934
Completion of the First Building

1935
Elucidation of Mosquito-borne Japanese Encephalitis by Dr.Tokushiro Mitamura

Discovery of the Pathogen of Lymphogranuloma Urethritis (Chlamydia) by Dr. Yoneji Miyagawa

1947
Transfer of about half of IID personnel to the newly founded "National Institute of Health", under control of the Ministry of Public Health and Welfare

Name changed from Tokyo Imperial University to the University of Tokyo

1952
Discovery of Trichomycin by Dr. Seigo Hosoya

1953
Discovery of the Blood Group Glycolipids by Dr. Tamio Yamakawa

1954
Discovery of Interferon by Dr. Yasuichi Nagano

1955
Isolation of Multidrug-resistant *Shigella* by Dr. Osamu Kitamoto

1965
Establishment of the Laboratory Animal Research Center

1966
Establishment of the Amami Laboratory of Injurious Animals

Institute for Infectious Diseases in Meiji Period

Institute of Medical Science

1967
Reorganization of the Institute of Infectious Diseases into the Institute of Medical Science

Completion of the Second Building

1980
Completion of the Third Building

Establishment of the Laboratory of Molecular Genetics

1991
Establishment of the Human Genome Center

1992
100th Founding Anniversary of the Institute

1995
Completion of the Fourth Building

1998
Establishment of the Center for Experimental Medicine (now "Center for Experimental Medicine and Systems Biology")

2000
Reorganization of 23 departments into 3 big departments; Microbiology and Immunology, Cancer Biology and Basic Medical Sciences

Establishment of the Advanced Clinical Research Center

2001
Opening of the Medical Science Museum

2003
Completion of new research facilities, the General Research Building and Hospital Building

2004
Reorganization of the University of Tokyo as a national university corporation

2005
Establishment of the International Research Center for Infectious Diseases

2006
Establishment of the Research Center for Asian Infectious Diseases with collaborating sites in Beijing and Harbin

Establishment of the Medical Proteomics Laboratory

2008
Establishment of the Center for Stem Cell Biology and Regenerative Medicine

2009
Official recognition as a Joint Usage/Research Center

2011
Establishment of the International Research and Development Center for Mucosal Vaccines

2014
Establishment of the Center for Gene & Cell Therapy

2015
Establishment of the Health Intelligence Center

2017
125th Founding Anniversary and 50th Reorganization Anniversary of the Institute

2018
Official recognition as an International Joint Usage/Research Center

2020
Integration of the Health Intelligence Center into the Human Genome Center

IMSUT Landmark Achievements

- Elucidation of Hereditary Hemolytic Anemia by Dr. Shiro Miwa
- Contribution to the Eradication of Filariasis by Dr. Manabu Sassa
- Elucidation of Synaptic Ultrastructure by Dr. Kiyoshi Hama
- Elucidation of the Function of GTP-binding Proteins by Dr. Yoshito Kajiro
- Discovery of the Src-family Oncogenes by Dr. Kumao Toyoshima
- Start of Bone Marrow and Umbilical Cord Blood Transplantation Medicine by Dr. Shigetaka Asano
- Start of HIV/AIDS Treatment in Japan by Dr. Kaoru Shimada
- Determination of the Structure and Function of N-linked Oligosaccharides by Dr. Akira Kobata
- Elucidation of the Genetic Information of HTLV Virus by Dr. Mitsuaki Yoshida
- Elucidation of Protease-dependent Virus Pathogenicity by Dr. Yoshiyuki Nagai
- Determination of the DNA Sequence of Human Chromosome 21 by Dr. Yoshiyuki Sakaki

List of Deans

1st Shibasaburo Kitasato (1892-1914)	Acting Dean Ryojiro Fukuhara (1914-1915)	2nd Tanemichi Aoyama (1915-1916)	3rd Haruo Hayashi (1916-1919)	4th Mataro Nagayo (1919-1934)	5th Yoneji Miyagawa (1934-1940)	6th Tokushiro Mitamura (1940-1944)	7th Takeo Tamiya (1944-1949)	8th Shuji Hasegawa (1949-1956)	9th Yoshiharu Takeda (1956-1956)
10th Yasuichi Nagano (1956-1958)	11th Masashiro Kudo (1958-1965)	12th Ayao Yamamoto (1965-1968)	13th Manabu Sassa (1968-1971)	Acting Dean Yukinori Tsunematsu (1971-1971)	14th Manabu Sassa (1972-1973)	15th Tadashi Yamamoto (1973-1977)	16th Hiroto Shimojo (1977-1979)	17th Toru Tsumita (1979-1983)	18th Takeshi Odaka (1983-1987)
19th Kumao Toyoshima (1987-1990)	20th Akira Kobata (1990-1992)	21st Kazushige Hirosawa (1992-1996)	22nd Mitsuaki Yoshida (1996-1998)	23rd Ken-ichi Arai (1998-2003)	24th Tadashi Yamamoto (2003-2007)	25th Motoharu Seiki (2007-2011)	26th Hiroshi Kiyono (2011-2015)	27th Yoshinori Murakami (2015-2019)	28th Yuji Yamanashi (2019-)

List of Directors of the Hospital

1st Tomoe Takagi (1895-1896)	2nd Gozou Moriya (1899-1901)	3rd Gorosaku Shibayama (1901-1914)	4th Kenzo Futaki (1914-1920)	5th Yoneji Miyagawa (1920-1945)	Acting Director Takeo Tamiya (1945-1946)	6th Yoshio Mikamo (1946-1951)	7th Osamu Kitamoto (1951-1969)	
8th Yukio Ishibashi (1969-1971)	9th Tsunamasa Inou (1971-1974)	10th Keimei Mashimo (1974-1977)	11th Sugishi Ootani (1977-1981)	12th Genshitiro Fujii (1981-1985)	13th Shiro Miwa (1985-1987)	14th Nobuo Akiyama (1987-1991)	15th Kaoru Shimada (1991-1994)	
16th Shigetaka Asano (1994-2003)	17th Aikichi Iwamoto (2003-2006)	18th Naohide Yamashita (2006-2010)	19th Kohzoh Imai (2010-2014)	20th Keiya Ozawa (2014-2018)	21st Arinobu Tojo (2018-2021)	22nd Hiroshi Yotsuyanagi (2021-)		

Department of Microbiology and Immunology

Chair : Yasushi Kawaguchi

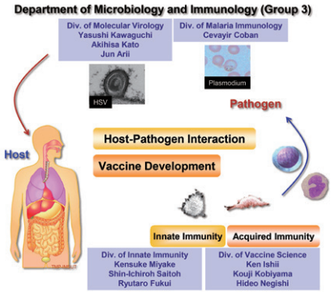
Division of Infectious Genetics
- Professor — Kensuke Miyake, M.D., Ph.D.
- Associate Professor — Shin-Ichiroh Saitoh, Ph.D.
- Project Associate Professor — Ryutaro Fukui, Ph.D.

Division of Molecular Virology
- Professor — Yasushi Kawaguchi, D.V.M., Ph.D.
- Associate Professor — Akihisa Kato, Ph.D.
- Visiting Associate Professor — Jun Arii, Ph.D.

Division of Vaccine Science
- Professor — Ken Ishii, M.D., Ph.D.
- Associate Professor — Kouji Kobiyama, Ph.D.
- Project Senior Assistant Professor — Hideo Negishi, Ph.D.

Division of Malaria Immunology
- Professor — Cevayir Coban, M.D.

The growing concern in emerging and re-emerging infections increases demand for understanding and controlling these infectious diseases. Our department focuses on: the elucidation of molecular interactions between pathogens and hosts; molecular recognition of microbial products by the immune system; and molecular mechanisms controlling host defense systems. The department is composed of 4 divisions. We are closely working together to understand molecular mechanisms underlying host-pathogen interactions and develop novel vaccines or small chemicals to control infectious diseases and related immune disorders. Our research activities go beyond our institute and have been successfully running joint research projects in the area of infection and immunity with other research groups in Europe, USA, and Asia, as well as in Japan. The department is also promoting collaborative projects with the Research Hospital and Research Centers in our institute and pharmaceutical companies for the development of drugs and vaccines. Another important mission of our department is to promote development of young independent investigators in the fields of microbiology and immunology.



This figure shows 4 divisions in the Department of Microbiology and Immunology. Two divisions mainly focus on pathogens, whereas two divisions focus on host immune responses against pathogens. These divisions work together to understand the molecular bases underlying host-pathogen interaction and to develop novel vaccines or novel therapy for infectious diseases or related immune disorders.

Department of Cancer Biology

Chair : Yoshinori Murakami

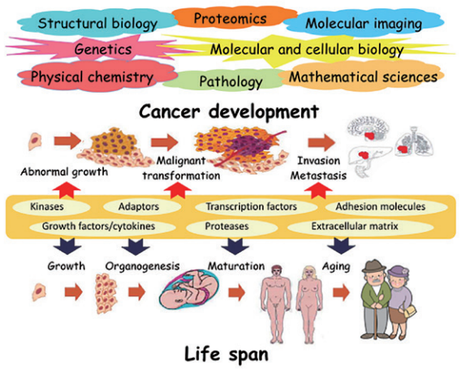
Division of Molecular Pathology
- Professor — Yoshinori Murakami, M.D., Ph.D.
- Visiting Professor — Naohiko Koshikawa, Ph.D.

Division of Genetics
- Professor — Yuji Yamanashi, Ph.D.

Division of Cancer Cell Biology
- Professor — Makoto Nakanishi, M.D., Ph.D.
- Associate Professor — Atsuya Nishiyama, Ph.D.

Division of Aging and Regeneration
- Professor — Emi Nishimura, M.D., Ph.D.

Development and progression of cancer is a multi-step process associated with structural and functional alteration of various genes, including those involved in regulation of cell growth, differentiation, aging, regeneration, and cell-cell and cell-matrix interaction. In the Department of Cancer Biology, we aim to clarify the entire picture of tumor development and progression and aging based on these gene products. To do so, we apply various multidisciplinary approaches in addition to molecular and cellular biological techniques and mouse genetics, such as proteomics, molecular imaging, structural biology, physical chemistry, and mathematical sciences. Our goal is to understand the molecular bases of cell growth, differentiation and aging, malignant transformation, tumor invasion, metastasis, angiogenesis, and drug resistance, with regard to pathogenic mechanisms in human cancer. The findings of our research will provide innovative targets for translational research. Ongoing research investigations are as follows. Division of Molecular Pathology: 1) Molecular analysis of cancer progression and tumor immune response by aberrant cell adhesion and its application to diagnosis and treatment of cancer. 2) Genomic and molecular pathological analyses of various solid tumors and leukemias. Division of Genetics: 1) Studies on molecular signals that regulate a variety of cellular activities, aiming to address how deregulated cellular signals cause neoplastic, neuromuscular or other intractable disorders. 2) Pathophysiological analyses of animal models for the above-mentioned diseases, aiming to develop new therapeutic approaches. Division of Cancer Cell Biology: 1) Elucidation of in vivo anticancer mechanisms and development of innovative cancer therapies. 2) Studies on regulatory mechanisms of in vivo aging. 3) Molecular basis underlying DNA methylation abnormalities in early stages of carcinogenesis. Division of Aging and Regeneration: Studies on the mechanisms of tissue regeneration, aging, and carcinogenesis with a focus on tissue stem cells, and development of technologies to control them.



Department of Basic Medical Sciences

Chair : Mutsuhiro Takekawa

Division of Neuronal Network
- Professor — Toshiya Manabe, M.D., Ph.D.

Division of Cell Signaling and Molecular Medicine
- Professor — Mutsuhiro Takekawa, M.D., Ph.D.

Division of RNA and Gene Regulation
- Professor — Toshifumi Inada, Ph.D.
- Associate Professor — Yoshitaka Matsuo, Ph.D.

The Department of Basic Medical Sciences is established to explore new fields in basic life science with the common aim of understanding the life processes at ever deeper levels. In other words, the goal of this department is to develop fundamental bases for clinically-oriented translational research without regards to specific diseases or research fields. This department is currently composed of the following three groups: Division of Neuronal Network, Division of Cell Signaling and Molecular Medicine, and Division of RNA and Gene Regulation. A brief summary of each division is described below. 1) Division of Neuronal Network is interested in the molecular mechanisms of higher brain functions in mammals such as emotion and learning/memory and in etiology of psychiatrical and neurological disorders. This Division focuses especially on the roles of functional molecules localized in synapses (e.g., neurotransmitter receptors, signal transduction molecules and adhesion molecules) in neuronal information processing, using electrophysiological, biochemical, molecular biological and behavioral approaches. 2) Division of Cell Signaling and Molecular Medicine aims to elucidate the regulatory mechanisms of intracellular signal transduction systems that are responsible for cell fate decisions, such as MAP kinase cascades and stress granules. This Division also aims to develop new diagnostic or therapeutic tools for currently intractable disorders in which these pathways are involved (e.g., cancer, auto-immune diseases, and neurodegenerative diseases). 3) Division of RNA and Gene Regulation aims to understand the molecular mechanism of preventing the production of abnormal proteins involved in the pathogenesis and pathophysiology of neurodegenerative diseases, autoimmune diseases, cancer, and aging. To develop therapeutic and diagnostic agents targeting translational abnormalities, this Division focuses on the intracellular dynamics of ribosomes, and elucidates the control mechanism and physiological functions of "abnormal translation" and "ribosome quality control" at the molecular and individual levels.

Fig.1 A hippocampal slice prepared from the mouse brain

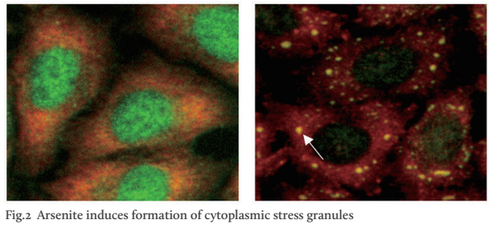


Fig.2 Arsenite induces formation of cytoplasmic stress granules

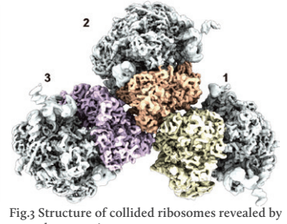


Fig.3 Structure of collided ribosomes revealed by cryo-electron microscopy

Human Genome Center

Director : Seiya Imoto

Laboratory of Genome Database
Professor — Kenta Nakai, Ph.D.

Laboratory of Molecular Medicine
Professor — Tatsuhiro Shibata, M.D., Ph.D.
Senior Assistant Professor — Atsushi Niida, Ph.D.

Laboratory of Genome Technology
Professor — Tatsuhiro Shibata, M.D., Ph.D.
Professor — Yoshinori Murakami, M.D., Ph.D.

Laboratory of Sequence Analysis
Professor — Seiya Imoto, Ph.D.
Associate Professor — Kotoe Katayama, Ph.D.

Laboratory of Functional Analysis in Silico
Professor — Kenta Nakai, Ph.D.
Associate Professor — Sung-Joon Park, Ph.D.

Department of Public Policy
Professor — Kaori Muto, Ph.D.
Associate Professor — Yusuke Inoue, Ph.D.

Division of Medical Data Informatics
Professor — Tetsuo Shibuya, Ph.D.

Division of Health Medical Intelligence
Professor — Seiya Imoto, Ph.D.
Project Associate Professor — Yaozhong Zhang, Ph.D.

Division of Metagenome Medicine
Project Professor — Satoshi Uematsu, M.D., Ph.D.

We promote personalized genomic medicine based on whole genome information and healthcare information and make a significant contribution to human society through the establishment of innovative diagnosis, prevention, and treatments for diseases. For this purpose, we are conducting the following projects by utilizing supercomputers and artificial intelligence technologies optimized for medical and life science research.

1) Biomedical research for new-dimensional genomic medicine
We will conduct new-dimensional genomic research by adding metagenomic information on commensal bacteria and viruses that live with humans as a new dimension to human multiomics information such as genome, epigenome, transcriptome, proteome, and metabolome obtained by using ultra-speed sequencer technology. By clarifying the connection between these differences and diseases such as cancer and adult diseases and environmental factors, we will lead to the development of innovative diagnosis, prevention, and treatment methods.

2) Medical informatics and AI for personalized genomic medicine
We develop medical informatics that organizes health-medical knowledge/information, analyzes and translates personal genomic information and their health-medical data for personalized genomic medicine. By taking advantage of the artificial intelligence and the supercomputer, we develop big data analysis technologies by integrating large-scale human genome-related databases, drug adverse reaction database, clinical information, etc., and establish cutting-edge computational software that accelerates personalized genomic medicine.

3) Public policy science for ethical, legal and social issues (ELSI)
We study various issues that arise at the point of contact with society in advancing life science and medical research. In order to promote personalized genomic medicine and advanced medical care, public understanding and social consensus building on the use of personal genomes are essential. Therefore, by empirical methods or comparative policy studies, we conduct various research such as prevention of the misuse and abuse of personal genetic information, disease notification, sharing decision-making process between medical care providers and patients, access right to their clinical/genomic information, and affordable health care service. We propose policy statements based on these studies.


Shirokane4&5 (2.0PFLOPS)


Lustre File System (20PB)


Archive Disk (~100PB)

Human Genome Center Supercomputer System SHIROKANE

Center for Experimental Medicine and Systems Biology

Director : Yasuhiro Yamada

Division of Stem Cell Pathology
Professor — Yasuhiro Yamada, M.D., Ph.D.

Laboratory of Innate Immunity
Professor — Kensuke Miyake, M.D., Ph.D.

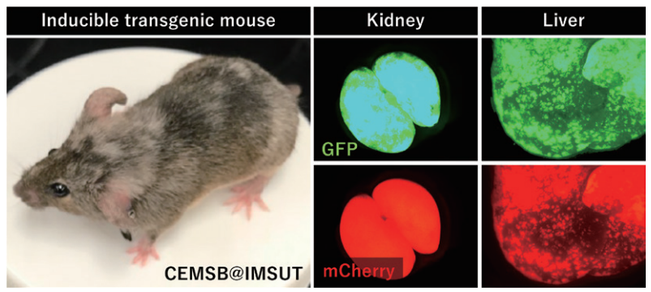
Laboratory of Reproductive Systems Biology
Project Professor — Masahito Ikawa, Ph.D.
Associate Professor — Manabu Ozawa, Ph.D.

Laboratory of Genetically Engineered Mouse Research
Invited Professor — Kimi Araki, Ph.D.

Division of Genome Engineering
Professor — Tomoji Mashimo, Ph.D.
Senior Assistant Professor — Kazuto Yoshimi, Ph.D.

Core Laboratory for Developing Advanced Animal Models
Professor — Yasuhiro Yamada, M.D., Ph.D.
Professor — Tomoji Mashimo, Ph.D.
Associate Professor — Manabu Ozawa, Ph.D.

The Center for Experimental Medicine and Systems Biology was established in 2007, renewed from The Center for Experimental Medicine organized in 1998. The center consists of five laboratories, Division of Stem Cell Pathology, Division of Genome Engineering, Laboratory of Innate Immunity, Laboratory of Reproductive Systems Biology, and Laboratory of Genetically Engineered Mouse Research. Although an accurate and complete genome sequence of various organisms have been made available, the function of genes, the epigenetic mechanisms that control gene expressions, the role of genomic elements, including non-coding elements, are not fully understood, especially at an organismal level. The purposes of the center are to establish in vivo experimental platforms for various research fields and develop animal models for investigating human diseases. Genetically-engineered mice have offered the opportunities of not only analyzing the complex gene function in vivo, but also providing various human disease models, where new therapeutic approaches can be explored. Moreover, application of CRISPR/Cas system enables efficient and rapid genome editing in rodents. We take advantage of the embryo engineering technologies as well as genome editing technologies to devise the in vivo experimental systems that link the basic science and medicine. Our center has a mission to provide scientists at IMSUT and other academic institutes with genetically-engineered animal models for studying various aspects of biology as well as human diseases. Our center is also developing novel technologies for establishing advanced animal models for biomedical research. We hope that our effort promotes the interdisciplinary research that connects a wide range of research fields, including stem cell biology, immunology, and cancer biology, which eventually contributes to the establishment of novel therapies for human diseases.



A chimeric mouse with an inducible transgenic system

Advanced Clinical Research Center

Director : Toshio Kitamura

Division of Cellular Therapy
Professor — Toshio Kitamura, M.D., D.M.Sc.

Division of Infectious Diseases
Professor — Hiroshi Yotsuyanagi, M.D., D.M.Sc.
Associate Professor — Takeya Tsutsumi, M.D., D.M.Sc.

Division of Clinical Genome Research
Professor — Yoichi Furukawa, M.D., Ph.D.
Associate Professor — Tsuneo Ikenoue, M.D., Ph.D.
Senior Assistant Professor — Kiyoshi Yamaguchi, Ph.D.

Division of Innovative Cancer Therapy
Professor — Tomoki Todo, M.D., Ph.D.
Project Associate Professor — Minoru Tanaka, M.D., Ph.D.

Division of Advanced Medicine Promotion
Professor — Fumitaka Nagamura, M.D., D.M.Sc.
Associate Professor — Masanori Nojima, M.D., Ph.D., M.P.H.
Visiting Associate Professor — Hiroaki Taniguchi, M.D., D.M.Sc.

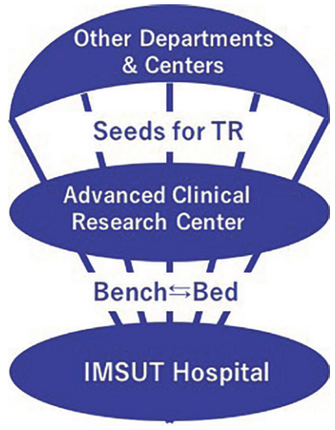
Division of Advanced Genome Medicine
Associate Professor — Yoshihiro Hirata, M.D., Ph.D.
Senior Assistant Professor — Yasuo Matsubara, M.D., Ph.D.

Division of Bioethics
Associate Professor — Ayako Kamisato, Ph.D.

Division of Frontier Surgery
Professor — Dai Shida, M.D., Ph.D.
Associate Professor — Susumu Aikou, M.D., Ph.D.

Division of Hematopoietic Disease Control
Professor — Yasuhito Nannya, M.D., Ph.D.

Advanced Clinical Research Center (ACRC) collaborates with basic research groups in IMSUT to translate the research outcomes into medical practice at IMSUT Hospital. ACRC also performs clinical sciences targeting malignancies (including leukemia), infectious diseases (including COVID-19) and immunological diseases. ACRC aims to translate its own research outcomes into early-phase clinical trials and to undertake the feed-back experiments from its own clinical experiences. For this purpose, ACRC is developing novel therapeutics utilizing various resources including tissue stem cells, molecular targeted agents, recombinant viruses and medical informatics. Each division of ACRC performs peculiar medical research based on the concept of bench to bed, and proposes the ideas elucidating clinical problems from bed to bench. Therefore, each division has a close contact with basic scientists inside and outside IMSUT.
Currently, ACRC consists of 8 divisions: namely, Division of Hematopoietic Disease Control and Division of Cellular Therapy in which hematological oncologists are working, Division of Infectious Diseases in which professionals for HIV/AIDS, viral hepatitis and other infectious disorders are working, Division of Clinical Genome Research in which surgical oncologists are working, Division of Innovative Cancer Therapy in which professionals for brain tumor surgery are developing oncolytic virotherapy, Division of Advanced Medicine Promotion which contributes to regulatory sciences in medicine, Division of Advanced Genome Medicine involved in training biomedical graduate students, and Division of Bioethics which handles ethical issues in life science. All are the group of physician scientists.



Position of ACRC in IMSUT

Center for Stem Cell Biology and Regenerative Medicine

Director : Hideki Taniguchi

Division of Regenerative Medicine
Professor — Hideki Taniguchi, M.D., Ph.D.

Division of Stem Cell and Molecular Medicine
Professor — Atsushi Iwama, M.D., Ph.D.

Division of Stem Cell Transplantation
Professor — Yasuhito Nannya, M.D., Ph.D.
Project Professor — Satoshi Takahashi, M.D., D.M.Sc.

Division of Stem Cell Signaling
Professor — Toshio Kitamura, M.D., D.M.Sc.

Division of Stem Cell Processing
Professor — Hideki Taniguchi, M.D., Ph.D.

Division of Experimental Pathology
Professor — Yasuhiro Yamada, M.D., Ph.D.

Division of Stem Cell Biolog
Project Associate Professor — Satoshi Yamazaki, Ph.D.

Division of Mammalian Embryology
Project Associate Professor — Toshihiro Kobayashi, Ph.D.

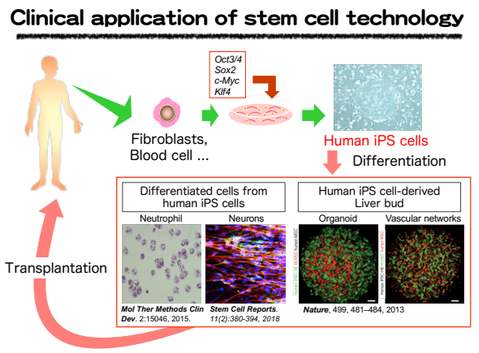
Division of Stem Cell Aging Medicine
Professor — Emi Nishimura, M.D., Ph.D.

Division of Somatic Stem Cell Research
Associate Professor — Tokiko Nagamura-Inoue, M.D., D.M.Sc.

FACS Core Laboratory
Professor — Atsushi Iwama, M.D., Ph.D.

Stem Cell Bank
Professor — Hideki Taniguchi, M.D., Ph.D.

Stem cell research has been a focus of attention as medicine of the 21st century replacing artificial organs and organ transplantation therapy, and also has a strong impact on the research field of cancer and other diseases. Center for Stem Cell and Regenerative Medicine was launched as a core research center for stem cell-based medicine. The center has 10 divisions, Division of Regenerative Medicine, Division of Stem Cell and Molecular Medicine, Division of Stem Cell Transplantation, Division of Stem Cell Signaling, Division of Stem Cell Processing, Division of Stem Cell Pathology, Division of Stem Cell Biology, Division of Mammalian Embryology, Division of Stem Cell Aging Medicine and Division of Somatic Stem Cell Research. The Center aims to translate research outcomes of stem cell biology into pre-clinical and clinical studies, and also to innovation of therapeutic approaches to cancer stem cells and various diseases. It also serves to clarify various clinical problems using cutting-edge research tools such as patient-derived iPS cells. To support our research, we have FACS Core Laboratory and Stem Cell Bank and a service to generate patient-derived iPS cells.



International Research Center for Infectious Diseases

Director : Yasushi Kawaguchi

Department of Special Pathogens
- Associate Professor — Takeshi Ichinohe, Ph.D.
- Visiting Professor — Masaki Imai, D.V.M., Ph.D.*
- Visiting Professor — Seiya Yamayoshi, D.V.M., Ph.D.*

(*As of July 15, 2021)

Department of Infectious Disease Control
- Professor — Yasushi Kawaguchi, D.V.M., Ph.D.
- Associate Professor — Akihisa Kato, Ph.D.

(Division of Viral Infection)
- Associate Professor — Takeshi Ichinohe, Ph.D.

(Division of Systems Virology)
- Associate Professor — Kei Sato, Ph.D.

Pathogenic Microbes Repository Unit
- Professor — Yasushi Kawaguchi, D.V.M., Ph.D.

Outbreaks of emerging viruses such as influenza A(H1N1)pdm09 virus and SARS-CoV-2 have made us aware that the emergence of infectious diseases overseas can be a major threat to us living in Japan. To control such diseases, we need to develop methods for diagnosis, prevention, and treatment, including isolation and identification of the pathogen. For this purpose, basic research is essential to discovering the nature of the causative pathogen. Research institutions at universities must actively conduct basic research on such emerging infectious diseases and share their findings so that infectious control experts can respond promptly to emerging or re-emerging infectious diseases. Against this background, the International Research Center for Infectious Diseases was established in 2005 at the Institute of Medical Science, the University of Tokyo, and the Institute for Microbial Diseases, Osaka University. The joint research system serves as a base for advanced medical and biological research on emerging and re-emerging infectious diseases and for training infectious disease researchers. The center consists of two research departments and the "Pathogen Microbes Repository Unit".

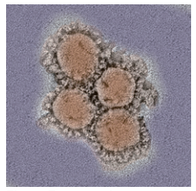


Figure. Electron micrograph of SARS-CoV-2 taken by Dr. Masaki Imai and Ms. Michiko Ujie

International Research and Development Center for Mucosal Vaccines

Director : Ken Ishii

Division of Mucosal Barriology
- Professor — Cevayir Coban, M.D.
- Visiting Professor — Koji Hase, Ph.D.

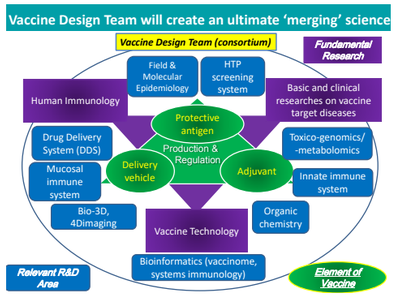
Division of Innate Immune Regulation
- Project Professor — Satoshi Uematsu, M.D., Ph.D.

Division of Clinical Vaccinology
- Project Professor — Kohtaro Fujihashi, D.D.S., Ph.D.
- Project Associate Professor — Yosuke Kurashima, Ph.D.

Division of Mucosal Vaccines
- Professor — Ken Ishii, M.D., Ph.D.
- Visiting Professor — Jun Kunisawa, Ph.D.
- Visiting Associate Professor — Tomonori Nochi, Ph.D.
- Project Senior Assistant Professor — Rika Nakahashi, Ph.D.

Division of Mucosal Symbiosis
- Project Associate Professor — Yoshiyuki Goto, Ph.D.
- Invited Professor — Tetsuro Matano, M.D., D.M.Sc.

International Research and Development Center for Mucosal Vaccines (IMV) was established in 2011 to conduct research and development of next-generation of vaccines focusing/targeting the mucosal immune system. IMV aims to contribute to developing novel vaccines, diagnostics, and therapeutics that will enable us to control emerging/reemerging infectious diseases including tuberculosis, malaria, AIDS, AMR, SARS-CoV-2, and other infectious diseases as well as non-communicable diseases such as cancer, allergy, diabetes, atherosclerosis. We are conducting basic and pre-clinical research for the molecular and cellular understanding of the mucosal and systemic immune system towards more effective and safer vaccine development. These studies include designing a new era of vaccines using AI, self-learning system of big data. In addition to long-term collaborations within researchers at IMSUT and between national and international relevant researchers, IMV promotes public-private partnerships between academia, industries, and government to facilitate further collaboration and funding.



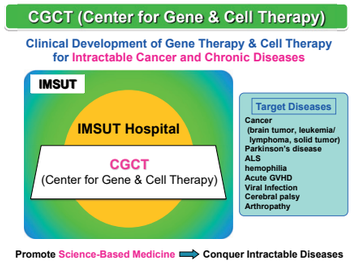
Center for Gene & Cell Therapy

Director : Takashi Okada

Division of Molecular and Medical Genetics
- Professor — Takashi Okada, M.D., Ph.D.
- Associate Professor — Naoya Uchida, M.D., Ph.D.

Center for Gene and Cell Therapy
- Professor — Tomoki Todo, M.D., Ph.D.
- Professor — Toshio Kitamura, M.D., D.M.Sc.
- Professor — Fumitaka Nagamura, M.D., D.M.Sc.
- Invited Professor — Koji Tamada, M.D., Ph.D.
- Project Professor — Hideaki Tahara, M.D., Ph.D.
- Visiting Professor — Shin-ichi Muramatsu, M.D., Ph.D.
- Associate Professor — Tokiko Nagamura-Inoue, M.D., Ph.D.
- Project Associate Professor — Hiroaki Uchida, M.D., Ph.D.

IMSUT hospital has been leading hematopoietic stem cell (HSC) transplantation and gene therapy research in Japan, and to translate this research to clinics, the Center for Gene & Cell Therapy (CGCT) in IMSUT was established in 2014. CGCT is focused on translational development of gene therapy as well as stem cell therapy targeting intractable malignancies, chronic diseases, and inherited diseases, including oncolytic virotherapy and engineered T cell therapy for malignancies, AAV vector gene therapy for neuromuscular disorders and hemophilia, HSC-targeted lentiviral gene therapy for inherited hematopoietic diseases, T cell therapy for post-transplant viral infections, and mesenchymal stromal cell therapy.



Laboratory Animal Research Center

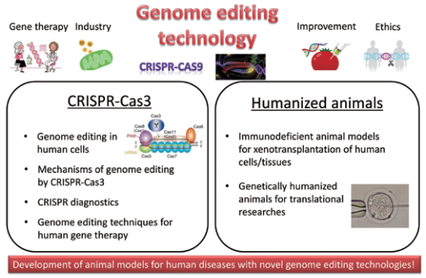
Director : Tomoji Mashimo

Division of Animal Genetics
- Professor — Tomoji Mashimo, Ph.D.
- Senior Assistant Professor — Kazuto Yoshimi, Ph.D.

Animal Center
- Professor — Tomoji Mashimo, Ph.D.

The Laboratory Animal Research Center (LARC) was founded in 1965 as the first modern animal facility in Japan. Mice and rats are strictly maintained in the SPF condition for many scientific experiments. We also provide several service for mouse embryo manipulation and generating genetically modified animals with genome editing technologies.
In addition to such supports, we are developing useful genome editing tools such as CRISPR-Cas3 and knock-in strategies in mice and rats. We are now focusing on generating "humanized animals" or "immunodeficient animals". These valuable animals can be used for xenotransplantation of human cells/tissues including human iPS cells.

The building of the Laboratory Animal Research Center



Amami Laboratory of Injurious Animals

Director : Tomoji Mashimo

Professor — Tomoji Mashimo, Ph.D.

This laboratory is the southernmost facility of the University of Tokyo, and has long history nearly 120 years in Amami Oshima. We have made great achievements in filariasis eradication from this island and also prevention of Habu bites. From 2005, the experimental environment that can handle BSL-2 and BSL-3 pathogens has been established as a primate experimental base of the International Research Center for Infectious Diseases, and became international joint usage and research center capable of infection experiment in non-human primates. Currently, we keep colonies of New World Monkeys adapted to the climate of Amami Oshima, and are conducting research in collaboration with various institutions in Japan and overseas.

Fig.1. (a) Main gate of facility,
(b) Animal experiment room for monkeys (ABSL3)

Medical Proteomics Laboratory

Director : Mutsuhiro Takekawa

Professor — Mutsuhiro Takekawa, M.D., Ph.D.
Professor — Kouhei Tsumoto, Ph.D.
Project Professor — Koichi Tanaka
Associate Professor — Masaaki Oyama, Ph.D.

Proteins play important roles in regulating complex biological events and their functional disorders often lead to a variety of diseases such as cancer and infection. The mission of our laboratory is to develop advanced technologies for antibody engineering, small-molecule screening, mass spectrometry and electron microscopy to perform an integrative proteomic analysis of disease-related protein-protein interaction networks not only from a physicochemical, structural biology point of view but also from a bioinformatical, systems biology point of view. We are also widely involved in many collaborative research projects to facilitate the utilization of these medical proteomics technologies inside and outside the institute.

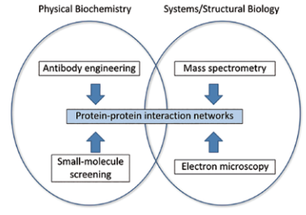


Fig 1. Protein interaction network analysis in medical proteomics research

Research Center for Asian Infectious Diseases

Director : Yasushi Kawaguchi

Professor Yasushi Kawaguchi, D.V.M., Ph.D.
Project Professor Mitsue Hayashi, Ph.D.
Associate Professor Akihisa Kato, Ph.D.
Project Associate Professor Jin Gohda, Ph.D.
Project Senior Assistant Professor Mizuki Yamamoto, Ph.D.

IMSUT's Research Center for Asian Infectious Diseases is conducting collaborative research with three institutes, supported by the Japan Agency of Medical Research and Development (AMED). Collaborating institutes are: the Institute of Microbiology of Chinese Academy of Sciences (Beijing); the Harbin Veterinary Research Institute of Chinese Academy of Agricultural Sciences; the National Institute of Infectious Diseases (Tokyo). Center's research focuses on basic and translational studies, targeting SARS-CoV-2, MERS-CoV, Dengue virus, HIV-1, avian and human influenza viruses, and drug-resistant bacteria. In Beijing, IMSUT scientists are working with Chinese scientists mainly on HIV-1 infection and latency.

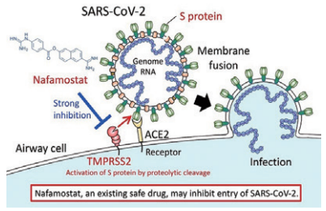


Fig. Identification of an existing Japanese pancreatitis drug, nafamostat, which is expected to prevent the transmission of new coronavirus infection (COVID-19). Nafamostat prevents viral entry of SARS-CoV-2 by inhibiting a serine protease, TMPRSS2, which is critical for membrane fusion of SARS-CoV-2.

Laboratory of Molecular Genetics

Director : Yuji Yamanashi

(Frontier Research Unit)
Associate Professor Kazuo Tatebayashi, Ph.D.

The faculty members of the Frontier Research Unit advance cutting edge medical research based on their independent ideas.

IMSUT Distinguished Professor Units

Division of Stem Cell Therapy
IMSUT Distinguished Professor Hiromitsu Nakauchi, M.D., Ph.D.

Division of Mucosal Immunology
IMSUT Distinguished Professor Hiroshi Kiyono, D.D.S., Ph.D.
Project Associate Professor Yosuke Kurashima, Ph.D.
Project Senior Assistant Professor Rika Nakahashi, Ph.D.

Division of Virology
IMSUT Distinguished Professor Yoshihiro Kawaoka, D.V.M., Ph.D.
Visiting Professor Takeshi Noda, D.V.M., Ph.D.
Visiting Professor Tokiko Watanabe, D.V.M., Ph.D.

Division of Stem Cell Therapy

Our goal is to "Establish a New Frontier of Stem Cell Therapy by Connecting the Basic Science and Clinical Medicine." We are working to uncover new diseases, elucidating the causes of disease and developing therapeutic modalities by connecting the knowledge and methodology of basic science such as immunology, molecular biology, cell biology and developmental engineering with clinical medicine.
We are also actively collaborating with international institutes including Stanford University in the US and University of Exter Living Systems Institute in UK.

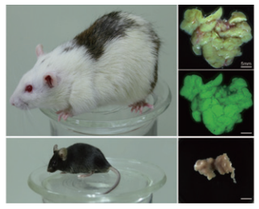


Fig.1. Mouse pancreas generated in rat by interspecies blastocyst complementation.
Shown below is a mouse (iPS cell donor) and its pancreas.

Division of Mucosal Immunology

The mucosal immune system not only senses pathogenic antigens such as microbial pathogens and allergens, but also establishes tolerance that does not react excessively to beneficial antigens such as food-derived proteins and commensal microorganisms. Our laboratory' s mission is to elucidate and understand the uniqueness of the mucosal immune system which controls the immunological balancing act between the elimination and commensalism with harmful and beneficial antigens, respectively, and aim to develop the basic platform for creating the novel strategies of prevention and treatment of various infectious and immunological diseases by the fusion science with mucosal immunology, agriculture science, engineering and plant biology.
The mucosal immune system not only senses pathogenic antigens such as microbial pathogens and allergens, but also establishes tolerance that does not react excessively to beneficial antigens such as food-derived proteins and commensal microorganisms. Our laboratory' s mission is to elucidate and understand the uniqueness of the mucosal immune system which controls the immunological balancing act between the elimination and commensalism with harmful and beneficial antigens, respectively, and aim to develop the basic platform for creating the novel strategies of prevention and treatment of various infectious and immunological diseases by the fusion science with mucosal immunology, agriculture science, engineering and plant biology.

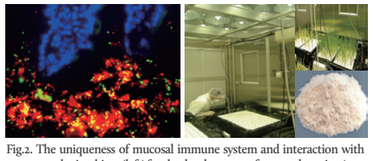


Fig.2. The uniqueness of mucosal immune system and interaction with commensal microbiota (left) for the development of mucosal vaccine (e.g., MucoRice) (right)

Division of Virology

Viruses can cause devastating diseases. The long-term goal of our research is to understand the molecular pathogenesis of viral diseases by using influenza virus, Ebola virus, and severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections as models. Interactions between viral and host gene products during viral replication determine the consequences of infection (i.e., the characteristics of disease manifestation, whether limited or widespread); hence, our research has centered on such interactions during these viral infections.

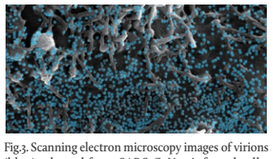


Fig.3. Scanning electron microscopy images of virions (blue) released from SARS-CoV-2-infected cells.

IMSUT Hospital

Director
Hiroshi Yotsuyanagi, M.D., D.M.Sc.

Deputy Director
Tomoki Todo, M.D., Ph.D.
Tokiko Nagamura-Inoue, M.D., D.M.Sc.

Department of Hematology/Oncology
Professor Yasuhito Nannya, M.D., Ph.D.
Project Professor Satoshi Takahashi, M.D., D.M.Sc.
Clinical Professor Tokiko Nagamura-Inoue, M.D., D.M.Sc.
Associate Professor Yoichi Imai, M.D., Ph.D.
Project Associate Professor Hiroshi Yasui, M.D., D.M.Sc.

Department of Infectious Diseases and Applied Immunology
Associate Professor Takeya Tsutsumi, M.D., D.M.Sc.
Professor Hiroshi Yotsuyanagi, M.D., D.M.Sc.

Department of Rheumatology and Allergy
Associate Professor Motohisa Yamamoto, M.D., D.M.Sc.

Department of Oncology and General Medicine
Professor Narikazu Boku, M.D., D.M.Sc.
Professor Hiroshi Yotsuyanagi, M.D., D.M.Sc.
Visiting Professor Hideaki Kagami, D.D.S., Ph.D.
Associate Professor Yoshihiro Hirata, M.D., Ph.D.
Associate Professor Takeya Tsutsumi, M.D., D.M.Sc.
Senior Assistant Professor Yasuo Matsubara, M.D., Ph.D.
Project Senior Assistant Professor Yasuki Hijikata, M.D., Ph.D.
Project Senior Assistant Professor Koichi Kimura, M.D., D.M.Sc.

Department of Applied Genomics
Professor Yoichi Furukawa, M.D., Ph.D.
Associate Professor Tsuneo Ikenoue, M.D., Ph.D.

Department of Radiology
Associate Professor Hiroyuki Akai, M.D., Ph.D.
Senior Assistant Professor Toshihiro Furuta, M.D., Ph.D.

Department of Palliative Medicine/Advanced Clinical Oncology
Project Senior Assistant Professor Yasuki Hijikata, M.D., Ph.D.
Visiting Professor Mieko Chinzei, M.D., D.M.Sc.

Department of Diagnostic Pathology
Associate Professor Yasunori Ota, M.D., Ph.D.

Department of Gastroenterology
Associate Professor Yoshihiro Hirata, M.D., Ph.D.

Department of Surgery
Professor Dai Shida, M.D., Ph.D.
Project Professor Hideaki Tahara, M.D., Ph.D.
Associate Professor Susumu Aikou, M.D., Ph.D.
Senior Assistant Professor Giichiro Tsurita, M.D., Ph.D.

Department of Anesthesia
Associate Professor Ryo Orii, M.D., Ph.D.

Department of Joint Surgery
Senior Assistant Professor Hideyuki Takedani, M.D., D.M.Sc.

Department of Surgical Neuro-Oncology
Professor Tomoki Todo, M.D., Ph.D.
Project Associate Professor Minoru Tanaka, M.D., Ph.D.

Department of Urology
Professor Haruki Kume, M.D., Ph.D.
Project Senior Assistant Professor Sayuri Takahashi, M.D., Ph.D.

Department of Medical Informatics
Associate Professor Hiroyuki Akai, M.D., Ph.D.
Senior Assistant Professor Toshihiro Furuta, M.D., Ph.D.

Department of Radiological Technology
Associate Professor Hiroyuki Akai, M.D., Ph.D.

Department of Cell Processing and Transfusion
Clinical Professor Tokiko Nagamura-Inoue, M.D., D.M.Sc.

Surgical Center
Professor Tomoki Todo, M.D., Ph.D.
Project Associate Professor Minoru Tanaka, M.D., Ph.D.

Department of Medical Supply Center
Professor Tomoki Todo, M.D., Ph.D.
Project Associate Professor Minoru Tanaka, M.D., Ph.D.

Department of Laboratory Medicine
Clinical Professor Tokiko Nagamura-Inoue, M.D., D.M.Sc.
Project Senior Assistant Professor Koichi Kimura, M.D., D.M.Sc.

Department of Pathology
Associate Professor Yasunori Ota, M.D., Ph.D.

Department of Clinical Genomics
Professor Yoichi Furukawa, M.D., Ph.D.

Department of Clinical Nutrition
Senior Assistant Professor Yasuo Matsubara, M.D., Ph.D.

Radiation Control Office
Associate Professor Hiroyuki Akai, M.D., Ph.D.

Regional Medical Liaison Office
Clinical Professor Tokiko Nagamura-Inoue, M.D., D.M.Sc.

Center for Clinical Safety and Infection Control
Professor Hiroshi Yotsuyanagi, M.D., D.M.Sc.
(Department of Clinical Trial Safety Management)
Associate Professor Yoichi Imai, M.D., Ph.D.
Associate Professor Ayako Kamisato, Ph.D.
(Department of Infection Prevention and Control)
Professor Hiroshi Yotsuyanagi, M.D., D.M.Sc.

Center for Translational Research
Professor Fumitaka Nagamura, M.D., D.M.Sc.
Associate Professor Masanori Nojima, M.D., Ph.D.
Project Associate Professor Hiroshi Yasui, M.D., D.M.Sc.

Center for Antibody and Vaccine Therapy
Professor Hiroshi Yotsuyanagi, M.D., D.M.Sc.
Professor Kouhei Tsumoto, Ph.D.
Project Professor Yataro Daigo, M.D., D.M.Sc.
Project Associate Professor Satoru Nagatoishi, Ph.D.
Project Senior Assistant Professor Atsushi Takano, M.D., Ph.D.

Therapeutic Vector Development Center
Professor Tomoki Todo, M.D., Ph.D.
Project Associate Professor Minoru Tanaka, M.D., Ph.D.

IMSUT CORD
Clinical Professor Tokiko Nagamura-Inoue, M.D., D.M.Sc.

Department of Nursing
Director Eiko Yoshii, RN,CNA

Department of Pharmacy
Director Seiichiro Kuroda

Department of AIDS Vaccine Development
Invited Professor Tetsuro Matano, M.D., D.M.Sc.
Visiting Associate Professor Ai Tachikawa, D.M.Sc.

Since 2004, the hospital affiliated with IMSUT (IMSUT Hospital) has been the only one affiliated with a national university research institute in Japan. The 8–storied hospital building has 122 beds including a ward organized for translational research and early clinical trials such as a F-I-M study, an outpatient clinic, and operating rooms. Currently, IMSUT Hospital mainly targets diseases such as hematological malignancies, solid tumors, infectious diseases, and autoimmune disorders. IMSUT Hospital, together with Advanced Clinical Research Center, is conducting research on disease pathophysiology and promoting translational research (TR), such as gene, viral, and cell therapy of cancers, as well as novel vaccine treatment. The organization of IMSUT Hospital consists of 4 units; (1) medical care unit, (2) care support unit, (3) clinical safety and infection control unit, and (4) clinical research support unit, and clinical activity of these units are supported by departments of nursing, pharmacy and administration office, respectively.

IMSUT Hospital aims to be a core facility for clinical application of excellent outcomes by domestic and international collaborative research, especially in tight association with 3 major research departments and 6 research centers in IMSUT. Since activities and mission of IMSUT Hospital cannot be covered by its fixed operational expenses, IMSUT Hospital has been supported by a series of external funding such as grants from Japan Agency for Medical Research and Development (AMED), those from public sectors such as MEXT & MHLW as well as pharmaceutical companies. In recent years, IMSUT Hospital is still expanding its organization. In 2011 Department of Surgical Neuro-Oncology was established for promoting oncolytic virotherapy of cancers. Center for Antibody and Vaccine Therapy and Department of Palliative Medicine was open in 2012, and Center for Gene & Cell Therapy was founded in 2014. More recently, Department of Urology was open in 2020 for clinical practice of robotic surgery. Department of Gastroenterology was open in 2021 in collaboration with the Department of surgery, resulting a total of 14 clinical departments in IMSUT Hospital.

Corporate Sponsored Research Program/Social Cooperation Research Programs

Project Division of RNA Medical Science
Project Associate Professor — Masaki Takahashi, Ph.D.
Project Senior Assistant Professor — Kaku Goto, Ph.D.

Project Division of International Advanced Medical Research
Project Associate Professor — Koichiro Yuji, M.D., Ph.D.

Project Division of Fundamental Study on Cutting Edge of Genome Medicine
Project Associate Professor — Hiroshi Yasui, M.D., D.M.Sc.

Project Division of Advanced Biopharmaceutical Science
Project Associate Professor — Satoru Nagatoishi, Ph.D.

Project Division of Cancer Biomolecular Therapy
Project Professor — Hideaki Tahara, M.D., Ph.D.
Project Associate Professor — Hiroaki Uchida, M.D., Ph.D.

Project Division of Genomic Medicine and Disease Prevention
Project Professor — Toru Suzuki, M.D., Ph.D.
Professor — Yoshinori Murakami, M.D., Ph.D.

Division of Clinical Precision Research Platform
Project Professor — Satoshi Takahashi, M.D., D.M.Sc.

In addition to the three core departments and affiliated centers, IMSUT has set up corporate sponsored research program(s), of which the costs are paid by donations from supporting companies to extend educational and research activities. Social cooperation research programs have also been set up, aimed at collaborative research initiatives with private organizations through their funding of shared interest that can contribute to social benefit. The corporate sponsored research program(s) and social cooperation research programs are led by IMSUT project professors and contribute to evolving the educational and research activities of IMSUT, and to the expansion of the institute's diverse research.

Common Research Facilities

Culture Media Section
Head — Mutsuhiro Takekawa

Library
Head — Makoto Nakanishi

Radioisotope Center
Head — Kensuke Miyake

IT Service Room
Head — Makoto Nakanishi

Genetically Modified Microorganism Support Office
Head — Yasushi Kawaguchi

Office of Research Ethics
Head — Kaori Muto
Associate Professor — Ayako Kamisato

Office of Health and Safety
Head — Shin-Ichiroh Saitoh

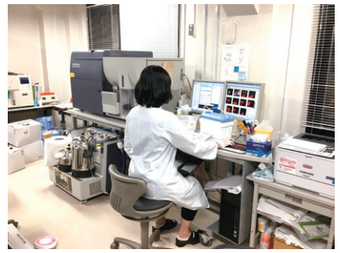
Office of Intellectual Property
Head — Mutsuhiro Takekawa

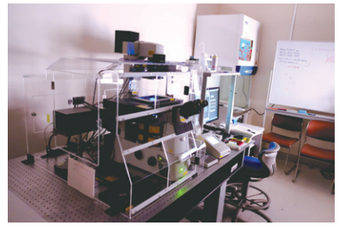
Advisory Room for Conflict of Interest
Head — Yoichi Furukawa

Pathology Core Laboratory
Laboratory I Head — Yoshinori Murakami
Laboratory II Head — Yasunori Ota

Imaging Core Laboratory
Head — Mutsuhiro Takekawa

IMSUT Clinical Flow Cytometry Laboratory
Head — Tokiko Nagamura-Inoue


IMSUT Clinical Flow Cytometry Laboratory


Imaging Core Laboratory


Library

Technical Office

Head — Fumitaka Nagamura

Dean's Office

Dean's Advisor Office
Visiting Professor — Toichi Takenaka

Project Coordination Office
Head — Makoto Nakanishi

Research Platform Office
Head — Jun-ichiro Inoue

International Affairs Office
Head — Makoto Nakanishi

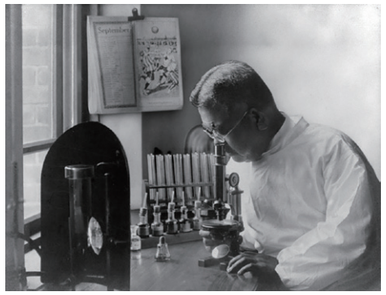
BioBank Japan
Head — Yuji Yamanashi
Visiting Professor — Takayuki Morisaki

Education Activities

The Institute of Medical Science, The University of Tokyo (IMSUT), is prominent as an institution for graduate education. It provides an ideal environment for young people interested in pursuing a career in scientific research. Drawing upon a wide range of graduate schools such as medicine, science, agricultural and life sciences, pharmaceutical sciences, engineering, information science and technology, frontier sciences and interdisciplinary information studies, the faculties of the various divisions teach a wide range of courses to a similarly diverse array of elite graduate students. In order to pursue transdisciplinary approaches within the Graduate School of Frontier Sciences, the University of Tokyo has now established the new Department of Computational Biology and Medical Science. Through IMSUT's strenuous efforts, this department was established in fiscal year 2015, with the Shirokanedai campus housing many participating laboratories as well as some courses that make up the department's core curriculum. Thus, through strong links to IMSUT, cross-disciplinary education and research are expanding. The distinguishing features of our educational program are that it targets mainly graduate students aiming to become researchers, and that the professors and staff members can concentrate on guiding students in their laboratory research. The departments and divisions frequently collaborate and interact closely with each other, making interdisciplinary research yet one more of our distinguishing features.
The programs provided by the institute include a graduate seminar series and clinical courses for non-physician graduate students at IMSUT Hospital. The graduate seminar series consists of weekly seminars, provided by first-class researchers from around Japan, on a theme freshly chosen each year. Those courses are deemed to be credits for the graduate school of medicine. Our Institute's affiliated hospital provides clinical courses for non-physician graduate students, which include in-depth consideration of ethical issues and translational research.
IMSUT also has a rich educational environment for information science. At the Human Genome Center, there are faculty members with deep computing expertise, and workshops are frequently held there. Lectures offered by the Department of Computational Biology and Medical Science, Graduate School of Frontier Sciences, are open to IMSUT students outside this research area. Further, many other seminars are given by researchers from inside and outside Japan, providing a window onto the latest research progress.
Our library is available 24 hours a day including weekends and holidays.
IMSUT encourages students to conduct research enthusiastically, and works to motivate them. We honor exceptional graduate students every year with our Outstanding Student Publication Awards.

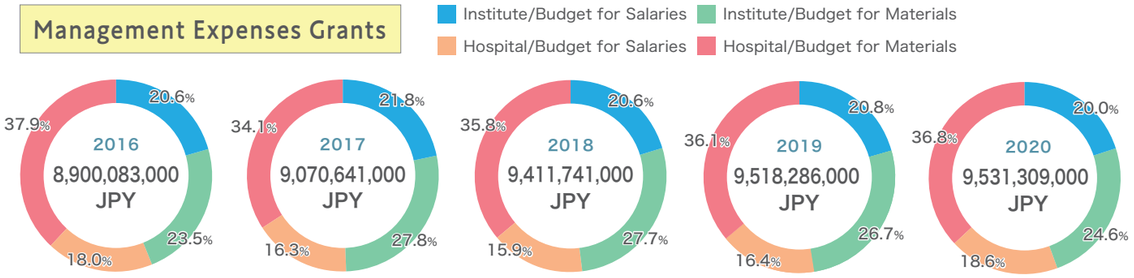
Medical Science Museum

The Medical Science Museum preserves and introduces to the public the valuable historical materials of the Institute of Medical Science (IMS), the University of Tokyo. Founded by Dr. Shibasaburo Kitasato in 1892 as the Institute of Infectious Diseases (IID), for more than half a century following its inception the institute served as a key player in infectious disease research in Japan. The IID at the time not only acted as the largest manufacturer of bacteriological products such as vaccines and antiserums, but also became involved in all aspects of research and medical care related to infectious disease: educating doctors and public sanitation officials on matters related to infectious disease, evaluating/approving bacteriological products, and so on. With the ongoing development of antibiotics and improvements in public sanitation, the importance of infectious disease research receded, and the IID was reborn as the Institute of Medical Science with its focus reset to cutting-edge research into medical science in 1967. And today, with the aim of clarifying the principles of infectious diseases, cancer and other specified diseases, and establishing practical treatments based on such insights, the institute carries out research and development in the most advanced areas of medicine such as genomic medicine and gene and cell therapies.
Surrounded by greenery, the museum beckons with its contrasting facets: a brick-style wing evoking a stable from the era of the IID and a glass-paneled wing heralding the future. Please contemplate the past and future of medical science during your visit.

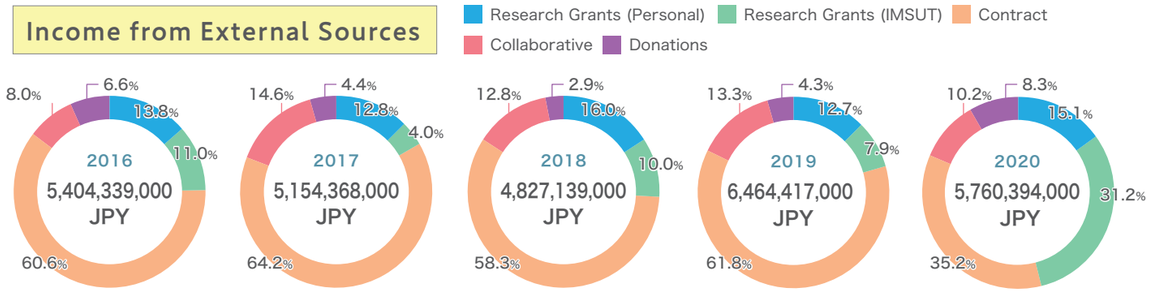

Dr. Shibasaburo Kitasato
Founding Dean of the Institute for Infectious Diseases
September, 1910 (Meiji period)
Preserved in the Medical Science Museum of the Institute of Medical Science, The University of Tokyo

Budget

Management Expenses Grants



Income from External Sources



Projects

(As of July 1, 2021)

Research and Education Projects by External Funds

Translational Research Network Program
"Strategic Promotion and Expansion of a Translational Research to Establish a Global Base for Knowledge Collaboration"

Project Head in IMSUT　IMSUT Hospital Director/ Professor Hiroshi Yotsuyanagi

Japan Program for Infectious Diseases Research and Infrastructure "Studies to Control Emerging, Re-emerging and Imported Infectious Diseases to Be Conducted in International Collaboration Sites in China"

Project Head　Professor Yasushi Kawaguchi

BioBank Japan Project for Genomic and Clinical Research "Management of BioBank Japan (BBJ) for utilization of the human materials and medical information"

Project Head　Dean Yuji Yamanashi

Research and Education Projects by Management Expenses Grants

FY 2016-2021	Joint Research Project on Promotion of Basic and Applied Medical Sciences
FY 2016-2021	Establishment of a Collaborative Platform for Research and Human Resources for the Control of Infectious Diseases
FY 2020-2024	Core Research for Creating New Dimension Genomic Medicine by Integrating Human Intelligence and AI
FY 2021-2025	New Dimensional Vaccine Research and Development Program

Members

(As of July 1, 2021)

Staff

	Institute	Hospital	Total
Professor	28	1	29
Associate Professor	20	6	26
Senior Assistant Professor	3	4	7
Assistant Professor	38	12	50
Research Associate	1	0	1
Official	43	11	54
Technical Official	29	113	142

Institute 162 + Hospital 147 = 309

Fixed-term Project Staff

	Institute	Hospital	Total
Project Professor	5	0	5
Project Associate Professor	10	0	10
Project Senior Assistant Professor	4	3	7
Project Assistant Professor	12	4	16
Project Reseacher	42	1	43
Project Academic Specialist	54	13	67
Project Specialist	11	8	19
Project Medical Staff	0	23	23
Project Nursing Staff	0	18	18

Institute 138 + Hospital 70 = 208

Fixed-term Part-time (Project) Staff

	Institute	Hospital	Total
Project Professor	6	1	7
Project Associate Professor	3	0	3
Project Senior Assistant Professor	0	1	1
Project Assistant Professor	2	0	2
Project Reseacher	20	0	20
Project Academic Specialist	37	8	45
Project Specialist	25	3	28
Assistant Clerk	15	8	23
Technical Assistant	21	5	26
Part-time Academic Affairs Staff	1	0	1
Skilled Assistant	1	9	10
Member of the Medical Staff	0	10	10
Special Medical Intern	0	2	2
Assistant Medical Technician	0	6	6
Assistant Nurse	0	2	2

Institute 131 + Hospital 55 = 186

Total Number of Staff

Institute 431 + Hospital 272 = 703

Graduate School Students

Graduate School	Master's	Doctoral	Total
Graduate School of Medicine	3	53	56
Graduate School of Science	12	9	21
Graduate School of Pharmaceutical Sciences	0	0	0
Graduate School of Information Science and Technology	8	4	12
Graduate School of Frontier Sciences	62	53	115
Graduate School of Interdisciplinary Information Studies	1	1	2
Graduate School of Engineering	14	12	26

Master's 100 + Doctoral 132 = 232

JSPS Research Fellow

	Total
JSPS Research Fellow (SPD)	0
JSPS Research Fellow (PD)	3
JSPS Research Fellow (RPD)	1
JSPS Research Fellow (DC)	11
JSPS Foreign Research Fellow	0

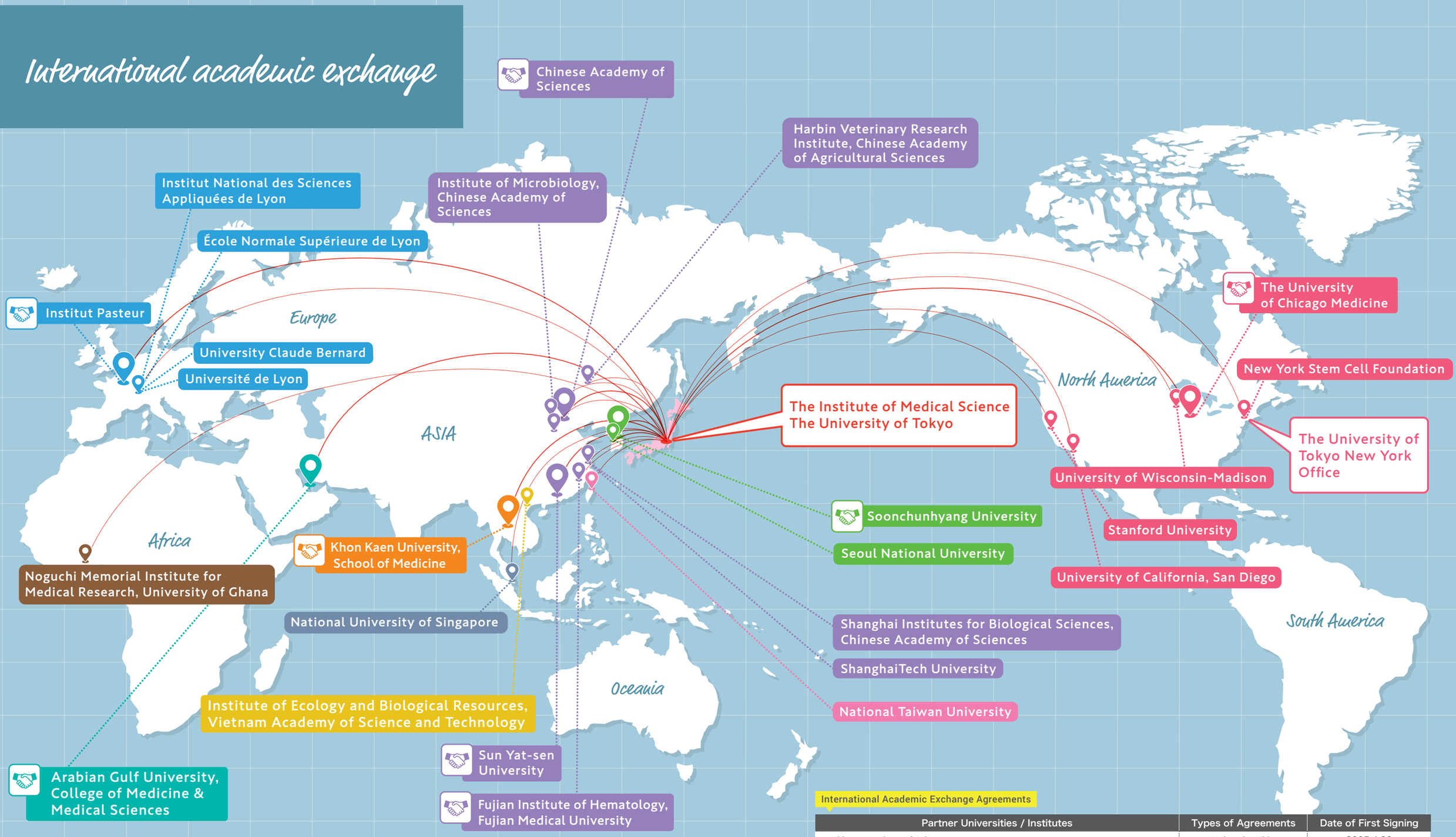
15

Research Students

	Total
Graduate Research Student	9
Graduate International Research Student	4
IMSUT Research Student	5

18

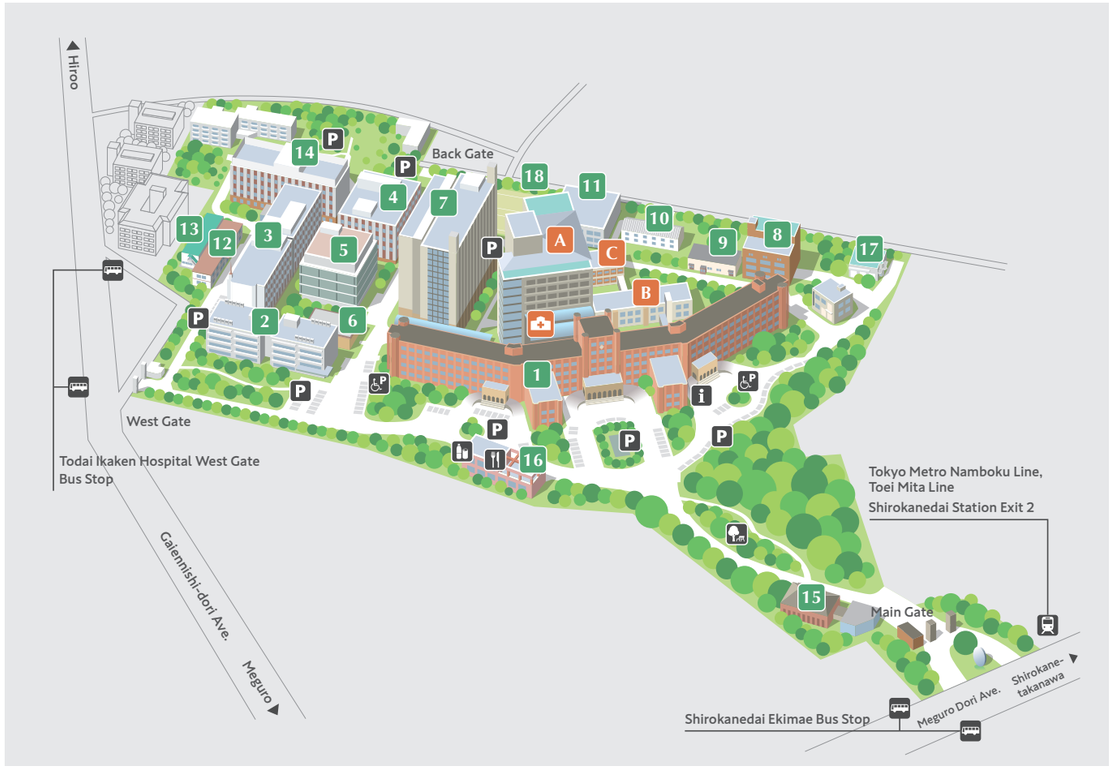
International academic exchange



International Academic Exchange Agreements

Partner Universities / Institutes	Types of Agreements	Date of First Signing
Chinese Academy of Sciences	University Wide	2005.4.29
Institut Pasteur, France	Departmental	2006.4.18
Sun Yat-sen University, China	University Wide	2011.11.15
Arabian Gulf University, College of Medicine & Medical Sciences, Kingdom of Bahrain	Departmental	2013.7.14
Soonchunhyang University, Korea	Departmental	2013.9.26
The University of Chicago Medicine, The United States of America	Departmental	2014.6.4
Khon Kaen University, School of Medicine, Thailand	Departmental	2016.12.20
Fujian Institute of Hematology, Fujian Medical University, China	Departmental	2020.6.3

Caupus Map



IMSUT Hospital

- Hospital Reception for Outpatients
- A Hospital Bldg. A
- B Hospital Bldg. B
- C Hospital Bldg. C

University Facilities

1 Bldg. 1
2 Bldg. 2
3 Bldg. 3
4 Bldg. 4
5 Animal Center
6 Amgen Hall
7 General Research Bldg.
8 Clinical Research Bldg. A
9 Core Facility for Therapeutic Vectors
10 Research Bldg. Annex
11 Open Laboratory Bldg.
12 Human Genome Center Annex
13 Crest Hall
14 Human Genome Center
15 Medical Science Museum
16 Shirokane Hall
17 BioBank
18 Tennis Courts

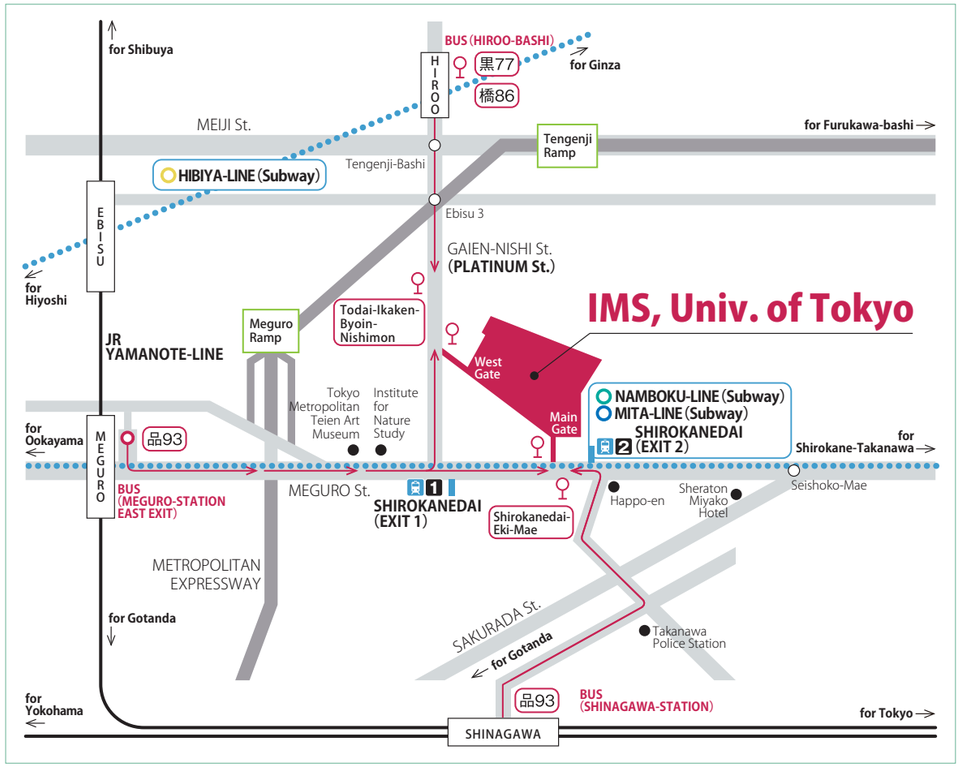
- Hospital Information
- Station
- Rest Area
- Bus Stop
- Restaurant
- Parking
- Shop
- Parking for Patients

(Unit: ㎡)

Grounds/Buildings		Land Space	Buildings: Floor Space	Buildings: Total Space
Shirokanedai	Institute		11,548	54,126
	Hospital		3,305	23,259
	Subtotal	68,907	14,853	77,385
Amami		8,834	805	805
Total		77,741	15,658	78,190

Locations: IMSUT — 4-6-1 Shirokanedai, Minato-ku, Tokyo
Amami Laboratory of Injurious Animals — 802 Tean-sude, Setouchi-cho, Oshima-gun, Kagoshima

Access Map



SHIROKANEDAI SHIROKANEDAI-STATION on the Metro NAMBOKU or MITA LINE (EXIT 2)

By WALK FROM STATION

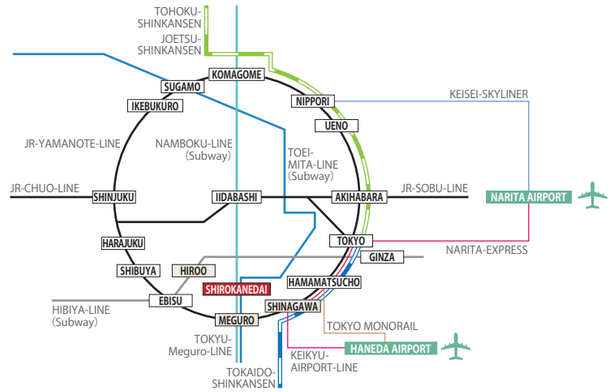
MEGURO 15 min. walk from JR-MEGURO-STATION EAST EXIT

By BUS FROM STATION

MEGURO From JR-MEGURO-STATION EAST EXIT (MEGRO-EKI-MAE bus stop)
＊take (品93) metropolitan bus bound for OHI-KEIBAJO
>> get off at SHIROKANEDAI-EKI-MAE
＊take (黒77) metropolitan bus bound for SENDAGAYA-EKI-MAE
(or take (橋86) metropolitan bus bound for SHINBASHI-EKI-MAE or TOKYO TOWER)
>> get off at TODAI-IKAKENBYOIN-NISHIMON

SHINAGAWA From JR-SHINAGAWA-STATION (SHINAGAWA-EKI-MAE bus stop)
＊take (品93) metropolitan bus bound for MEGRO-EKI-MAE
>> get off at SHIROKANEDAI-EKI-MAE

HIROO From HIROO-STATION on the Metro HIBIYA LINE (HIROO-BASHI bus stop)
＊take (黒77) or (橋86) metropolitan bus bound for MEGRO-EKI-MAE
>> get off at TODAI-IKAKENBYOIN-NISHIMON



https://www.ims.u-tokyo.ac.jp/imsut/en/access/access/

https://www.ims.u-tokyo.ac.jp/imsut/en/

4-6-1, Shirokanedai, Minato-ku, Tokyo, 108-8639, Japan TEL / (+81)-3-3443-8111

THE UNIVERSITY OF TOKYO
The Institute of Medical Science
The University of Tokyo