

THE INSTITUTE OF  
MEDICAL SCIENCE  
THE UNIVERSITY OF TOKYO

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Compiled by : The Project Coordination Office/The Administrative Affairs Division

# Serving Global Welfare with Comprehensive Knowledge

The Institute of Medical Science, The University of Tokyo (IMSUT) was originally founded in 1892 by Dr. Shibasaburo Kitasato as the Institute of Infectious Diseases. The Institute was incorporated into the University of Tokyo in 1916 and was reorganized as IMSUT in 1967. With a history spanning over 130 years from the Meiji era to the Reiwa era, IMSUT explores the fundamental principles of biology and disease, develops innovative methods of treatment and prevention, and implements these methods to contribute to the development and welfare of society. To this end, the research environment at IMSUT is focused on producing comprehensive knowledge of medical science that integrates a wide variety of disciplines, including medicine, pharmacy, science, engineering, agriculture, information science, ethics, and public policy. In this research environment, individual researchers and medical professionals carry out original research and develop technologies based on their own intellectual curiosity. To overcome diseases that threaten humanity, including infectious diseases, cancer, and intractable diseases such as immunological, neurological, and muscular diseases, we have established a system that integrates basic life science research, project-based translational research, and the development of advanced medicine at IMSUT Hospital, the only national university-affiliated hospital in Japan.

IMSUT has three core research departments that explore the principles of biology: the Department of Basic Medical Sciences, the Department of Cancer Biology, and the Department of Microbiology and Immunology. In addition, to promote translational research that implements the diverse results of our core research in society, we have established seven centers and five research facilities, including the Human Genome Center, which houses Japan's largest supercomputer dedicated to the life sciences (SHIROKANE), and the Advanced Clinical Research Center. At our affiliated hospital, clinical trials and advanced medical care based on the research results produced by IMSUT are conducted in close collaboration with local medical practitioners.

In November 2018, IMSUT was accredited by the Ministry of Education, Culture, Sports, Science and Technology as an International Joint Usage/Research Center, the only one in the country in the field of life sciences. After receiving the highest rating of "S" in the year-end evaluation for FY2021, the project entered its next phase in FY2022. Currently, approximately 1,000 faculty members, administrative, technical and hospital staff, and researchers, including more than 200 students affiliated with eight graduate schools, work at the Shirokanedai campus, as well as at the Research Center for Asian Infectious Diseases (Beijing) and the Amami Laboratory of Injurious Animals (Amami Oshima).



**Makoto Nakanishi**, M.D., Ph.D.  
Dean



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# IMSUT Organization

Department Heads' Meeting

Dean

Professor Makoto Nakanishi

Senior Faculty Meeting

General Faculty Meeting

Committees

Vice Dean for General Affairs  
Professor Mitsuhiro Takekawa  
Vice Dean for Research Support  
Professor Seiya Imoto

Vice Dean for Finance  
Professor Yasushi Kawaguchi  
Vice Dean for Hospital Management  
Professor Atsushi Iwama

## Research Departments

Department of Microbiology and Immunology

Chair Professor Kensuke Miyake

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

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 Toshifumi Inada

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

## Research Facilities

### Human Genome Center

Director Professor Seiya Imoto

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

### Center for Experimental Medicine and Systems Biology

Director Professor Tomoji Mashimo

- 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 Fumitaka Nagamura

- 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
- Division of Stem Cell and Molecular Medicine
- Division of Stem Cell Transplantation
- Division of Stem Cell Processing
- Division of Mammalian Embryology
- Division of Stem Cell Aging Medicine
- Division of Somatic Stem Cell Research
- FACS Core Laboratory
- Stem Cell Bank

## IMSUT Distinguished Professor Unit

- Division of Virology

### International Research Center for Infectious Diseases

Director Professor Yasushi Kawaguchi

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

### International Vaccine Design Center

Director Professor Ken Ishii

- Human Immune-Profilng Team (Division of Systems Immunology)(Division of Human Immunology)(Division of Infection Immunology)
- New Dimensional Vaccine Design Team (Division of Vaccine Engineering)(Division of Adjuvant Innovation)(Division of Mucosal Vaccines)(Division of Immunology and Genomics)

### 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 Mitsuhiro Takekawa

### Research Center for Asian Infectious Diseases

Director Professor Yasushi Kawaguchi

### Laboratory of Molecular Genetics

Director Professor Makoto Nakanishi

(Frontier Research Unit)

## IMSUT Hospital

Director  
Professor Tomoki Todo

Deputy Director  
Professor Yasuhiro Nannya

### 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 Applied Genomics
- Department of Radiology
- Department of Palliative Medicine and Advanced Clinical Oncology
- Department of Oncology and General Medicine
- Department of Diagnostic Pathology
- Department of Gastroenterology

#### Departments of Surgery

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

### 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
- Department of Clinical Genomics
- Department of Clinical Nutrition
- 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
- Therapeutic Vector Development Center
- 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 Advanced Biopharmaceutical Science
- Project Division of Genomic Medicine and Disease Prevention
- Project Division of Clinical Precision Research Platform
- Project Division of Innovative Diagnostics Technology Platform
- Project Division of Oncolytic Virus Development

## Consortium

- Consortium for Gene Therapy and Regenerative Medicine

## Common Research Facilities

## Technical Office

## Dean's Office

## Administration Office

General Manager Isao Uehara

Administrative Affairs Division

Manager Yoko Akutsu

Research Support Division

Manager Yuji Takayama

Hospital Division

Manager Makoto Jin



## 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

**1915**

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

**1906**

Completion of the new building

**1914**

Reorganization under the Ministry of Education

**1905**

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

**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

**1934**

Completion of the First Building



**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

**1953**

Discovery of the Blood Group Glycolipids by Dr. Tamio Yamakawa

**1966**

Establishment of the Amami Laboratory of Injurious Animals

**1955**

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

**1954**

Discovery of Interferon by Dr. Yasuichi Nagano

**1952**

Discovery of Trichomycin by Dr. Seigo Hosoya



Institute for Infectious Diseases in Meiji Period

**1935**

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

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

**1930**

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

**1916**

Incorporation into Tokyo Imperial University



## Institute of Medical Science

**1967**

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

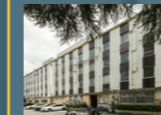
Completion of the Second Building



**1980**

Completion of the Third Building

Establishment of the Laboratory of Molecular Genetics



**1991**

Establishment of the Human Genome Center

**1992**

100<sup>th</sup> Founding Anniversary of the Institute

**1998**

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

**1995**

Completion of the Fourth Building



**2004**

Reorganization of the University of Tokyo as a national university corporation

**2003**

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



**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

**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

**2018**

Official recognition as an International Joint Usage/Research Center

**2017**

125<sup>th</sup> Founding Anniversary and 50<sup>th</sup> Reorganization Anniversary of the Institute



**2022**

Reorganization of the International Research and Development Center for Mucosal Vaccines into International Vaccine Design Center

**2020**

Integration of the Health Intelligence Center into the Human Genome Center

**2015**

Establishment of the Health Intelligence Center

**2014**

Establishment of the Center for Gene & Cell Therapy

**2011**

Establishment of the International Research and Development Center for Mucosal Vaccines

## 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 (1956-1958)	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 Hirose (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 (2019-2023)	29th ● Makoto Nakanishi (2023-)		

## 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 (2021-2023)	23rd ● Tomoki Todo (2023-)

## Department of Microbiology and Immunology

Chair : Kensuke Miyake

### Division of Infectious Genetics

Professor Kensuke Miyake, M.D., Ph.D.  
Associate Professor Takuma Shibata, 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.

### Division of Malaria Immunology

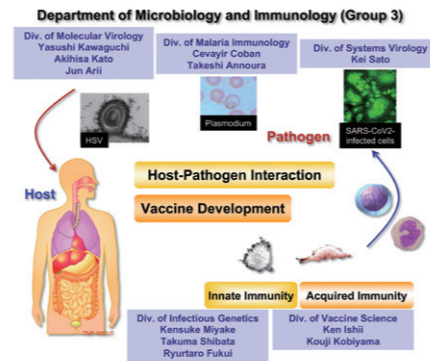
Professor Cevayir Coban, M.D.  
Visiting Associate Professor Takeshi Annoura, Ph.D.

### Division of Systems Virology

Professor Kei Sato, Ph.D.

The growing concern in emerging and re-emerging infections increases demand for understanding these infections and controlling 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 5 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 5 divisions in the Department of Microbiology and Immunology. Three 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.



This figure shows 5 divisions in the Department of Microbiology and Immunology. Three 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.  
Associate Professor Akane Inoue-Yamauchi, Ph.D.

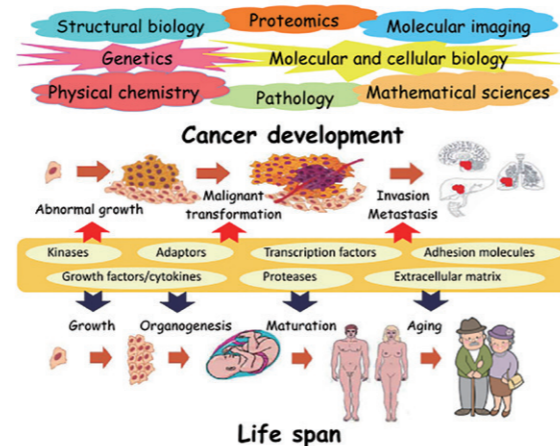
### Division of Cancer Cell Biology

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.  
Associate Professor Daisuke Nanba, Ph.D.  
Project Senior Assistant Professor Hiroyuki Matsumura, 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 : Toshifumi Inada

### Division of Neuronal Network

Professor Toshiya Manabe, M.D., Ph.D.  
Senior Assistant Professor Shizuka Kobayashi, Ph.D.

### Division of Cell Signaling and Molecular Medicine

Professor Mutsuhiro Takekawa, M.D., Ph.D.  
Senior Assistant Professor Yuji Kubota, Ph.D.

### Division of RNA and Gene Regulation

Professor Toshifumi Inada, Ph.D.  
Associate Professor Yoshitaka Matsuo, Ph.D.

### Division of Protein Metabolism

Professor Yasushi Saeki, Ph.D.

The Department of Basic Medical Sciences explores new fields in basic life science to understand life processes at deeper levels. Its goal is to develop fundamental bases for translational research across various diseases and research fields. The department consists of four groups: the Division of Neuronal Network, the Division of Cell Signaling and Molecular Medicine, the Division of RNA and Gene Regulation, and the Division of Protein Metabolism. Here's a summary of each division:

1. Division of Neuronal Network: Investigates molecular mechanisms of higher brain functions, and psychiatric and neurological disorders. Focuses on functional molecules in synapses involved in neuronal information processing using various approaches.
2. Division of Cell Signaling and Molecular Medicine: Aims to understand regulatory mechanisms of intracellular signal transduction systems critical for cell fate decisions and diseases. Also develops diagnostic and therapeutic tools for disorders involving these pathways.
3. Division of RNA and Gene Regulation: Seeks to understand the surveillance system preventing abnormal protein production in neurodegenerative diseases and aging. Focuses on ribosome collision and translation quality control, analyzing pathogenic mechanisms, and developing therapeutic and diagnostic agents.
4. Division of Protein Metabolism: Aims to understand biological phenomena regulated by intracellular proteolysis, particularly the ubiquitin-proteasome system. Investigates pathogenic mechanisms of diseases caused by abnormal proteolysis and contributes to ubiquitin drug discovery.

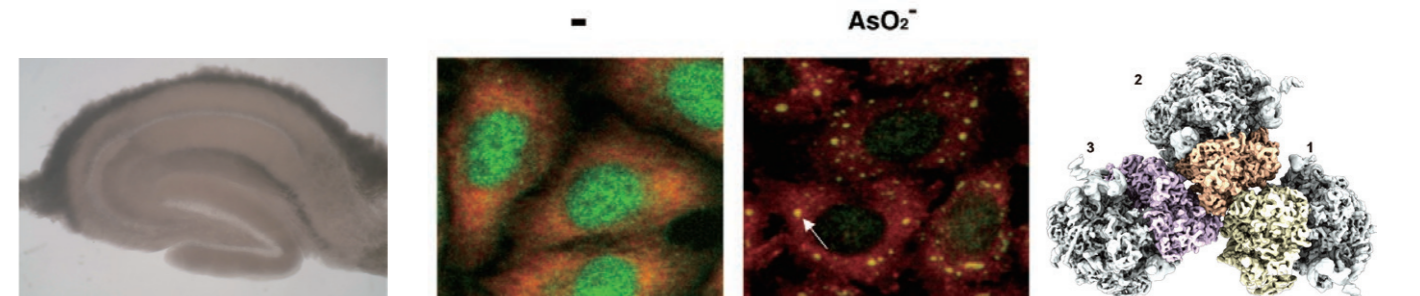


Fig.1 A hippocampal slice prepared from the mouse brain

Fig.2 Arsenite induces the 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**  
Project Professor Koichi Matsuda, 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**  
Professor Seiya Imoto, Ph.D.  
Visiting Professor Satoshi Uematsu, M.D., Ph.D.  
Project Associate Professor Kosuke Fujimoto, 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 a new dimension of genome research by adding metagenomic information on bacteria and viruses that coexist with us as a new dimension to human multi-omics information, including individual genomes, epigenomes, transcriptomes, proteomes, and metabolomes, obtained by using state-of-the-art measurement technologies such as ultra high-speed sequencing technology. By elucidating the connection between these differences and diseases such as cancer and lifestyle-related diseases, as well as environmental factors, we will lead to the development of innovative diagnostic, preventive, and therapeutic 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.



Shirokane5&6 (2.0PFLOPS)



Lustre File System (30PB)



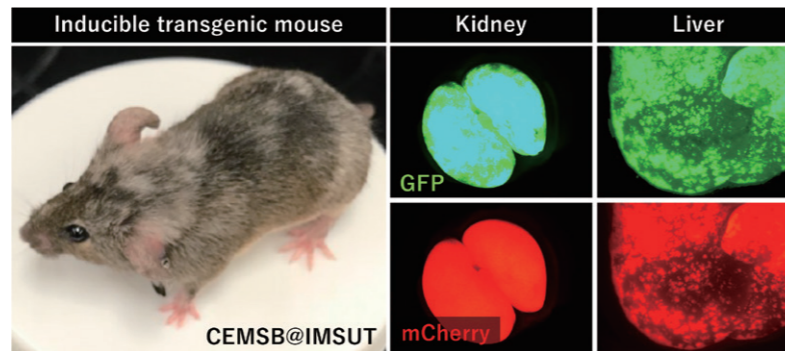
Archive Disk (~100PB)  
Human Genome Center Supercomputer System SHIROKANE

## Center for Experimental Medicine and Systems Biology

Director : Tomoji Mashimo

- **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**
- **Division of Genome Engineering**  
Professor Tomoji Mashimo, Ph.D.  
Senior Assistant Professor Kazuto Yoshimi, Ph.D.
- **Core Laboratory for Developing Advanced Animal Models**  
Professor Tomoji Mashimo, Ph.D.  
Visiting Professor Kimi Araki, 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

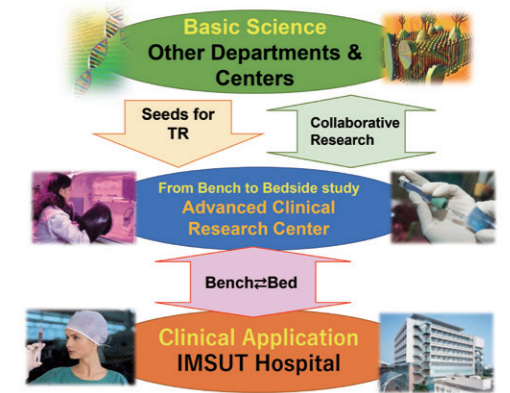
Director : Fumitaka Nagamura

- **Division of Infectious Diseases**  
Professor Hiroshi Yotsuyanagi, M.D., D.M.Sc.  
Project Senior Assistant Professor Michiko Koga, M.D., D.M.Sc.
- **Division of Clinical Genome Research**  
Professor Yoichi Furukawa, M.D., Ph.D.  
Associate Professor Kiyoshi Yamaguchi, Ph.D.
- **Division of Innovative Cancer Therapy**  
Professor Tomoki Todo, M.D., Ph.D.  
Project 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.  
Associate Professor Takaaki Konuma, 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. The missions of ACRC are to perform clinical sciences targeting malignancies (including leukemia), infectious diseases (including COVID-19) and immunological diseases. ACRC also 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 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 Frontier Surgery which creates solid evidence of surgical treatment for gastrointestinal cancers, 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.

Most of the staff are medical doctors, who conduct basic research while supporting the medical care work of IMSUT hospital.



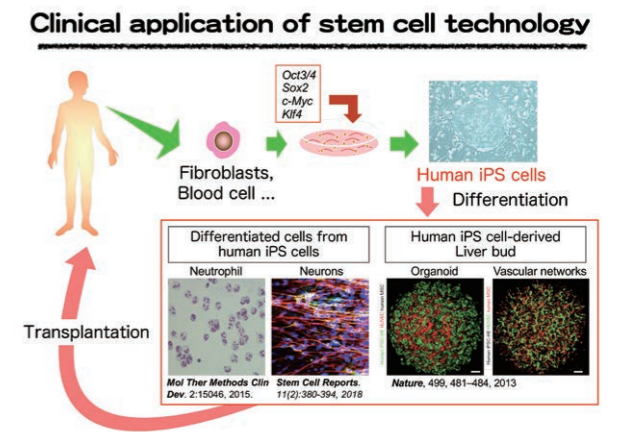
Position of ACRC in IMSUT

## Center for Stem Cell Biology and Regenerative Medicine

Director : Hideki Taniguchi

- **Division of Regenerative Medicine**  
Professor Hideki Taniguchi, M.D., Ph.D.  
Associate Professor Naoki Tanimizu, Ph.D.
- **Division of Stem Cell and Molecular Medicine**  
Professor Atsushi Iwama, M.D., Ph.D.  
Senior Assistant Professor Motohiko Oshima, 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 Processing**  
Professor Hideki Taniguchi, M.D., 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 expected to provide alternatives to organ transplantation, and novel therapeutic approaches for 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 Regenerative Medicine, Division of Stem Cell and Molecular Medicine, Division of Stem Cell Transplantation, Division of Stem Cell Processing, 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 develop innovative 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 iPSCs. To support our research, we have FACS Core Laboratory and Stem Cell Bank and a service to generate patient-derived iPSCs.



## International Research Center for Infectious Diseases

Director : Yasushi Kawaguchi

### Department of Special Pathogens

Professor Kei Sato, Ph.D.  
 Visiting Professor Masaki Imai, D.V.M., Ph.D.  
 Visiting Professor Seiya Yamayoshi, D.V.M., Ph.D.  
 Associate Professor Takeshi Ichinohe, Ph.D.

### 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.

### 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".

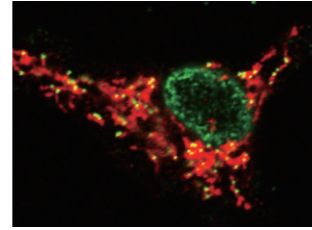


Fig. 1: Influenza virus-induced mitochondrial DNA (yellow) release

## International Vaccine Design Center

Director : Ken Ishii

### Human Immune-Profiling Team

(Division of Systems Immunology)  
 Professor Kei Sato, Ph.D.  
 (Division of Human Immunology)  
 Professor Ken Ishii, M.D., Ph.D.  
 Visiting Professor Noriko Sorimachi, Ph.D.  
 Project Senior Assistant Professor Toshihiko Kobayashi, Ph.D.  
 (Division of Infection Immunology)  
 Professor Cevayir Coban, M.D.  
 Visiting Professor Anavaj Sakuntabhai, M.D., Ph.D.

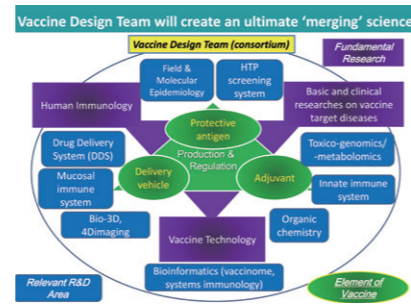
### New Dimensional Vaccine Design Team

(Division of Vaccine Engineering)  
 Project Professor Kouhei Tsumoto, Ph.D.  
 (Division of Adjuvant Innovation)  
 Professor Ken Ishii, M.D., Ph.D.  
 Visiting Professor Jun Kunisawa, Ph.D.  
 Associate Professor Kouji Kobiyama, Ph.D.

### (Division of Mucosal Vaccines)

Project Professor Kohtarou Fujihashi, D.D.S., Ph.D.  
 Visiting Professor Koji Hase, Ph.D.  
 Visiting Professor Tomonori Nochi, Ph.D.  
 (Division of Immunology and Genomics)  
 Professor Ken Ishii, M.D., Ph.D.

The pandemic caused by the novel coronavirus provided an opportunity to rearm the importance of vaccine development research. On the other hand, tuberculosis, AIDS, malaria, drug-resistant pathogens (AMR), and emerging and reemerging infectious diseases such as Ebola, Pox and MERS still pose a threat to the world, and the development of vaccines that can prevent these infectious diseases is an urgent issue not only in Japan but also worldwide. Similarly, allergic diseases, cancer, diabetes, atherosclerosis, and neurodegenerative diseases are also serious problems worldwide. The International Vaccine Design Center (vDESC) will promote seamless research activities from basic to clinical vaccine development research based on the Institute of Medical Science's strengths in microbiology, immunology, protein engineering, genomic medical science, gene and cell therapy, and clinical research, thereby forming a center for fostering researchers who will lead the next generation. The center will promote the formation of a center for fostering researchers who will lead the next generation. Currently, through joint projects that unite industry, government, and academia, clinical development research and clinical trials are underway for many innovative next-generation vaccines, including novel modalities, adjuvants, novel measurement technologies, new vaccine designs utilizing artificial intelligence and big data, and mucosal vaccines via oral and intranasal routes.



## Center for Gene & Cell Therapy

Director : Takashi Okada

### Division of Molecular and Medical Genetics

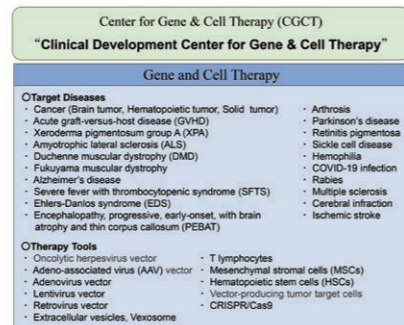
Professor Takashi Okada, M.D., Ph.D.  
 Project Senior Assistant Professor Yasunari Matsuzaka, Ph.D.

### Center for Gene & Cell Therapy

Professor Tomoki Todo, M.D., Ph.D.  
 Professor Fumitaka Nagamura, M.D., D.M.Sc.  
 Invited Professor Koji Tamada, M.D., Ph.D.

Project Professor Satoshi Takahashi, M.D., D.M.Sc.  
 Visiting Professor Shin-ichi Muramatsu, M.D., Ph.D.  
 Associate Professor Tokiko Nagamura-Inoue, 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 into clinical practice, the Center for Gene & Cell Therapy (CGCT) was established in 2014. The CGCT is focused on the development of gene and stem cell therapy for intractable cancer as well as chronic and inherited diseases including oncolytic virotherapy and engineered T cell therapy for malignancies, AAV vector gene therapy for neuromuscular disorders, lentiviral gene therapy, T cell therapy for post-transplant viral infections, mesenchymal stromal cell therapy, and development for viral vector production infrastructure. Additionally, it is also involved in the development of AAV vector-based vaccine against infectious as well as neurodegenerative diseases.



## Laboratory Animal Research Center

Director : Tomoji Mashimo

### Division of Animal Genetics

Professor Tomoji Mashimo, Ph.D.  
 Senior Assistant Professor Kazuto Yoshimi, Ph.D.

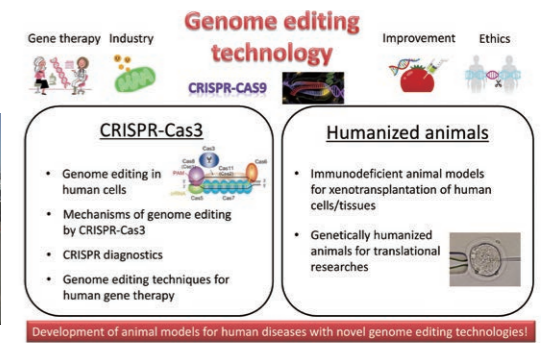
### Animal Center

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.  
 Visiting Associate Professor Takeshi Annoura, 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)

## Center for Gene & Cell Therapy

Director : Takashi Okada

### Division of Molecular and Medical Genetics

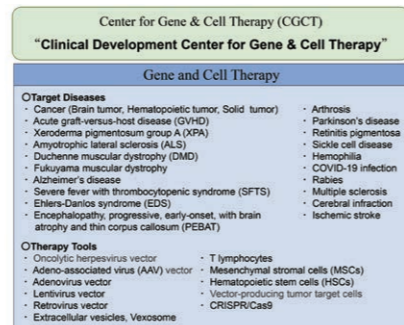
Professor Takashi Okada, M.D., Ph.D.  
 Project Senior Assistant Professor Yasunari Matsuzaka, Ph.D.

### Center for Gene & Cell Therapy

Professor Tomoki Todo, M.D., Ph.D.  
 Professor Fumitaka Nagamura, M.D., D.M.Sc.  
 Invited Professor Koji Tamada, M.D., Ph.D.

Project Professor Satoshi Takahashi, M.D., D.M.Sc.  
 Visiting Professor Shin-ichi Muramatsu, M.D., Ph.D.  
 Associate Professor Tokiko Nagamura-Inoue, M.D., Ph.D.

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## Medical Proteomics Laboratory

Director : Mutsuhiro Takekawa

Professor Mutsuhiro Takekawa, M.D., Ph.D.  
 Project 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.

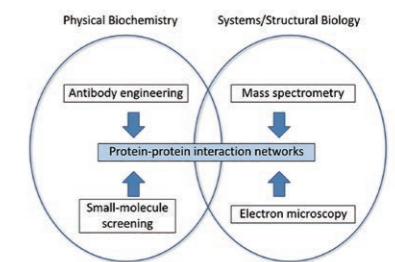


Fig.1. Protein interaction network analysis in medical proteomics research

## Research Center for Asian Infectious Diseases

Director : Yasushi Kawaguchi

Professor Yasushi Kawaguchi, D.V.M., Ph.D.  
Project Professor Mitsue Hayashi, Ph.D.  
Visiting Professor Masaki Imai, D.V.M., Ph.D.

Visiting Professor Seiya Yamayoshi, D.V.M., Ph.D.  
Associate Professor Akihisa Kato, Ph.D.  
Visiting Associate Professor Jin Gohda, Ph.D.

Project Senior Assistant Professor Mizuki Yamamoto, Ph.D.

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. Organization chart of Research Center for Asian Infectious Diseases. The center was established in 2005 under the auspices of the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and has been supported by the Japan Agency for Medical Research and Development (AMED) since 2015 to the present.

## Laboratory of Molecular Genetics

Director : Makoto Nakanishi

(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 Unit

### 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.

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.

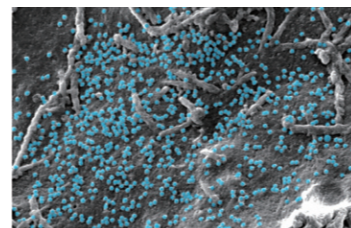


Fig. Scanning electron micrograph of virions (blue) being released from SARS-CoV-2 Omicron variant-infected cells

## Consortium

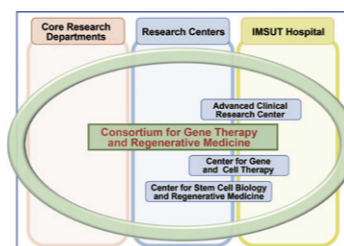
### Consortium for Gene Therapy and Regenerative Medicine

Professor Atsushi Iwama, M.D., Ph.D.  
Professor Tomoki Todo, M.D., Ph.D.  
Professor Fumitaka Nagamura, M.D., D.M.Sc.

Professor Kaori Muto, Ph.D.  
Professor Takashi Okada, M.D., Ph.D.  
Professor Hideki Taniguchi, M.D., Ph.D.

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

Recent advances in gene therapy, regenerative medicine, and cell therapy have tightly linked these fields scientifically as well as in clinical practice. These fields have common target cells, organs, or diseases and utilize similar technologies. Based on these recent trends, we founded a consortium for Gene Therapy and Regenerative Medicine, in which IMSUT researchers working on gene therapy, regenerative medicine, cell therapy, Ethical, Legal and Social Issues (ELSI), and regulatory science liaise closely with each other and promote front-line research. Core members belong to the Center for Gene and Cell Therapy, Center for Stem Cell Biology and Regenerative Medicine, and Advanced Clinical Research Center, but we recruit all IMSUT researchers interested in these fields and aim to develop this consortium into an international hub for gene and cell therapy and regenerative medicine.



## IMSUT Hospital

### Director

Tomoki Todo, M.D., Ph.D.

### Deputy Director

Yasuhiro Nannya, M.D., Ph.D.

### Department of Hematology/Oncology

Professor Yasuhiro 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 Takaaki Konuma, M.D., Ph.D.  
Associate Professor Kazuaki Yokoyama, M.D., D.M.Sc.  
Project Associate Professor Hiroshi Yasui, M.D., D.M.Sc.  
Project Senior Assistant Professor Koichiro Yuji, M.D., Ph.D.

### Department of Infectious Diseases and Applied Immunology

Professor Hiroshi Yotsuyanagi, M.D., D.M.Sc.  
Senior Assistant Professor Eisuke Adachi, M.D., D.M.Sc.  
Project Senior Assistant Professor Michiko Koga, 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.  
Associate Professor Yoshihiro Hirata, M.D., Ph.D.  
Senior Assistant Professor Yasuo Matsubara, 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.

### Department of Radiology

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

### Department of Palliative Medicine and Advanced Clinical Oncology

Professor Tomoki Todo, 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.  
Senior Assistant Professor Yasuo Matsubara, M.D., Ph.D.

### Department of Surgery

Professor Dai Shida, M.D., Ph.D.  
Associate Professor Susumu Aikou, M.D., Ph.D.

### Department of Anesthesia

Associate Professor Ryo Orii, M.D., Ph.D.

### Department of Joint Surgery

Professor Tomoki Todo, M.D., Ph.D.

### Department of Surgical Neuro-Oncology

Professor Tomoki Todo, M.D., Ph.D.  
Project Professor Minoru Tanaka, M.D., Ph.D.

### Department of Urology

Project Senior Assistant Professor Sayuri Takahashi, M.D., Ph.D.  
Professor Haruki Kume, 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.  
Associate Professor Kazuaki Yokoyama, M.D., D.M.Sc.

### Surgical Center

Project Professor Minoru Tanaka, M.D., Ph.D.  
Professor Tomoki Todo, M.D., Ph.D.

### Department of Medical Supply Center

Project Professor Minoru Tanaka, M.D., Ph.D.  
Professor Tomoki Todo, M.D., Ph.D.

### Department of Laboratory Medicine

Clinical Professor Tokiko Nagamura-Inoue, M.D., D.M.Sc.  
Project Senior Assistants 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 Yasuhiro Nannya, M.D., Ph.D.

(Department of Medical Safety Management)

Associate Professor Susumu Aikou, M.D., Ph.D.

Associate Professor Ayako Kamisato, Ph.D.

Associate Professor Motohisa Yamamoto, M.D., D.M.Sc.

(Department of Infection Prevention and Control)

Senior Assistant Professor Eisuke Adachi, M.D., D.M.Sc.

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.

### Therapeutic Vector Development Center

Professor Tomoki Todo, M.D., Ph.D.

Project 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-story hospital building has 122 beds including a ward organized for translational research and early clinical trials including first-in-human studies, an outpatient clinic, and operating rooms. Currently, IMSUT Hospital mainly targets diseases such as brain tumors, hematological malignancies, gastrointestinal tumors, urological tumors, 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 oncolytic virus therapy, gene therapy and cell therapy, 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 activities of these units are supported by departments of nursing and pharmacy, and administration office.

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 that promotes oncolytic virus therapy. Center for Antibody and Vaccine Therapy and Department of Palliative Medicine opened in 2012, and Center for Gene & Cell Therapy was founded in 2014. More recently, Department of Urology opened in 2020 for clinical practice of robotic surgery. Department of Gastroenterology opened in 2021 in collaboration with the Department of Surgery, resulting in a total of 14 clinical departments in IMSUT Hospital. In addition, the Department of General Medicine was reorganized into the Department of Oncology and General Medicine to promote oncology practice in July 2021.





## 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 Advanced Biopharmaceutical Science

Project Senior Associate Professor Susana de Vega, 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.

### ● Project Division of Clinical Precision Research Platform

Project Professor Satoshi Takahashi, M.D., D.M.Sc.

### ● Project Division of Innovative Diagnostics Technology Platform

Project Associate Professor Hiroshi Yasui, M.D., D.M.Sc.

### ● Project Division of Oncolytic Virus Development

Project Professor Minoru Tanaka, M.D., Ph.D.

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 Mutsuhiro Takekawa

### ● Radioisotope Center

Head Kensuke Miyake

### ● IT Service Room

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 Tomoji Mashimo

### ● Office of Intellectual Property

Head Mutsuhiro Takekawa

### ● Advisory Room for Conflict of Interest

Head Seiya Imoto

### ● Pathology Core Laboratory

Laboratory I Head Yoshinori Murakami  
Laboratory II Head Yasunori Ota

### ● Imaging Core Laboratory

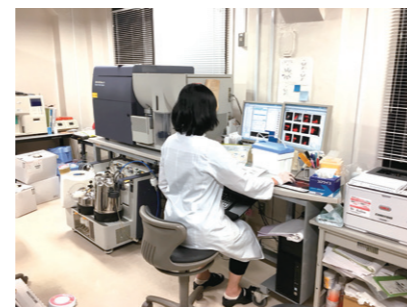
Head Mutsuhiro Takekawa

### ● IMSUT Clinical Flow Cytometry Laboratory

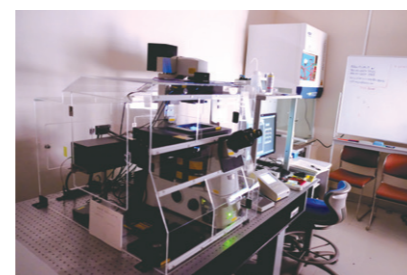
Head Tokiko Nagamura-Inoue

### ● IMSUT-HLC Cell Processing Facility

Head Tokiko Nagamura-Inoue



IMSUT Clinical Flow Cytometry Laboratory



Imaging Core Laboratory



Library

## Technical Office

Head Toshifumi Inada

## Dean's Office

### ● Dean's Advisor Office

Visiting Professor Toichi Takenaka  
Visiting Professor Masahiko Kikuchi

### ● Project Coordination Office

Head Mutsuhiro Takekawa

### ● Research Platform Office

Head Mutsuhiro Takekawa  
Project Professor Yataro Daigo

### ● BioBank Japan

Head Koichi Matsuda  
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 antisera, 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 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



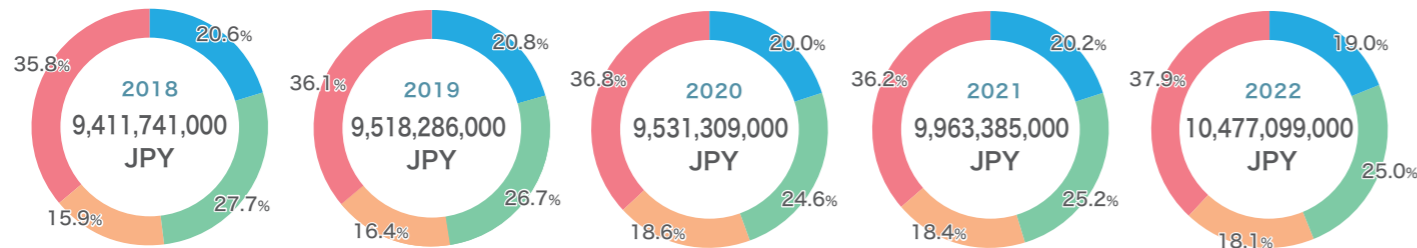
# Budget

# Members

(As of July 1, 2023)

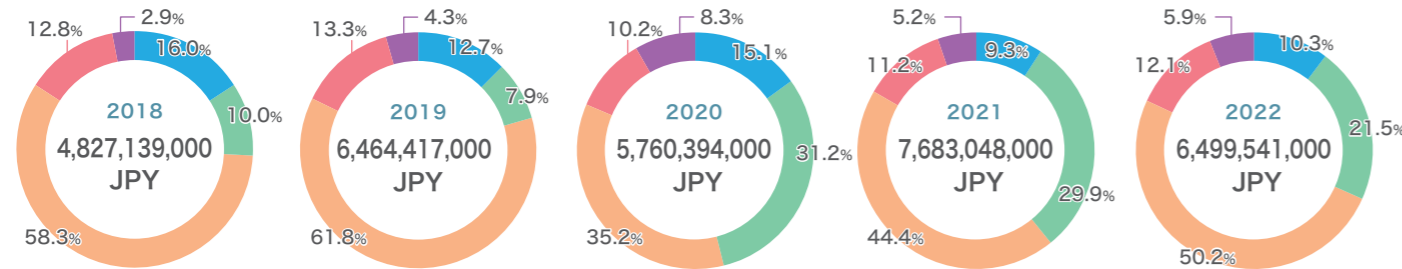
## Management Expenses Grants

■ 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



# Projects

(As of July 1, 2023)

## Research and Education Projects by External Funds

Translational Research Program  
Serving as a Center for Advancing Translational Research (CATR)

Project Head in IMSUT: IMSUT Hospital Director/  
Professor Tomoki Todo

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 - Construction and Utilization  
Biobank for Genomic Medicine Realization  
(B-Cure)  
"Management of Disease-oriented Biobank  
in Japan for Utilization"

Project Head: Project Professor Koichi Matsuda

## Research and Education Projects by Management Expenses Grants

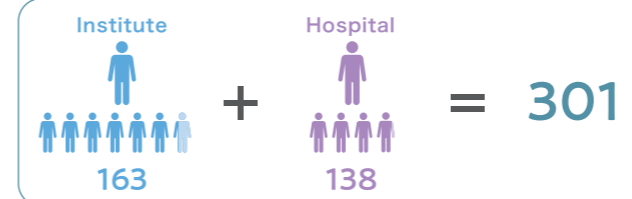
FY 2022-2027: International Joint Research Project  
on Promotion of Basic and Applied  
Medical Sciences

FY 2022-2023: International Joint Research Center for  
Promoting Basic and Applied Research  
and Implementing Translational Research

FY 2022-2027: Cutting-edge Research and  
Next-generation Human Resource  
Development for the Control of Infectious  
Diseases Using Collaborative  
Infrastructure

## Staff

	Institute	Hospital	Total
Professor	28	1	29
Associate Professor	21	6	27
Senior Assistant Professor	5	3	8
Assistant Professor	35	13	48
Research Associate	1	0	1
Official	46	11	57
Technical Official	27	104	131



## Fixed-term Project Staff

	Institute	Hospital	Total
Project Professor	4	0	4
Project Associate Professor	6	0	6
Project Senior Assistant Professor	7	1	8
Project Assistant Professor	17	3	20
Project Researcher	38	1	39
Project Academic Specialist	33	9	42
Project Specialist	12	5	17
Project Medical Staff	0	25	25
Project Nursing Staff	0	11	11

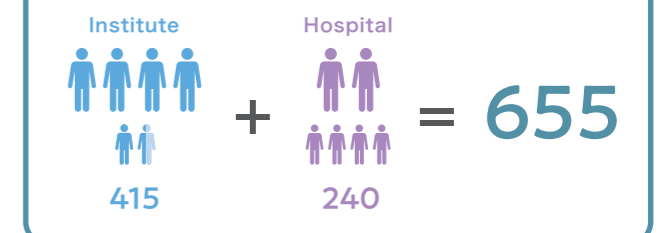


## Fixed-term Part-time (Project) Staff

	Institute	Hospital	Total
Project Professor	4	0	4
Project Associate Professor	1	0	1
Project Senior Assistant Professor	0	1	1
Project Assistant Professor	1	0	1
Project Researcher	18	0	18
Project Academic Specialist	41	7	48
Project Specialist	20	2	22
Assistant Clerk	20	8	28
Technical Assistant	28	2	30
Part-time Academic Affairs Staff	1	0	1
Skilled Assistant	1	6	7
Member of the Medical Staff	0	11	11
Special Medical Intern	0	1	1
Assistant Medical Technician	0	6	6
Assistant Nurse	0	3	3

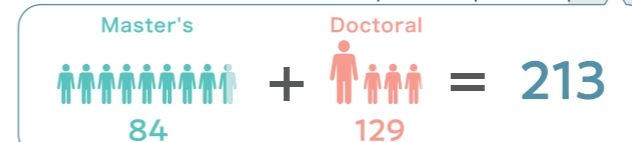


## Total Number of Staff



## Graduate School Students

Graduate School	Master's	Doctoral	Total
Graduate School of Medicine	1	39	40
Graduate School of Science	18	6	24
Graduate School of Agricultural and Life Sciences	0	0	0
Graduate School of Pharmaceutical Sciences	0	0	0
Graduate School of Information Science and Technology	6	10	16
Graduate School of Frontier Sciences	45	55	100
Graduate School of Interdisciplinary Information Studies	1	2	3
Graduate School of Engineering	13	17	30



## JSPS Research Fellow

	Total
JSPS Research Fellow (SPD)	1
JSPS Research Fellow (PD)	2
JSPS Research Fellow (RPD)	1
JSPS Research Fellow (DC)	11
JSPS Foreign Research Fellow	1

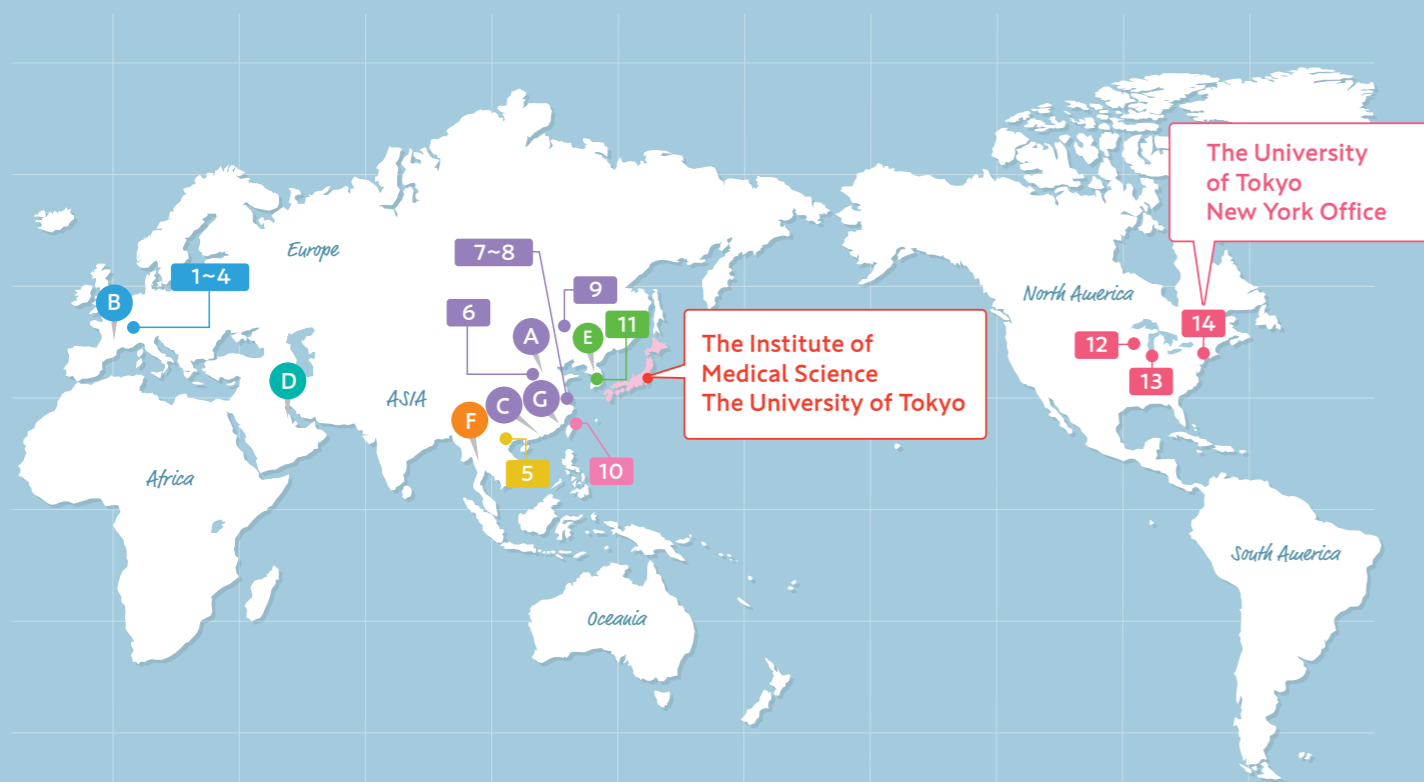
**16**

## Research Students

	Total
Graduate Research Student	3
Graduate International Research Student	5
IMSUT Research Student	6

**14**

# International Academic Exchange



## International Academic Exchange Agreements

	Partner Universities / Institutes	Types of Agreements	Date of First Signing
A	Chinese Academy of Sciences	University Wide	2005.4.29
B	Institut Pasteur, France	Departmental	2006.4.18
C	Sun Yat-sen University, China	University Wide	2011.11.15
D	Arabian Gulf University, College of Medicine & Medical Sciences, Kingdom of Bahrain	Departmental	2013.7.14
E	Soonchunhyang University, Korea	Departmental	2013.9.26
F	Khon Kaen University, School of Medicine, Thailand	Departmental	2016.12.20
G	Fujian Institute of Hematology, Fujian Medical University, China	Departmental	2020.6.3

## International Academic Exchange

	Universities / Institutes		Universities / Institutes
1	University Claude Bernard	8	ShanghaiTech University
2	Institut National des Sciences Appliquées de Lyon	9	Harbin Veterinary Research Institute, Chinese Academy of Agricultural Sciences
3	École Normale Supérieure de Lyon	10	National Taiwan University
4	Université de Lyon	11	Seoul National University
5	Institute of Ecology and Biological Resources, Vietnam Academy of Science and Technology	12	University of Wisconsin-Madison
6	Institute of Microbiology, Chinese Academy of Sciences	13	The University of Chicago
7	Center for Excellence in Molecular Cell Science, Chinese Academy of Sciences	14	New York Stem Cell Foundation

# International Joint Usage / Research Center

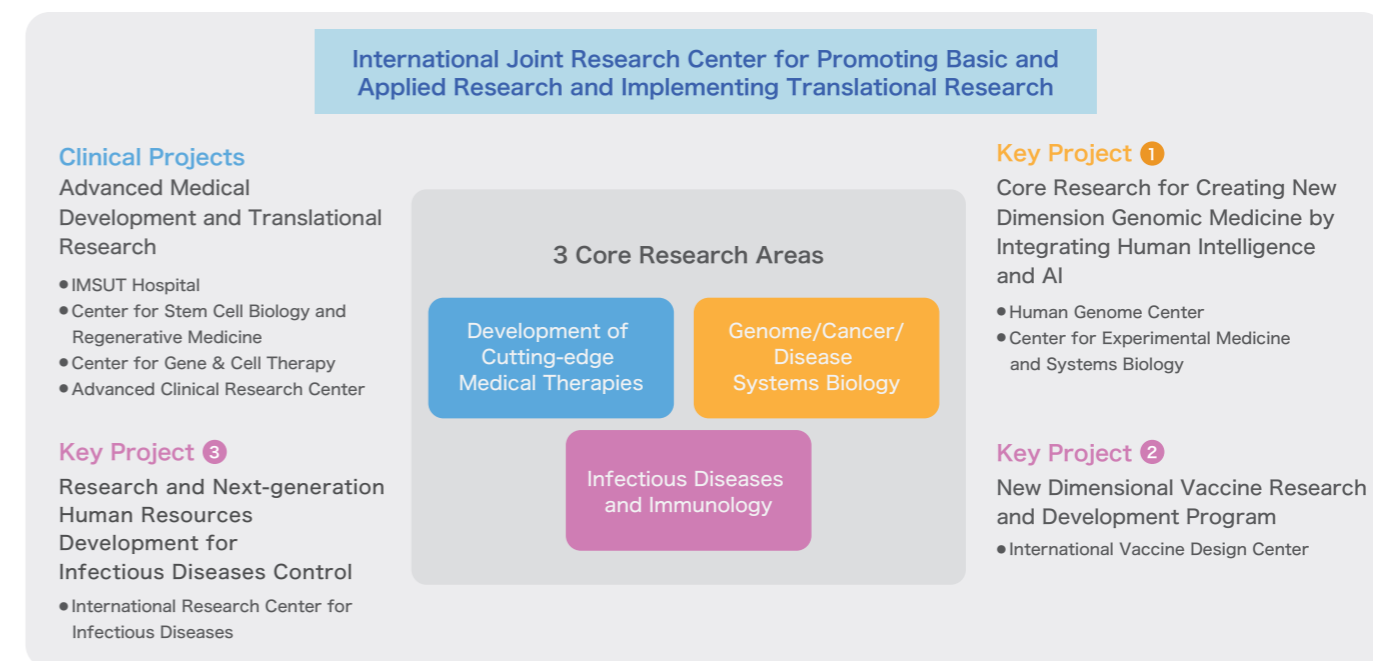
## International Joint Usage/Research Center

The Joint Usage/Research Center (JURC) was established by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) to enable researchers across Japan both to share access to large-scale research facilities, materials, and data beyond the boundaries of individual universities and to conduct joint research.

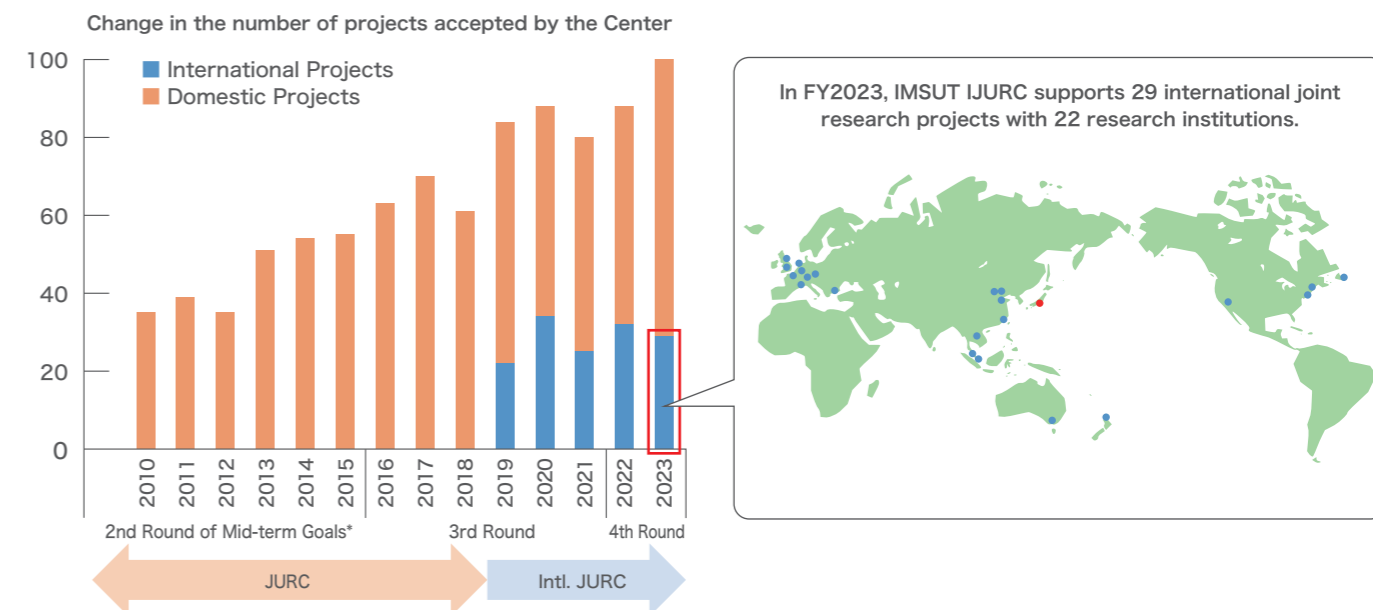
IMSUT was accredited by MEXT as a Joint Usage/Research Center in 2010, and in 2018 it was recognized as the only International Joint Usage/Research Center among university-affiliated research institutes in the field of life sciences in Japan. In line with MEXT's policy, IMSUT aims to advance basic and applied medical science and to realize advanced medical treatments in pursuit of global welfare.

Based on the network that we have established with domestic and overseas research institutions, IMSUT serves as a hub to help researchers work together organically and to promote long-term stable international collaborative research.

## Structure



## Joint Research Projects

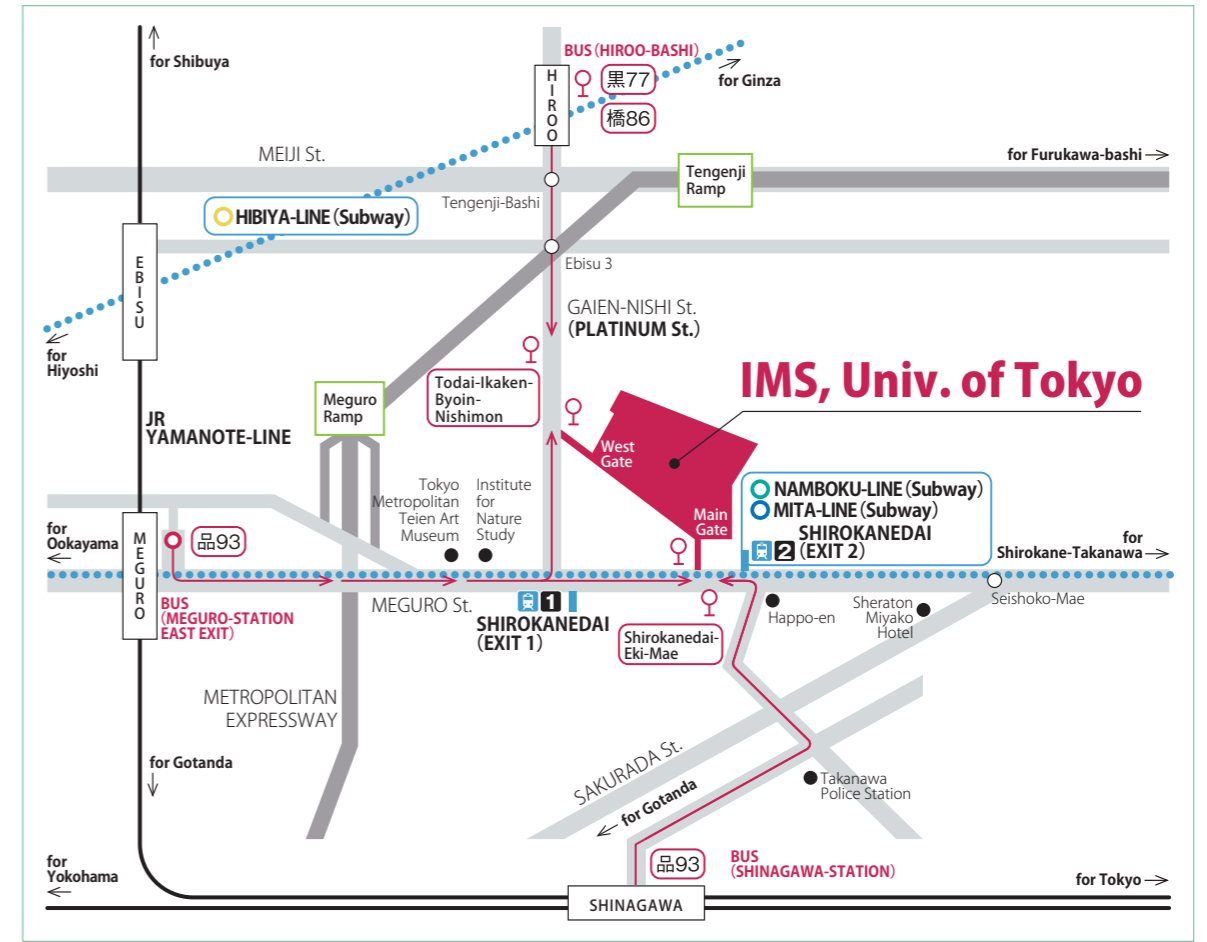


\*Mid-term goals are set by MEXT. Each national university formulates its own plans to achieve those goals within the next 6 years.

# Campus Map



# Access Map



## IMSUT Hospital

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

## University Facilities

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

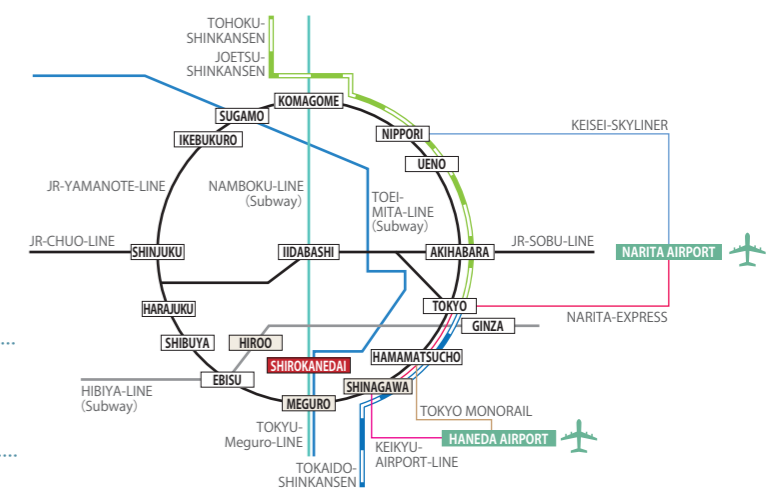
Hospital Information	Station
Rest Area	Bus Stop
Restaurant	Parking
Shop	Parking for Patients

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

(Unit: m<sup>2</sup>)

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

- By WALK FROM STATION**  
**SHIROKANEDAI** SHIROKANEDAI-STATION on the Metro NAMBOKU or MITA LINE (EXIT 2)
- By BUS FROM STATION**  
**MEGURO** 15 min. walk from JR-MEGURO-STATION EAST EXIT  
**MEGURO** From JR-MEGURO-STATION EAST EXIT (MEGURO-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 MEGURO-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 MEGURO-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/>

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