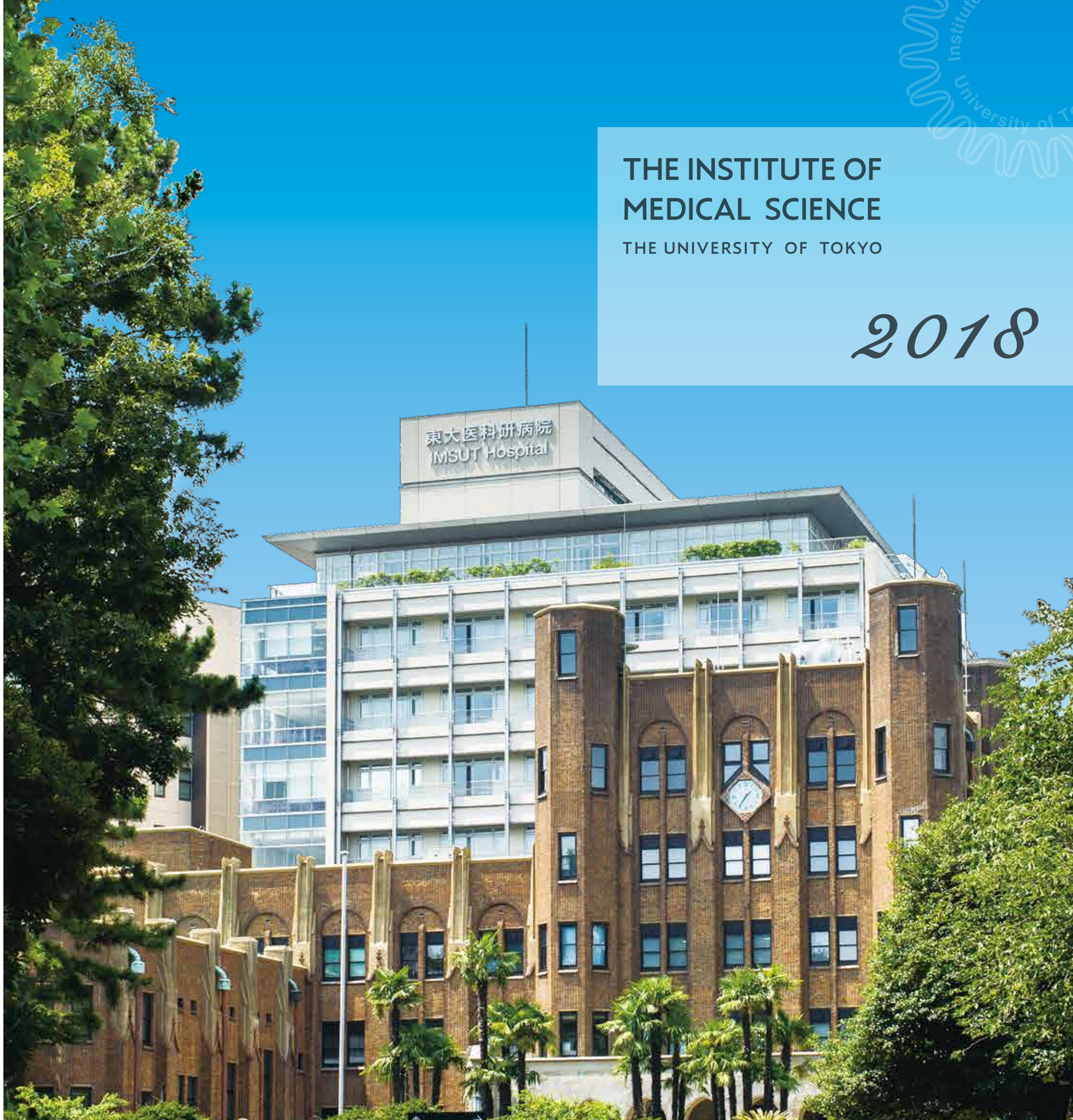
東京大学
THE UNIVERSITY OF TOKYO



THE INSTITUTE OF MEDICAL SCIENCE

THE UNIVERSITY OF TOKYO

2018

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October 2018

Save the Future

The Institute of Medical Science, the University of Tokyo (IMSUT) was established by Prof. Dr. Shibasaburo Kitasato in 1892 as the Institute of Infectious Diseases (IID). It was then reorganized and underwent a name change from IID to IMSUT in 1967. At IMSUT, we search for the truth of biological phenomena and the principles of diseases, reconstitute the disease model and unveil the molecular and cellular mechanisms of illnesses. It is our mission to aim at innovative prevention and therapies on the basis of basic research sparked and driven by the investigators' intellectual curiosity. We also conduct project-oriented research to respond to society's needs by focusing on several timely topics of biomedical science. Moreover, we work to push back the frontiers of medical and biological science, and put our discoveries into practice as revolutionary therapies in our affiliated research hospital. Further, the Institute continues to contribute to the national and global research community in biomedical science as a collaborative hub for research with shared activities and facilities, including our high-level basic research and large-scale research facilities such as our supercomputer and affiliated hospital.

We are currently conducting basic research on cancer, infectious diseases, immune disorders, and other intractable and rare diseases. At the same time, we are expanding programs in genomic medicine, regenerative medicine and genetically engineered animal models to develop novel prevention, diagnostics and therapeutics. These pioneering research initiatives have earned international respect for their achievements. IMSUT also provides a practical model of a translational research center, serving as a bridge from bench to bedside for cutting-edge medical treatment, gene therapy, drug and vaccine development.

IMSUT celebrated the 125th anniversary of its foundation and the 50th anniversary of the institute's reorganization in 2017. Beyond 125 years, we aim to contribute to the global society of the 21st century. We are involved in the "IMSUT 125-50/IMSUT One to Gogo" project that aims to place us at the forefront of cutting-edge medical and life science research institutes.

Dean
Yoshinori Murakami, M.D., Ph.D.

THE INSTITUTE
OF MEDICAL SCIENCE
THE UNIVERSITY
OF TOKYO

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Dean
Professor Yoshinori Murakami

Vice Dean for General Affairs
Professor Mutsuhiro Takekawa

Vice Dean for Finance
Professor Yasushi Kawaguchi

Vice Dean for Research Support
Professor Hirotoshi Tanaka

Senior Faculty Meeting

General Faculty Meeting

Committees

Research Departments

Department of Microbiology and Immunology
Chair Professor Kensuke Miyake

- Division of Virology
- Division of Infectious Genetics
- Division of Molecular Virology

Department of Cancer Biology
Chair Professor Yuji Yamanashi

- Division of Molecular Pathology
- Division of Cellular and Molecular Biology
- Division of Genetics
- Division of Cancer Cell Biology

Department of Basic Medical Sciences
Chair Professor Toshiya Manabe

- Division of Neuronal Network
- Division of Cell Signaling and Molecular Medicine

Research Facilities

Human Genome Center
Director Professor Satoru Miyano

- Laboratory of Genome Database
- Laboratory of DNA Information Analysis
- Laboratory of Molecular Medicine
- Laboratory of Genome Technology
- Laboratory of Sequence Analysis
- Laboratory of Functional Analysis *in silico*
- Department of Public Policy

Center for Experimental Medicine and Systems Biology
Director Professor Yoshinori Murakami

- Division of Stem Cell Pathology
- Laboratory of Innate Immunity
- Laboratory of Reproductive Systems Biology
- Laboratory of Genetically Engineered Mouse Research
- Laboratory of Systems Biology

Advanced Clinical Research Center
Director Professor Toshio Kitamura

- Division of Molecular Therapy
- 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

Center for Stem Cell Biology and Regenerative Medicine
Director Professor Yoshinori Murakami

- Division of Stem Cell and Molecular Medicine
- Division of Regenerative Medicine
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- Division of Stem Cell Processing
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- Division of Stem Cell Dynamics
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- Stem Cell Bank
- FACS Core Laboratory

International Research Center for Infectious Diseases
Director Professor Yoshihiro Kawaoka

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

International Research and Development Center for Mucosal Vaccines
Director Project Professor Hiroshi Kiyono

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

Health Intelligence Center
Director Professor Seiya Imoto

- Division of Health Medical Data Science
- Division of Health Medical Computational Science

Center for Gene & Cell Therapy
Director Professor Arinobu Tojo

Laboratory Animal Research Center
Director Professor Chieko Kai

Amami Laboratory of Injurious Animals
Director Professor Chieko Kai

Medical Proteomics Laboratory
Director Professor Jun-ichiro Inoue

Research Center for Asian Infectious Diseases
Director Professor Yasushi Kawaguchi

Laboratory of Molecular Genetics
Director Professor Yoshinori Murakami

(Frontier Research Unit)

IMSUT Distinguished Professor Units

- Division of Stem Cell Therapy
- Division of Mucosal Immunology

IMSUT Hospital

Director Professor Arinobu Tojo

Deputy Director Professor Hiroshi Yotsuyanagi

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 General Medicine
- Department of Applied Genomics
- Department of Radiology
- Department of Palliative Medicine
- Department of Diagnostic Pathology

Departments of Surgery

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

Care Support Unit

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

Clinical Safety and Infection Control Unit

- Center for Clinical Safety and Infection Control

Clinical Research Support Unit

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

Department of Nursing

Department of Pharmacy

Department of AIDS Vaccine Development

Corporate Sponsored Research Programs, Social Cooperation Research Programs

- Project Division of Molecular and Developmental Biology
- Project Division of RNA Medical Science
- Project Division of Systems Immunology Research
- Project Division of International Advanced Medical Research
- Project Division of ALA 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

Common Research Facilities

Technical Office

Dean's Office

Administration Office

General Manager Takahiko Kato

- Administrative Affairs Division — **Manager** Toshihide Asakawa
- Research Support Division — **Manager** Isao Uehara
- Hospital Division — **Manager** Makoto Hidai

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

Discovery of *Sersinia Pestis* and development of Serum Therapy for Diphteria by Dr. Shibasaburo Kitasato

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

1897
Discovery of *Shigella* by Dr. Kiyoshi Shiga

* Photo courtesy of The Kitasato Institute

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

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 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 (IMS)

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 national center for 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

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-)	

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-)		

Department of Microbiology and Immunology

Chair : Kensuke Miyake

Division of Virology
- Professor — Yoshihiro Kawaoka, D.V.M., Ph.D.
- Project Professor — Makoto Yamashita, Ph.D.
- Visiting Professor — Takeshi Noda, D.V.M., Ph.D.
- Associate Professor — Masaki Imai, D.V.M., Ph.D.
- Project Associate Professor — Satoshi Fukuyama, M.D., Ph.D.
- Project Associate Professor — Tokiko Watanabe, D.V.M., Ph.D.
- Project Associate Professor — Seiya Yamayoshi, D.V.M., Ph.D.

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

Division of Molecular Virology
- Professor — Yasushi Kawaguchi, D.V.M., Ph.D.

The research scope of our department includes the elucidation of the molecular interactions between pathogens and the host, molecular recognition of microbial products by the immune system, and the molecular mechanisms controlling host defense systems. Our department particularly focuses on the pathogens such as Influenza virus, Ebola virus, and Hepes Simplex Virus. Understanding the molecular bases underlying host-pathogen interactions will be applied to the development on novel vaccines or approaches to prevent or control infectious diseases and related immune disorders. The department is composed of 3 divisions: “Division of Virology” , “Division of Innate Immunity” , and “Division of Molecular Virology” . Although each research group has particular interests in either the pathogen or the host, their research is not limited to one or the other side of infectious diseases. Rather, their research covers a wide range of dynamic interactions between microbes and the host in the development of infectious diseases and related immune disorders. Our department has been successfully promoting basic research in the area of infection and immunity in collaboration with many other groups in Japan and other countries. In addition, we have actively engaged in promoting collaborative projects with IMSUT Research Hospital as well as various groups in pharmaceutical companies for the development of drugs, vaccines and immunobiomaterials. The growing concern in emerging and re-emerging infectious diseases demands further progresses of the basic research projects in our department. Our department, as one of the pioneer groups in our country, strongly endeavors to promote and expand the research projects on infection and immunity through collaborations with other groups, and the professional development of young independent investigators through studies in the department.

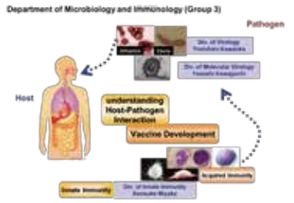


Figure shows three divisions in Department of Microbiology and Immunology. Two divisions focus on pathogens such as Influenza virus, Evola virus, and Herpes Simplex Virus, whereas another division focuses on the immune system. These divisions work together to understand the molecular bases underlying host-pathogen interaction and to develop novel vaccines or novel therapy for infectious diseases.

Department of Cancer Biology

Chair : Yuji Yamanashi

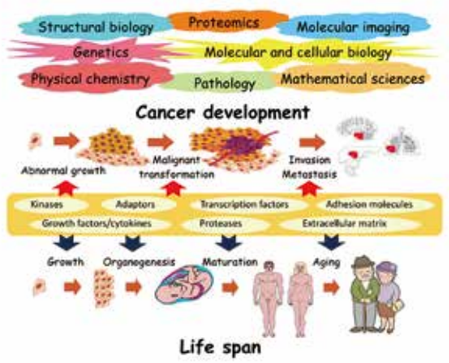
Division of Molecular Pathology
- Professor — Yoshinori Murakami, M.D., Ph.D.
- Project Professor — Takayuki Morisaki, M.D., Ph.D.
- Visiting Professor — Naohiko Koshikawa, Ph.D.
- Visiting Associate Professor — Daisuke Matsubara, M.D., Ph.D.

Division of Cellular and Molecular Biology
- Professor — Jun-ichiro Inoue, Ph.D.
- Associate Professor — Takeharu Sakamoto, D.V.M., Ph.D.

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

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

Formation and development of cancer is a multi-step process that involves alteration of structure and function of various genes, including those involved in regulation of cell growth, differentiation, and cell-cell and cell-extracellular matrix interaction. In the Department of Cancer Biology, we aim to clarify the entire picture of tumor formation and development based on these gene products. To do so we apply various multidisciplined 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 and differentiation, malignant transformation, tumor invasion, metastasis, and angiogenesis, with regard to pathogenic mechanisms in human cancer. The findings of our research should be the subjects of translational research. Ongoing research investigations are as follows. Division of Molecular Pathology: 1) Molecular analysis of cancer progression by aberrant cell adhesion and its application to diagnosis and treatment of cancer. 2) Genomic, epigenomic and molecular pathological analyses of lung, bile-duct and other solid tumors and adult T-cell leukemia. Division of Cellular and Molecular Biology: 1) Elucidation of the molecular mechanisms of transcription factor NF-κB activation and its roles in cancer development and pathogenesis of various diseases. 2) Studies on regulatory mechanisms of the tumor microenvironment and therapeutic development targeting these mechanisms. Division of Genetics: 1) Studies on molecular signals that regulate a variety of cellular activities, aiming to address how deregulated cellular signals cause neoplastic 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) Molecular basis underlying DNA methylation abnormalities in early stages of carcinogenesis.



Department of Basic Medical Sciences

Chair : Toshiya Manabe

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.

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 two groups: the Division of Neuronal Network and the Division of Cell Signaling and Molecular Medicine. 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, for instance, 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 cellfate 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).

Fig.1 A hippocampal slice prepared from the mouse brain

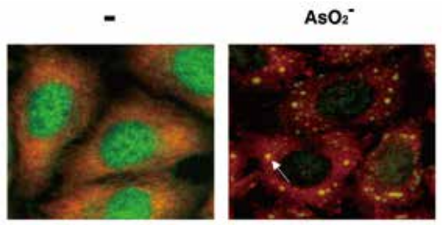


Fig.2 Arsenite induces formation of cytoplasmic stress granules

Human Genome Center

Director : Satoru Miyano

Laboratory of Genome Database
Professor — Satoru Miyano, Ph.D.

Laboratory of DNA Information Analysis
Professor — Satoru Miyano, Ph.D.
Associate Professor — Rui Yamaguchi, Ph.D.

Laboratory of Molecular Medicine
Professor — Tatsuhiro Shibata, M.D., Ph.D.

Laboratory of Genome Technology
Professor — Satoru Miyano, Ph.D.
Professor — Yoshinori Murakami, M.D., Ph.D.

Laboratory of Sequence Analysis
Professor — Satoru Miyano, Ph.D.
Associate Professor — Tetsuo Shibuya, Ph.D.

Laboratory of Functional Analysis in Silico
Professor — Kenta Nakai, Ph.D.
Senior Assistant Professor — Ashwini Ajay Patil, Ph.D.
Project Senior Assistant Professor — Sung-Joon Park, Ph.D.

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

The implementation of genomic medicine has started. By promoting personalized genomic medicine based on genomic and medical information, Human Genome Center is to contribute to our society through development of diagnostic methods, novel treatment, and prevention for diseases. With the technology of artificial intelligence and the supercomputer system SHIROKANE specialized for biomedical research, our center is pursuing the following items.

1) **Biomedical research for personalized genomic medicine**
With high technologies symbolized as silicon sequencer, etc., we conduct cutting-edge researches to understand the common diseases such as cancer by analyzing the personal genome, epigenome, transcriptome, proteome, metabolome, drug effects, and environmental factors, and to translate the results for personalized diagnosis, prevention and treatment. Especially, we develop and implement cancer clinical sequence based on whole genome sequencing.

2) **Medical informatics for personalized genomic medicine**
We develop medical informatics that organizes medical knowledge/information, analyzes and interprets personal genomic information and their medical data for personalized genomic medicine. By taking advantage of the artificial intelligence technology and the supercomputer, we develop the infrastructure in place to suit large-scale human genome-related databases, drug adverse reaction database, large-scale data analysis computational / statistical software for life and health that accelerates personalized genomic medicine.

3) **Policy science for ethical, legal and social issues (ELSI)**
To promote to promote life/medical sciences, study of ELSI is important for public understanding of its concepts. In particular, social consensus should be built to make best use of personal genome. By empirical methods or comparative policy studies, we conduct various researches on future impacts towards disease notification and shared decision-making and access to their clinical/genomic information, and affordable health care. We address policy statements based on these studies.

SHIROKANE3&4
(550TFLOPS)

Lustre File System
(30PB)

Archive Disk (~100PB)

Human Genome Center
Supercomputer System
SHIROKANE

Center for Experimental Medicine and Systems Biology

Director : Yoshinori Murakami

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

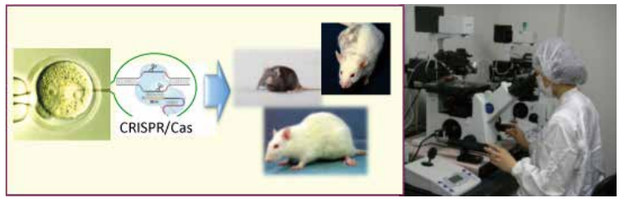
Laboratory of Innate Immunity
Professor — Kensuke Miyake, M.D., Ph.D.

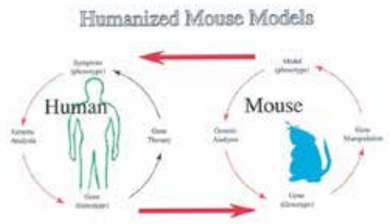
Laboratory of Reproductive Systems Biology
Project Professor — Masahito Ikawa, Ph.D.
Associate Professor — Manabu Ozawa, Ph.D.

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

Laboratory of Systems Biology
Associate Professor — Susumu Nakae, Ph.D.

The Center for Experimental Medicine and Systems Biology was established in July, 2007, renewed from The Center for Experimental Medicine organized in 1998. The center consists of five laboratories, Division of Stem Cell Pathology, Laboratory of Innate Immunity, Laboratory of Reproductive Systems Biology, Laboratory of Genetically Engineered Mouse Research, and Laboratory of Systems Biology.
The purposes of the center are to develop animal models for human diseases and establish *in vivo* experimental platforms in various research fields including stem cell biology, immunology, and cancer biology. To achieve these purposes, 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.
After the completion of the genome projects, an accurate and complete genome sequence of various organisms have been made available. However, 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.
Gene targeting technology has provided powerful strategies for uncovering many aspects of gene functions *in vivo*. Genetically-engineered mice have offered the opportunities of not only analyzing the complex gene function *in vivo*, but also presenting 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.
Our center has a mission to provide scientists at IMSUT and other academic institutes with genetically-engineered animal models to conduct research on human diseases. Our center is also developing novel technologies for establishing advanced animal models for biomedical research. We hope that our effort promotes the specialized, comprehensive or interdisciplinary research, which connect different research fields, including stem cell biology, immunology, and cancer biology.





Advanced Clinical Research Center

Director: Toshio Kitamura

Division of Molecular Therapy
Professor — Arinobu Tojo, M.D., D.M.Sc.
Associate Professor — Satoshi Takahashi, M.D., D.M.Sc.

Division of Cellular Therapy
Professor — Toshio Kitamura, M.D., D.M.Sc.
Associate Professor — Susumu Goyama, M.D., Ph.D.

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.
Project Senior Assistant Professor — Kiyoshi Yamaguchi, Ph.D.

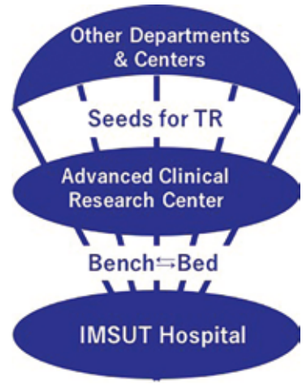
Division of Innovative Cancer Therapy
Professor — Tomoki Todo, M.D., Ph.D.
Associate Professor — Yasushi Ino, M.D., Ph.D.
Project Associate Professor — Minoru Tanaka, M.D., Ph.D.

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

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.

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, infectious 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 an intimate contact with basic scientists inside and outside IMSUT.
ACRC is now consisted of 8 divisions: namely, Division of Molecular Therapy 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 : Yoshinori Murakami

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

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

Division of Stem Cell Transplantation
Professor — Arinobu Tojo, M.D., Ph.D.
Associate Professor — Satoshi Takahashi, M.D., Ph.D.

Division of Stem Cell Processing
Associate Professor — Makoto Otsu, M.D., Ph.D.

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

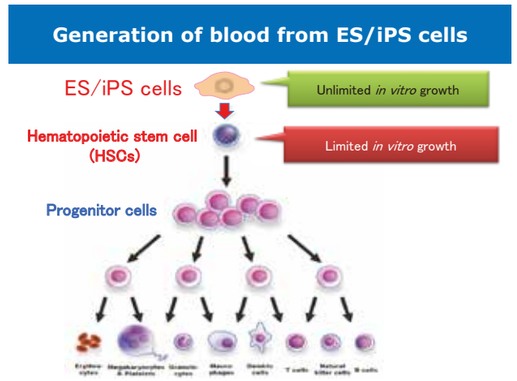
Division of Stem Cell Dynamics
Associate Professor — Beate Heissig, M.D., Ph.D.

Division of Stem Cell Cellomics
Project Associate Professor — Hiroshi Watarai, Ph.D.

Stem Cell Bank
Associate Professor — Makoto Otsu, M.D., Ph.D.

FACS Core Laboratory
Associate Professor — Makoto Otsu, 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 7 divisions, Division of Stem Cell and Molecular Medicine, Division of Regenerative Medicine, Division of Stem Cell Transplantation, Division of Stem Cell Processing, Division of Stem Cell Signaling, Division of Stem Cell Dynamics, and Division of Stem Cell Cellomics. 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 : Yoshihiro Kawaoka

Department of Special Pathogens
Professor Chieko Kai, D.V.M., Ph.D.
Professor Yoshihiro Kawaoka, D.V.M., Ph.D.

Department of Infectious Disease Control
Professor Yasushi Kawaguchi, D.V.M., Ph.D.
(Division of Viral Infection)
Associate Professor Takeshi Ichinohe, Ph.D.
(Division of Bacteriology)
Associate Professor Hitomi Mimuro, Ph.D.
(Division of Systems Virology)
Associate Professor Kei Sato, Ph.D.

Pathogenic Microbes Repository Unit
Associate Professor Hitomi Mimuro, Ph.D.

Countermeasures against emerging and re-emerging infectious diseases require not only the urgent development of novel vaccines and antivirals, but also long-term basic research and the development of other human resources. Accordingly, the Institute of Medical Science, University of Tokyo and the Research Institute of Microbial Diseases, Osaka University, jointly established the International Research Center for Infectious Diseases in 2005, with the purpose of training infectious disease specialists and undertaking research that will ultimately promote the control of infectious diseases. This Center is composed of two departments (the Department of Special Pathogens and the Department of Infectious Disease Control) and one unit (the Pathogenic Microbes Repository Unit).

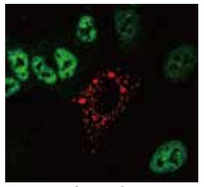


Fig. 1: Sever fever with thrombocytopenia syndrome (SFTS) virus NSs (red) inhibits nuclear translocation of IRF3 (green).

International Research and Development Center for Mucosal Vaccines

Director : Hiroshi Kiyono

Division of Mucosal Barriology
Professor Kensuke Miyake, M.D., Ph.D.
Visiting Professor Koji Hase, Ph.D.
Visiting Associate Professor Shintaro Sato, 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 Kensuke Miyake, 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.

Our center was established to develop next-generation of “Mucosal Vaccines” which can contribute to the control of emerging/reemerging infectious diseases including tuberculosis, pneumonia, influenza, AIDS, herpes, diarrheal diseases and other infectious diseases as well as allergic diseases. We are conducting basic research for molecular and cellular understanding of the mucosal immune system for the development of Mucosal Vaccine. These scientific efforts will lead to the creation of “Mucosal Vaccinology” integrating front-line knowledge of mucosal immunology and vaccine design technology. We have created the cooperative research and development platform for the industry, government and university for the development of oral and nasal vaccines. We further assess intestinal microorganisms comprehensively by using bioinformatics. We aim for clarification of the whole picture of intestinal ecosystem which consists of epithelial-stromal barrier, immune system and gut microbiota.

Annual International Workshop on Mucosal Immunology and Vaccine for Young Investigators 2017

Health Intelligence Center

Director : Seiya Imoto

Division of Health Medical Data Science
Professor Seiya Imoto, Ph.D.

Division of Health Medical Computational Science
Professor Satoru Miyano, Ph.D.

Currently, the cost of whole-genome sequencing analysis for an individual runs less than thousand USD. This cost should be decreased to hundred USD within several years. It is obvious that almost all of us can have own whole-genome sequence information. We are making an effort on development statistical data analysis technologies enhanced with supercomputing in order to create methods for the prediction and prevention of diseases and for improving our health based on genomic big data including whole-genome, transcriptome, epigenome and meta-genome of microbiota, and time-series big data of health and medical records.

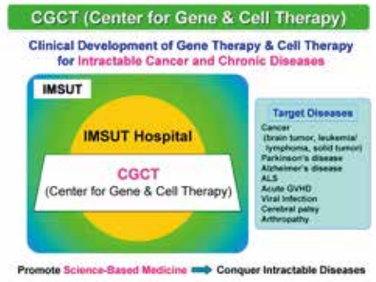
Recommended drugs by AI with their targets and evidence

Center for Gene & Cell Therapy

Director : Arinobu Tojo

Professor Tomoki Todo, M.D., Ph.D.
Professor Arinobu Tojo, M.D., D.M.Sc.
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 Shin-ichi Muramatsu, M.D., Ph.D.
Project Professor Kenzaburo Tani, M.D., Ph.D.
Associate Professor Satoshi Takahashi, M.D., D.M.Sc.
Associate Professor Makoto Otsu, M.D., Ph.D.
Associate Professor Tokiko Nagamura-Inoue, M.D., D.M.Sc.

IMSUT hospital has been playing a lead role in gene therapy and hematopoietic stem cell transplantation in Japan. In order to strengthen this clinical development even further, IMSUT established the Center for Gene & Cell Therapy (CGCT) in 2014. CGCT particularly focuses on the development of gene therapy / cell therapy for intractable cancer and chronic diseases, e.g. oncolytic virotherapy, engineered T cell therapy, gene therapy for neurological disorders using AAV vectors, T cell therapy for post-transplant viral infections, and cell therapy using mesenchymal stem/stromal cells.



Laboratory Animal Research Center

Director : Chieko Kai

Professor Chieko Kai, D.V.M., Ph.D.
Associate Professor Misako Yoneda, D.V.M., Ph.D.
Project Senior Assistant Professor Hiroki Sato, Ph.D.

Our major research interests are to elucidate molecular mechanisms of pathogenicity and species specificity of minus and single strand RNA viruses (Mononegavirales) and to control viral diseases. We are also developing new virus vaccines using genetic engineering and medicine effective in the virus infectious diseases. Taking advantage of the oncolytic feature of morbilliviruses, we produced novel oncolytic virus vectors for cancer therapies and are now improving them.

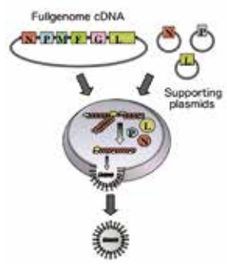


Fig.1 Reverse genetics for generation of recombinant virus

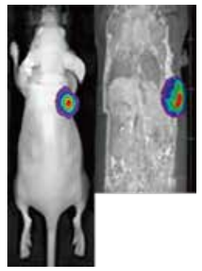


Fig.2 *In vivo* oncolytic activity of recombinant measles virus

Amami Laboratory of Injurious Animals

Director : Chieko Kai

Professor Chieko Kai, D.V.M., Ph.D.

This laboratory was established in 1965 at Amami-oshima Island for studies on endemic diseases. This laboratory has four major themes in research: (1) The analysis of pathogenicity of viruses and the development of vaccines for infectious diseases using non-human primate models, (2) The application of dedifferentiated fat (DFAT) cells for wound healing in non-human primate, (3) The study of assisted reproductive technology in non-human primate, (4) The chronobiological analysis in non-human primate and (5) The development of new therapies for Habu venom using molecular biological and immunological techniques.

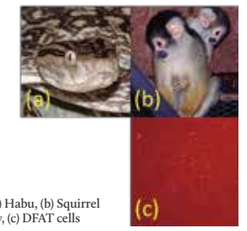


Fig.1. (a) Habu, (b) Squirrel monkey, (c) DFAT cells

Laboratory of Molecular Genetics

Director : Yoshinori Murakami

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

The faculty members belonging to the Frontier Research Unit promote the advanced medical science research individually.

Medical Proteomics Laboratory

Director : Jun-ichiro Inoue

Professor	Jun-ichiro Inoue, Ph.D.	Project Professor	Koichi Tanaka
Professor	Kouhei Tsumoto, Ph.D.	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.

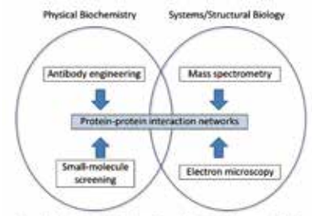


Fig 1. Protein interaction network analysis in medical proteomics research

Research Center for Asian Infectious Diseases

Director : Yasushi Kawaguchi

Professor	Yasushi Kawaguchi, D.V.M., Ph.D.	Project Professor	Zene Matsuda, M.D., Ph.D., D.Sc.	Project Associate Professor	Takaomi Ishida, Ph.D.
Professor	Yoshihiro Kawaoka, D.V.M., Ph.D.	Project Professor	Mitsue Hayashi, Ph.D.	Project Associate Professor	Seiya Yamayoshi, D.V.M., Ph.D.
Professor	Jun-ichiro Inoue, Ph.D.	Visiting Professor	Kunito Yoshiike, D.Sc.	Project Senior Assistant Professor	Jin Gohda, Ph.D.

IMSUT's Research Center for Asian Infectious Diseases is conducting collaborative research with four institutes, supported by the Japan Agency of Medical Research and Development (AMED). Collaborating institutes are: the Institute of Biophysics and 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 HIV-1, MERS coronavirus, Dengue virus, avian and human influenza viruses, and drug-resistant bacteria. In Beijing, IMSUT scientists are working with Chinese scientists mainly on HIV-1 membrane fusion and latency.

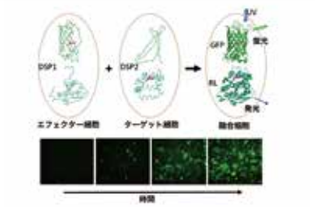


Fig. Detection of membrane fusion with split reporter proteins, DSPs.
The membrane fusion can be quantitatively measured by the dual split proteins (DSPs) containing split *Renilla* luciferase (RL) and split GFP domains.

IMSUT Distinguished Professor Units

Division of Stem Cell Therapy

IMSUT Distinguished Professor	Hiromitsu Nakauchi, M.D., Ph.D.
Project Associate Professor	Tomoyuki Yamaguchi, Ph.D.
Project Associate Professor	Eiji Mizutani, Ph.D.
Project Associate Professor	Satoshi Yamazaki, Ph.D.

Division of Mucosal Immunology

IMSUT Distinguished Professor	Hiroshi Kiyono, D.D.S., 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.

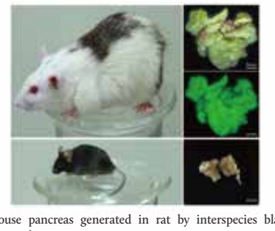


Fig.1. Mouse pancreas generated in rat by interspecies blastocyst complementation.
Shown below is a mouse (iPS cell donor) and its pancreas.

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.

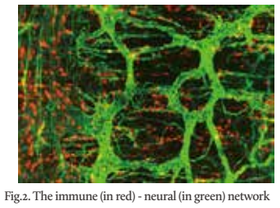


Fig.2. The immune (in red) - neural (in green) network

IMSUT Hospital

Director
Arinobu Tojo, M.D., D.M.Sc.
(Director's Office)
Visiting Professor Mieko Chinzei, M.D., D.M.Sc.
Visiting Associate Professor Ai Tachikawa, D.M.Sc.

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

Department of Hematology/Oncology
Professor Arinobu Tojo, M.D., D.M.Sc.
Associate Professor Satoshi Takahashi, 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
Professor Hiroshi Yotsuyanagi, M.D., D.M.Sc.
Senior Assistant Professor Tomohiko Koibuchi, M.D., D.M.Sc.

Department of Rheumatology and Allergy
Professor Hirotoshi Tanaka, M.D., D.M.Sc.
Senior Assistant Professor Noritada Yoshikawa, M.D., D.M.Sc.

Department of General Medicine
Professor Hiroshi Yotsuyanagi, M.D., D.M.Sc.
Project Professor Kenzaburo Tani, M.D., Ph.D.
Visiting Professor Hideaki Kagami, D.D.S., Ph.D.
Associate Professor Yoshihiro Hirata, M.D., Ph.D.
Senior Assistant Professor Yasuo Matsubara, M.D., Ph.D.

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

Department of Radiology
Associate Professor Akira Kunimatsu, M.D., Ph.D.
Senior Assistant Professor Hiroyuki Akai, M.D., Ph.D.

Department of Palliative Medicine
Professor Arinobu Tojo, M.D., D.M.Sc.

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

Department of Surgery
Associate Professor Masaru Shinozaki, 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.
Associate Professor Yasushi Ino, M.D., Ph.D.
Project Associate Professor Minoru Tanaka, M.D., Ph.D.

Department of Medical Informatics
Associate Professor Akira Kunimatsu, M.D., Ph.D.
Senior Assistant Professor Hiroyuki Akai, M.D., Ph.D.

Department of Radiological Technology
Associate Professor Akira Kunimatsu, M.D., Ph.D.

Department of Cell Processing and Transfusion
Associate 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
Professor Arinobu Tojo, M.D., D.M.Sc.

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

Radiation Control Office
Associate Professor Akira Kunimatsu, M.D., Ph.D.

Regional Medical Liaison Office
Professor Hiroshi Yotsuyanagi, 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)
Senior Assistant Professor Tomohiko Koibuchi, 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 Hirotoshi Tanaka, 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.
Senior Assistant Professor Noritada Yoshikawa, M.D., D.M.Sc.
Project Senior Assistant Professor Atsushi Takano, M.D., Ph.D.

Therapeutic Vector Development Center
Professor Tomoki Todo, M.D., Ph.D.
Associate Professor Yasushi Ino, M.D., Ph.D.

IMSUT Cord
Associate Professor Tokiko Nagamura-Inoue, M.D., D.M.Sc.

Department of Nursing
Director Koji Kobayashi, R.N., P.H.N., Ph.D.

Department of Pharmacy
Director Seiichiro Kuroda

Department of AIDS Vaccine Development
Invited Professor Tetsuro Matano, M.D., D.M.Sc.

After the incorporation of all Japanese national universities in April 2004, almost all university hospitals became under direct control of university corporations or were attached to a faculty of medicine. The Hospital of the Institute of Medical Science, the University of Tokyo (IMSUT Hospital) remains the only hospital affiliated with a research institution for a national university in Japan. The 8–storied hospital building has 135 beds including 6 sterile patient rooms, an outpatient clinic, and advanced diagnostic and therapeutic machines. Currently, IMSUT Hospital mainly targets diseases such as hematological malignancies, solid tumors, infectious diseases, and autoimmune disorders. Based on advanced medical treatment, IMSUT Hospital, together with the Advanced Clinical Research Center, is conducting research on pathogenesis and promoting translational research (TR), such as gene and cell therapy of blood cancers, viral therapy of brain tumors, and vaccine treatment of solid tumors. The operational structure of IMSUT Hospital is divided into 4 units; (1) Medical Care Unit, (2) Care Support Unit, (3) Clinical Safety and Infection Control Unit, and (4) Clinical Research Support Unit. These units are further supported by the Department of Nursing, Pharmacy and Administration Office.

IMSUT Hospital aims to operate as a core facility for the clinical application of outstanding international and domestic research results, including those of IMSUT' s 3 major research centers: Human Genome Center, Center for Experimental Medicine and Systems Biology, and Center for Stem Cell and Regenerative Medicine of IMSUT. Since the activities and mission of IMSUT Hospital cannot be covered by its fixed operational expenses, IMSUT Hospital has been supported by external funds such as i) Funding for Cancer Translational Research, ii) Coordination, Support and Training Program for Translational Research, and iii) Translational Research Network Program among other external funding sources. IMSUT Hospital is still expanding its organization. In 2011, the Department of Surgical Neuro-Oncology was established to conduct clinical research of oncolytic virotherapy for brain tumors. In 2012, the Center for Antibody and Vaccine Therapy began operation, and the Department of Palliative Medicine was established. Further, CGCT (Center for Gene & Cell Therapy) was established in 2014 to serve and promote TR.

Corporate Sponsored Research Programs/Social Cooperation Research Programs

Project Division of Molecular and Developmental Biology
Project Professor — Sumiko Watanabe, Ph.D.
Project Senior Assistant Professor — Hideto Koso, M.D., Ph.D.

Project Division of RNA Medical Science
Project Associate Professor — Masaki Takahashi, Ph.D.

Project Division of Systems Immunology Research

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

Project Division of ALA Advanced Medical Research
Project Professor — Kenzaburo Tani, M.D., Ph.D.
Project Senior Assistant Professor — Yasushi Soda, 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.

In addition to the three core departments and affiliated centers, IMSUT has set up corporate sponsored research programs, 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 programs 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

Animal Center
Professor — Chieko Kai

Culture Media Section
Head — Jun-ichiro Inoue

Library
Head — Yasushi Kawaguchi

Radioisotope Center
Head — Kensuke Miyake

IT Service Room
Head — Mutsuhiro Takekawa

Photographic Laboratory
Head — Mutsuhiro Takekawa

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 — Makoto Nakanishi

Office of Intellectual Property
Head — Jun-ichiro Inoue

Advisory Room for Conflict of Interest
Head — Hirotoshi Tanaka

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

Gene Manipulated Mouse Section
Professor — Yasuhiro Yamada
Professor — Chieko Kai

Imaging Core Laboratory
Head — Mutsuhiro Takekawa

IMSUT Clinical Flow Cytometry Laboratory
Head — Arinobu Tojo

IMSUT Clinical Flow Cytometry Laboratory

Imaging Core Laboratory

Library

Technical Office

Head — Kensuke Miyake

Dean's Office

Dean's Advisor Office
Visiting Professor — Toichi Takenaka

Project Coordination Office
Head — Mutsuhiro Takekawa

Office of Support for Platforms for Advanced Technologies and Research Resources
Head/Visiting Professor — Kohzoh Imai

International Affairs Office
Head — Mutsuhiro Takekawa

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

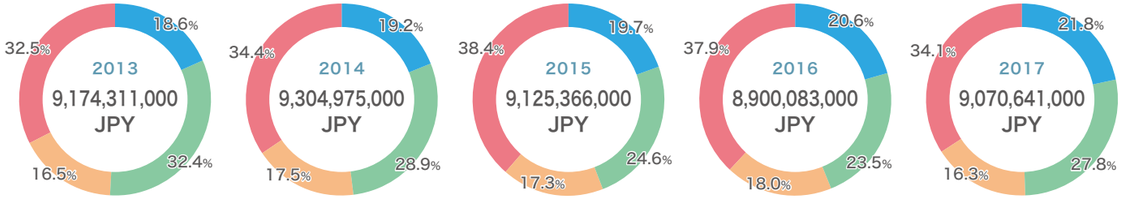
The Medical Science Museum preserves and introduces to the public the valuable historical materials of the Institute of Medical Science (IMS), the University of Tokyo. Founded by Dr. Shibasaburo Kitasato in 1892 as the Institute of Infectious Diseases (IID), for more than half a century following its 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

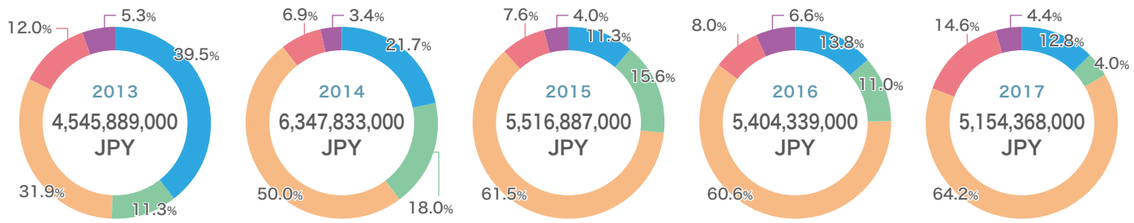
Management Expenses Grants

Institute/Budget for Salaries　Institute/Budget for Materials
Hospital/Budget for Salaries　Hospital/Budget for Materials



Income from External Sources

Research Grants (Personal)　Research Grants (IMSUT)　Contract
Collaborative　Donations



+ Supplementary Budget (BioBank Project) 2,470,360JPY

+ Supplementary Budget (BioBank Project) 1,010,269JPY

Projects

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 Arinobu Tojo

Japan Initiative for Global Research Network on Infectious Diseases (J-GRID)
"China-Japan Research Collaboration on Defense against Emerging and Reemerging Infections"

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　Professor Yoshinori Murakami

Ongoing in 2018

Research and Education Projects by Management Expenses Grants

FY 2015-2019	Organization of International Genomic Medicine Research Initiative for Innovative Therapies and Prevention
FY 2016-2020	Global Promotion of Strategic Research and Development for Mucosal Vaccines
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

Members

Staff

(Data:2018.07.01)

	Institute	Hospital	Total
Professor	24	1	25
Associate Professor	24	5	29
Senior Assistant Professor	2	6	8
Assistant Professor	35	14	49
Research Associate	1	0	1
Official	36	12	48
Technical Official	37	114	151

Institute 159 + Hospital 152 = 311

Fixed-term Project Staff

	Institute	Hospital	Total
Project Professor	8	0	8
Project Associate Professor	14	0	14
Project Senior Assistant Professor	7	1	8
Project Assistant Professor	13	0	13
Project Reseacher	45	1	46
Project Academic Support Specialist	45	10	55
Project Academic Support Staff	25	4	29
Project Specialist	0	0	0
Project Medical Staff	0	12	12
Project Nursing Staff	0	6	6

Institute 157 + Hospital 34 = 191

Fixed-term Part-time (Project) Staff

	Institute	Hospital	Total
Project Professor	6	1	7
Project Associate Professor	2	1	3
Project Senior Assistant Professor	0	0	0
Project Assistant Professor	3	1	4
Project Reseacher	13	1	14
Project Academic Support Specialist	24	2	26
Project Academic Support Staff	33	5	38
Project Senior Specialist	0	2	2
Project Specialist	4	0	4
Assistant Clerk	15	11	26
Technical Assistant	19	2	21
Part-time Academic Affairs Staff	1	0	1
Skilled Assistant	4	9	13
Member of the Medical Staff	0	9	9
Special Medical Intern	0	4	4
Assistant Medical Technician	1	3	4
Assistant Nurse	0	1	1

Institute 125 + Hospital 52 = 177

Total Number of Staff

Institute 441 + Hospital 238 = 679

Graduate School Students

Graduate School	Master's	Doctoral	Total
Graduate School of Medicine	2	61	63
Graduate School of Science	18	6	24
Graduate School of Agricultural and Life Sciences	0	0	0
Graduate School of Pharmaceutical Sciences	1	0	1
Graduate School of Information Science and Technology	7	3	10
Graduate School of Frontier Sciences	69	40	109
Graduate School of Interdisciplinary Information Studies	3	2	5
Graduate School of Engineering	11	13	24

Master's 111 + Doctoral 125 = 236

JSPS Research Fellow

	Total
JSPS Research Fellow(SPD)	1
JSPS Research Fellow(PD)	2
JSPS Research Fellow(DC)	13
JSPS Foreign Research Fellow	2

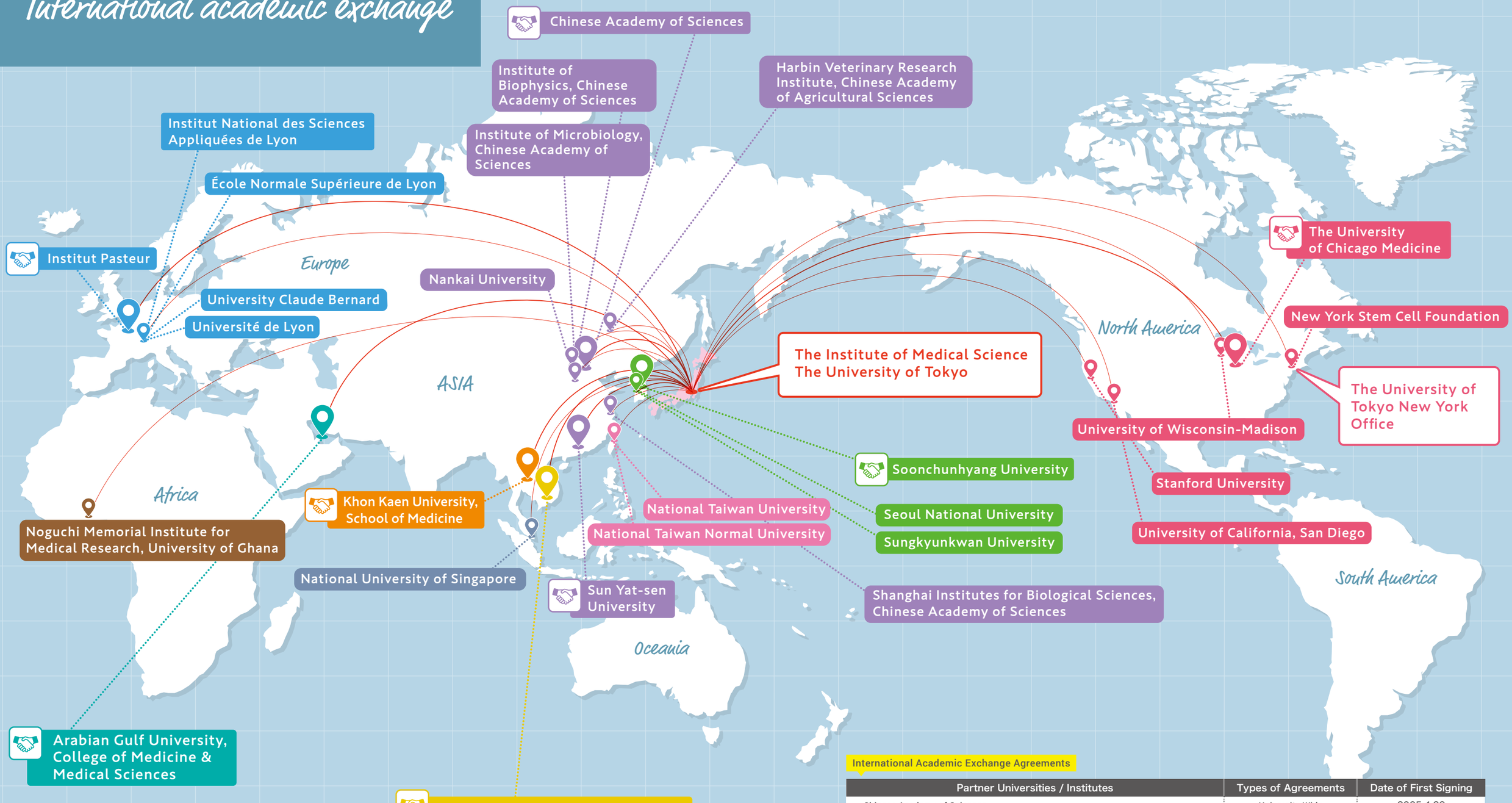
18

Research Students

	Total
Graduate Research Student	11
Graduate International Research Student	2
IMSUT Research Student	2

15

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
Vietnam National University-Ho Chi Minh City, School of Medicine	Departmental	2015.3.23.
Khon Kaen University, School of Medicine, Thailand	Departmental	2016.12.20

Caupus Map

University 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 Court

International Lodge

- a Shirokanedai Lodge A
- b Shirokanedai Lodge B
- c Shirokanedai Lodge C

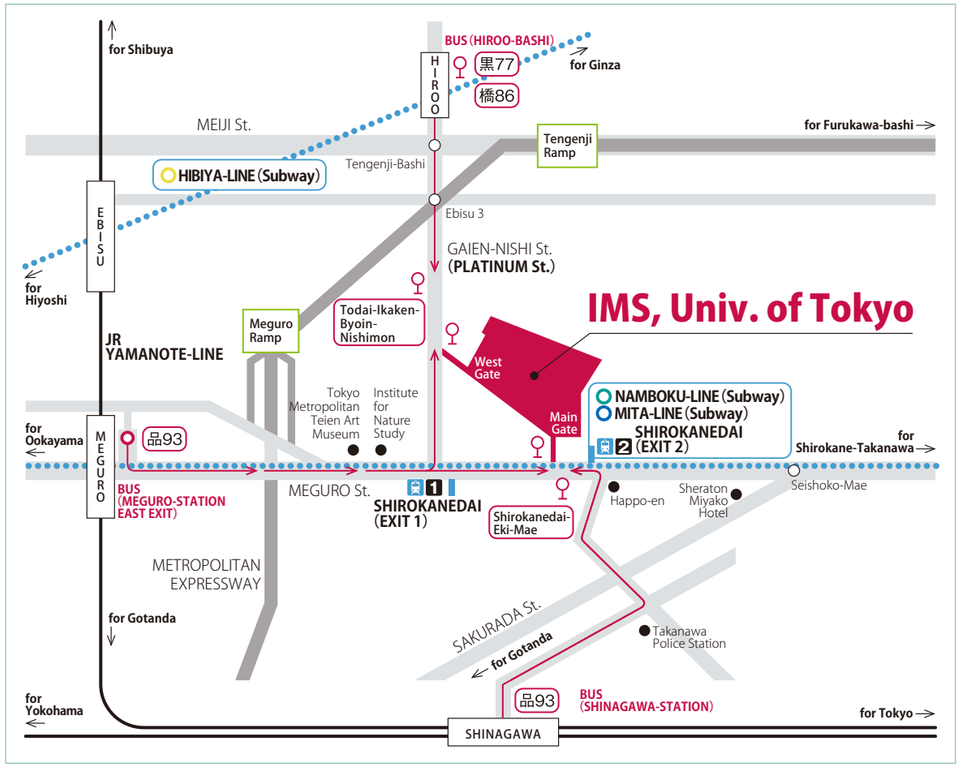
- Hospital Information
- Station
- Rest Area
- Bus Stop
- Restaurant
- Parking
- Shop
- Parking for Patients

Grounds/Buildings (Unit: ㎡)

		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

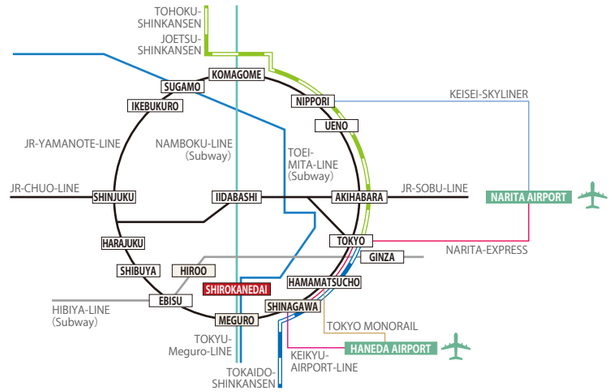
MEGURO 15 min. walk from JR-MEGURO-STATION EAST EXIT

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



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

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

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東京大学 THE UNIVERSITY OF TOKYO

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