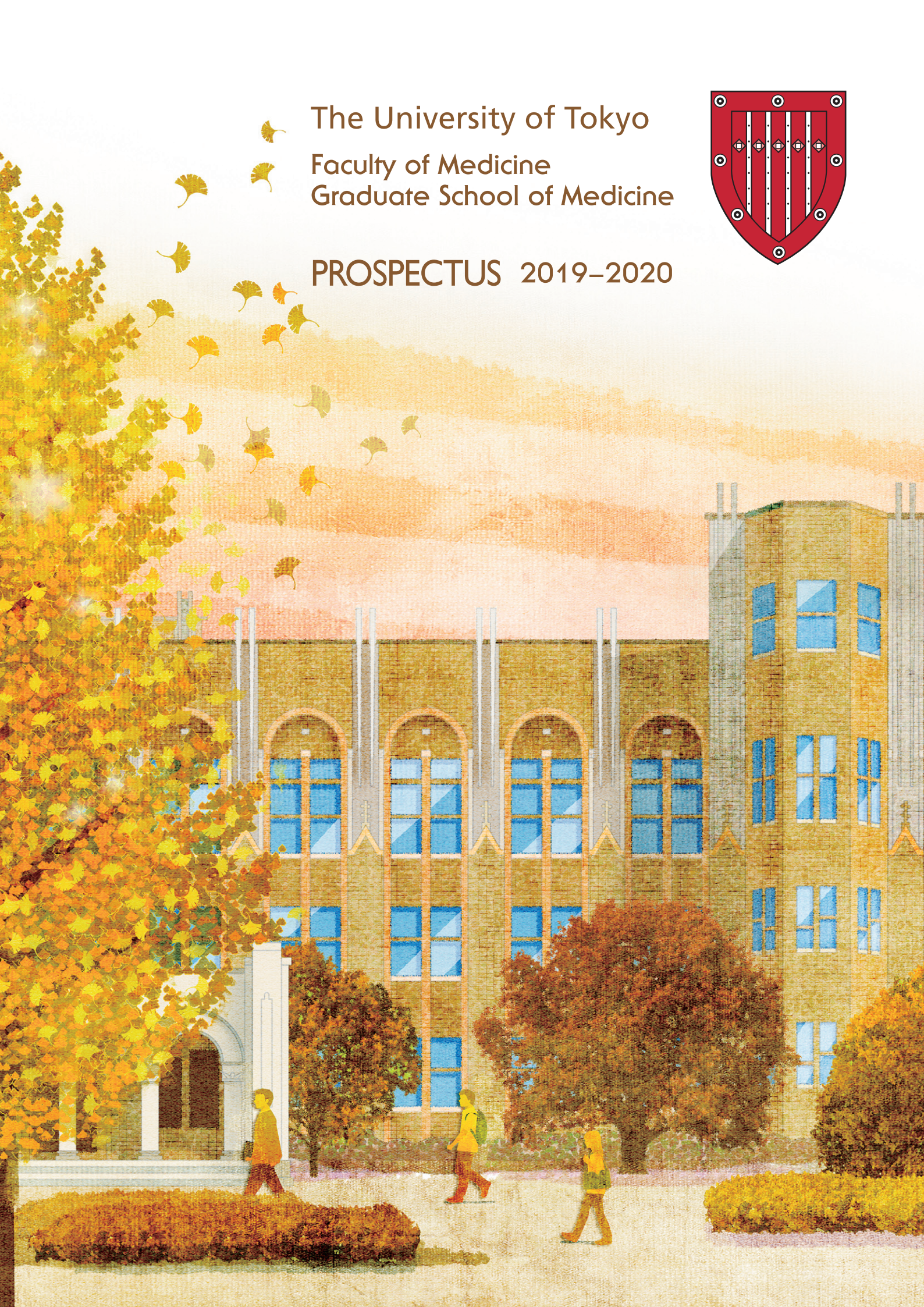
The University of Tokyo

Faculty of Medicine
Graduate School of Medicine

PROSPECTUS 2019–2020



A Message From the Dean of Faculty of Medicine and Graduate School of Medicine, the University of Tokyo

The University of Tokyo's Faculty of Medicine traces its origins back to the establishment of a smallpox vaccination post at Kanda-Otamagaike in 1858, more than 160 years ago. That is how far back its history and traditions go, and how long it has supported modern medical education and has sent forth healthcare practitioners and researchers who have made outstanding contributions to the development of medical science and clinical practice in Japan.

During the period 1995-1997, the school reorganized around its graduate-level programs, and in 2004 the University of Tokyo became a national university corporation. For the past few years, the hospital's facilities have been under redevelopment; in 2018 Inpatient Ward B opened, and in 2019 Clinical Research Center Building A was completed with study rooms, offices, and laboratories for clinical departments. Renovation of the South Clinical Research Building is now complete, and it now has a special auditorium for clinical lectures, the Tetsumon Clinical Lecture Hall. We now also have a facility dedicated to multidisciplinary research for innovation in molecular life sciences and academia-industry collaboration, which is also used by departments of the University of Tokyo's School of Engineering and School of Science, among others. With these improved facilities for teaching, research, and clinical care, the infrastructure is in place for great leaps forward.

The Faculty of Medicine has both a medical school and a School of Integrated Health Sciences. They aim to contribute to progress in the life sciences, medical science, and medical care, and to train future global leaders in those fields. In other words, through creative research they seek the truths that will help solve the problems in those fields, which will, when applied clinically, facilitate holistic healthcare. The Faculty of Medicine's Medical School has an initial (first-year) enrollment of 110. With the aim of obtaining a license to practice medicine, students learn about the structure of the human body and the mechanisms of pathogenesis. The School of Integrated Health Sciences has a first-year enrollment of 44. By studying the prevention of disease and the relations of health with society and the environment, these students learn to create and develop the nursing and health sciences.

The purpose and guiding ideal of the Graduate School of Medicine is to advance human understanding of the mechanisms of biological phenomena, and thereby to conquer disease and promote health, and to do so through education, research, and training of international leaders who use their exemplary knowledge in all areas of medicine to do innovative advanced research. To that end, our many laboratories are international leaders in research at the frontiers of medical science and healthcare. Medical students – the next generation of researchers – stimulate and are stimulated by their colleagues as part of these efforts through their participation in research.

Thus, we continue on our missions to provide the best possible medical care to patients in need today and to train top-level research scientists who will lay the foundations of medicine for tomorrow.

Nobuhito Saito, MD,PhD
Dean, Faculty of Medicine and Graduate School of Medicine,
The University of Tokyo

HISTORY

1858	May	Practitioners, trained in Dutch (European) medicine in Edo (Tokyo), laid out money to establish the Shutojo (vaccination center) in Kanda Mitamagaike.
	Nov.	Shutojo was destroyed in a fire that had spread from Kanda Aioicho. Shutojo continued its operations at other sites such as the residence of Ito Genboku.
1859	Sep.	Shutojo was reconstructed at Shitaya Izumibashi Dohri.
1860	Oct.	Shutojo became an official medical institution of the Shogunate Government.
1861	Oct.	Shutojo was renamed as Seiyo Igaku-Sho (Institute of Western Medicine) and offered courses of Western Medicine in the fields of Education, Autopsy, and Vaccination.
1863	Feb.	Seiyo Igaku-Sho was renamed as Igaku-Sho (Institute of Medicine).
1868	Jul.	Igaku-Sho, affiliated with the Military Hospital which had been moved from Yokohama to Todo residence in Shitaya, was renamed as Daibyoin (the Great Hospital).
1869	Feb.	The Daibyoin was renamed as Igakko-Ken-Byoin (Medical School and Hospital).
	Dec.	Igakko-Ken-Byoin was renamed as Daigaku Toko (University East Building).
1871	Jul.	The Ministry of Education was established and Daigaku-Toko was renamed as Toko (East Building).
1872	Aug.	A School System was established. Toko was renamed as Daiichi-Daigaku-Ku- Igakko (The First University District Medical School).
1874	May	Daiichi-Daigaku-Ku-Igakko was renamed as Tokyo-Igakko (Tokyo Medical School).
1876	Nov.	Tokyo-Igakko was moved to Hongo.
1877	Apr.	Tokyo Igakko, affiliated with Tokyo-Kaisei School, was renamed as The University of Tokyo. Tokyo Medical School was renamed as The University of Tokyo Faculty of Medicine.
1886	Mar.	The University of Tokyo was renamed as Imperial University, and The University of Tokyo Faculty of Medicine was renamed as the Imperial University Medical College. A Graduate School was established.
1897	Jun.	The Imperial University was renamed as Tokyo Imperial University.
1917	Aug.	Eiraku Hospital, affiliated with the Ministry of Education Medical Practice License Examination, moved to Tokyo Imperial University and was renamed as Koishikawa Hospital affiliated with Tokyo Imperial University Medical College.
1919	Apr.	A faculty system was established renaming Tokyo Imperial University Medical College as the Faculty of Medicine.
1931	Feb.	The first building of the Faculty of Medicine was constructed.
1936	Jan.	The Brain Research Laboratory was built with funds donated by Mr. Hisasaburo Horikoshi.
	Nov.	The second building of the Faculty of Medicine (main building) was constructed.
1947	Oct.	Tokyo Imperial University was renamed as The University of Tokyo.
1950	Apr.	The Institute of Nursing was renamed as The University Nursing School.
1953	Apr.	The School of Health Care and Nursing was founded.
	Jul.	The Graduate School was founded, and the Division of Medical Doctor Biological Science was established. The Brain Research Laboratory became the Brain Research Institute of the Faculty of Medicine.
1956	Apr.	The Midwives School was established.
1958	Apr.	The Division of Pharmaceutical Sciences became an independent faculty.
	May	The University of Tokyo Faculty of Medicine celebrated its centennial anniversary.
1961	Mar.	The Medical Library was built in commemoration of the centenary.
	Apr.	The Institute of Medical Electronics was established.
1965	Apr.	The Research Institute of Logopedics and Pediatrics was established. The School of Health Care and Nursing was reorganized as the School of Health Sciences. The Graduate School of The University of Tokyo was reorganized and the Division of Medical Doctor Biological Science became the Faculty of Medicine. The Health science Course was established in the Medical Science Division.

1966	Sep.	The third building of the Faculty of Medicine was constructed.
1971	Apr.	The Laboratory of Animal Experiments was established.
1973	Mar.	The Animal Center for Biomedical Research was constructed.
1983	Jan.	An annex of the third building of the Faculty of Medicine was constructed.
1985	Sep.	The office of International Academic Affairs was established.
1987	Apr.	Specialized courses were introduced to the Graduate School of Medicine.
1992	Apr.	The School of Health Sciences became the School of Health Science and Nursing. The School of International Health was established in the Medical Science Division.
	Jul.	The Radiation Research Institute was established.
1995	Apr.	As a result of the shift to the chair system of the Graduate School of Medicine, four divisions, Third Basic Medicine, Social Medicine, Third and Fourth Clinical Medicine, were replaced with Pathology, Immunology and Microbiology, Social Medicine, Reproduction and Development, and Aging Science and Surgery.
1996	Apr.	As a result of the shift to the chair system of the Graduate School of Medicine, three divisions, First Clinical Medicine, Health Science, and International Health, were replaced with Internal Medicine, Health Science and Nursing, and International Health.
1997	Apr.	As a result of the shift to the chair system of the Graduate School of Medicine, three divisions, First and Second Basic Medicine, and Second Clinical Medicine, were replaced with Molecular Cell Biology, Functional Biology, Radiology and Biomedical Engineering, and Neuroscience. As a result of the above-mentioned reorganization, three institutes, the Institute of Brain Research, the Institute of Medical Electronics, and the Institute of Logopedics and Phoniatrics were made redundant.
1999	Apr.	The Master course of Medical Science was established in the Graduate School of Medicine. This course accepts graduates of all faculties except those from Schools of Medicine, Dentistry, and Veterinary Medicine.
2000	Apr.	The International Research Center for Medical Education was established (A shared facility for education and research).
2001	Apr.	The University Branch Hospital was united with the University Hospital.
2002	Mar.	Nursing School and Midwives School was closed. Experimental Building (First Stage) was constructed.
2003	Apr.	The Center for Disease Biology and Integrative Medicine was established. The Radiation Research Institute and the Laboratory of Animal Experiments were integrated into the Center for Disease Biology and Integrative Medicine.
2004	Apr.	All the National Universities owned by the Japanese Government became National University Corporations. and the University of Corporation.
2005	Mar.	Experimental Building (Second Stage) was constructed.
2007	Apr.	The School of Public Health was established. This school offers programs for Master of Public Health.
2008	May.	The University of Tokyo Faculty of Medicine and the University of Tokyo Hospital celebrated their 150th anniversary.
2010	Apr.	The School of Health Science and Nursing became the School of Integrated Health Sciences.
2011	Jan.	The Museum of Health and Medicine was established.
2012	Apr.	The Office for Research Ethics Support was established.
2013	Apr.	The International Research Center for Medical Education became a facility of the Graduate School of Medicine.
2013	Oct.	The Life Sciences Core Facility was established.
2015	Apr.	The Office for Clinical Practice and Medical Education was established.
2017	Apr.	The Global Nursing Research Center was established.

Graduate School of Medicine

Dean Nobuhito Saito

Molecular Cell Biology

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Cell Biology and Anatomy	Cell Biology	Professor	Masahide Kikkawa
	Structural Biology	Professor	Masahide Kikkawa
	Structural Cell Biology		
	Cellular Neurobiology	Professor	Shigeo Okabe
Biochemistry and Molecular Biology	Molecular Biology	Professor	Noboru Mizushima
	Cellular Signaling	Professor	Makoto Murakami
	Physiological Chemistry and Metabolism	Professor	Hiroki Kurihara
	Advanced Structural Biology	Professor	Danev Radostin
*Collaborative Department	Clinical Genome Informatics / Lipid Science/Cancer Cellular Signaling		

Functional Biology

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Physiology	Integrative Physiology	Professor	Kenichi Ohki
	Cellular and Molecular Physiology	Professor	Masanori Matsuzaki
	Neurophysiology	Professor	Masanobu Kano
Pharmacology	Cellular and Molecular Pharmacology	Professor	Kenzo Hirose
	Systems Pharmacology	Professor	Hiroki Ueda
*Collaborative Department	Brain Functional Dynamics		

Pathology, Immunology and Microbiology

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Pathology	Pathology and Diagnostic Pathology	Professor	Tetsuo Ushiku
	Molecular Pathology	Professor	Kohei Miyazono
		Associate Professor	Daizo Koinuma
Microbiology	Microbiology	Professor	Masanori Hatakeyama
	Infection Control and Prevention	Professor	Kyoji Moriya
Immunology	Immunology	Professor	Hiroshi Takayanagi
		Associate Professor	Takeshi Nitta
*Collaborative Department	Tumor Pathology / Infection Pathology / Molecular Oncology		

Radiology and Biomedical Engineering

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Radiology	Diagnostic Radiology	Professor	Osamu Abe
		Associate Professor	Harushi Mori
	Radiotherapy	Associate Professor	Keiichi Nakagawa
	Nuclear Medicine	Associate Professor	Hidemasa Takao
Biomedical Engineering	System Physiology	Professor	Kiyoshi Miyagawa
		Associate Professor	Kimiko Yamamoto
	Chemical Biology and Molecular Imaging	Professor	Yasuteru Urano
		Associate Professor	Mako Kamiya
*Collaborative Department	Biosystem Construction and Control		

Neuroscience

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Basic Neuroscience	Neuropathology	Professor	Takeshi Iwatsubo
	Neurochemistry	Professor	Haruhiko Bito
	Neurobiology		
Integrative Medical Neuroscience	Developmental Neuroscience		
	Cognitive Neuroscience		
	Systems Medical Neuroscience		
	Child Neuropsychiatry	Associate Professor	Yukiko Kano
Clinical Neuroscience	Neuropsychiatry	Professor	Kiyoto Kasai
		Associate Professor	Seiichiro Jinde
	Neurology	Professor	Tatsushi Toda
		Associate Professor	Atsushi Iwata
	Neurosurgery	Professor	Nobuhito Saito
		Associate Professor	Hirofumi Nakatomi
*Collaborative Department	Biomedical Neural Dynamics		

Social Medicine

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Occupational, Environmental and Preventive Medicine	Preventive Medicine	Professor	Shumpei Ishikawa
		Associate Professor	Hiroto Katoh
	Public Health	Professor	Yasuki Kobayashi
		Associate Professor	Satoshi Toyokawa
	Radiological Health		
Forensic Medicine, and Medical Informatics and Economics	Forensic Medicine	Professor	Hirotaro Iwase
		Associate Professor	Yohsuke Makino
	Biomedical Informatics	Professor	Kazuhiko Ohe
*Collaborative Department	Cancer Control Policy and Research/Cancer Epidemiology/Cancer Communication		

Internal Medicine

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Medicine I	Cardiovascular Medicine	Professor	Issei Komuro
	Vascular Biology		
	Respiratory Medicine	Professor	Takahide Nagase
	Gastroenterology	Professor	Kazuhiko Koike
	Nephrology	Professor	Masaomi Nangaku
Medicine II	Endocrinology	Professor	Masaomi Nangaku
	Nutrition and Metabolism	Professor	Toshimasa Yamauchi
	Hematology and Oncology	Professor	Mineo Kurokawa
	Allergy and Rheumatology	Professor	Keishi Fujio
	Infectious Diseases	Professor	Kyoji Moriya
		Associate Professor	Syu Okugawa
	Stress Science and Psychosomatic Medicine	Associate Professor	Kazuhiro Yoshiuchi
Clinical Laboratory Medicine and Pathology	Clinical Laboratory Medicine	Professor	Yutaka Yatomi
	Transfusion Medicine	Professor	Hitoshi Okazaki
*Collaborative Department	Molecular Diabetology		

Reproductive, Developmental and Aging Sciences

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Obstetrics and Gynecology	Reproductive Endocrinology	Professor	Tomoyuki Fujii
		Associate Professor	Takeshi Nagamatsu
	Gynecological Oncology	Associate Professor	Katsutoshi Oda
	Perinatal Medicine	Associate Professor	Kaori Koga
	Molecular Cellular Reproductive Medicine	Professor	Yutaka Osuga
		Associate Professor	Osamu Hiraike
Pediatric Sciences	Pediatrics	Professor	Akira Oka
		Associate Professor	Yutaka Harita
	Developmental Pediatrics	Professor	Naoto Takahashi
	Pediatric Surgery	Professor	Jun Fujishiro
	Pediatric Oncology		
Aging Sciences	Geriatric Medicine	Professor	Masahiro Akishita
		Associate Professor	Sumito Ogawa
	Aging Research	Professor	Masahiro Akishita
*Collaborative Department	Health Policy for Children and Families/Medical Science for Life and Aging		

Surgical Sciences

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	Thoracic Surgery	Professor	Jun Nakajima
	Cardiovascular Surgery	Professor	Minoru Ono
		Associate Professor	Yasutaka Hirata
	Gastrointestinal Surgery	Professor	Yasuyuki Seto
		Associate Professor	Sachiyo Nomura
	Hepatobiliary Pancreatic Surgery	Professor	Kiyoshi Hasegawa
		Associate Professor	Junichi Arita
	Urology	Professor	Haruki Kume
		Associate Professor	Motofumi Suzuki
	Artificial Organ and Transplantation Division		

Surgical Sciences

Surgery	Surgical Oncology	Professor	Soichiro Ishihara
		Associate Professor	Hiroaki Nozawa
	Vascular Surgery	Professor	Soichiro Ishihara
	Breast and Endocrine Surgery		
Sensory and Motor System Medicine	Dermatology	Professor	Shinichi Sato
		Associate Professor	Yoshihide Asano
	Plastic and Reconstructive Surgery	Professor	Mutsumi Okazaki
		Associate Professor	Takuya Iida
	Oral and Maxillofacial Surgery	Professor	Kazuto Hoshi
		Associate Professor	Hideto Saijo
	Orthopaedic Surgery	Professor	Sakae Tanaka
		Associate Professor	Taku Saito
	Ophthalmology	Professor	Makoto Aihara
		Associate Professor	Satoshi Kato
		Associate Professor	Toshikatsu Kaburaki
	Otolaryngology and Head and Neck Surgery	Professor	Tatsuya Yamasoba
		Associate Professor	Shinichi Iwasaki
		Associate Professor	Kenji Kondo
	Rehabilitation Medicine	Professor	Nobuhiko Haga
		Associate Professor	Yusuke Shinoda
Vital Care Medicine	Anesthesiology	Associate Professor	Kanji Uchida
	Acute Medicine	Professor	Naoto Morimura

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Health Sciences and Nursing

Health Sciences	Health Sociology	Associate Professor	Naoki Kondo
	Mental Health	Professor	Norito Kawakami
		Associate Professor	Daisuke Nishi
	Epidemiology and Preventive Health Sciences	Professor	Yutaka Matsuyama
		Associate Professor	Koji Oba
	Biostatistics	Professor	Yutaka Matsuyama
		Associate Professor	Koji Oba
	Health Education	Professor	Hideki Hashimoto
	Health Promotion Sciences		
	Biomedical Ethics	Professor	Akira Akabayashi
		Associate Professor	Yoshiyuki Takimoto
Preventive and Administrative Nursing	Advanced Clinical Nursing	Associate Professor	Yukie Takemura
	Nursing Administration	Associate Professor	Yukie Takemura
	Family Nursing	Professor	Kiyoko Kamibeppu
	Community Health Nursing	Professor	Noriko Yamamoto-Mitani
	Public Health Nursing		
Clinical Nursing	Gerontological Home Care and Long-term Care Nursing	Professor	Noriko Yamamoto-Mitani
	Palliative Care Nursing	Professor	Noriko Yamamoto-Mitani
	Midwifery and Women's Health	Associate Professor	Megumi Haruna
	Psychiatric Nursing	Professor	Norito Kawakami
		Associate Professor	Yuki Miyamoto
	Gerontological Nursing	Professor	Hiromi Sanada
		Associate Professor	Gojiro Nakagami
	Wound Care Management	Professor	Hiromi Sanada
*Collaborative Department	Public Mental Health Policy		

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International Health

International Social Medicine	Global Health Policy		
	Community and Global Health	Professor	Masamine Jimba
International Biomedical Sciences	Human Genetics	Associate Professor	Akihiko Mabuchi
	Developmental Medical Sciences	Professor	Masashi Mizuguchi
		Associate Professor	Teruyuki Tanaka
	Human Ecology	Professor	Masahiro Umezaki
		Associate Professor	Shoko Konishi
	Biomedical Chemistry	Professor	Tomoyoshi Nozaki
		Associate Professor	Yoh-ichi Watanabe

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School of Public Health

Epidemiology and Health Sciences	Biostatistics	Professor	Yutaka Matsuyama
		Associate Professor	Koji Oba
	Social and Preventive Epidemiology	Professor	Satoshi Sasaki
	Clonical Epidemiology and Health Economics	Professor	Hideo Yasunaga
	Health Communication	Professor	Takahiro Kiuchi
		Associate Professor	Tsuyoshi Okuhara
Behavioral Health Sciences	Mental Health	Professor	Norito Kawakami
		Associate Professor	Daisuke Nishi
	Health Sociology and Health Education	Associate Professor	Naoki Kondo
	Health and Social Behavior	Professor	Hideki Hashimoto
	Health Promotion Sciences		
	Biomedical Ethics	Professor	Akira Akabayashi
		Associate Professor	Yoshiyuki Takimoto
Health Services Sciences	Health Policy	Professor	Yasuki Kobayashi
		Associate Professor	Satoshi Toyokawa
	Healthcare Informatics	Professor	Kazuhiko Ohe
	Clinical Information Engineering	Professor	Hiroshi Oyama
	Forensic Medicine and Medical Law	Professor	Hirotaro Iwase
		Associate Professor	Yohsuke Makino
	Global Environmental Health	Associate Professor	Yoonhee Kim
***Collaborative Department**	Public Health Science		

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Center for Disease Biology and Integrative Medicine

Director Masanobu Kano

Laboratory of Molecular Biomedicine for Pathogenesis	Professor	Toru Miyazaki
	Associate Professor	Satoko Arai
Laboratory of Structural Physiology	Professor	Haruo Kasai
Laboratory of Biomedical Equipment and Biomaterial	Associate Professor	Taichi Ito
Laboratory of Clinical Biotechnology	Professor	Ungil Chung
Laboratory of Environmental and Metabolic Health Sciences	Professor	Makoto Murakami
	Associate Professor	Seiichiroh Ohsako
Laboratory of Animal Resources	Professor	Atsu Aiba
	Associate Professor	Kazuki Nakao
	Associate Professor	Hidetoshi Kassai
Laboratory of Molecular Radiology	Professor	Kiyoshi Miyagawa
	Associate Professor	Noriko Hosoya
Laboratory of Biomedical Infomatics	Associate Professor	Takeshi Imai

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The International Research Center for Medical Education

Director Tatsuya Yamasoba

Department of Medical Education	Professor	Masato Eto
Department of International Cooperation for Medical Education		

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Global Nursing Research Center

Director Hiromi Sanada

Division of Care Innovation	Professor	Hiromi Sanada
	Project Professor	Taketoshi Mori
	Associate Professor	Gojiro Nakagami
	Project Associate Professor	Takeo Minematsu
	Project Associate Professor	Nao Tamai
	Project Associate Professor	Ryoko Murayama
	Project Associate Professor	Makoto Oe
Division of Nursing System	Professor	Noriko Yamamoto-Mitani
	Professor	Kiyoko Kamibeppu
	Associate Professor	Yukie Takemura
	Associate Professor	Yuki Miyamoto
	Associate Professor	Megumi Haruna

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Institution

The Office of International Academic Affairs	Head	Shinichi Sato
Medical Scientist Training Program	Head	Haruhiko Bito
Office for Human Research Studies	Director	Masaomi Nangaku
	Vice Director	Akira Akabayashi
Life Sciences Core Facility	Head	Yoshihiro Kita
The Office for Clinical Practice and Medical Education	Head	Masato Eto
Medical Library	Head	Hideo Yasunaga
Museum of Health and Medicine	Head	Kazuhiko Ohe

Endowed Department

Department of Bone & Cartilage Regenerative Medicine	Project Associate Professor	Fumiko Yano
Department of Cell & Tissue Engineering(Fujisoft)	Project Associate Professor	Atsuhiko Hikita
Immunotherapeutics	Project Professor	Kazuhiro Kakimi
Department of Advanced Clinical Science and Therapeutics	Project Associate Professor	Mutsuo Harada
Computational Diagnostic Radiology and Preventive Medicine	Project Professor	Naoto Hayashi
	Project Associate Professor	Kansei Uno
	Project Associate Professor	Takeharu Yoshikawa
Clinical Trial Data Management		
Ubiquitous Preventive Medicine	Project Associate Professor	Yuichi Ikeda
Science for Joint Reconstruction	Project Associate Professor	Toru Moro
Therapeutic Strategy for Heart Failure	Project Associate Professor	Masaru Hatano
Molecular Structure and Dynamics (JEOL / Zeiss)	Project Professor	Nobutaka Hirokawa
Department of Medical Genomics		
Continence Medicine	Project Professor	Yasuhiko Igawa
Department of Life Support Technology (Molten)	Project Professor	Taketoshi Mori
Department of Advanced Translational Research and Medicine in Management of Pulmonary Hypertension	Project Associate Professor	Haruhiro Toko
Department of Immunotherapy Management	Project Associate Professor	Hiroko Kanda
Department of medical research and management for musculoskeletal pain	Project Professor	Koh Matsudaira
	Project Associate Professor	Hiroyuki Oka
Department of Molecular Science on Diabetes		
Department of Osteoimmunology	Project Associate Professor	Kazuo Okamoto
Health Economy and Society Policy	Project Professor	Tomoyuki Takura
Department of medical and pharmaceutical community healthcare	Project Professor	Hirohisa Imai
Department of Molecular Neurology	Project Professor	Seiji Tsuji
	Project Associate Professor	Jun Mitsui
Laboratory for New Generation Drug Discovery	Project Associate Professor	Hideaki Ando
Department of Biostatistics and Bioinformatics	Project Professor	Daisuke Koide
	Project Associate Professor	Akihiro Hirakawa

Laboratory for Advanced Research on Pathophysiology of	Project Associate Professor	Miki Iwabu
Metabolic Diseases	Project Associate Professor	Masato Iwabu
Department of Preventive Medicine for Locomotive Organ Disorders	Project Professor	Noriko Yoshimura
Department of Home Care Medicine	Project Associate Professor	Takashi Yamanaka
Department of Advanced Cardiology	Project Associate Professor	Katsuhito Fujiu
Artificial Intelligence in Healthcare	Project Associate Professor	Yoshimasa Kawazoe

Social Cooperation Program

Department of Ubiquitous Health Informatics	Project Associate Professor	Kayo Waki
Department of Lipidomics	Project Professor	Yoshiya Oda
Advanced Nursing Technology	Project Associate Professor	Ryoko Murayama
Verbal analysis of pathophysiology	Project Associate Professor	Shinichi Tokuno
Department of Health Services Research	Project Associate Professor	Taisuke Jo
Skincare Science	Project Associate Professor	Takeo Minematsu
Department of Healthcare Quality Assessment	Project Professor	Hiroaki Miyata
Bariatric & Metabolic Care	Project Associate Professor	Susumu Aikou
Imaging Nursing Science	Project Associate Professor	Nao Tamai
Department of Innovative Dementia Prevention	Project Associate Professor	Tadafumi Hashimoto
Department of Functional Genomics and Immunological Diseases	Project Associate Professor	Tomohisa Okamura
Department of Prevention of Diabetes and Life-style Related Diseases	Project Professor	Takashi Kadowaki
	Project Associate Professor	Satoko Yamaguchi
Department of Next-Generation Pathology Information Networking	Project Professor	Takeshi Sasaki
Chronic kidney disease pathophysiology	Project Professor	Reiko Inagi

Research Unit

Global Leader Program for Social Design and Management	Project Associate Professor	Jung Su Lee

Faculty of Medicine

Dean Nobuhito Saito

School of Medicine	Cell Biology and Anatomy / Biochemistry and Molecular Biology / Physiology / Pharmacology / Pathology / Microbiology / Immunology / Radiology / Biomedical Engineering / Basic Neuroscience / Integrative Medical Neuroscience / Clinical Neuroscience / Occupational, Environmental and Preventive Medicine / Medical Principles and Medical Ethics / Forensic Medicine, and Medical Informatics and Economics / Medicine I / Medicine II / Clinincal Laboratory Medicine and Pathology / Obstetrics and Gynecology / Pediatric Science / Aging Science / Sugery / Sensory and Motor System Medicine / Vital Care Medicine
School of Integrated Health Sciences	Family Nursing / Community Health Nursing / Fundamental Nursing / Gerontological Nursing / Midwifery and Women's Health / Adult Health and Nursing / Mental Health and Nursing / Health Sociology / Health Administration / Epidemiology and Biostatistics / Human Ecology / Biochemistry and Nutrition / Maternal and Child Health

University Hospital

Director Yasuyuki Seto

Clinical Division

Department of Internal Medicine	General Medicine	Professor	Issei Komuro
	Cardiovascular Medicine	Professor	Issei Komuro
	Respiratory Medicine	Professor	Takahide Nagase
	Gastroenterology	Professor	Kazuhiko Koike
	Nephrology and Endocrinology	Professor	Masaomi Nangaku
	Diabetes and Metabolic Diseases	Professor	Toshimasa Yamauchi
	Hematology and Oncology	Professor	Mineo Kurokawa
	Allergy and Rheumatology	Professor	Keishi Fujio
	Infectious Diseases	Professor	Kyoji Moriya
		Associate Professor	Syu Okugawa
	Neurology	Professor	Tatsushi Toda
		Associate Professor	Atsushi Iwata
	Geriatric Medicine	Professor	Masahiro Akishita
		Associate Professor	Sumito Ogawa
	Psychosomatic Medicine	Professor	Akira Akabayashi
		Associate Professor	Kazuhiro Yoshiuchi
		Associate Professor	Yoshiyuki Takimoto
Department of Surgery	General Surgery	Professor	Soichiro Ishihara
	Stomach and Esophageal Surgery	Professor	Yasuyuki Seto
		Associate Professor	Sachiyo Nomura
	Colon and Rectal Surgery	Professor	Soichiro Ishihara
		Associate Professor	Hiroaki Nozawa
	Hepatobiliary Pancreatic Surgery	Professor	Kiyoshi Hasegawa
		Associate Professor	Junichi Arita
	Vascular Surgery	Professor	Soichiro Ishihara
	Breast and Endocrine Surgery		
	Artificial Organ and Transplantation Surgery	Professor	Kiyoshi Hasegawa
		Associate Professor	Junichi Arita
	Cardiovascular Surgery	Professor	Minoru Ono
		Associate Professor	Yasutaka Hirata
	Thoracic Surgery	Professor	Jun Nakajima
	Neurosurgery	Professor	Nobuhito Saito
		Associate Professor	Hirofumi Nakatomi
	Anesthesiology and Pain Relief Center	Associate Professor	Kanji Uchida
	Urology and Andrology	Professor	Haruki Kume
		Associate Professor	Motofumi Suzuki
	Gynecologic Surgery	Professor	Yutaka Osuga
		Associate Professor	Katsutoshi Oda
Department of sensory and Motor System Medicine	Dermatology	Professor	Shinichi Sato
		Associate Professor	Yoshihide Asano
	Ophthalmology	Professor	Makoto Aihara
		Associate Professor	Satoshi Kato
		Associate Professor	Toshikatsu Kaburaki
	Orthopaedic Surgery and Spinal Surgery	Professor	Sakae Tanaka
		Associate Professor	Taku Saito
	Otolaryngology and Head and Neck Surgery	Professor	Tatsuya Yamasoba
		Associate Professor	Shinichi Iwasaki
		Associate Professor	Kenji Kondo
	Rehabilitation Medicine	Professor	Nobuhiko Haga
		Associate Professor	Yusuke Shinoda
	Plastic, Reconstructive and Aesthetic Surgery	Professor	Mutsumi Okazaki
		Associate Professor	Takuya Iida
	Oral-Maxillofacial Surgery and Orthodontics	Professor	Kazuto Hoshi
		Associate Professor	Hideto Saijo

Department of Pediatrics, Perinatal and Women's Medicine	Pediatrics	Professor	Akira Oka
		Associate Professor	Yutaka Harita
	Pediatric Surgery	Professor	Jun Fujishiro
	Obstetrics and Gynecology	Professor	Tomoyuki Fujii
		Associate Professor	Kaori Koga
		Associate Professor	Osamu Hiraike
		Associate Professor	Takeshi Nagamatsu
Department of Neuropsychiatry	Neuropsychiatry	Professor	Kiyoto Kasai
		Associate Professor	Seiichiro Jinde
Department of Radiology	Radiology	Professor	Osamu Abe
		Associate Professor	Keiichi Nakagawa
		Associate Professor	Harushi Mori
Acute Medicine	Acute Medicine	Professor	Naoto Morimura

Central Clinical Facilities

Clinical Laboratory	Professor	Yutaka Yatomi
Operation Center	Associate Professor	Kazuhiko Fukatsu
Imaging Center	Professor and Director	Osamu Abe
Department of Blood Transfusion	Professor	Hitoshi Okazaki
Perinatal Center	Professor	Tomoyuki Fujii
Rehabilitation Service	Professor	Nobuhiko Haga
	Associate Professor	Yusuke Shinoda
Department of Medical Engineering		
Central Supply Service	Associate Professor	Kazuhiko Fukatsu
Intensive Care Unit	Professor	Naoto Morimura
Pathology	Professor	Tetsuo Ushiku
Department of Corneal Transplantation	Professor	Makoto Aihara
Department of Cell Therapy and Transplantation Medicine	Professor	Mineo Kurokawa
Department of Endoscopy and Endoscopic Surgery	Professor	Kazuhiko Koike
Department of Hemodialysis and Apheresis	Professor	Masaomi Nangaku
Infection Control and Prevention Service	Professor	Kyoji Moriya
Department of Planning, Information and Management	Professor	Kazuhiko Ohe
University Hospital Medical Information Network Center	Professor	Takahiro Kiuchi
	Associate Professor	Tsuyoshi Okuhara
Organ Transplantation Service	Professor	Kiyoshi Hasegawa
Labor Safety and Health Management Office	Associate Professor	Tomotaka Yamamoto
Child Psychiatry	Associate Professor	Yukiko Kano
Tissue Bank	Associate Professor	Sumihito Tamura
Epidemiology and Preventive medicine	Associate Professor	Nobutake Yamamichi
Center for Liaison and Public Relations	Professor	Yutaka Osuga
Datebase Center of the National University Hospitals		
Department of Chemotherapy	Professor	Kiyoshi Miyagawa
Department of Medical Record Management	Professor	Kazuhiko Ohe
Intensive Care Unit	Professor	Naoto Morimura
Department of Palliative Medicine	Associate Professor	Masahiko Sumitani
Children's Medical Center	Professor	Akira Oka
	Professor	Jun Fujishiro
Department of Disaster Medical Management	Professor	Naoto Morimura
International Medical Center	Associate Professor	Sumihito Tamura
Department of Clinical Nutrition Therapy	Associate Professor	Naoto Kubota
Department of Chemotherapy	Professor	Naoto Takahashi
Department of Clinical Genomics	Professor	Yutaka Osuga
	Professor	Kiyoshi Miyagawa
	Professor	Tatsushi Toda
Pharmaceutical Department	Professor	Hiroshi Suzuki
Nursing Department		
Administration Office		

Clinical Research Division

Clinical Research Support Center	Professor	Takashi Moritoyo
	Associate Professor	Chie Sakanaka
22nd Century Medical and Research Center	Professor	Yutaka Osuga
	Project Professor	Kazuhiro Kakimi
Department of Tissue Engineering	Professor	Kazuto Hoshi
	Associate Professor	Atsuhiko Hikita
Cooperative Unit of Medicine and Engineering Research	Professor	Minoru Ono
Translational Research Center	Professor	Takeshi Iwatsubo
Center for Genome Medicine	Professor	Yutaka Osuga
	Project Associate Professor	Nobuhiro Shojima
Unit for Early and Exploratory Clinical Development	Professor	Takeshi Iwatsubo

Organization of Clinical Management Support

Department of Personnel Administration and Human Resource Management	Professor	Yutaka Yatomi
Medical Specialists Training Center		
Department of Performance Monitoring and Risk Management	Professor	Nobuhiko Haga
Office of Performance Monitoring	Associate Professor	Tomotaka Yamamoto
Medical Safety management Center	Associate Professor	Tomotaka Yamamoto
Infection Control Center	Professor	Kyoji Moriya
Department of Highly Advanced Novel Medical Technologies Evaluation	Professor	Jun Nakajima
Department of Unapproved New Drugs and Medical Devices Evaluation	Professor	Nobuhiko Haga
Department of Education and Staff Development	Professor	Tatsuya Yamasoba
General Education Center	Professor	Masato Eto
Hospitality Center		
Department of Hospital Planning and Management	Professor	Jun Nakajima
Department of Research Support	Professor	Yutaka Osuga
Department of Clinical Research Gavernance	Project Professor	Hideaki Ui

Organization of Clinical Management

Inpatient Services Administration	Professor	Haruki Kume
Admission and Discharge Center		
Cancer Board	Professor	Kiyoshi Miyagawa
Outpatient Services Administration	Professor	Kiyoshi Miyagawa
Central Clinical Services Administration	Associate Professor	Masahiko Sumitani
Vascular Board		
Perioperative Assessment Center	Associate Professor	Kanji Uchida
Epilepsy Center		
Immunotherapy Center	Project Associate Professor	Hiroko Kanda
SSc Center	Associate Professor	Yoshihide Asano
Osteoporosis Center	Associate Professor	Taku Saito
Hip Fracture Board		
Division of patient support services	Professor	Yutaka Osuga
Medical Community Network and Discharge Planning Center	Associate Professor	Masahiko Sumitani
Cancer Resource Center	Associate Professor	Sachiyo Nomura
Patient Relations and Clinical Ethics Center	Associate Professor	Yoshiyuki Takemoto

Faculty of Medicine Graduate School of Medicine The University of Tokyo

Graduate School of Medicine

Institution

Molecular Cell Biology

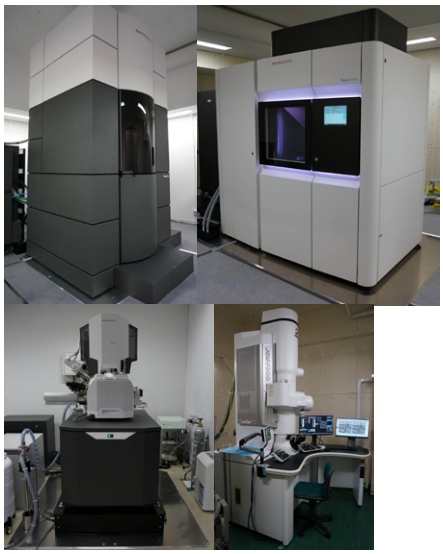
Structural Biology

http://structure.m.u-tokyo.ac.jp/

Kikkawa lab is interested in eukaryotic flagella/cilia, which works as a propeller and a sensor of cells. We study regulatory mechanisms of flagella/cilia beating by combining cryo-electron microscopy, optical microscopy with high-speed camera, cell biology, and genetics. We also provide cryo-electron microscopes as shared facilities.

Our current focuses are:

- How cilia/flagella are assembled.
- Molecular mechanisms of flagella and axonemal dyneins.
- Provide cryo-electron microscopy as shared facility

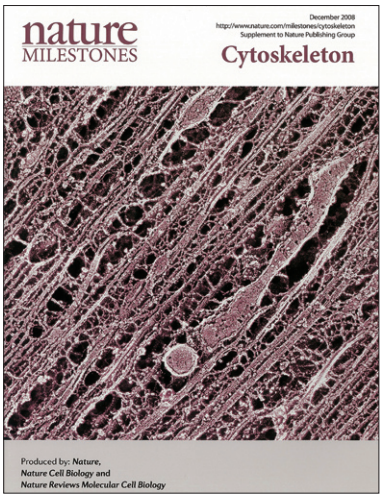


Cryo-electron microscopies installed in the University of Tokyo. From left to right: Titan Krios G3i (upper left), Talos Arctica (upper right), Aquilos (FIB-SEM,lower left), JEOL JEM-F200 (lower right).

Structural Cell Biology

http://cb.m.u-tokyo.ac.jp/

Our laboratory aims to study the function of microtubule-based molecular motors, kinesin superfamily proteins (KIFs). We have previously identified 45 KIF genes from human and mouse genomes. According to mouse molecular genetics and structural biological analyses, we have identified their functional relevance in higher brain function, brain wiring, left-right determination, tumor suppressing pathway, metabolic diseases, and so on. However, there still exist multiple interesting questions in this field, which we aim to solve by multidisciplinary and comprehensive approaches.

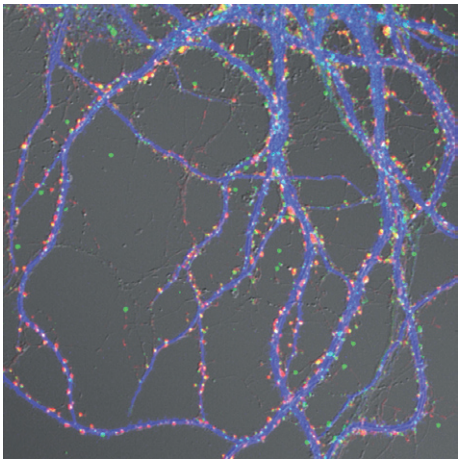


The neuronal cytoskeleton and its associated organelles (From Nature Milestones 2008)

Cellular Neurobiology

The Laboratory of Cellular Neurobiology is interested in understanding the molecular mechanisms regulating synapse formation and maintenance, which are essential in proper function of neural circuits in the brain. The laboratory is using optical imaging of synaptic molecules in live neurons, in combination with molecular biological approaches to modify neuronal functions.

- Molecular architecture of the postsynaptic density
- Molecular mechanisms of activity-dependent synapse remodeling
- Regulation of synapse functions by glial cells
- Regulation of synapse formation and maintenance in vivo
- Synapse dysfunction in psychiatric diseases



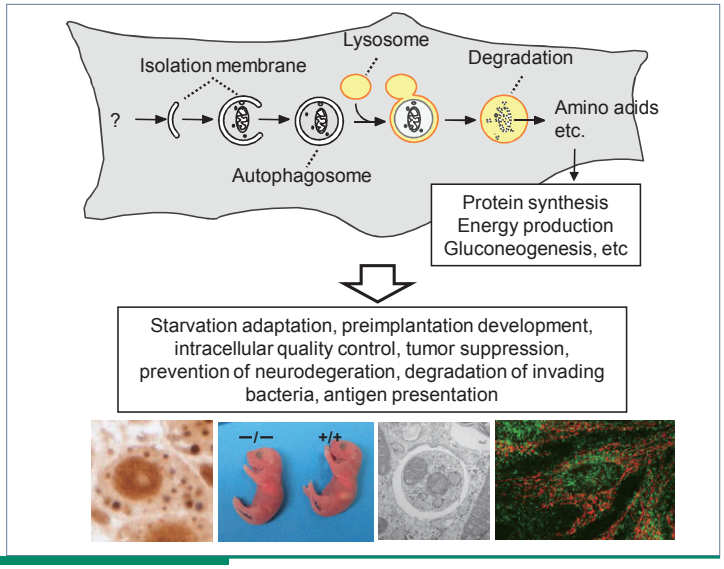
Quantitative fluorescence imaging of cultured hippocampal neurons (green: postsynaptic protein and calibrated fluorescent microspheres, red: presynaptic protein, blue: microtubule-associated protein)

Molecular Biology

http://molbiol.umin.jp/

Our laboratory has been doing trans-disciplinary studies on autophagy, an intracellular degradation system, and trying to understand the mechanisms and biological and pathophysiological functions of autophagy.

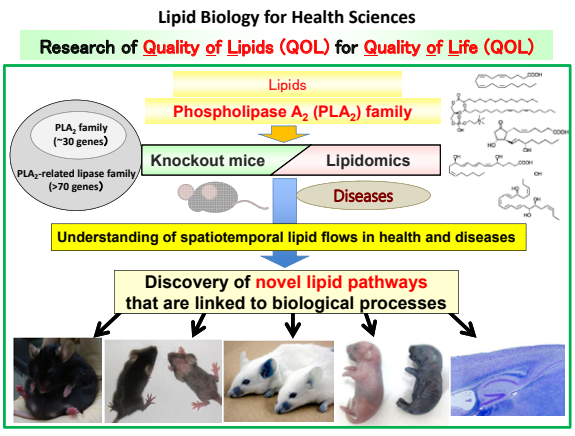
- Molecular mechanism of autophagy (its regulation, membrane dynamism, selectivity, etc.)
- Physiological and pathophysiological roles of autophagy
- Development of new methods for monitoring and modulating autophagy



Cellular Signaling

https://lmmhs.m.u-tokyo.ac.jp

Lipids serve as the largest energy source, cell membrane components, and bioactive mediators. Lipids are major environmental substances supplied as nutrients and spatiotemporally regulate a variety of biological responses in response to given microenvironmental cues within tissues. Our research focuses on the regulation of biological networks driven by lipids and their metabolites. By taking advantages of an array of gene-manipulated mice for lipid-metabolizing enzymes and receptors, we aim to clarify novel lipid-orchestrated mechanisms underlying various diseases such as metabolic and immune disorders. Knowledges obtained from these approaches will be translated to humans toward discovery of new biomarkers or druggable targets.

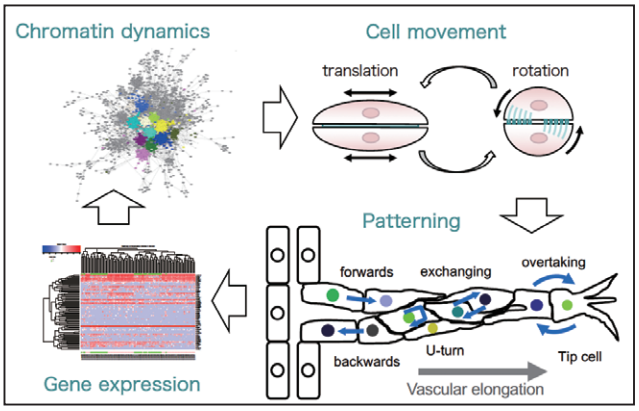


Physiological Chemistry and Metabolism

http://bio.m.u-tokyo.ac.jp/

We are investigating cellular behavior and signaling mechanisms underlying cell fate determination, morphogenesis and organogenesis in embryonic development.

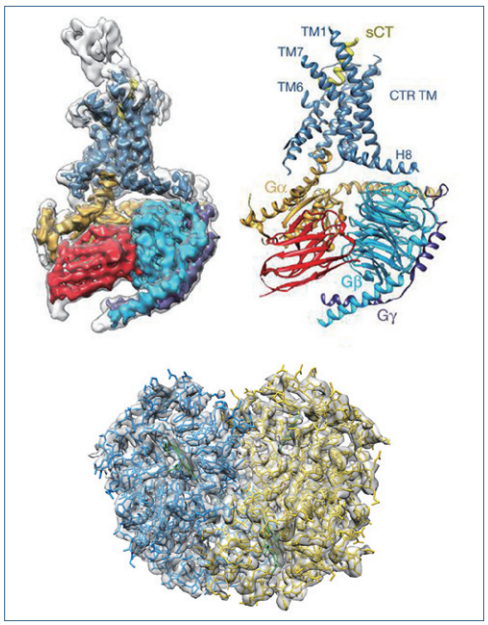
- Mechanisms of neural crest fate determination and craniofacial morphogenesis
- Mechanisms of cardiac development
- Mechanisms of angiogenesis



Understanding morphogenesis and organogenesis based on collective cell movement

Advanced Structural Biology

Our main interest is development of new methods and improvement of existing techniques for structure determination by cryo-electron microscopy (cryo-EM). Simultaneously, we are using state-of-the-art cryo-EM to study the structures of "difficult" samples, such as membrane proteins, small (< 100 kDa) molecules, heterogeneous samples and intact cellular volumes.
Cryo-EM is already past the tipping point and is being widely accepted and appreciated as a capable structural biology method. There are several areas where further progress is expected and/or already ongoing. Instrumentation, sample preparation, automation, deep learning and streamlining of the research process are of great interest to us and we are trying to contribute in these directions.



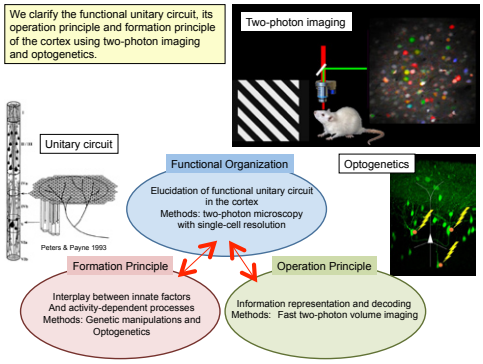
The structures of G-protein coupled receptors (upper) and hemoglobin (lower) solved by cryo-electron microscopy

Functional Biology

Integrative Physiology

http://www.physiol2.med.kyushu-u.ac.jp/

The cerebral cortex acquires complicated response selectivity by receiving and processing information from the outside of the world. However, it is still unknown what kind of neural circuit actually is involved this information processing. In recent years, progress of imaging technology (two-photon excitation method) has made it possible to simultaneously measure the activity of thousands of nerve cells from a living animal (Ohki et al., 2005, 2006). In addition to that, various technologies for studying neural circuits are being developed one after another and research on neuroscience is entering a transition era. In our laboratory, by using these latest methods, we are trying to find out how the neural circuits of mammalian visual cortex process information.



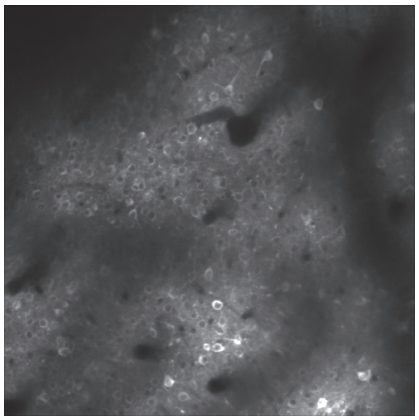
- Functional organization in the visual cortex
- Development of neural circuits in the visual cortex
- Information representation in the visual cortex
- Roles of each cell-type in the processing of visual information

Cellular and Molecular Physiology

http://plaza.umin.ac.jp/~Matsuzaki-Lab/

Our laboratory studies the neural circuits in the frontal cortex, which emerge movement and thought. Applying two-photon imaging, optogenetics, and electrophysiology to behaving mice and marmosets, we measure and manipulate the activities of multiple neurons and analyze their dynamics.

- Neural circuits for motor learning and motor execution.
- Neural circuits for decision making.
- Neural circuits for brain-machine-interface.
- Development of novel fluorescent microscopy system.



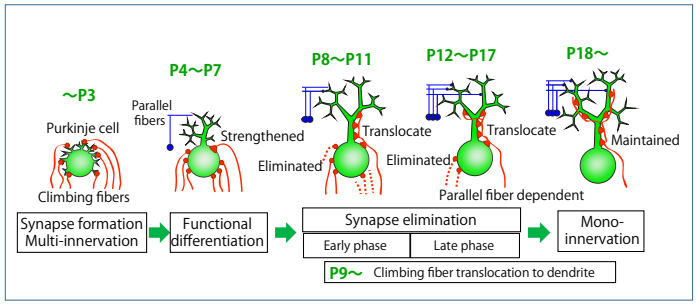
Two-photon image of the mouse motor cortical neurons

Neurophysiology

http://plaza.umin.ac.jp/~neurophy/

Our laboratory studies the function of the synapse, a key structure for brain functions, and its changes related to postnatal development, learning, and memory. We monitor neural activity in real time using various methodologies including; electrophysiology, molecular biology, and optical imaging of functional molecules.

- Postnatal development of synaptic function and organization in the cerebellum
- Retrograde synaptic modulation mediated by endogenous cannabinoids
- Synaptic integration in intact animals
- Synaptic plasticity and motor learning in the cerebellum

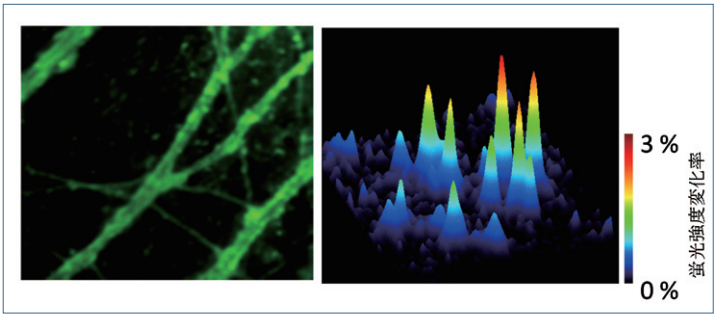


Postnatal development of cerebellar climbing fiber to Purkinje cell synapses

Cellular and Molecular Pharmacology

http://www.pharmacol.m.u-tokyo.ac.jp/

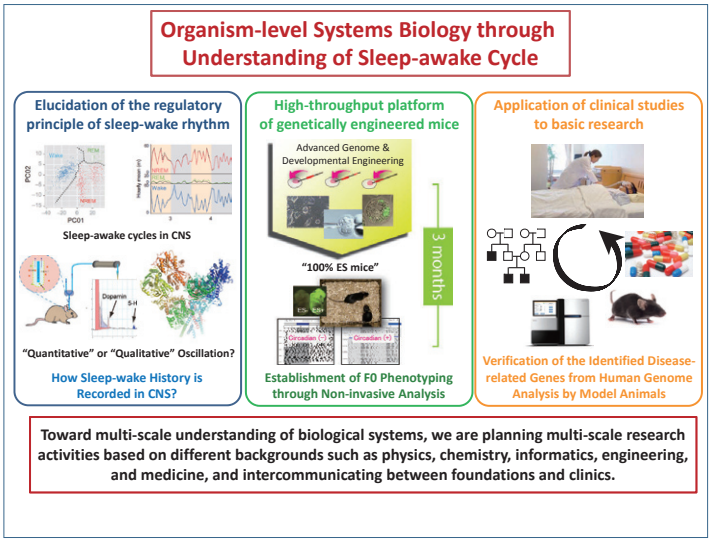
The goal of our research is to elucidate the regulatory mechanisms of physiological functions in the biological systems, especially in the central nervous system, by developing original bioimaging technologies including glutamate imaging technology. Currently, we are developing new basic technologies of molecular tag, super-resolution imaging and Ca^{2+} imaging, and applying the technologies to actual physiological studies.



Systems Pharmacology

We are aiming at understanding of how multi-stability and homeo-dynamics in sleep-wake systems, as a model system, can be achieved through negative feedback regulation of membrane potential in neurons, and neural circuit structures. Also, we are establishing a high-throughput production platform of genetically engineered mice to facilitate a quantitative analysis and perturbation at the organismal level, and paving the way for the basic research by associating with human genome analysis obtained from clinical studies.

- Elucidation of the regulatory principle of sleep-wake rhythm
- High-throughput production platform of genetically engineered mice
- Application of human genome analysis from clinical studies to basic research



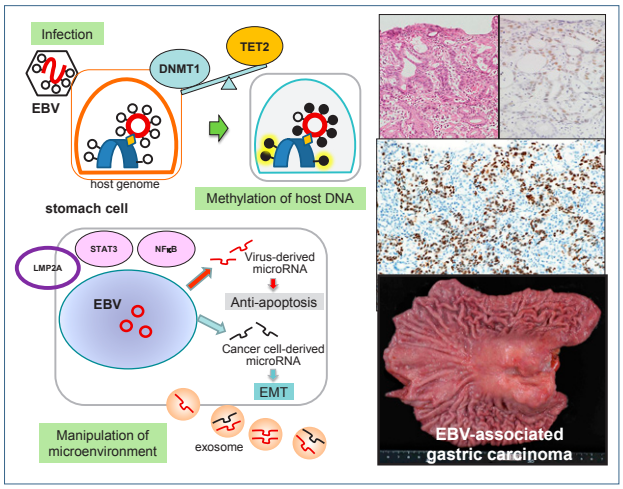
Pathology, Immunology and Microbiology

Pathology and Diagnostic Pathology

http://pathol.umin.ac.jp/index_e.htm

We investigate the pathogenesis and pathobiology of diseases, especially the neoplastic diseases, by means of morphology. Our goal is to discover new entities and to clarify unknown pathogenesis of diseases through the interaction with clinical medicine.

- Cancer research
  - Primitive phenotypic tarnsformation
  - Epstein-Barr virus associated gastric carcinoma
  - Cancer epigenetics (DNA methylation, microRNA)
  - Cancer classification for individualized medicine
- Application of molecular pathology to diagnostic pathology
  - Genome pathology, clinical sequencing
  - Discovery of molecular target for cancer therapy
  - Proteome pathology
- Next generation diagnostic pathology
  - Tele-pathology, digital pathology
  - AI and 3D technology

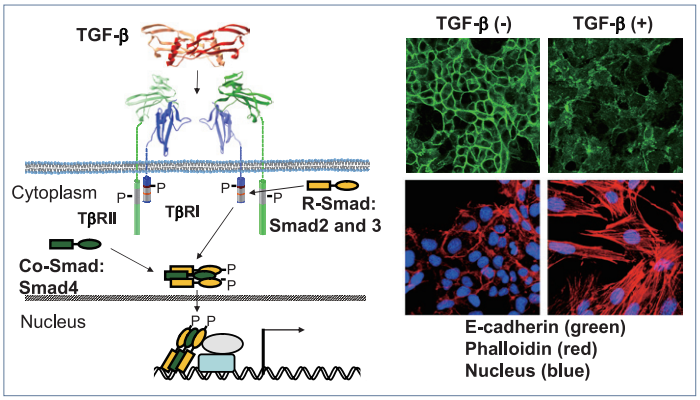


Molecular Pathology

http://beta-lab.umin.ac.jp/index.htm

We study signaling mechanisms of the TGF-β family proteins, and elucidate how they regulate progression of cancers. Mechanisms of regulation of TGF-β-Smad target genes will be studied by genome-wide approaches. Based on these findings, we will develop new strategies for the treatment of cancer.

- Dynamic changes in the transcriptional machinery regulated by TGF-β
- Roes of TGF-β in epithelial-mesenchymal transition (EMT)
- Roles of tumor microenvironment - approach by orthotopic transplantation models
- Analysis of cancer metastasis by tissue-clearing methods



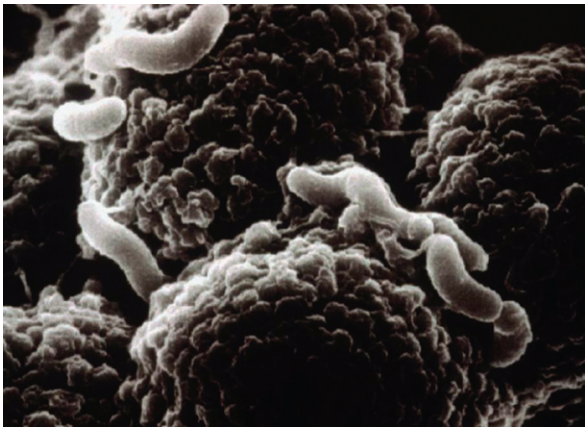
Signaling by TGF-β (left) and TGF-β-mediated EMT of mammry epithelial cells (right)

Microbiology

http://www.microbiol.m.u-tokyo.ac.jp/

Our major objective is to elucidate molecular mechanisms underlying development of gastric carcinoma triggered by infection with *Helicobacter pylori*. Based on the results obtained from these studies, we are also developing new strategies for prevention and treatment of infection/inflammation-associated cancers, which account for ~ 50% of entire human malignancies.

- Structural biological analysis of *H. pylori* oncoprotein CagA
- Intracellular signaling pathways targeted by CagA
- Mouse genetic studies on gastric carcinogenesis
- Host genetic factors determining gastric cancer susceptibility
- Molecular mechanisms linking inflammation and cancer



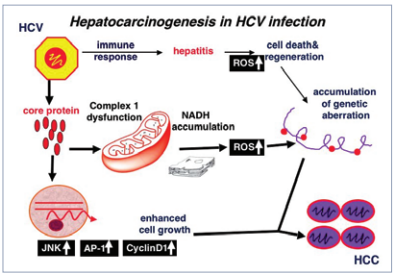
H. pylori - gastric epithelial cell interaction

Infection Control and Prevention

We are engaged in education of medical staff as well as in daily clinical activities on the prevention of healthcare-associated infection (HAI). Research activities on the pathogenesis of infection with hepatitis viruses and HIV, in particular, on the mechanism of hepatocarcinogenesis in HCV infection are also our mission.

- Development of preemptive strategies for the control of healthcare-associated infection
- Development of new methods in infection control and treatment of viral hepatitis
- Molecular pathogenesis of hepatocellular carcinoma in HCV infection
- Pathogenesis of progression of HIV infection
- Molecular pathogenesis of the mitochondrial disturbances in viral infections
- Molecular pathogenesis of hepatitis B viral infection
- Host defences to microorganisms
- Molecular analysis of innate immunity in microorganism infection
- New detection method and pathogenesis of opportunistic cytomegaloviral infection
- Mechanism of multi-drug resistant microorganisms
- Molecular epidemiology of *Clostridium difficile*

Infection control team rounds

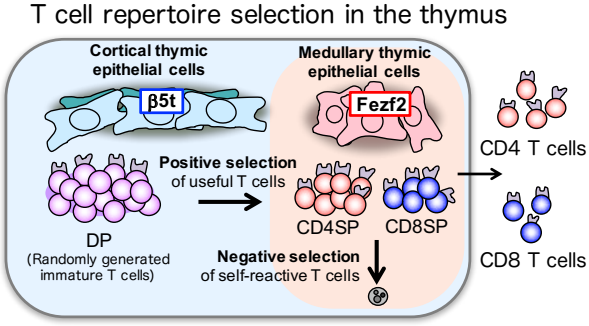


Immunology

http://www.immunol.m.u-tokyo.ac.jp/english

We aim to comprehensively understand immune responses by analyzing molecular mechanisms of the development of immune cells and the regulation of innate and adaptive immune systems, and to provide novel strategies for the treatment of immune diseases. We focus on the molecules and immune cells that contribute to autoimmune diseases, employing genetically modified mice to address their physiological significance in vivo.

- Animal models for studying immune cells by genome engineering technology
- Molecular mechanisms of immune cell development
- Role of immune tissue microenvironment in immune cell regulation
- Mechanisms and pathogenesis of autoimmune diseases
- Regulation of bone metabolism by the immune system
- Regulation of immune cells in bone microenvironment



Genetic variations of β5t alter CD8 T cell repertoire.
Nitta et al, ***Sci Immunol*** 2017

A transcription factor Fezf2 controls T cell tolerance.
Takaba et al, ***Cell*** 2015

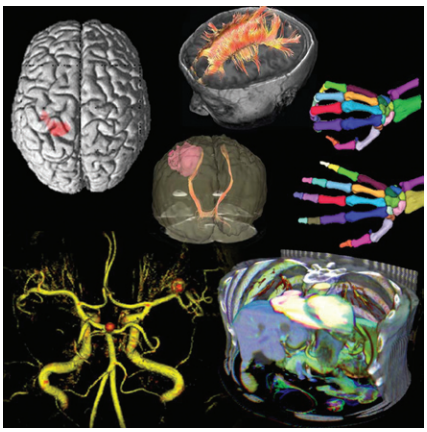
Radiology and Biomedical Engineering

Radiology

http://www.ut-radiology.umin.jp/

We have been performing a variety of research studies in biomedical imaging and analysis, computer-assisted diagnosis (CAD) and radiation therapy.

- Diagnostic Radiology
  - MRI analysis of brain morphology, diffusion, function and network
  - Development and application of CAD systems
  - Simulation of interventional radiology procedures using 3D printing
- Radiation Oncology
  - Stereotactic irradiation by gamma knife, synergy system and intensity modulated radiotherapy (IMRT)
  - Clinical and biological studies for the reduction of radiation-induced damage
- Nuclear Medicine
  - Functional imaging using radioisotope-labeled tracer technology
  - Imaging of brain metabolism and aggregated proteins using PET



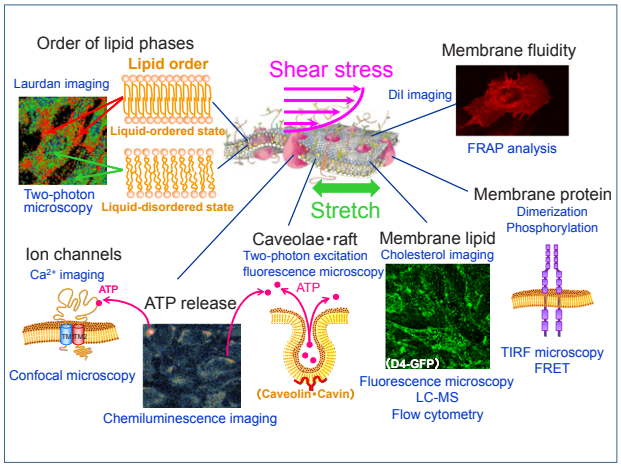
Representative images analyzed with computer-assisted technology

System Physiology

http://square.umin.ac.jp/bme/research_Eng.html

We study biomechanics dealing with mechanical phenomena in the human body, especially focusing on cellular sensing and mechanisms underlying the responses to mechanical stimuli. The main theme of our work is to elucidate how vascular endothelial cells sense hemodynamic forces (i.e., shear stress and cyclic stretch) generated by blood flow and blood pressure. This would be of benefit not only for understanding the blood flow-mediated regulation of vascular functions, angiogenesis and vascular remodeling, but also for the elucidation of clinically important problems, such as the development of atherosclerosis and cerebral aneurysms.

- Mechanosensing and mechanotransduction
- Hemodynamic force-induced cellular responses
- Hemodynamic force-mediated gene regulation



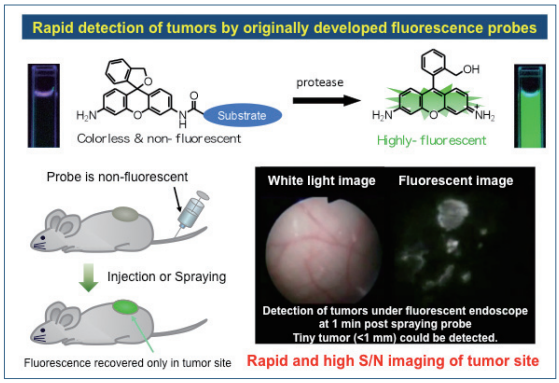
Analysis of mechanosensing molecular mechanisms in vascular endothelial cells

Chemical Biology and Molecular Imaging

http://cbmi.m.u-tokyo.ac.jp/

Our research field is so-called chemical biology. One of our main research interests is to develop novel small molecule-based photo-functional tools for biological and medical research, including fluorescence probes for detecting various events in living cells and animals. Recently, we have succeeded to develop fluorescence probes for in vivo tumor detection, and they are now applied to real resected human samples by collaborating with many surgeons.

- Establishment of rational design strategies for various photo-functional small molecule-based probes
- Development of novel fluorescence probes, photosensitizing probes and caged compounds, and their application to various living biological samples
- In vivo detection and therapy of tumors in model mice and real human samples by using rationally designed novel fluorescence and photosensitizing probes

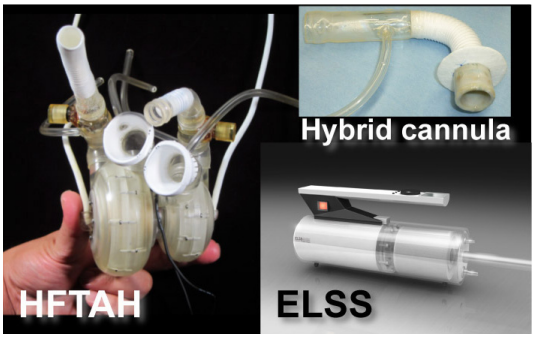


Biosystem Construction and Control

http://www.bme.gr.jp/bme_E/

Our research fields include medical engineering technologies represented by the artificial organs. Especially in the research of the artificial heart, the goat whose heart was replaced with the new type of the total artificial heart survived for more than three months. To rescue the life of cardiopulmonary arrest patients, the compact emergency life support system has been developed. Other than these, researchs and developments of bio-compatible materials, sensors, new diagnostic devices and an implantable artificial kidney have been performed.

- Artificial heart
- Emergency life support system
- Hybrid technology of biological and artificial materials
- New blood pumps
- Implantable pressure sensor
- Implantable artificial kidney



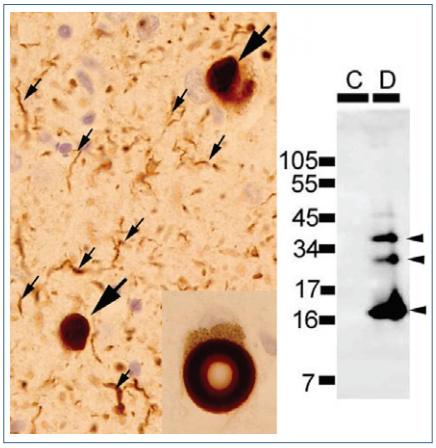
Helical flow total artificial heart (HFTAH), hybrid cannula and compact emergency life support system (ELSS)

Neuroscience

Neuropathology

Elucidate the pathomechanism of neuronal degeneration and death in major neurodegenerative disorders (e.g., Alzheimer disease, Parkinson disease), and develop novel strategies for disease-modifying therapies.

- Mechanism of Aβ production, aggregation and clearance
- Pathological function of β-amyloid binding proteins (e.g., CLAC)
- Mechanism of aggregation and neurotoxicity of α-synuclein
- Pathological function of familial Parkinson disease gene LRRK2
- Strategies for development and validation of disease modifying therapies for Alzheimer disease (J-ADNI Clinical Study)
- Mechanism of extracellular release and propagation of tau protein
- Pathological function of TDP-43 and FUS in amyotrophic lateral sclerosis



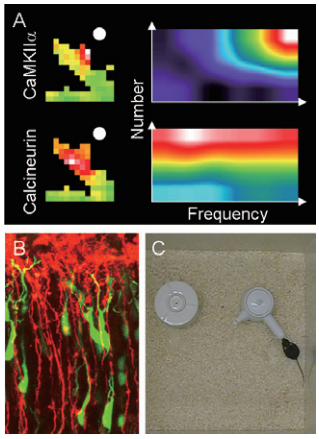
Phosphorylated α-synuclein deposited in Lewy bodies of Parkinson's disease and Lewy body disease

Neurochemistry

http://www.neurochem.m.u-tokyo.ac.jp/Homepage.html

Our brain is able to recognize and memorize external and internal events as they occur. A functional neural network further stands out by its capacity to extract patterns and rules, and to associate them with abstract meaning and affective valence. What are the local and global spectra of the molecular signaling events in neurons that underlie such complex information processing at the systems level? Are these events, in turn, converted into more profound modifications of the synaptic wiring mechanisms? To address these issues, we are currently investigating the chemistry and physiology of various neuronal protein complexes near and at synapses.

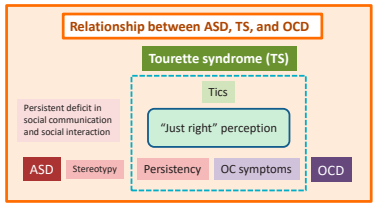
- Understanding molecular and circuit mechanisms controlling memory and emotional behaviors, through integration of state-of-the-art in vitro and in vivo neurobiological techniques in molecular optogenetics/imaging, genetical circuit tracing, and quantitative and behavioral experiments in combination with genetically modified mice and gene transfer using viral vectors.
- Optical and molecular investigation (including real-time imaging and optical manipulation) of biochemical signaling in single synapse, synapse to nucleus, and living brain circuits that are involved in activity-dependent modification of neural circuit function and behavior.

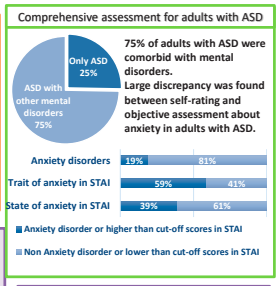


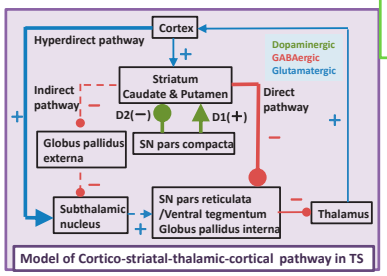
A. Single-synapse imaging (left) and frequency-number response profile (right) of CaMKIIα and calcineurin
B. Visualization of migrating neurons (green) and radial glial fibers (red) during corticogenesis
C. Novel object recognition task

Child Neuropsychiatry

Main diseases of our current research are autism spectrum disorder (ASD), ADHD, Tourette syndrome and childhood Obsessive-compulsive disorder (OCD). From the viewpoint of development of brain and mind, we are trying to investigate pathogenesis of these diseases by integrating phenomenological, neuropsychological, brain-imaging and genetic studies. We are also applying this integrative approach to treatment research for patients with these diseases.







Correlation between Obsessive-Compulsive (OC) Symptoms, Tics, and Global Functioning

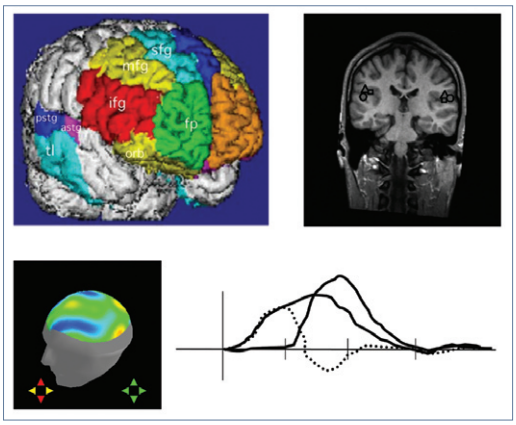
OC Symptom Dimensions	Tic Symptoms (YGTSS total tics)	Global Functioning (GAF)
Aggression	0.318 *	-0.297 *
Sexual/Religious	0.368**	-0.225
Symmetry	0.356 **	-0.218
Contamination	0.189	-0.254†
Hoarding	0.177	-0.075
Miscellaneous	0.212	-0.239†

- Epidemiological, behavior phenotype, neuropsychological, genetic and treatment study of Tourette syndrome and childhood OCD
- Brain-imaging study of ASD, ADHD and Tourette syndrome
- Genomic and epigenomic analysis of ASD and Tourette syndrome
- Development of predictor of pharmacotherapy and parent training for ADHD
- Effectiveness study of early intervention for autistic preschoolers and group cognitive behavior therapy for adults with ASD
- Investigation on clinical evaluation and psychological education for adults with developmental disorders

Neuropsychiatry

http://npsy.umin.jp/en/

Our department mainly investigates schizophrenia and autistic spectrum disorders not only by biological approaches which integrate neuroimaging, genetic and animal studies, but also by psycho-social approaches. We also promote the systematic clinical research training programs and the cooperation with the basic neuroscience research.



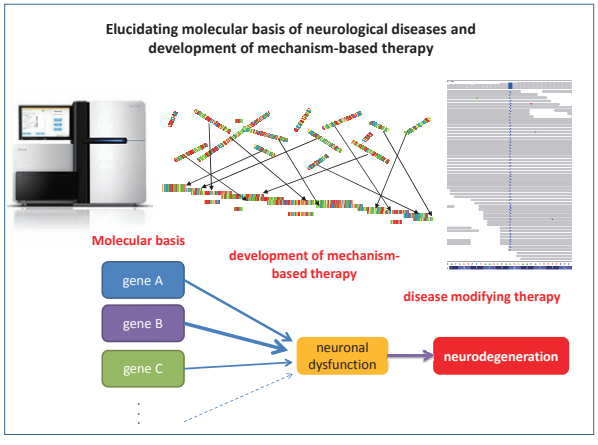
Multi-modality neuroimaging in neuropsychiatry using a combination of high-resolution MRI, EEG, MEG, NIRS, and PET

- Integrated Neuroimaging studies in Schizophrenia Targeting Early intervention and Prevention
  http://plaza.umin.ac.jp/arms-ut/
- Multimodal neuroimaging studies of autistic spectrum disorders
- Clinical trials to establish the medical equipment as a clinical test useful for the pharmacological treatment of mental disorders

Neurology

http://square.umin.ac.jp/neurotky/

Our Department is conducting research programs to elucidate the pathophysiological mechanisms of neurological diseases including neurodegenerative diseases, immune-mediated diseases and neuromuscular diseases, and to establish new therapeutic approaches for these diseases. We are also providing excellent training programs to become a board-certified neurologist.

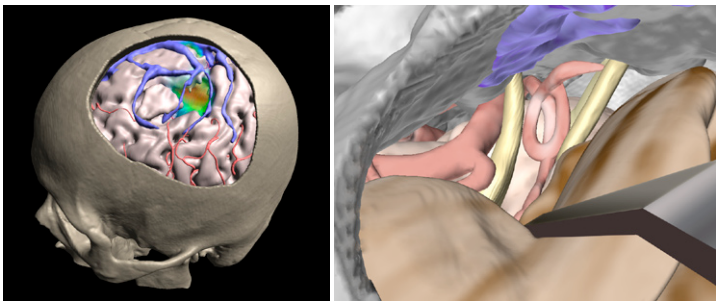


- Molecular Genetics (identification of disease genes and development of therapeutic approaches)
- Molecular pathophysiology of neurological diseases (protein structures and functions)
- Immune-mediated diseases (autoantibodies)
- Neurophysiology and cognitive neuroscience (magnetic stimulation, NIRS, MEG, PET, and fMRI)
- Neuropathology of neuromuscular diseases (pathological studies on biopsy and autopsy materials)
- Multicenter-based clinical research

Neurosurgery

http://www.h.u-tokyo.ac.jp/neurosurg/

The 21st century has been designated as "The Century of the Brain". To lead Japanese surgical neuroscience, we have devoted our activities to the following: advanced clinical neurosurgery, neuroscience research and graduate and postgraduate education.



Pre-operative simulation using 3D-fusion images

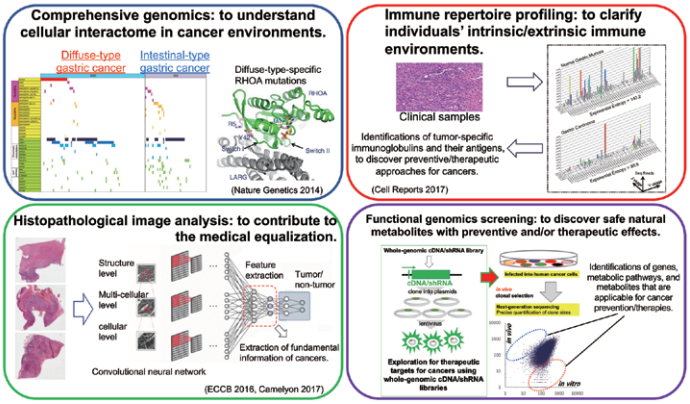
- Skull base surgery in managing benign or malignant skull base tumors and cerebrovascular disorders
- Genetic analysis of cerebrovascular diseases and benign brain tumors
- Functional neurosurgery including epilepsy surgery
- Multi-omics analysis of brain tumors (genetic analysis)
- Development of new therapeutic strategies for malignat brain tumors
- Development of novel fluorescence probes for brain tumors
- Radiogenomics analysis of brain tumors
- Cinical study on gamma-knife surgery
- Application of brain functional imaging for neurosurgery
- Application of VR technology for surgical simulation

Social Medicine

Preventive Medicine

https://plaza.umin.ac.jp/prm/

Our goal is to discover appropriate intervention points for the prevention and therapeutics for issues in health care and hygiene, with special focuses on malignant tumors, from the viewpoints of genomic and information sciences. Based on bioinformatics for such complex eco-systems of wide varieties of cells, such as large-scale genomic information at single cell resolution and multi-dimensional histological image information, we are exploring preventive / therapeutic targets or biomarkers, and also analyzing their biological significance in diseases.



Exploration of preventive/therapeutic interventions for diseases by genomics & inforamatics

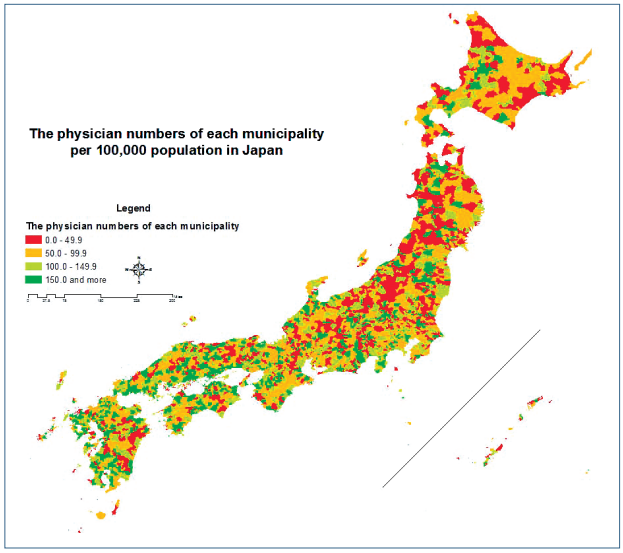
- Comprehensive genomics; to understand cellular interactome in cancer environments.
- Immune repertoire profiling; to clarify individuals' intrinsic / extrinsic immune environments.
- Histopathological image analysis; to contribute to the medical equalization.
- Functional genomics screening; to discover safe natural metabolites with preventive and/or therapeutic effects.

Public Health

http://publichealth.m.u-tokyo.ac.jp/

Public health is the science and art of preventing disease, prolonging life, and promoting health and quality of life (QOL) through organized community effort. Through studies in various fields and laboratories, our department aims to advance research, support policy development, and promote education toward these ends.

- Efficiency and equity issues of health systems
- Health manpower policy
- Occupational and environmental health
- Health services research



Physician distribution by municipality in Japan

Forensic Medicine

http://ut-forensic.jp

We conduct autopsies, and various examinations including histology, biochemistry, radiology, toxicology, and genetics as usual practices. We also perform the following research with other institutes and departments including Education and Research Center of Legal Medicine, Chiba University.

- Analysis and pathophysiology of illegal drugs including new psychoactive substances.
- Application of imaging modalities such as CT, or MRI for death investigation.
- Age and stature estimation and sex determination using CT .
- Mechanical properties of human tissue.
- Diagnosis of drowning.
- Application of relatively new DNA testing method for practice of forensic medicine

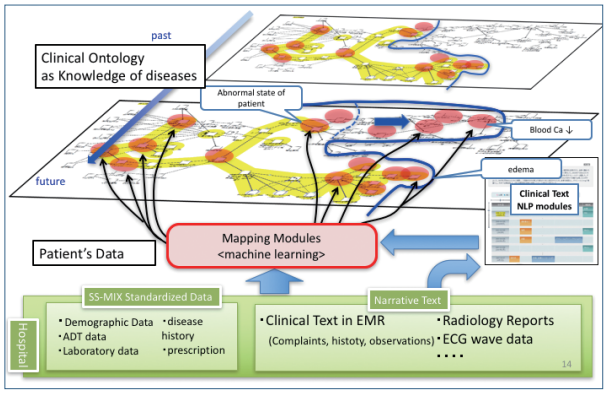
Forensic autopsy room

CT room

Biomedical Informatics

http://www.m.u-tokyo.ac.jp/medinfo/

The Department of Biomedical Informatics aims to reform medical systems and make social contribution by applying information technology to medical and clinical field including hospital information management. The department develops innovative methods that are applicable to medical information systems in the boundary area of healthcare and information science, establishes infrastructures for information environment, and applies knowledge and technique acquired through these efforts to medical and healthcare field.
The main keywords of the target domain are medical and clinical information systems, next-generation electronic health record systems, virtual health care environment, and AI including natural language processing as well as machine learning.



Automatic Mapping from Clinical Case Dara to Knowledge of Disease Transition

- Development and application of clinical ontology
- Research for sharing healthcare data among medical institutions and hospitals, and the application for clinical epidemiology
- Extraction of medical knowledge from electronic medical record database using natural language processing
- Development of knowledge-driven real time alerting system in clinical practice
- R&D of medical artificial Intelligence and mobile healthcare system

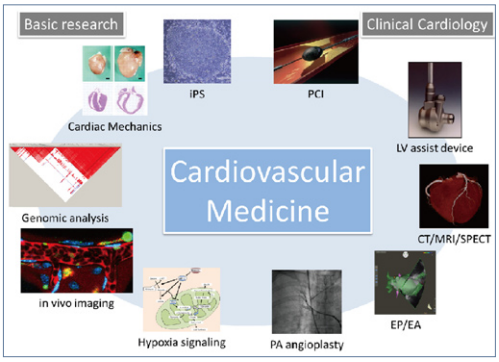
Internal Medicine

Cardiovascular Medicine

https://cardiovasc.m.u-tokyo.ac.jp/

We aim to provide the finest medical care for all cardiovascular diseases, including ischemic heart disease, arrhythmia, valvular disease, pulmonary hypertension, adult congenital heart disease, and arterial diseases. In particular, we have treated the largest number of serious heart failure patients in Japan. In collaboration with the Cardiovascular Surgery, we would like to work as the last bastion against heart failure. Moreover, with ongoing basic research and translational studies, we are developing new diagnostic modalities and treatments for refractory diseases.

- Investigation of disease pathophysiology (severe heart failure, Marfan's syndrome, pulmonary hypertension, etc.) and development of novel therapies
- Analysis of genome, epigenome, and transcriptomes in various cardiovascular diseases
- Investigation of pathophysiology of cardiomyopathy using iPS cells
- Research on the role of chronic inflammation in the pathogenesis of various cardiovascular diseases
- Research on endothelial dysfunction in various diseases
- Development of new integrated databases for clinical information and research
- Improvement of imaging techniques (echocardiography, MRI, CT, SPECT) for cardiovascular diseases
- Clinical research of severe heart disease, pulmonary hypertension, arrhythmia

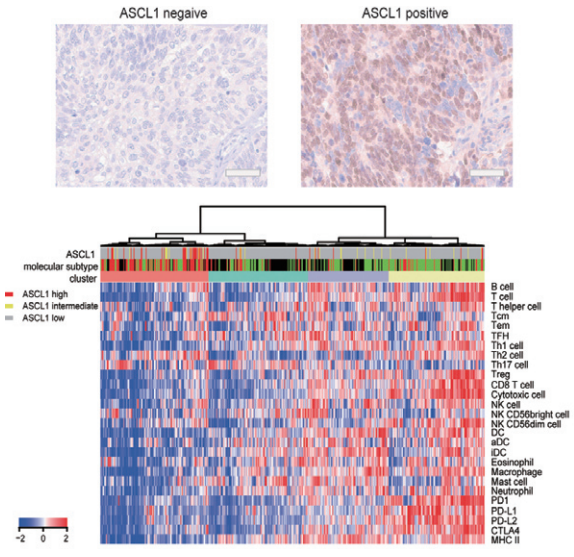


Respiratory Medicine

http://kokyuki.umin.jp/

The number of patients with pulmonary diseases is increasing. At the Department of Respiratory Medicine, we conduct a wide variety of basic and clinical research. We focus on molecular analysis of lung diseases to develop novel treatment strategies.

- Molecular profiling of lung cancer
- Discovery of novel prognostic biomarkers in lung cancer
- Targeted clinical sequencing of lung cancer specimens
- Clinical research using the lung cancer database
- Molecular analysis of COPD using animal models
- Molecular analysis of asthma
- Molecular analysis of pulmonary fibrosis using animal models
- Clinical epidemiology using the DPC database
- Case reports

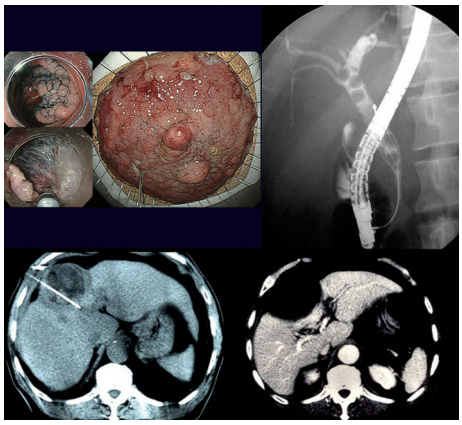


Expression of ASCL1 and immune-related genes in lung adenocarcinoma

Gastroenterology

http://gastro.m.u-tokyo.ac.jp/med/home.html

Our Department of Gastroenterology is one of the top institutions in the world in the treatment of hepatocellular carcinoma by unique ablation(RFA) and gastrointestinal/pancreatobiliary cancer/stone by endoscopic manipulation (ESD&ERCP). The goal of our department is to accurately diagnose and give the best available treatment to these patients, and to this end, we are performing a wide variety of basic as well as clinical research.

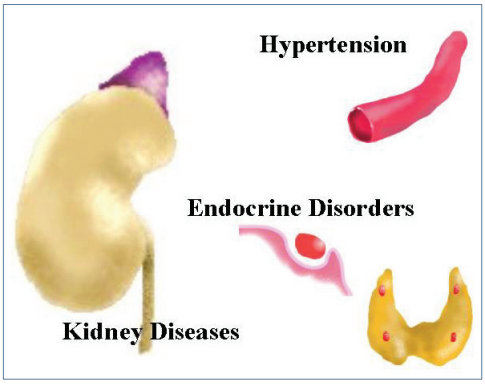


- Development of better therapeutic strategy for hepatitis B and C
- Elucidation of hepatocarcinogenesis mechanism in viral hepatitis
- Development of a better therapeutic modality for hepatocellular carcinoma & metastatic liver tumor
- Elucidation of gastric injury mechanisms by *Helicobacter pylori*
- Elucidation of stem cell and carcinogenic mechanism of gastrointestinal cancer
- Development of therapeutic strategy for advanced pancreatobiliary cancer
- Development of a better endoscopic therapeutic modality for pancreatobiliary cancer/stone
- Development of better diagnostic & therapeutic strategy for chronic pancreatitis
- Development of an endoscopic *en bloc* resection method for early gastric, esophageal and colonic cancer
- Elucidation of the mechanisms of metabolism-associated liver diseases
- Development of better diagnostic & therapeutic strategy for small intestinal diseases

Nephrology / Endocrinology

http://www.todai-jinnai.com/

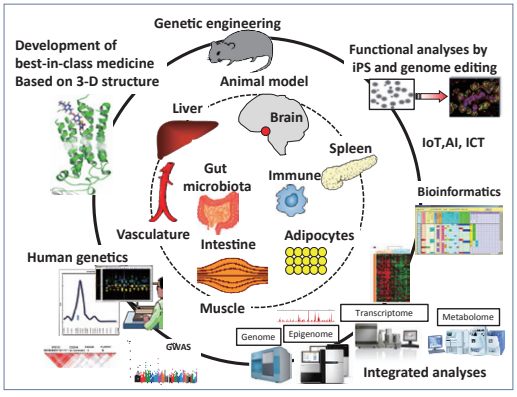
We are investigating the pathophysiology of renal and endocrine disorders for the development of innovative diagnostic and therapeutic tools.



- Analysis of pathophysiology and development of therapy of chronic kidney disease
- Abnormal oxygen metabolism of kidney disease
- Epigenetic changes in CKD
- Development of biomarkers and therapy of acute kidney injury
- Renal physiology and morphology
- G protein signaling in health and disease
- Clinical and basic investigation of bone and mineral disorders
- Pathophysiology of hypertension

Nutrition and Metabolism

We are investigating to reveal the molecular mechanisms underlying the development of metabolic diseases (diabetes mellitus, lipid metabolic disorders, obesity disease, sarcopenia, metabolic syndrome and atherosclerosis) using interdisciplinary approaches and state-of-the-art technology including genetically engineered model animals, iPS cells, omics analyses (epigenome, metabolome etc), human genetics, clinical epidemiology and bioinformatics. Our major goal is to develop mechanism-based fundamental treatment and prevention strategies for the metabolic diseases.

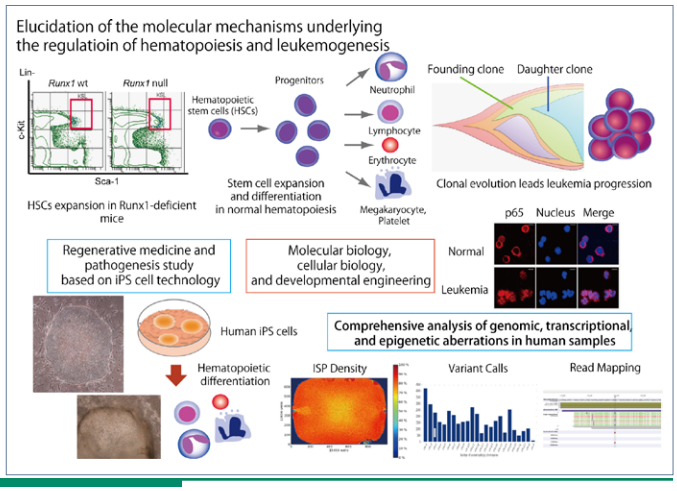


- Elucidation of molecular mechanism of insulin resistance linked to obesity, sarcopenia and development of novel treatment focusing on AdipoR, myokines etc
- Epigenetic analysis of the mechanisms of metabolic control and their disruption in type 2 diabetes and obesity
- Elucidation of the molecular mechanism of metabolic diseases and development of novel treatment using iPS cells
- Molecular mechanism of insulin signal transduction
- Molecular mechanism of insulin secretory defect in type 2 diabetes
- Genetic susceptibility and risk factors of type 2 diabetes
- Using IoT, AI, development of accurate diagnostis, prevention, treatment algorithm for type 2 diabetes
- Molecular mechanism of adipogenesis and obesity
- Transcriptional regulation of lipid metabolism
- Molecular mechanism of atherosclerosis
- Mouse genetic models of diabetes, lipid metabolism disorder and atherosclerosis

Hematology and Oncology

http://www.u-tokyo-hemat.com/

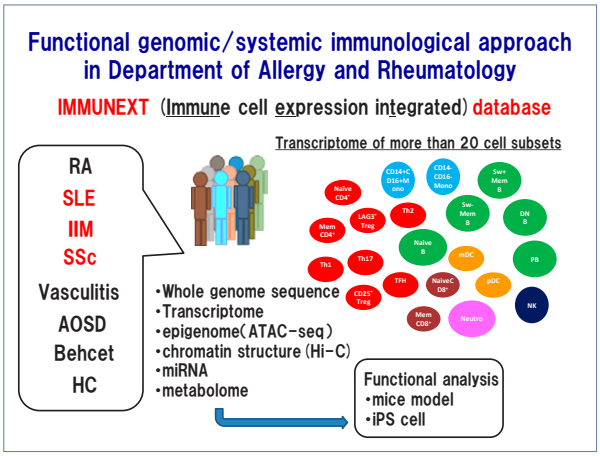
We investigate the pathogenesis, diagnostic methods, and novel therapeutics of hematological diseases by the comprehensive use of research technologies in molecular biology, cellular biology, developmental engineering, and genomic science. Studies about transcriptional regulation and signal transduction in hematopoiesis and analyses of regulation of hematopoietic stem cells are promoted. We also implement basic and clinical studies based on genomics, regenerative medicine, immunotherapy and transplantation medicine, which aim at application to therapeutic strategies.



- Mechanisms in the regulation of self renewal and differentiation in hematopoietic stem cells
- Comprehensive genomic and epigenetic analysis of hematological malignancies
- Elucidation of the molecular mechanisms underlying the pathogenesis of leukemia
- Development and analysis of mouse models of leukemogenesis
- Regenerative medicine and pathogenesis study based on human iPS cell technology
- Adoptive immunotherapy with T cells engineered with chimeric antigen receptor or T cell receptor for cancer

Allergy and Rheumatology

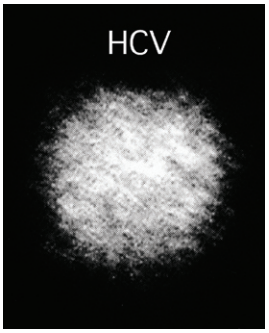
The principal aim of our department is to provide the best clinical care and support to the patients with rheumatic diseases, such as rheumatoid arthritis, systemic lupus erythematosus, idiopathic inflammatory myositis, systemic sclerosis, and vasculitis. We perform both basic and clinical research to translate laboratory findings into novel diagnostic and therapeutic approach by combining genetics, transcriptome informatics and immunology. We think translational research based on human immunology and diseases is the key to well understand and overcome rheumatic disease.



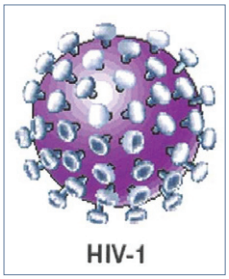
- Genome/transcriptome analysis of immunological diseases
- Disease classification and diagnosis with genome/transcriptome of immunological diseases
- Comprehensive analysis of miRNA in immunological diseases
- Identification of molecular pathway related to prognosis in treatment-resistant RA
- Identification of molecular pathway related to organ damage in SLE
- Molecular analysis using conditional knockout mice
- Functional analysis of immunological disease-associated variant using disease-specific iPS cells

Infectious Diseases

We are investigating both clinical and basic aspects in infectious diseases, in particular, on HIV infection and hepatitis viral infections, the latter of which is the major cause of liver diseae worldwide. Our research topics cover the wide areas in microbiology, immunology and pathobilology of infectious diseases, including viral and bacterial infections.



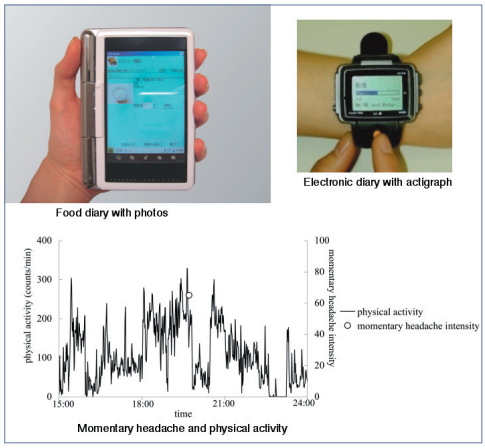
- Clinical studies of HIV infection
- Treatment and prevention of viral hepatitis
- Molecular pathogenesis of hepatocellular carcinoma in HCV infection
- Pathogenesis of extrahepatic manifestations and its control in HCV infection
- Molecular pathogenesis of hepatocellular carcinoma in HBV infection
- Molecular pathogenesis of hepatitis B viral infection
- Pathogenesis of influenza viral infection
- Molecular epidemiology and pathogenesis of bacterial infection
- Host defenses to microorganisms
- Mechanism of multi-drug resistant microorganisms


HIV-1

Stress Sciences and Psychosomatic Medicine

http://psmut.umin.ac.jp/

The targets of our laboratory include stress-related diseases such as primary headaches and lifestyle-related diseases, eating disorders and malignancies. The goals of our work are to determine the mechanisms of these conditions, to develop objective markers for diagnosis and severity, and to discover new treatment approaches using ecological momentary assessment (EMA), biochemical assessment of eating-related molecules, and physiological assessment of autonomic nervous function.



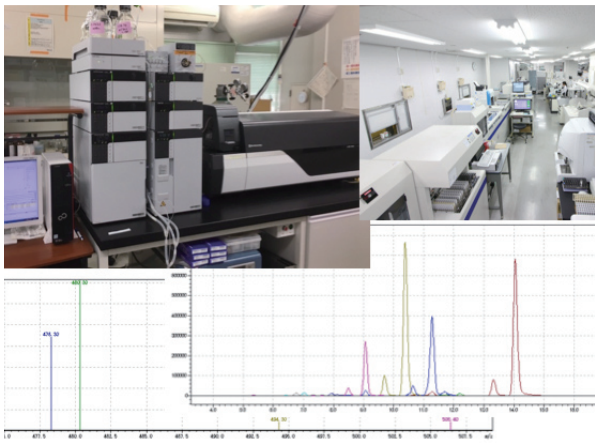
- We are using ecological momentary assessment (EMA) techniques to collect and evaluate subjective and objective data including physical activity and autonomic nervous function in natural settings in stress-related diseases. We are also developing new treatments using these methods.
- Investigation into the pathophysiology, psychopathology and neurobehavioral basis of stress-related diseases by use of ecological momentary assessment methods
- Using heart rate and blood pressure variability, we are investigating autonomic nervous function in eating disorders. This work uses non-linear analyses such as fractal analysis, as well as linear analysis.
- We have developed an egogram questionnaire, which we refer to as the TEG.

Clinical Laboratory Medicine

http://lab-tky.umin.ac.jp/

The main goal of our research projects, described below, is the development of new and useful laboratory tests, and elucidation of pathophysiology of diseases through laboratory tests.

- (Patho)physiological roles of lysophospholipid mediators, and its application to laboratory medicine
- Platelet biology, Laboratory diagnosis of heparin-induced thrombocytopenia
- Discovery of biomarkers for liver diseases
- Genetic testing
- Clinical introduction of the assay of oxidized/reduced albumin
- Cell surface analysis and quantification of cell surface antigens usingflow cytometry
- Analysis of ventricular functions using echocardiography
- Relationship between the respiratory function and various pathophysiological conditions
- Magnetoencephalographic (MEG) study on neural mechanisms for audiovisual integration
- Machine-learning approach for medical diagnosis

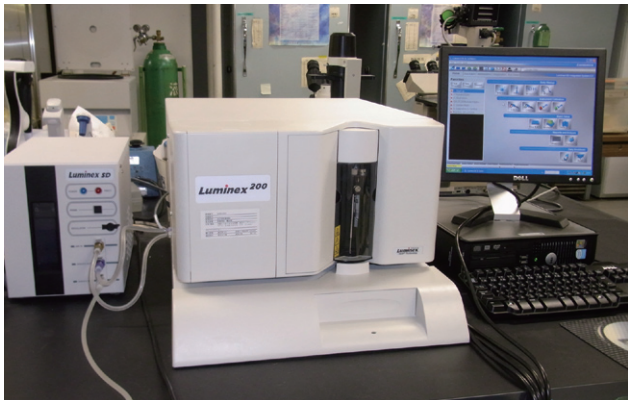


Analysis of Lysophospholipids

Transfusion Medicine

http://square.umin.ac.jp/traf-tky/

The Department of Transfusion Medicine aims the achievement of safe and appropriate transfusion practice in the hospital, and for this purpose, controls, tests and supplies all blood products for transfusion.
The research fields include:



- Detection of red cells/ leukocytes/platelets antigens/antibodies
- Development of new anti-angiogenic strategies for the treatment of solid tumors
- Investigation on the pathophysiology of the immunological adverse effects of transfusion
- Clinical study for the safety of autologous blood donation

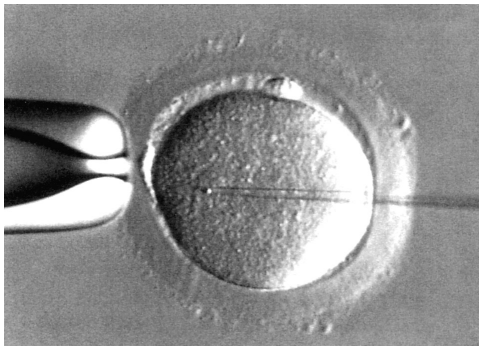
Reproductive, Developmental and Aging Sciences

Reproductive Endocrinology

http://www.h.u-tokyo.ac.jp/patient/depts/a_joseika01/index.html

We manage women's reproductive health comprehensively throughout their respective life stages (adolescence, reproductive ages, menopause, and post-menopause). We also aim to develop advanced reproductive techniques, which could be practiced with higher success rates and improved safety, based on experimental and clinical research.

- Establishment of effective and low-risk treatment for infertility
- Development of assisted reproductive technology
- Understanding of interaction between the endometrium and embryo during the implantation period
- Study of pathophysiology of endometriosis / adenomyosis
- Understanding of local regulation of folliculogenesis
- Technical development of advanced endoscopic / minimally invasive surgery
- Development of hormone replacement therapy for perimenopausal / postmenopausal women
- Health care for women
- Development of oncofertility



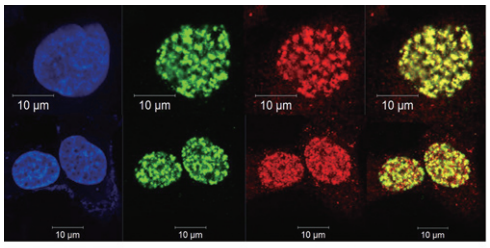
ICSI (intracytoplasmic sperm injection)

Gynecologic Oncology

http://www.h.u-tokyo.ac.jp/patient/depts/a_joseika01/index.html

Our basic research focuses on genetic and epigenetic analysis on gynecologic cancer for developing new diagnostic system and cancer treatment.
Clinically, we are investigating intensive surgical management, as well as less invasive (laparoscopic surgery, robot-assisted surgery) surgery in gynecologic malignancies.

- Intensive surgery for advanced or recurrent tumors and minimally invasive surgery for selected patients
- Identification of molecular-targeted therapies and immunotherapies on basis of genome and epigenome wide analyses
- Development of novel therapeutics targeting DNA repair pathway
- Development of new medical system for gynecologic cancer treatment and diagnosis using AI technology



Blue: Hoechst Green: H2Ax Red: SIRT1 Yellow: Merge

After irradiation, SIRT1 are recruited to H2AX focus.

Perinatal Medicine

http://www.h.u-tokyo.ac.jp/patient/depts/a_joseika03/index.html#ninpu

The researches are on going for development of precise prenatal diagnosis on the fetal status using ultrasonography and for better understanding on pathology of perinatal diseases. We are also focusing on the immunological aspects and inflammation in patho- physiology of pregnancy. Our goal is to develop the therapy and prevention methods for habitual abortion, pregnancy induced hypertension, preterm labor, and cerebral palsy.

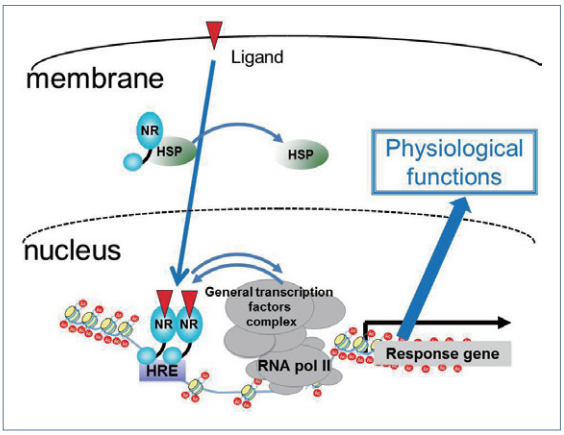
- Prenatal diagnosis of abnormal fetuses using three dimensional ultrasonography
- Management of recurrent pregnancy loss
- Management of complicated pregnancy
- Management of preterm labor
- Prevention of cerebral palsy of the newborn
- Development of novel therapy for hypertensive disorders of pregnancy.

Three dimensional ultrasonography of fetus

Molecular and Cellular Reproductive Medicine

We investigate the molecular mechanisms of reproductive functions using the knowledge and techniques of molecular and cellular biology and genetics.
Our studies are focusing on the pathophysiological mechanism of sex steroid hormones to elucidate how these hormones effect on reproductive phenomena including embryogenesis, spermatogenesis and fetal development, and on the prenatal genetic diagnosis.

- Effect of sex steroid hormones on reproductive medicine
- Molecular mechanisms of embryogenesis
- Analysis of implantation mechanism
- Analysis of intrauterine fetal development
- Prenatal diagnosis using molecular genetics



Molecular mechanisms of sex steroids

Pediatrics / Developmental Pediatrics

http://square.umin.ac.jp/ped/

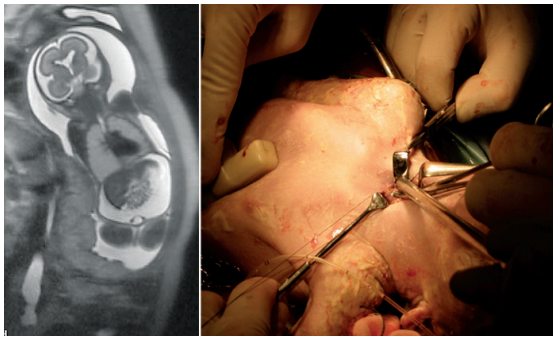
We are studying all aspects concerning the health of infants, children and adolescents.
We have achieved very important contributions to clarify the molecular pathogenesis of pediatric disorders.

- Molecular diagnosis, analysis and collaborative treatment of pediatric renal diseases
- Molecular diagnosis and analyses of hematological malignancies and solid tumors
- Multi-institutional comparative clinical studies on leukemia and solid tumors
- Molecular analysis and diagnosis and collaborative treatment of endocrine/metabolic diseases and diabetes
- Diagnosis, molecular analysis and collaborative treatment of congenital heart diseases
- Molecular mechanism of Neonatal immune tolerance
- Comprehensive analysis of biomarkers in neonatal diseases
- Microbiome and immune function in neonates
- Immunity of neonates born to mothers with systemic autoimmune diseases
- Neurocognitive effects of intrauterine infection and environmental toxins
- Diagnosis and comprehensive treatment of neuromuscular disorders
- Molecular diagnosis and treatment of mitochondrial disorders
- Early intervention of developmental disorders
- Patho-physiological analysis by digital data in pediatric critical care
- Protective respiratory care by trans-pulmonary pressure in children
- Development of educational program of transitional care

Pediatric Surgery

Pediatric surgical diseases have great variety. In our department all kinds of pediatric surgical conditions are treated, and in these fetal and neonatal surgical care is our main interest. We also treat many pediatric patients using minimally invasive surgeries such as laparoscopy and thoracoscopy.

- Fetal surgery and treatment
- Pediatric minimally invasive surgery
- Pediatric robotic surgery
- Biliary atresia and biliary dilatation: their treatment and long-term prognosis
- The treatment by regenerative medicine of air way malacia and stenosis
- Development of pediatric surgical models
- Association between pediatric surgical diseases and intestinal microbiota
- Assessment of pediatric surgical procedures using nation-wide data

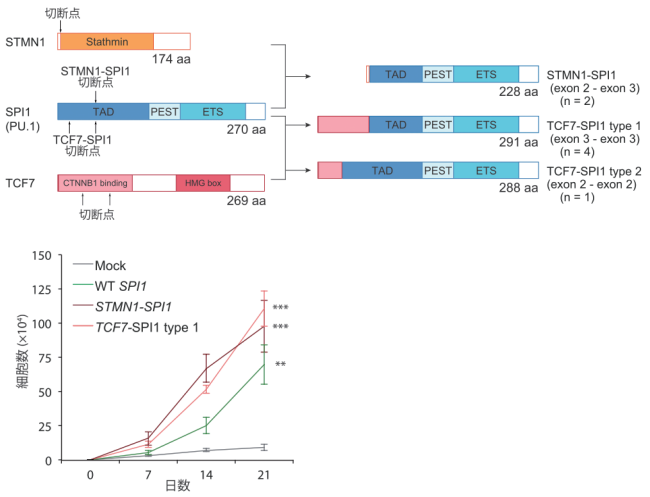


EXIT(ex utero intrapartum treatment):Tracheostomy on a fetus with laryngeal atresia

Pediatric Oncology

Division of Hematology/ Oncology is one of the world's premier research and treatment unit for childhood cancer. We have tried to translate laboratory discoveries into new options for children with tough-totreat cancers. Under the supervision of our physicians, our patients receive care at a world-class medical center along with the chance to participate in clinical trials at the cutting edge of medical science today. To continue to foster advancement in these fields into the future, the division also focuses on biological research about pediatric cancers.

- Genetic analysis and investigations for prognostic factors in neuroblastoma
- Tumorigenesis of germ cell tumors
- Genetic and epigenetic analyses of rhabdomyosarcoma
- Comprehensive genetic analysis of hepatoblastoma
- Studies on pathogenesis and diagnosis of acute lymphoblastic leukemia
- Multi-institutional joint studies on leukemia and solid tumors

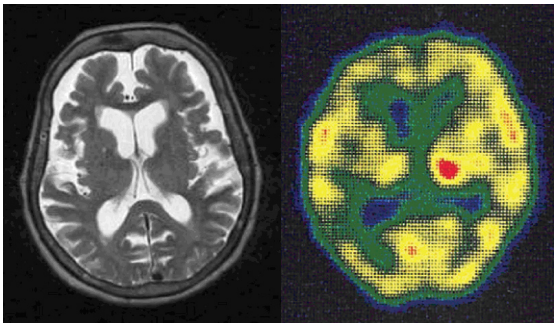


Novel SPI1 fusion genes in T-ALL and functional impact

Geriatric Medicine

http://www.h.u-tokyo.ac.jp/patient/depts/rounenbyou/index.html

The department of Geriatric Medicine, established in 1962, is the first department of Geriatric Medicine in Japan. The staff physicians are highly trained and experienced in managing complex cares. Comprehensive cares including assessment and treatment of chronic diseases and geriatric conditions are provided to ensure quality of life and health in elderly patients. Our research interests are as follows:



- Molecular mechanisms of vascular calcification
- Molecular mechanisms of Sarcopenia
- Inhibition of cognitive decline using antihypertensive drugs
- Cares and burden of family caregivers of patients with dementia
- Risk factors for adverse drug events
- Association between sex hormone and geriatric disease
- Novel gene responsible for locomotive syndrome, including osteoporosis
- Molecular mechanisms of vascular injury in sleep apnea syndrome
- Polypharmacy and frailty

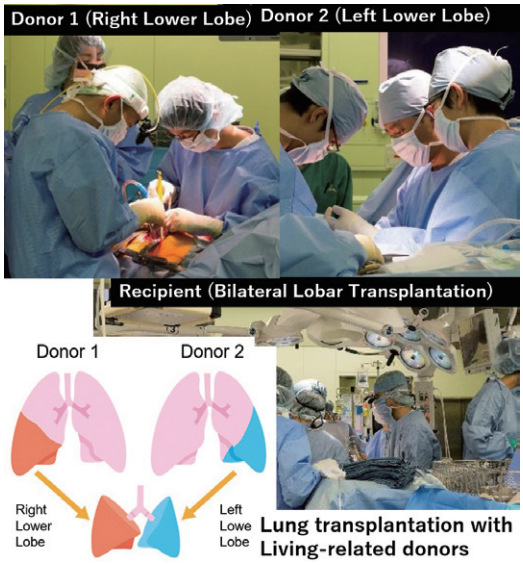
Surgical Sciences

Thoracic Surgery

http://cts.m.u-Tokyo.ac.jp

We specialize in surgical therapeutics, clinical and basic oncology for malignant neoplasms of the chest, such as primary lung cancer, pulmonary metastases, and mediastinal tumors. We also study immunotherapies for patients with postoperative recurrence of lung cancer or those with refractory malignant neoplasms. We started clinical lung transplantation program along with basic research since the University of Tokyo Hospital has become a certified hospital for lung transplantation in March 2014.

- Surgical therapeutics for malignant neoplasms of the chest
- Clinical and basic oncology of lung cancer
- Clinical and biological studies on thymic neoplasms
- Immunotherapy for lung neoplasms
- Clinical and basic studies on lung transplantation



Lung transplantation with Living-related donors

Cardiovascular Surgery

http://cts.m.u-tokyo.ac.jp/cardiac-surgery

We are leading in Japan by annual surgery case volume of 400. New knowledge and techniques are actively applied clinically. Many clinical research projects are going on along with routine clinical activities. Our laboratories have been also carrying out a large variety of basic research.

- Clinical research
  - Improvement of long-term results of heart transplantation
  - ventricular assist device for end-stage heart failure
  - valve plasty and valve-sparing operation
  - Minimally invasive surgery
  - Treatment of complex congenital heart disease
- Basic and experimental research
  - Development of new control system for ventricular assist device
  - Development of myocardial regenerative therapy
  - Development of a new suture device under endoscopic environment

Ventricular assist devices clinically available in Japan

Gastrointestinal Surgery

http://todai3ge.umin.jp/

Our goal is to cure the cancer patients by much better surgery. The development of better surgical methods have the highest priority. Better surgery means radicality of the cancer, minimal invasiveness, and good QOL after surgery. Recently, robot assisted transmediastinal (non-transthoracic) radical esophagectomy has been developed, which shows less postoperative pulmonary complications and better QOL after surgery compared with conventional esophagectomy.

- Cure by much better surgery
  - Robot assisted transmediastinal esophagectomy for esophageal cancer
  - Laparoscopic endoscopic cooperative surgery (LECS) for gastric and duodeneal tumor, non-exposed endoscopic wall-inversion surgery (NEWS) for gastric tumor
  - Laparoscopic gastrectomy for function preserving (proximal, distal and pylorus preserving gastrectomy)
- Research for carcinogenesis, progression, diagnosis and treatment
  - Inflammation and gastrointestinal carcinogenesis
  - Activatable fluorescence imaging probe for esophageal and gastric cancer
  - Oncolytic viral therapy for esophageal cancer
  - Genetics and epigenetics for esophageal and gastric cancer
  - Early detection of gastrointestinal cancer by new biomarkers
  - Immunotherapy based on intratumoral immune response in gastric cancer

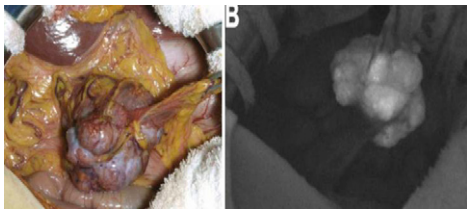
conventional

transmediastinal (non-transthoracic)

Hepatobiliary Pancreatic Surgery

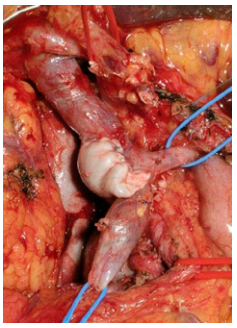
http://www.u-tokyo-hbp-transplant-surgery.jp/

We perfom nearly 150 hepatectomies in patients with hepatobiliary malignancies and nearly 90 pancreatectomies in patients with pancreatic neoplasms every year. The first priority is put on the safety of the patients undergoing surgery. In order to improve the surgical outcome for hepato-biliary-pancreatic malignancies, we conduct wide areas of research such as analysis of prognostic factors for liver malignancies, evaluation of liver hemodynamics using ultrasonography, liver ischemia/reperfusion injury, and liver regeneration.



ICGfluorescent imaging for detecting tumors

- The analysis of genetic abnormalities in hepatocellular carcinoma
- Development of new methods for the evaluation of liver functional reserve
- The evaluation of hemodynamics in the congested liver using ultrasonography
- Navigation system during liver surgery
- Study of intraoperative diagnosis (contrast-enhanced ultrasound, ICG fluorescent imaging, and elastography)
- Study of intraoperative diagnosis (enhanced ultrasound and ICG fluorescent imaging)
- Clinical trials concerning perioperative chemotherapy in hepatic resection for colorectal liver metastasis
- RCT to evaluate the effects of surgical resection and RFA for HCC (SURF trial) Investigation of adjuvant immunotherapies after surgery for pancreato-biliary malignant tumors
- Vascular reconstraction using criopreserved vein grafts Evaluation of the anti-adhesion materials



Vascular reconstraction using criopreserved vein grafts

Preoperative 3D imaging of the liver constructed by simulation software

Urology

http://square.umin.ac.jp/UT-urology/

We perform more than 1,500 urological surgeries every year, including nephrectomy, cystectomy and prostatectomy, with increasing trend of laparoscopic maneuvers. Robotic surgery was introduced in 2011. Surgical or non-surgical means are employed for non-cancer disease including chronic renal failure, urinary dysfunction, urinary incontinence and interstitial cystitis. With regard to basic research and treatment, genome analysis, dendritic cell therapy, viral therapy and Botulinum toxin injection are now under extensive investigation.

- Genome analysis of Corticotropin-independent Cushing's syndrome (Fig.1)
- Virus therapy for prostate cancer
- Genome analysis of renal cancer, renal pelvic cancer, ureteral cancer and testicular cancer
- Bladder cancer therapy with a vaccine against NY antibody
- Dendritic cell therapy for metastatic renal cancer and bladder cancer
- Hydrodistention therapy for interstitial cystitis
- Artificial urinary sphincter for male urinary incontinence
- Robot-assisted laparoscopic radical prostatectomy
- Robot-assisted laparoscopic partial nephrectomy
- Robot-assisted laparoscopic radical cystectomy

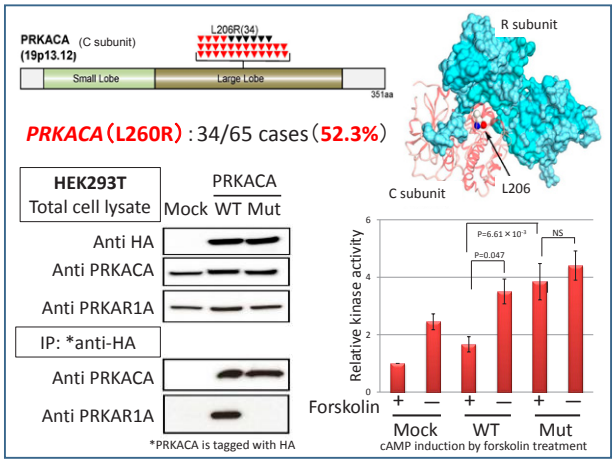
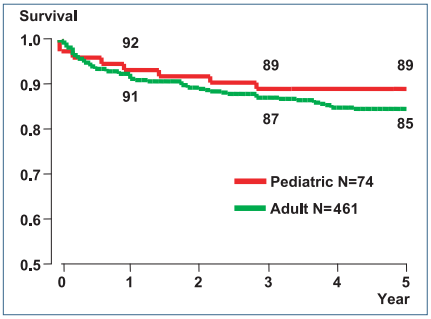


Fig.1 The L206R mutation in PRKACA, which was found in >50% of Corticotropin-independent Cushing's syndrome, has cAMP-independent activation of cAMP-dependent protein kinase (protein kinase A).

Artificial Organ and Transplantation Division

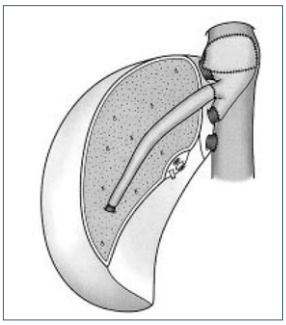
http://www.u-tokyo-hbp-transplant-surgery.jp/

609 living donor liver transplantation and 28 deceased donor liver transplantation until Dec. 2018. The 5-year survival rate for adult case was 85%, which is significantly superior to that of the national data (73%).

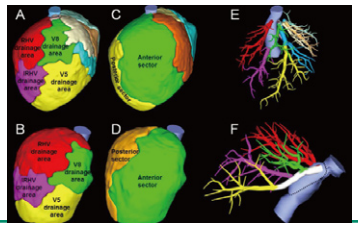


Overall survivals after living donor liver trasnplantation

- Surgical technique of liver transplantation: including right lateral sector graft, APOLT(Auxillary partial orthotopic liver transplantation)
- Hepatic vein reconstraction using criopreserved vein grafts
- Identification of veno-occlusive resions using ICG fluorescence imaging
- Antiviral treatment for hepatitic C virus infection after liver transplantation
- Validity and feasibility of transient elastography for the transplanted liver
- New-onset daibetes mellitus developing in adult living donor liver transplant recipient
- Diagnosis and treatment for acute rejection
- Diagnosis and treatment for postoperative infection



Hepatic vein reconstraction using criopreserved vein grafts



3D images of the liver graft by liver simulation software

Surgical Oncology

http://all-1su.umin.jp/

We have performed basic and clinical research mainly on colorectal cancer and inflammatory bowel disease. In basic research, we are studying biological phenomenon from various point of view such as carcinogenesis, cancer metastasis, and immunology. In clinical study, we are trying to identify the best way to treat each patient with the least surgical stress by minimally invasive surgery such as laparoscopic surgery and robotic surgery (da Vinci), and preoperative chemoradiation therapy for rectal cancer.

- Robot assisted surgery (da Vinci robotic surgery)
- Radiosensitivity and chemosensitivity of cancer
- Characterization of tumor vasculature and its therapeutic application
- Surveillance of ulcerative colitis
- Carcinogenesis in ulcerative colitis
- Cancer and autophagy
- Development of chemoradioimmunotherapy
- Genetic analysis of poorly differentiated colorectal cancer
- Intraperitoneal chemotherapy for peritoneal carcinomatosis

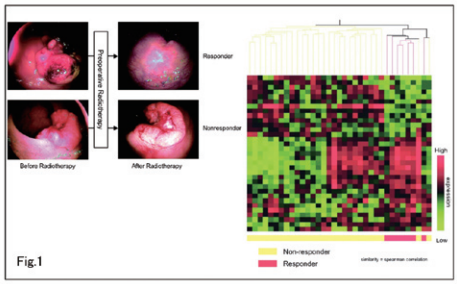


Fig.1 Prediction of chemoradiosensitivity in rectal cancer by DNA microarray

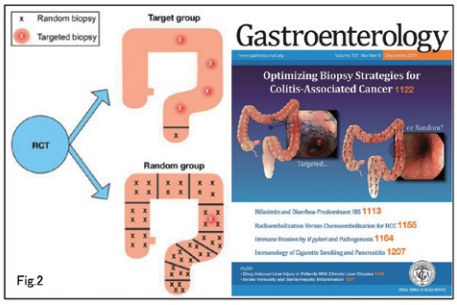
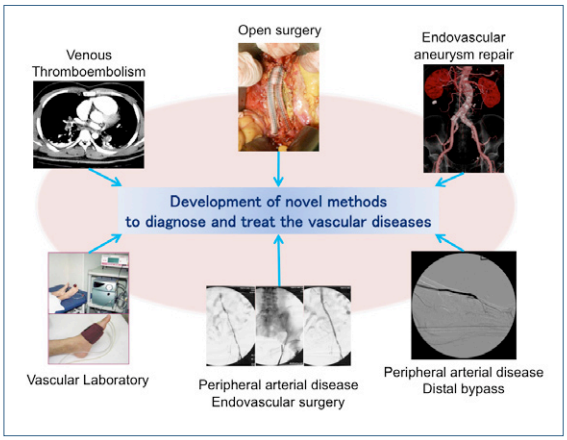


Fig.2 Targeted vs random biopsies for surveillance of ulcerative colitis-associated cancer

Vascular Surgery

http://all-1su.umin.jp/

We have a great deal of experience in treating patients with various vascular diseases, and we have performed much research on atherosclerosis, angiogenesis and vascular regeneration. Based on the research results, we are trying to identify the best way to treat each patient with the least surgical stress.



Development of a novel method to diagnose and treat the vasculardiseases.

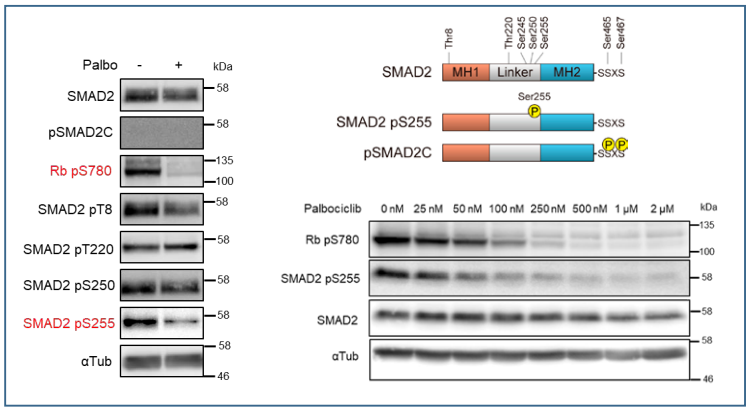
- Vascular regeneration therapy for atherosclerotic obliterans
- Development of aortic aneurysm model and simulation
- Gene analysis of peripheral arterial disease
- Visualization of the atherosclerotic lesions with fluorescent probe
- Navigation system for less invasive vascular surgery
- Analysis of intermittent claudication with dynamic and mechanical model
- Dynamic and genetic mechanism of aortic aneurysm expansion
- Development of the new prosthesis with small diameter
- Hemodynamic analysis of aortic wall after endovascular aneurysm repair
- Drug delivery system for aortic aneurysm and peripheral arterial disease

Breast and Endocrine Surgery

http://todai3ge.umin.jp/

Clinical activities in the department of breast and endocrine surgery widely range from diagnosis to surgical treatment for breast cancer, thyroid cancer, and benign tumors of breast, thyroid, and parathyroid. We also place importance on medical genetics including hereditary breast and ovarian cancer syndrome (HBOC) as well as precision medicine based on cancer genome information. Our goal and motivation of basic research are to eradicate metastatic breast cancer in which complete cure has yet to be realized.

- BRCAness in triple negative breast cancer
- Use of droplet digital PCR for quantitative and automatic analysis of the HER2 status
- Detection of the PIK3CA mutation in circulating tumor DNA in early-stage breast cancer
- Impact of CDK4/6 inhibitor palbociclib on activin-SMAD2 signaling in estrogen receptor-positive breast cancer
- Stem-like cells of breast cancer
- Epigenetic change which is critical for carcinogenesis of breast cancer



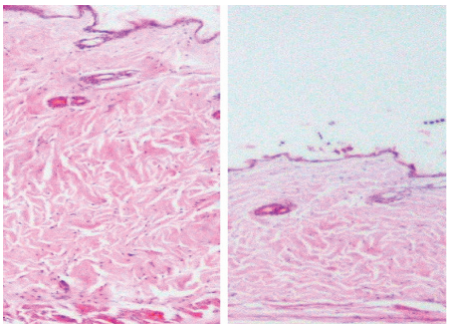
Palbociclib decreases Ser255 phosphorylation of SMAD2 in T47D breast cancer cells

Dermatology

http://www.h.u-tokyo.ac.jp/der/

Our department actively performs the following cutting-edge, multifaceted research projects that will be put into clinical practice in the future.

- Molecular mechanisms of immunological abnormalities and skin and lung fibrosis in scleroderma
- Development of novel therapies to scleroderma, including B cell depletion therapy
- Relative contribution of various cell adhesion molecules and chemokines to inflammatory conditions
- Identification of novel autoantibodies and their clinical significance in connective tissue diseases
- New roles of B lymphocytes, especially regulatory roles, in inflammatory disorders
- Immunological abnormalities of atopic dermatitis
- Pivotal roles of Fli1 in systemic sclerosis
- Roles of chemokines in cutaneous lymphoma
- Roles of lipid enzymes and receptors in immune-mediated skin diseases

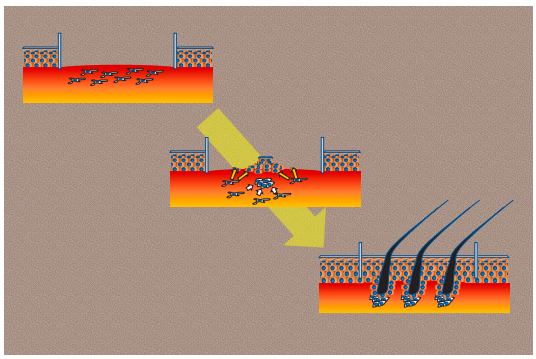


Skin fibrosis induced by bleomycin(left) is inhibited in CD19-deficient mice(right)

Plastic and Reconstructive Surgery

We aim to develop innovative therapeutic interventions for the morbidities associated with plastic and reconstructive surgery. With a variety of state-of-the-art approaches such as gene therapy and microvascular surgery, we continuously work on the reconstruction of skin, fat, muscle and nerve to fight against the intractable diseases.

- Basic Research
  - Development of gene therapies for the intractable diseases in plastic surgery
  - Realization of the innovative therapies for cutaneous ulcers via direct cellular reprogramming
  - Development of the method for perfect tissue regeneration via tissue embryonization.
  - Elucidation of pathology of vascular anomalies.
  - Development of new therapeutic intervention for alopecia



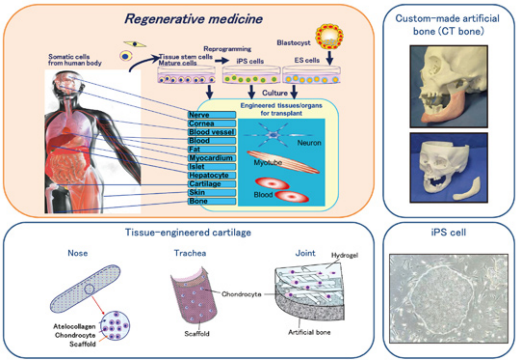
Aiming at perfect tissue regeneration through tissue embryonization

- Clinical Research
  - Development of a novel reconstruction method for facial nerve palsy and its optimization
  - Standardization of reconstruction method for eye closure in patients with facial nerve palsy by evaluation of blink function
  - Evaluation of effectiveness of lymphatico venous anastomosis in early stages of lymphedema
  - Research on dysphagia after tongue reconstruction after cancer resection
  - Development of tissue perfusion monitoring system using flexible electronic devices

Oral and Maxillofacial Surgery

http://plaza.umin.ac.jp/~oralsurg/

Our laboratory has been performing a wide range of clinically oriented research in oral-maxillofacial disorders such as congenital diseases, jaw deformities and tumors in the oral region. Cartilage and bone regeneration using tissue engineering techniques is our main field of research.

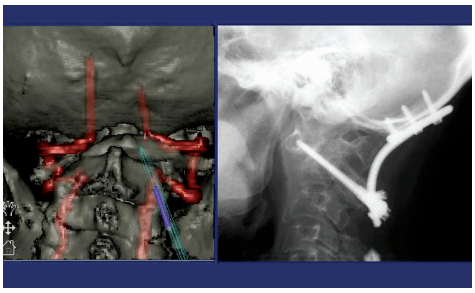


- Clinical research:
  - Treatment of facial deformities and malocclusion in patients with cleft lip/palate
  - Research on facial growth in patients with craniofacial anomalies
  - Reconstruction of oral and maxillofacial area by custom-made artificial bone (CT bone) (clinical trial) • Transplantation of implant-type tissue-engineered cartilage for cleft lip-nose patients (clinical study) • Management of occlusion in patients with fibrodysplasia ossificans progressiva (FOP) • QOL study of oral health care system in preoperative cancer patients • Clinical study of antifungal susceptibility in patients with oral candidiasis
- Basic and experimental research:
  - Regeneration of bone and cartilage with tissue-engineering approach • Development of intelligent artificial bone with the ability of bone induction • Development of micro-tetrapod bone implant • Molecular biology of cartilage repair and its application to cartilage regenerative medicine • Cartilage regenerative medicine using iPS cells • Development of novel scaffolds for cartilage and bone regeneration • In vivo evaluation of tissue-engineered cartilage and bone • Study on the control of mesenchymal cell differentiation • Elucidation of epigenetic abnormalities in oral cancers and oral premalignant lesions • Elucidation of sphingosine-1-phosphate signaling and its role in multistage oral cancer • Functional analysis of microRNAs in human dental pulp stem cells

Orthopaedic Surgery

http://www.u-tokyo-ortho.jp/

Our department was established in 1906 as the first department of orthopaedic surgery in Japan. Since then our efforts have been dedicated to responding to the needs of patients for orthopaedic care and to related research. Our department seeks to elucidate the molecular and genetic backgrounds of bone and cartilage disorders in order to develop groundbreaking treatments for these conditions. At the same time, we are attempting to establish various clinical devices.



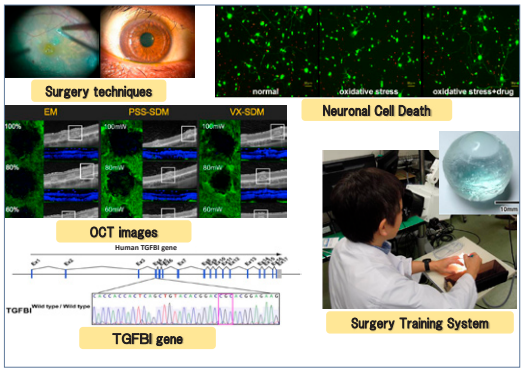
Surgical navigation system

- Systemic and comprehensive study for osteoarthritis
- Bone, cartilage and nerve regeneration
- Regulation of anabolic and catabolic bone metabolism by cytokines
- Molecular mechanism of age-related bone loss
- Molecular mechanism of osteoclast differentiation and apoptosis (RANKL-RANK, INF, Src)
- Gene therapy to control pathological bone destruction (arthritic bone resorption and arthritic joint destruction) using adenovirus vectors
- Surgical navigation system with a three-dimensional display and navigation robot
- Long-life artificial joint by construction of a super-durable lubricious interface of MPC

Ophthalmology

https://www.todaiganka.jp/

Our department applies cutting-edge technologies and knowledge to diagnosis and treatment of eye diseases. We conduct basic researches involving multi-faculties with molecular biological, immunological, and pharmacological techniques, and clinical studies with epidemiology and biostatistics.

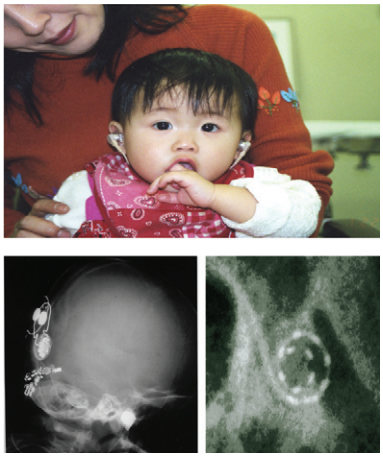


- Development and evaluation of new drug therapies and surgical techniques on glaucoma, or retinal, corneal, and uveal diseases.
- Development of diagnosis and treatment in glaucoma with functional and structural analysis.
- Study on mechanisms for maintaining intraocular pressure, and development of new drugs using clinical samples of glaucoma eyes and genetically modified animals.
- Further research in the mechanisms of neuronal death in retinal neurons and glial cells, and exploration of useful neuroprotective agents.
- Development and application of surgery training systems with bionic eyes.
- Improvements in corneal regeneration therapy and development of new therapies in hereditary corneal diseases.
- Study on corneal mechanisms to maintain clarity.
- Research on refractory uveitis and intraocular lymphoma.
- Comprehensive studies on multimodal imaging of structures and functions of macular diseases.

Otolaryngology and Head and Neck Surgery

http://utokyo-ent.org/

Our research is composed of both clinical and basic research. Clinical research is conducted by specialized clinics in the hospital, which experience ear diseases and hearing disorders from neonates to adulthood, head and neck cancer, paranasal diseases, olfactory and disorders, vertigo and balance disorders and voice and swallowing disorders. Basic and experimental research into molecular biology, electrophysiology and morphology is conducted in our department's laboratories.

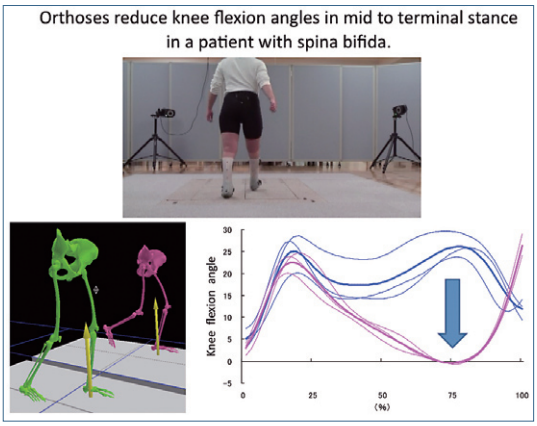


- Clinical research
  - Cochlear implantation in deaf children and their development of hearing, speech and language
  - Surgical correction of congenial microtia and atresia and postoperative radical ears to improve hearing
  - Quality of life in patients with head and neck cancer to restore speech and swallowing function
  - Vestibular research on the oculomotor and balance system and myogenic potential
  - Vestibular rehabilitation by electric stimulation
  - Survey of eosinophilic sinusitis and refractory allergic rhinitis
  - Surgical treatment of voice and swallowing disorders
  - Clinical sequencing for recurrent / metastatic head and neck cancer
  - Development of fluorescent probes for cancer cell imaging
- Basic and experimental research
  - Molecular biology of the inner ear
  - Molecular biology of pharyngeal cancer
  - Molecular biology of differentiation and development of inner ear and olfactory epithelium
  - Origins of vestibular myogenic potential
  - Aging and regeneration of olfactory epithelium, pathogenesis of chronic sinusitis and allergic rhinitis
  - Physiology of vocal cord vibration

Chochlear implant

Rehabilitation Medicine

Our research purpose is to improve the provision of a unique and comprehensive rehabilitation service enabling people to develop their full potential and often returning from being a "patient" to being a "person". Clinically oriented studies concentrate on elucidation of the origin of disabilities to cause activity limitation and restriction of participation.



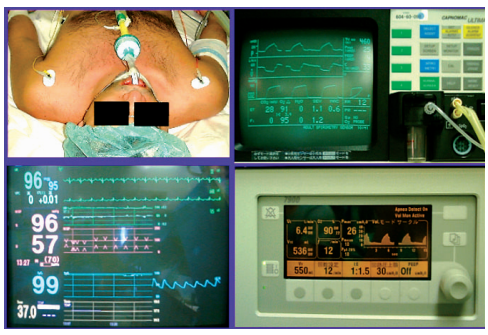
Gait analysis

- Gait analysis
  - 3-dimensional image analysis with a infrared camera system
  - Measurements of foot pressures with a computerised pressure sensor
- Clinical research on intractable rare diseases
  - Fibrodysplasia Ossificans Progressiva
  - Congenital Insensitivity to Plan
- Clinical research on congenital limb malformations
- Research on the effect of robotic rehabilitation

Anesthesiology

http://www.anes.umin.ne.jp/

We have seven research groups and their fields include respiration, circulation, pain, immune system and shock. These are recent major subjects of our research.



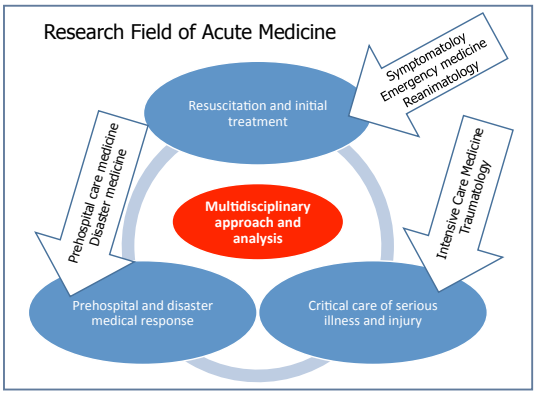
Anesthesia and monitors

- Respiratory system: A role of cytokine signaling in acute lung injury; Exploring optimal ventilatory strategy for respiratory failure
- Immune systems: Modification of immune system by anesthesia; Signal transduction pathway related to apoptosis induced by sepsis or ischemia-reperfusion injury
- Shock: Investigation of pathophysiology of shock; Effect of new plasma substitutes on hemorrhagic shock.
- Inflammation: A role of lipid mediators in organ damage mediated by ischemia-reperfusion injury of a mouse lower limb.
- Pain: A role of lipid mediators in the formation of hyperalgesia; A role of spinal microglial cells in the development of inflammation-mediated neuropathic pain; Mechanism of pruritoceptive and neurogenic Itch; Cognitive-behavioral therapy on chronic pain.
- Nervous system: Analysis of electroencephalography during general anesthesia; Clinical evaluation of neurological sequelae after cardiac surgery; Evaluation of neuroprotective properties of anesthetics.
- Anesthesia apparatus and other medical equipment: Invention and validation of a new airway device.
- Glucose metabolism: Effect of anesthetics on glucose metabolism *in vivo*
- Epidemiological survey and outcome study with large administrative database.

Acute Medicine

https://www.tokyodam.com/

We, acute care physicians, have a role to treat the patients with sudden and unexpected illness and injury, and our specialties are very wide in the settings of prehospital, disaster, ER (emergency room), and critical care. Acute Medicine is the science of these fields. Main studies of our department are as follows.



- Acuity of injury and illness related studies
  - Establishment of conception of "definitive acuity"
  - Acuity and severity scoring system
- Methodology of task switching in the setting of multitask at ER
- Improvement of outcome of emergency patients by mobile on-site physicians team
- Performance indicators of medical control for paramedics
- Performance indicators of regional emergency medical service system
- Critical care related studies
  - Relationship between biomarkers and severity of critically illness
  - Non invasive monitoring technology to predict circulatory shock status
- Versatile and durable WEB-based information sharing system for emergency medical service system and disaster medical response.
- Mass casualty incident and natural disaster medical response related studies
  - Investigation of regional disaster medical risk-resource-ratio (static approach)
  - Dynamic simulation model of necessity of regional medical resource in MCI and large scale natural disaster

Health Sciences and Nursing

Mental Health / Psychiatric Nursing

http://plaza.umin.ac.jp/heart/

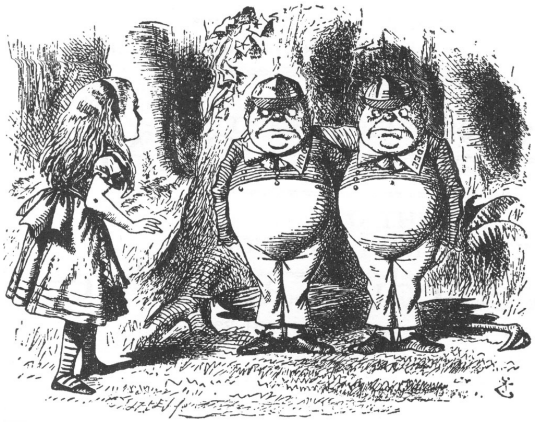
Our departments conduct research on mental health and psycho-social stress and provide education/ training of professionals in related fields from global perspectives.

- Mental Health
  - Mental health epidemiology
  - Occupational mental health/Occupational health psychology
  - Internet-based Cognitive Behavioral Therapy
  - Perinatal Mental Health
  - Disaster and mental health
  - Global mental health
- Psychiatric Nursing
  - Supporting people living with mental health problems
  - Wellness self-management in mental health
  - Recovery for people with mental illness
  - Peer support

Biostatistics / Epidemiology and Preventive Health Sciences

http://www.epistat.m.u-tokyo.ac.jp/

We are working on methodological researches of biostatistics and theoretical epidemiology, as well as consulting and supporting the conduct of epidemiologic/clinical studies. The followings are our important missions: biostatistical education for undergraduate and graduate students; the support of planning and analysis for clinical trials conducted in the University of Tokyo Hospital Clinical Research Support Center; and the support of resource development for academic biostatisticians.



What is a causal effect? Biostatistics provides the means to causal inference from observed data.

- Methodology
  - Design and analysis of clinical trials/epidemiologic studies
  - Statistical analysis of real-world data
  - Causal inference, missing data analysis and meta-analysis
- Collaborative projects
  - Phase II/III study of gemcitabine and S-1 (GS therapy) as neoadjuvant chemotherapy for resectable pancreatic cancer
  - Randomized Evaluation of Aggressive or Moderate Lipid Lowering Therapy with Pitavastatin in Coronary Artery Disease (REAL-CAD)
  - Japan Environmental and Children's Study (JECS)

Nursing Administration / Advanced Clinical Nursing

http://nurs-adm.umin.jp/

We aim to develop systems and methodology to bring out the potential of nursing and healthcare organizations to contribute well-being of not only patients, but also workers and institutes, and society. With this aim, we try to elucidate complex organizational phenomena, and to find keys to effective organizational development, while tackling to develop the methodology for organizational researches.

- Organizational process/management process
- Work environment
- Methodology for understanding phenomena in nursing organization

Family Nursing

Hand-in-hand with the seismic social changes occurring nationally and worldwide -- including declining birthrates and a growing proportion of elderly people, vulnerability of regional networks, and movement toward a gender-equal society -- the form and function of the family unit are also changing. Current Japanese society expects not only a client-centered perspective, but also a perspective of the family as 'client' in nursing research. Within this context, our research focuses especially on child-rearing issues and on caring for children with illness.

- Postnatal depression, difficulties in child rearing, child abuse and neglect
- Development of Pediatric QOL Inventory for children with chronic illness and their parents
- Transitional care for children, adolescent and young adult with childhood-onset chronic diseases and their families
- Support for survivors of childhood cancer including caring of their late effects, special needs education, school reentry and working
- Role and expertise of nursing staff in daycare centers
- Burden borne by caregivers of children with medical complexity, and their utilization of respite care services
- Care for dying patients and their families (QOL, family function)

Community Health Nursing

http://park.itc.u-tokyo.ac.jp/chn/english/index.html

The goal of our department is to continuously maintain and improve the health and quality of life of people regardless of their life stages and health statuses, by taking advantage of the characteristics of a target community or population and constructing the system. Also, we cover the research on skills of public health nurses who are the provider of community health care.

- Construction of community health care system
- Community health care for maternal and child health/ adult health/ elderly's health/ mental health
- Community health nursing for disaster prevention and recovery
- Skills of public health nurses

Assessing community's characteristics for Community Diagnoses

Health education program for elderly people

Gerontological Home Care and Long-term Care Nursing/ Palliative Care Nursing

http://www.adng.m.u-tokyo.ac.jp

Our research activities are targeted at quality assurance/ improvement of long-term nursing care for clients and their family members. We also aim at advancing knowledge grounded at nursing activities in Japan. 1) Developing theoretical frameworks that guide nursing care by explaining the nature of illness/aging experience and experience of taking care of others. 2) Developing quality improvement systems for nursing/healthcare in hospitals, long-term care facilities, outpatients, and home care.

- Quality assurance/improvement of care in the long-term care system
- Development of clinically derived theories through case studies and phenomenological approach
- Development of a community care system and nursing role
- Development of quality indicators for long-term care
- Development of IT-based nursing care/educational programs

Hosted workshops for community-building using a gaming tool

Midwifery and Women's Health

http://midwifery.m.u-tokyo.ac.jp/en/

The physical and psychological changes that occur during the perinatal period have a critical influence on women's lifelong health. Additionally, this influence extends to their children, families, and communities. Our department specifically focuses on the health of mothers and children in the perinatal period and mainly performs research in the following areas:

- Creating evidence of health guidance during pregnancy
  - Healthy lifestyle: adequate maternal nutrition, weight management, exercise, physical activity, sleep, and mental health
  - The effect of exercise and nutritional advice on health outcomes
- Development of a support system for reliable childbirth
  - Midwifery care for positive childbirth experiences
  - Addressing "Fear of childbirth" and psychosocial factors among pregnant Japanese women
  - Development of assessment methods of birth canal using transperineal ultrasonography
- Development of a support system for women's health
  - The effect of pelvic floor muscle exercise program for postpartum body management
  - Life and sleep among working mothers of infants and toddlers
  - Support for breastfeeding of working mothers
  - Intimate partner violence (IPV) and its related factors
- Creating evidence of health guidance for neonatal skin care
  - Development of an effective skin care intervention to prevent neonatal skin problems
  - Changes in neonatal skin barrier function and skin resident microflora by skin care
- International collaborative study
  - Development of the strategy for safe delivery in El Salvador
  - Secondhand smoke exposure during pregnancy and its related factors in Mongolia

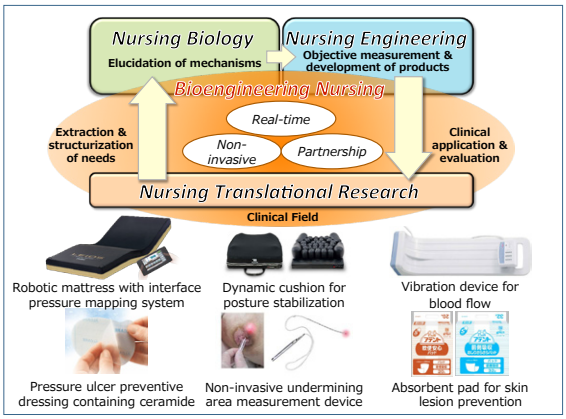
Drawing / Shoichi Sakamoto

Gerontological Nursing / Wound Care Management

http://www.rounenkango.m.u-tokyo.ac.jp/index-e.html

Pressure ulcers and diabetic foot ulcers usually occur in elderly people due to basic activities of daily living such as walking, sleeping, diet and excretion. Thus their supports are inevitable for comprehensive wound care management. Especially, diabetes mellitus, nutrition, and skin care are of importance for wound healing, hence we account for these keys to develop wound care technologies and devices. Our department address the new concept of nursing science, "Bioengineering Nursing", in which the basic science will be translated into clinical science through co-development of new technologies and devices with specialized engineers.

- Development and evaluation of wound management technology and devices
  - Elucidation of pathophysiology and its diagnosis technology of wound
  - Development of technology and devices for wound management and prevention
  - Evaluation of new technology and devices
  - Investigation of bioengineering aspect of elderly skin
  - Exploring of objective parameter of skin status
  - Development of intervention methodology for improving skin function



Products developed through bioengineering nursing research model

Health Sciences and Nursing

Health Sociology *See* **Health and Social Behavior**(p50)

Health Education *See* **Health and Social Behavior**(p50)

Biomedical Ethics *See* **Biomedical Ethics**(p51)

International Health

Global Health Policy

http://www.ghp.m.u-tokyo.ac.jp

Our mission is to improve population health by enhancing accountability and improving the evidence base of global (both domestic and international) health programs through the provision of the best possible information and rigorous monitoring and evaluation. The department's members generate knowledge and ideas through their research with high social and academic impacts, strengthen technical and leadership skills through educational programs, and enhance national capacities through collaborative projects, especially in the developing world.

The priority areas of research are:

- Global Burden of Disease (GBD)
- Health System Performance Assessment
- Domestic Health Policy Reform
- Inequality and Inequity in Health
- Infectious Disease Modeling
- Non-Communicable Diseases
- Health Technology Assessment and Health Innovations
- Radiation Exposure and Health in Fukushima

Community and Global Health

http://www.ich.m.u-tokyo.ac.jp/en/index.html

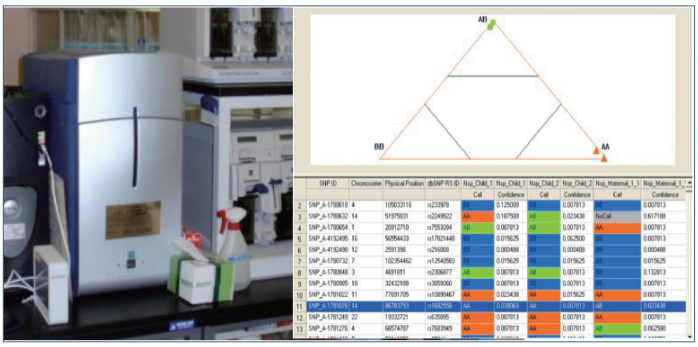
Our department acts for health and wellbeing of socially vulnerable people. Health itself is not necessarily our ultimate goal. How can an individual dream and reach her/his ultimate goal in life by making the best use of his/her health? This is more critical. We study and teach how it can be done in global settings. When any interventions are implemented, we continue to ask who receive real benefits from them.

- Health, nutrition, and development
- Health, human rights, and human security
- Infectious disease control (malaria, TB, HIV, NTDs, etc.)
- Health promotion
- Disaster and health
- Human resources for health
- Maternal, newborn, and child health
- Implementation research
- Positive deviance approach

Human Genetics

http://www.humgenet.m.u-tokyo.ac.jp/

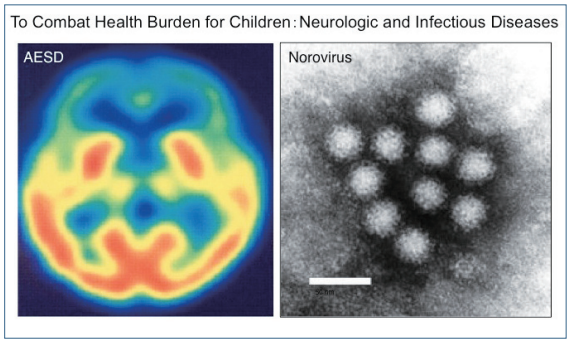
Department of Human Genetics is broadly interested in the human genome diversity, especially in the Asian populations. Specifically, we are using genomic research tools including SNP analyses, as well as gene expression profiling, to better understand the genetic background of a variety of complex diseases, especially bone and joint diseases, infectious diseases and sleep disorders.



- Theoretical and experimental analyses on the genetics of complex diseases
  - Development of statistical approaches for susceptibility gene mapping in complex diseases
  - Comprehensive genetics of bone and joint diseases
  - Host susceptibility factors to infectious diseases
  - Molecular mechanisms of sleep disorders
- Analysis on the genome diversity of Asia-Pacific populations
- Development of methodologies for the analysis of protein interactions

Developmental Medical Sciences

Founded in 1966 as the Department of Maternal and Child Health, this department has devoted itself to the research and education on the maintenance and promotion of mothers' and children's health, including studies of infectious diseases, nutritional disorders and congenital anomalies. At present, the main research activities are experimental and epidemiological studies on the etiology (genetic and environmental factors), pathogenesis, prevention and treatment of various childhood brain disorders (congenital and acquired) that cause mental and motor disabilities and epilepsy, from the viewpoint of international health science and developmental neuroscience.



- Studies on developmental brain disorders
  - Acute encephalopathy (brain edema)
  - Tuberous sclerosis (abnormal signal transduction)
  - Epilepsy, Rett syndrome (abnormal synaptic function)
  - Perinatal brain injury (hypoxia, ischemia)
- Molecular epidemiology of infectious diseases
  - Diarrhea viruses
  - Herpesviruses
- Epidemiology of maternal and child health
  - Malnutrition
  - Perinatal medicine

Human Ecology

http://www.humeco.m.u-tokyo.ac.jp/en/

The field of human ecology encompasses a wide range of perspectives in an effort to understand human health in relation to adaptation to physical and social environments. To this end, we use methodologies developed in human biology, nutritional sciences, anthropology, demography, environmental health, and urban ecology. The major topics of our studies include:

A community in Laos.

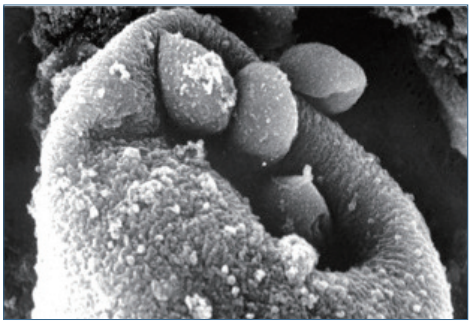
Rice terraces in West Java, Indonesia.

- Health impact of exposure to heavy metals, air pollution, unhealthy urban structures, and ecosystem degradation;
- The roles of gut microbiota in nutritional adaptation and the evolution of human populations;
- Mitigation of the health impacts of aging and depopulation at community/national scales;
- Biological and behavioral explanations of low fertility and fecundity during the post-demographic transition period;
- Interaction among subsistence, nutrition and health; and
- Medical anthropology; ecological anthropology.

Biomedical Chemistry

Our major research interests include virulence mechanisms and metabolism of protozoa, particularly *Plasmodium* spp. causing malaria and *Entamoeba histolytica* causing amebic dysentery. We mainly focus on vesicular trafficking, phagocytosis, autophagy, proteases, amino acid metabolisms, RNA maturation, translation, drug development, and organellogenesis. Our research approaches are very robust, and include biochemistry, molecular and cell biology, live imaging, multi-omics including metabolomics, and reverse genetics. Our present research themes include:

- Molecular elucidation of pathogenesis of parasites
- Biochemical and biological analyses of metabolism and organelles unique to parasites
- Analysis of vesicular traffic, protein secretion, and phagocytosis/trogocytosis in parasites
- Genome wide analysis and comparison of parasite strains
- Drug discovery and development against protozoan infections such as malaria and amebiasis
- Elucidation of divergence of RNA maturation and translation



Entamoeba histolytica eating human cells

School of Public Health

Biostatistics *See* **Biostatistics / Epidemiology and Preventive Health Sciences**(p42)

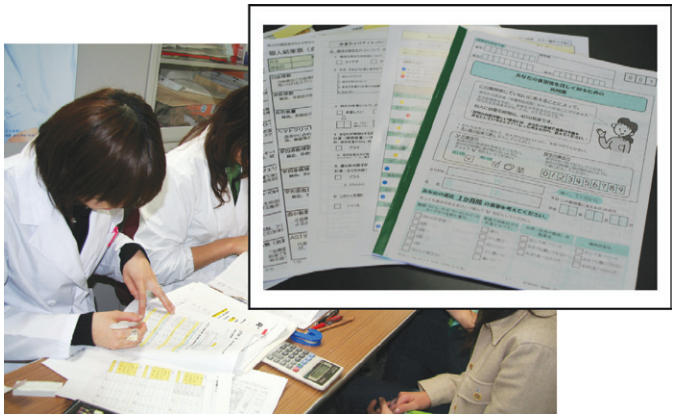
Health Sociology and Health Education *See* **Health and Social Behavior**(p50)

School of Public Health

Social and Preventive Epidemiology

Our main research field is preventive epidemiology on lifestyle-related diseases. This department is unique in Japan since our core research field is "nutritional epidemiology", which epidemiologically examines the roles of diets for disease prevention and control.

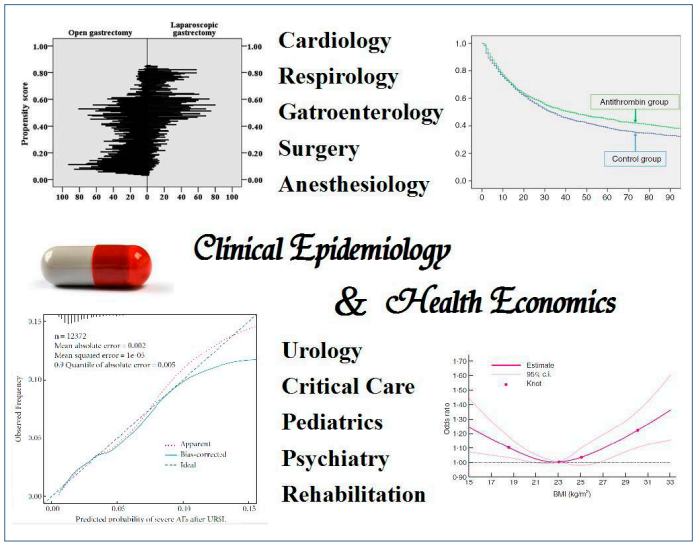
- Methodological studies on dietary assessments
- Nutritional epidemiologic studies on nutrient intakes/ dietary
  behaviors and health status
- Studies on development of dietary promotion methods and
  evaluation of their effectiveness
- Establishment of literature database for "epidemiologic studies on diets and health"
- Collaborative studies with clinical trial groups on nutrition-related diseases



Clinical Epidemiology and Health Economics

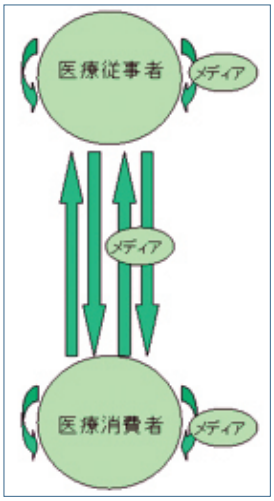
Through the cooperation with the specialists of epidemiology, statistics, clinical medicine, and economics, we implement multidisciplinary studies on clinical epidemiology, health economics, health technology assessment and health policy using large healthcare databases.

- Clinical epidemiological studies using the Diagnosis Procedure Combination database
- Health economics and policy studies using the governmental statistics
- Application of statistical methods for observational studies
- Integration of multiple databases



Health Communication

The Department of Health Communication conducts research on the University hospital Medical Information Network (UMIN) Center related activities as well as health communication research at various levels.



Main research topics include;

- Communication of health information to general public
- Patient-provider relationship and communication
- Health literacy
- Activities related to the UMIN
- Information systems for clinical epidemiologic studies
- Security of the information network

Mental Health

http://plaza.umin.ac.jp/heart/

The Department of Mental Health has engaged in education and research on a wide range of topics related to mental health, such as social determinants of stress and mental health. The Department provides classes of Mental Health I (epidemiology and countermeasures in mental health) and Mental Health II (occupational mental health).

- Community-based mental health epidemiology
- Occupational mental health
- Internet-based Cognitive Behavioral Therapy
- Perinatal Mental Health
- Disaster and mental health
- Global mental health

The UNU-IIGH/UNDESA/the University of Tokyo Expert Meeting on Mental Well-being, Disability, and Development in Kuala Lumpur, Malaysia, April 2013

Health and Social Behavior

The unit follows the legend of former departments of health sociology, health education, and social gerontology, and extends its academic endeavor to empirically reveal complex mechanisms between social structure/relationship and individual health/behavior. Through interdisciplinary and global communication with social science and health science, the unit aims at exploring research and education on social determinants of health, such as;

- Trans-generational health impact of socioeconomic status
- Health impact of retirement and social participation among the elderly
- Policy intervention design to alleviate social exclusion
- The impact of healthcare systems for health equity
- Social experiences of chronically ills and their health

Biomedical Ethics

http://www.ethps.m.u-tokyo.ac.jp/

The Department of Biomedical Ethics conducts both theoretical and empirical studies in the fields of biomedical ethics, research ethics and clinical ethics. Research topics include ethical theories, informed consent, ethics committees and organ transplantation. The Center for Biomedical Ethics and Law (CBEL) was recently set up as an adjunct to the Department of Biomedical Ethics. (http://www.cbel.jp/)

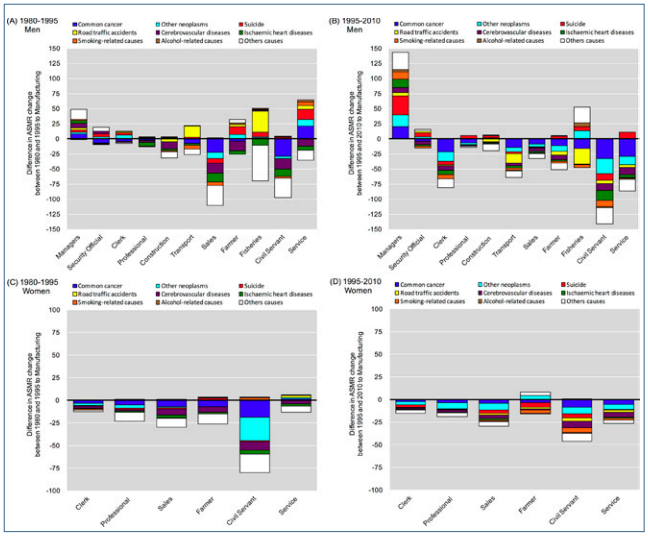
Outreach Program: CBEL provides training courses for ethics committee members. Participants include physicians, nurses and medical pharmaceutical representatives.

- Study of the functions and responsibilities of ethics committees in Japan
- Study of the methods for the formation of social consensus related to advanced medical technology
- Comparative study of clinical ethics in the Asian region
- Acceptability of advance directives in Japan
- Development of evaluation methods for biomedical ethics education
- Psychosocial and ethical aspects of living related organ transplantation

Health Policy

http://publichealth.m.u-tokyo.ac.jp/

Health Policy is the academic fields in which scientific evidence is collected, established, accumulated, and disseminated for health policy making. Through studies in various aspects in health policy, our department aims to advance research, support policy development, and promote education toward these ends. This department is concurrently operated with Department of Public Health.



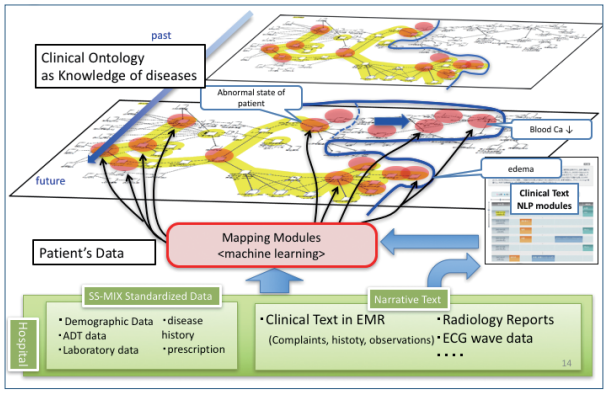
Contribution of cause specific death to changes in absolute inequalities between each occupation and manufacturing

- Efficiency and equity issues of health systems
- Health manpower policy
- Occupational and environmental epidemiology
- Health services research

Healthcare Informatics

http://www.m.u-tokyo.ac.jp/medinfo/

The Department of Biomedical Informatics aims to reform medical systems and make social contribution by applying information technology to medical and clinical field including hospital information management. The department develops innovative methods that are applicable to medical information systems in the boundary area of healthcare and information science, establishes infrastructures for information environment, and applies knowledge and technique acquired through these efforts to medical and healthcare field.
The main keywords of the target domain are medical and clinical information systems, next-generation electronic health record systems, virtual health care environment, and AI including natural language processing as well as machine learning.



Automatic Mapping from Clinical Case Dara to Knowledge of Disease Transition

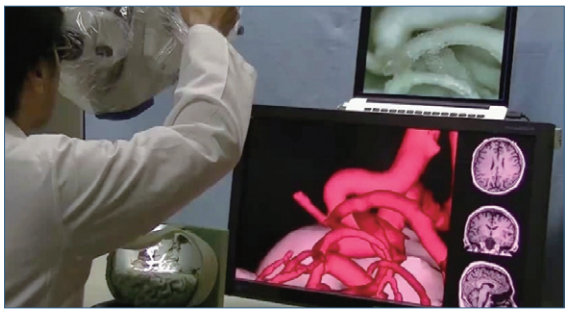
- Development and application of clinical ontology
- Research for sharing healthcare data among medical institutions and hospitals, and the application for clinical epidemiology
- Extraction of medical knowledge from electronic medical record database using natural language processing
- Development of knowledge-driven real time alerting system in clinical practice
- R&D of medical artificial Intelligence and mobile healthcare system

Clinical Information Engineering

http://webpark1893.sakura.ne.jp/wp/researches/

Clinical Information Engineering focuses on computer applications that address biomedical data (collection, analysis, representation). It is a combination of information science, computer science, and clinical science designed to assist in the management and processing of data, information and knowledge to support the practice and delivery of clinical care and public health.

- ClinVR: Clinical Interactive 3D Computer Graphics & Virtual reality
- PHI: Social information engineering for Public Health (Public Health Informatics: GIS for Health Science etc.)



Forensic Medicine

http://ut-forensic.jp

We conduct autopsies, and various examinations including histology, biochemistry, radiology, toxicology, and genetics as usual practices. We also perform the following research with other institutes and departments including Education and Research Center of Legal Medicine, Chiba University.

- Analysis and pathophysiology of illegal drugs including new psychoactive substances.
- Application of imaging modalities such as CT, or MRI for death investigation.
- Age and stature estimation and sex determination using CT .
- Mechanical properties of human tissue.
- Diagnosis of drowning.
- Application of relatively new DNA testing method for practice of forensic medicine

Forensic autopsy room

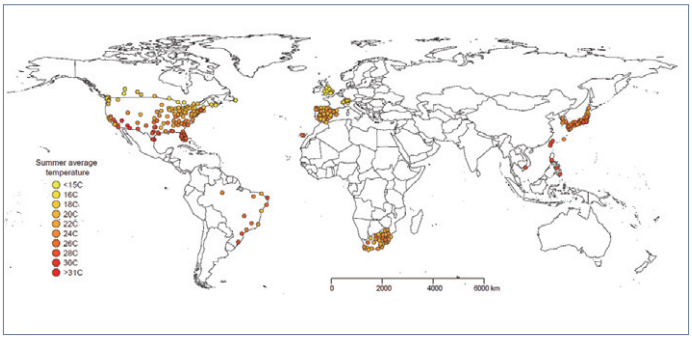
CT room

Global Environmental Health

https://sites.google.com/m.u-tokyo.ac.jp/envhealth

The Department of Global Environmental Health (GEH) aims to study the relationships between the environment and human health and to produce well-educated professionals with the ability to undertake epidemiological research. Our research interest includes climate change and variability, air pollution, and human health across multiple countries in environmental epidemiology. We address the scientific questions how the environmental factors are associated with health outcomes and potential socio-economic determinants that modify the exposure-response associations. The GEH provides two courses, 1) Environmental Health and 2) Methods for Environmental Health Research.

- Health risk assessment of climate change and air pollution in East Asia
- Seasonality of suicide and associations between suicide and weather in multi-city multi-country (MCC) network
- Statistical prediction model development for malaria early warning system in Southern Africa



Geographical distribution of the MCC network for the suicide-temperature association study

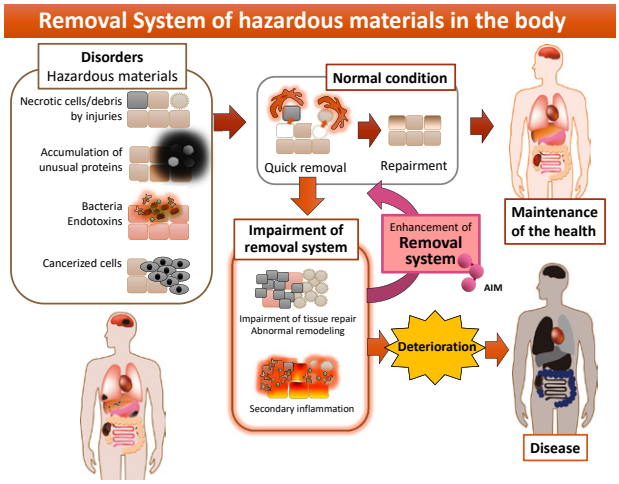
Center for Disease Biology and Integrative Medicine

Molecular Biomedicine for Pathogenesis

http://tmlab.m.u-tokyo.ac.jp/english/index.html

A variety of biological garbage such as necrotic cells, cancerous cells, excess lipids, or degenerated cells and proteins, are constitutively developed in our body. Such undesired substances are usually eliminated quickly, which is followed by tissue regeneration. Abrogation of such "removal system" may cause accumulation of garbage in tissues, accompanied by the secondary inflammation and fibrosis, resulting in the development of types of diseases. Thus, this scavenging response is essential to maintain the body in homeostasis and healthy state. Our overall goal is to apply our findings to develop a novel therapy based on this system against diseases.

- Elucidation of molecular mechanism of "removal system" conducted by serum protein AIM.
- Comprehension of diseases caused by abrogation of this removal system: acute kidney injury, chronic kidney disease, cancer, obesity, neurodegenerative diseases, autoimmune diseases, aging, etc.
- Development of novel therapies against diseases.

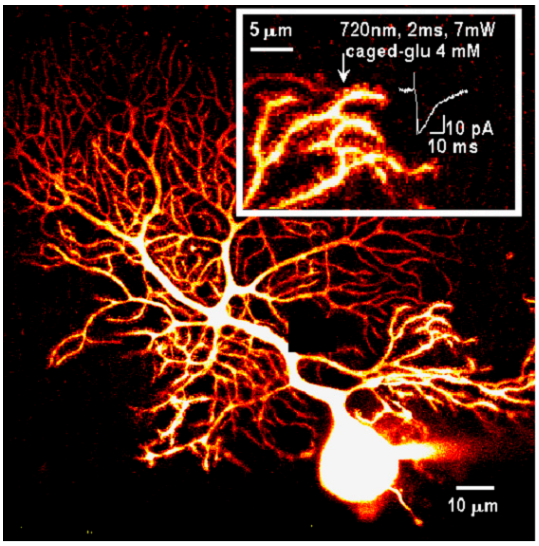


Structual Physiology

http://www.bm2.m.u-tokyo.ac.jp/index-e.html

We have been exploring two-photon excitation microscopy, which utilizes an infrared femtosecond-pulsed laser as a light source, to visualize and stimulate intact tissues at the cellular and molecular levels. We focus on the functions and disorders of the brain and secretory organs.

- The dynamics of synapses in the cerebral cortex, in relation to memory, cognitive processes and mental disorders
- Molecular mechanisms of exocytosis in synapses and the islet of Langerhans, and their optical control



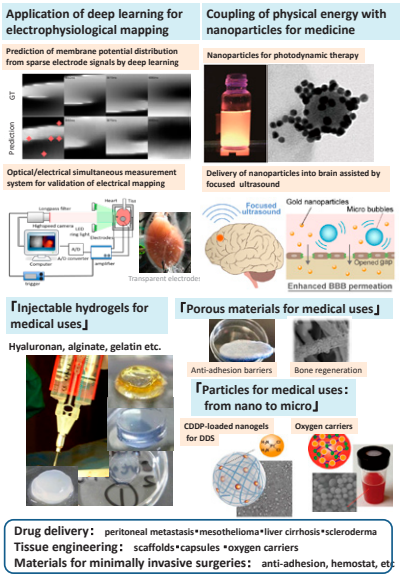
Fine structure and function of a central neuron studied with two-photon excitation imaging and uncaging

Biomedical Equipment and Biomaterial

http://www.cdbim.m.u-tokyo.ac.jp/

We aim to create a basic methodology for research and development of new biomedical equipment and biomaterial applicable clinical site by integrating bioengineering technology such as mechanical, measurement, material and chemical engineering. For medical equipment, we are challenging to apply recent information theories such as compressive sensing and machine learning to achieve high quality biometrics from low invasive ultrasound and electrical biometric signals. For biomaterial, we develop new biocompatible hydrogels based on polysaccharides, hyperbranched polymers, and DNA analogues, which materials are applied to drug delivery systems for peritoneal diseases, artificial red blood cells, and artificial pancreas islets.

- Application of deep learning for cardiac electrical mapping
- High speed fluorescence measurement by compressed laminar optical tomography
- Fabrication of new biocompatible hydrogels and particles
- Development of anti-peritoneal adhesion barrier, hemostats
- Drug delivery for peritoneal diseases, mesothelioma, liver cirrhosis, scleroderma
- Coupling of physical energy and nanoparticles for novel diagnostics/therapy

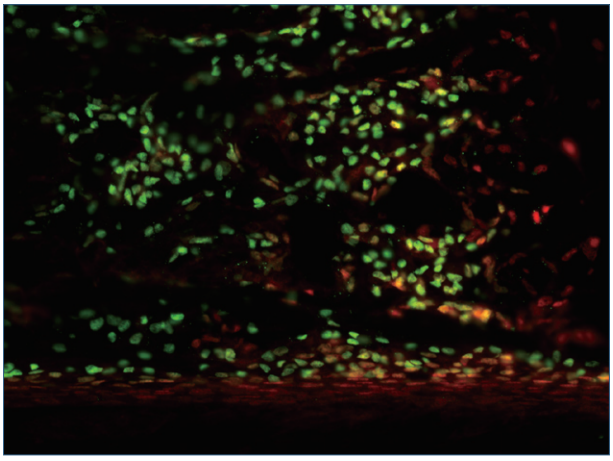


Clinical Biotechnology

http://www.tetrapod.t.u-tokyo.ac.jp/ohba-tei/en/

We pursue two scientific interests with a particular focus on skeletal tissues (bones and cartilages): (1) manipulation of progenitor cell differentiation and proliferation based on understanding of molecular mechanisms underlying cell fate specification, and (2) development of novel biomaterials fulfilling characteristics required for *in vivo* use as scaffolds. We aim to develop novel systems for skeletal tissue engineering and regenerative medicine, where cell differentiation and proliferation are directly regulated *in situ*.

- Understanding of epigenome dynamics and gene regulatory landscape in cell fate specification by genome-scale and bioinformatic approaches
- Identification of bioactive molecules for tissue regeneration, inspired by the gene regulatory landscape in progenitor differentiation and proliferation
- Creation of highly functional and biocompatible materials, based on design principle of biomaterials in materials science
- Development of tissue-inducing implant devices, which act as a carrier of bioactive molecules as well as a scaffold for tissue healing

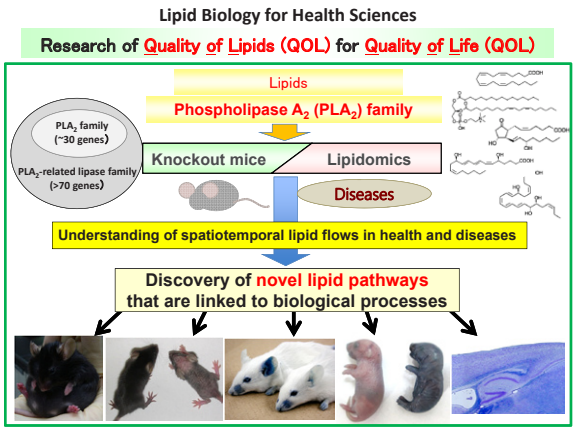


Development of osteoprogenitors expressing stage-specific molecules (green: Sp7, red: Runx2)

Environmental and Metabolic Health Sciences

https://lmmhs.m.u-tokyo.ac.jp

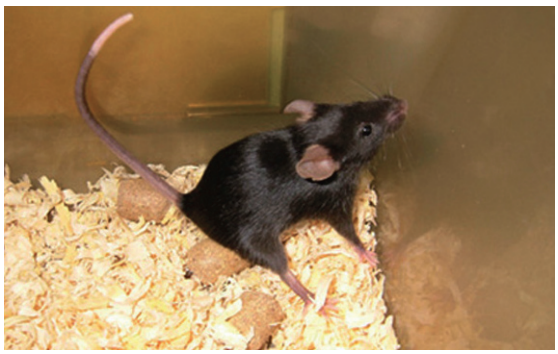
Lipids serve as the largest energy source, cell membrane components, and bioactive mediators. Lipids are major environmental substances supplied as nutrients and spatiotemporally regulate a variety of biological responses in response to given microenvironmental cues within tissues. Our research focuses on the regulation of biological networks driven by lipids and their metabolites. By taking advantages of an array of gene-manipulated mice for lipid-metabolizing enzymes and receptors, we aim to clarify novel lipid-orchestrated mechanisms underlying various diseases such as metabolic and immune disorders. Knowledges obtained from these approaches will be translated to humans toward discovery of new biomarkers or druggable targets.



Animal Resources / Research Resources and Support - Animal Research

Our laboratory focuses on understanding the molecular mechanisms which underlie the brain function and cancer development. We also try to generate animal models for human genetic diseases. Recently we established the gene targeting methods using CRISPR/Cas system. We also manage the animal facilities, provide reproductive technology service, advice on animal experiments, and give lectures on laboratory animals so that animal experiments are carried out in accordance with animal welfare.

- Molecular analysis of brain function and cancer using genetically modified mice
- Development of new model animals for human diseases
- Development of gene targeting animals using CRISPR/Cas system



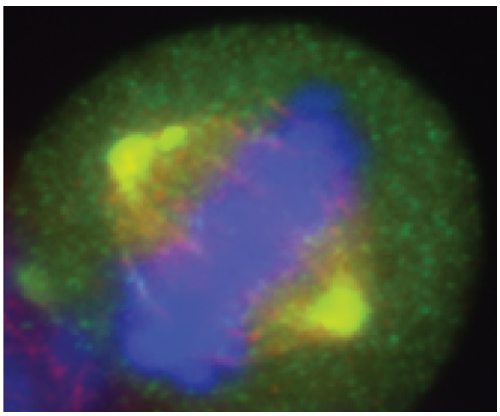
A mutant mouse lacking metabotropic glutamate receptor subtype-1 (mGluR1)

Molecular Radiology / Reserch Resources and Suport-Radiation Biology

http://www.cdbim.m.u-tokyo.ac.jp/english/index.html

We are investigating the molecular mechanisms of DNA double-strand break repair as the scientific basis of radiation therapy and chemotherapy in medical oncology. We also promote the basic research that contributes to the development of a novel therapeutic strategy by examining a link of the DNA metabolic network including DNA replication and cell cycle control with chromosome instability.

- Molecular mechanisms of homologous recombinational repair
- Mechanisms of the choice between homologous recombination and non-homologous end-joining
- Molecular mechanisms of DNA rereplication
- Mechanisms of the genesis of aneuploidy
- Functional analysis of meiotic recombination genes



Centrosome fragmentation which may lead to aneuploidy

Biomedical Informatics

http://www.cdbim.m.u-tokyo.ac.jp/english/index.html

The department conducts researches on the development of medical artificial intelligence systems and their application to clinical practice (i.e., clinical decision support, knowledge discovery from big data, and so on), utilizing the combined approach of medical knowledge representation, logical reasoning, and machine learning techniques. We actively collaborates with the department of Medical informatics, Graduate School of medicine, and the department of Planning, Information and Management in the University of Tokyo Hopistal, to conduct those researches using clinical information. Our activities also include the practical management of information infrastructure to support medical researches.

- Development and application of clinical ontology
- Development of clinical decision support systems using logical reasoning and machine learning
- Clinical text analysis and knowledge extraction using natural language processing
- Development of next-generation EHR system

Computer System for Biomedical Research

The International Research Center for Medical Education

Department of Medical Education

The mission of Department of Medical Education includes promotion of medical education not only in Faculty of Medicine, the University of Tokyo but also of the whole country. This department works on activities of educational practice or improvement and promotes research related to medical education field. In the university, this department offers educational activities such as clinical clerkship, PBL (problem-based learning) and clinical skill practical training. The department operates OSCE (objective structured clinical examination).

Clinical Simulation Center

International Cooperation for Medical Education

This is a department that disseminates basic theory on medical/ health professions education domestically and internationally, thereby improving health care in a broader sense. In particular, our strengths include learner assessment, program evaluation, clinical reasoning/ clinical decision making, general practice/ family medicine/ primary care, health communication, and patient-health-provider relationship. In addition, we are involved in human resource development in the field of health care and its international cooperation, and support projects related to medical/ health professions education in Japan and overseas.

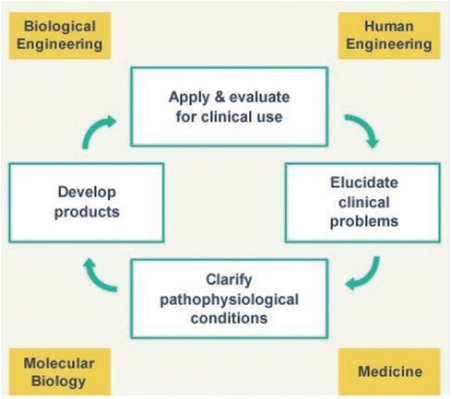
One scene of a faculty development workshop

Global Nursing Research Center

Division of Care Innovation

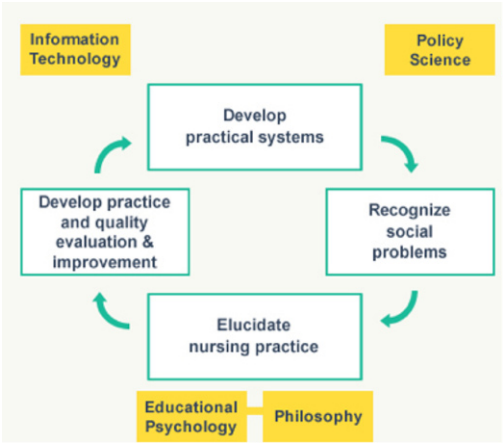
With a falling birthrate and a super-aging society, Japan is in need of a shift in focus that will emphasize the role of a supportive medical care. Here, we seek to develop a nursing science that will foster an interdisciplinary research/educational environment aiming to nurture young nursing researchers who can lead care innovation. This division, with bio-scientist/engineering researchers and companies working together, aims to develop care products that reduce the various inconveniences of daily life faced by each person with health impairments. To that end, we seek to accept young researchers and establish an innovative nursing research fields based on transdisciplinary integration.

- Robotics Nursing
  - Development of a robotic mattress that uses AI to monitor patients.
  - Development of a robot that can communicate with elderly people with dementia
- Biological Nursing
  - Development of a method for predicting pressure ulcer development through the use of skin blotting
  - Development of a method for detecting the presence of biofilm through the use of wound blotting
- Visualized Nursing
  - Development of an educational program for teaching visualization techniques using ultrasonography
  - Development of a tool that automatically measures bladder urine volume
- Clinical Nursing Technology
  - Development of nursing techniques for the early detection of extravasation using thermo-sensitive liquid crystal film
  - Improving our understanding of the mechanisms involved with infiltration and extravasation
- Reverse Translational Research
  - Improving prevention care for diabetic foot ulcers
  - Development of an international standard scale for evaluating diabetic foot ulcer



Division of Nursing System

We promote research activities with the aim of 'providing nursing practice solutions that reflect important cultural and social concerns, constructing Japan-origin nursing theories that support high quality practices, and making policy proposals.' Health Quality and Outcome Research department contributes to developing a methodology to evaluate their health quality well, conducting studies using outcomes from their perspectives, and then finally creating new effective and optimized nursing systems in order to improve the total of quality of life and health quality among. At the Department of Care Quality Management, we explore new research methodologies/innovations of research for care quality assurance and continuous quality improvement system.



- Health Quality and Outcome Research
  - Practice and evaluate nursing care directly or indirectly
  - Deploy research using patient-reported outcomes
  - Explore new health quality indicator
  - Develop evaluation methodologies to understand health quality among overall family and nursing system well
- Care Quality Management
  - Knowledge development in caring practice
  - Support for care workers
  - Care quality assurance in community care system
  - Development of quality indicators and benchmarking

Institution

The Office of International Academic Affairs

http://koryu.m.u-tokyo.ac.jp/homepage10.html

The Office of International Academic Affairs is under the direct authority of the Dean of the Graduate School of Medicine. Its four most important roles, as defined by the Committee on International Academic Affairs, are i) international educational exchange, ii) international contacts in research and scientific fields, iii) helping young researchers excel not only as scientists, but also as educators for the next generation and as administrators of their research groups, and iv) holding Medical English classes and developing language-teaching materials for medical students.

Medical Scientist Training Program

http://www.ut-mdres.umin.jp/

Medical Scientist Training Program was launched in 2008, aiming medical students have the opportunity to experience basic research in their early years and learn the attitude researcher.Students taking this program will activities such as journal clubs and English courses of Medical Research Communications as well as their own research in labs, retreat and the defense of research honors theses. Students are also expected to build up a network among medical students who intend to be a researcher through the program support, such as the short term stay at labs abroad, participations to the symposium, and the excursion with other universities.

Office for Human Research Studies

Office for Human Research Studies (OHRS) aims to protect the rights, health, and dignity of research participants. Based on this principle, OHRS supports researchers at the Graduate School of Medicine, the Faculty of Medicine and the University Hospital to perform their studies in an ethical manner. Our primary task is the management of the Ethics Committee secretariat. Additionally, we plan and manage research ethics seminars, provide ethics education to researchers through consultations, develop human resources for future research ethics specialists, and conduct related researches.

Life Sciences Core Facility

Life Sciences Core Facility provides researchers at the graduate school of medicine and the faculty of medicine access and technical assistance to specialized instruments including mass spectrometers, cell sorters, flow cytometers and a state-of-the-art fluorescent microscope.

The Office for Clinical Practice and Medical Education

The Office for Clinical Practice and Medical Education was established in April 2015 to promote medical education, especially clinical training for the 5th- and 6th-year medical students.
We facilitate the clinical clerkship program and establish liaison between students, faculty and other medical institutions, as well as enhance the clerkship curriculum and evaluation methods.
For individual students, we provide extended support by collaborating with the student support office and the educational office of the faculty of medicine.
With the International Research Center for Medical Education and other medical faculties, we also conduct research on medical education, particularly on the relationship between high-stakes examination and important educational outcomes, and the relationship between the scores and daily life.

Medical Library

https://www.lib.m.u-tokyo.ac.jp

The University of Tokyo Medical Library was opened in 1961 as a model of the Japanese modern medical library. The view makes it a perfect place to concentrate on study.
The library has adopted an open stack system so that users can have direct access to almost all the materials.

- Holdings:
  Books(number of volumes) : 273,607 (Japanese 109,946 Foreign 163,661)
  Periodicals(number of titles) : 3,997 (Japanese 2,005 Foreign 1,992)
- Visitors: 95,462
- Borrowed Books: 17,246

(as of March 31 2018)

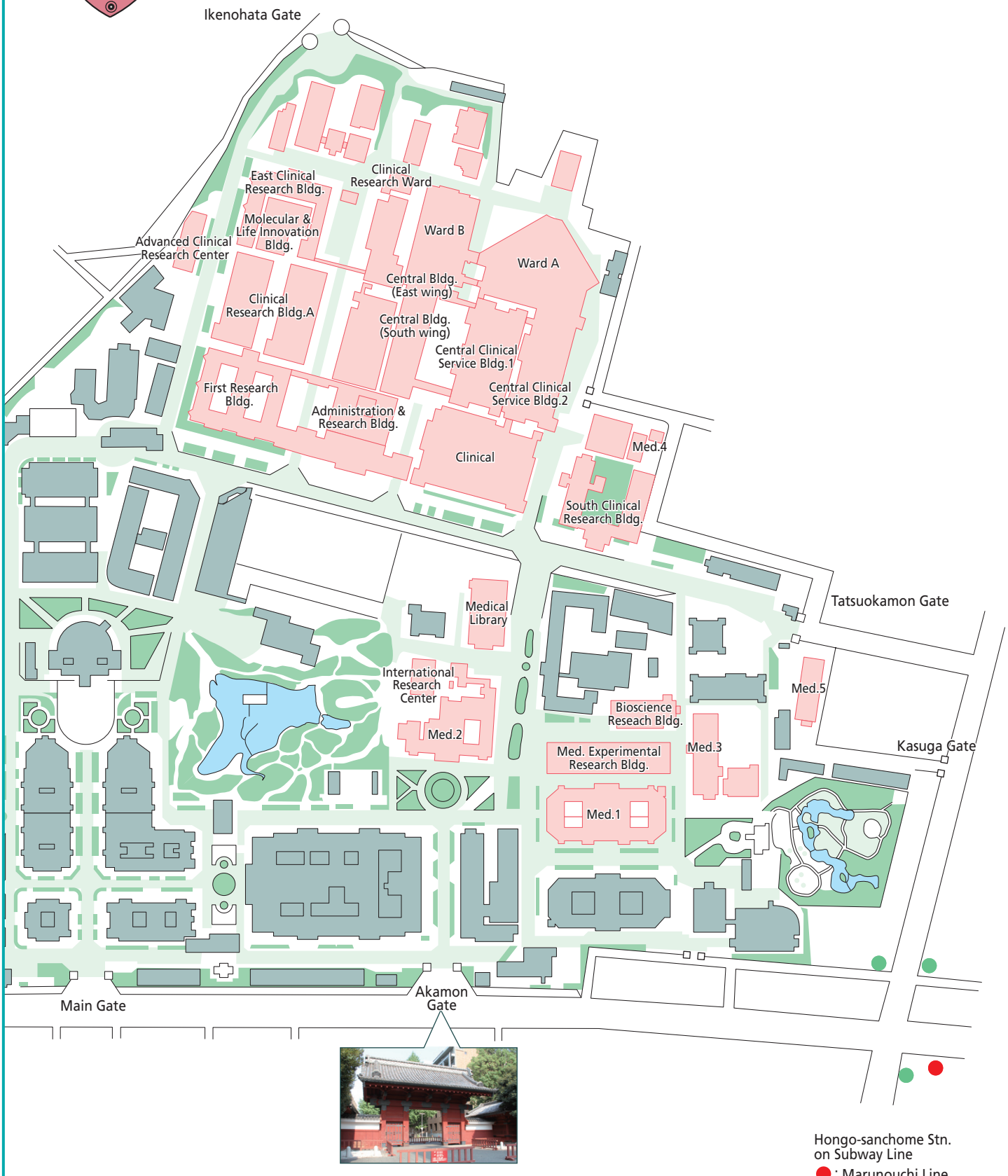
Museum of Health and Medicine

http://mhm.m.u-tokyo.ac.jp/

Museum of Health and Medicine was planned as part of commemorative projects to celebrate the anniversary of the founding of the School and the University of Tokyo Hospital, and was opened on 20, 2011. The permanent exhibition was a display medical archives and instruments from the early era, Ishihara's Color Blind Test Charts and a developed at the University. Special exhibitions planned to promote understanding among the regarding advances in medical science and health.

We moved to the South Clinical Research Bldg. in April 2019.

Graduate School of Medicine
Faculty of Medicine
The University of Tokyo



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