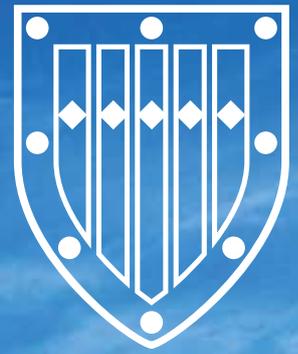
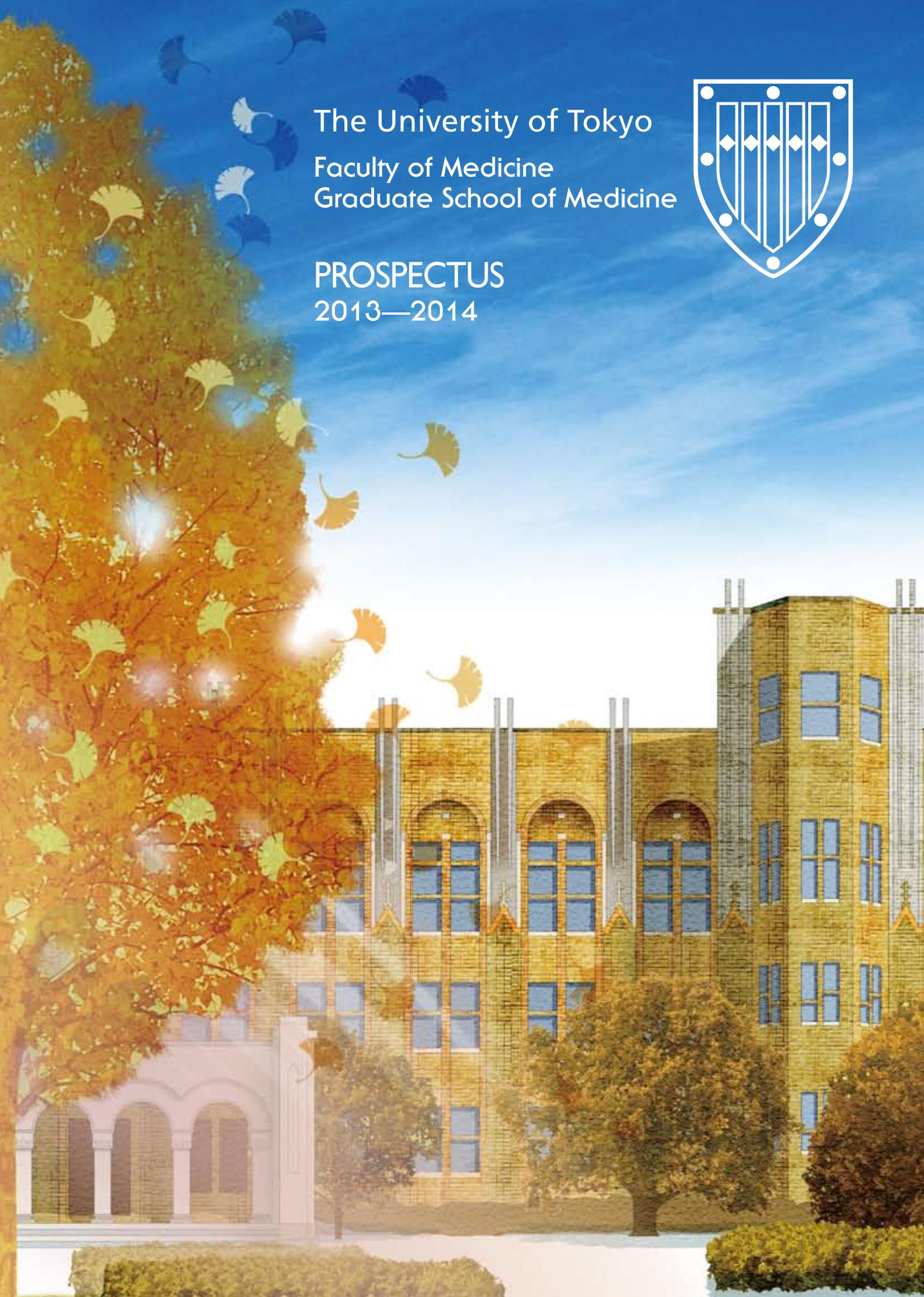


The University of Tokyo  
Faculty of Medicine  
Graduate School of Medicine



PROSPECTUS  
2013—2014







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

Faculty of Medicine, the University of Tokyo was established in 1858, and in May of 2008 we celebrated the 150th anniversary of our founding. University Executives, faculty members, staff, and students came together for an impressive birthday ceremony, and a student-designed monument was installed in front of our main building. To mark the occasion, we also established the Museum of Health and Medicine in 2011.

With its history and traditions in mind, we must move Faculty of Medicine, the University of Tokyo continuously forward. Each year in our Faculty, some 100 to 110 students begin medical school and about 40 are admitted to School of Integrated Health Sciences (School of Health Sciences and Nursing until 2009). Also, through our highly competitive PhD-MD program and the Medical Scientist Training Program that we began in 2008, several outstanding medical students have already taken their first steps on the road to research careers. In 2010, we started the Clinical Research Training Program for clinicians and students who are interested in clinical research. Our graduate school has a wide range of programs of study, and we grant from 150 to 200 doctoral degrees each year. Since its establishment in 2007, our new School of Public Health has admitted many exceptional physicians and public health researchers. It is also noteworthy that many students who enter our Master's degree program in the medical sciences after graduating with Bachelor's degrees in fields other than medicine continue their studies in our doctoral programs.

We expect that medicine will be at the center of the rapidly advancing life sciences in the 21st century. Furthermore, as we face the consequences of having an increasing number of elderly people in our population, we know that integrated health sciences, preventive medicine, environmental medicine, and nursing will become increasingly important. We have internationally prominent teachers and researchers working in a wide variety of fields, and numerous endowed departments and social cooperation programs that embody productive relations between academia and industry.

Through our Programs for Leading Graduate Students, i.e. Graduate Program for Leaders in Life Innovation (GPLLI) and Graduate Program for Social ICT Global Creative Leaders (GCL), we support financially graduate students and collaborative research with other graduate schools. Among our international activities, we teach students mainly from Asia and southeast Asia but also from other regions, and we are forging new ties with universities in Europe and North America.

Thus we are involved in a broad and growing spectrum of activities: investigating the human body in health and disease; promoting cross-disciplinary integration at the cutting edge of medical research and education; improving methods of diagnosis, treatment, and acute and long-term care; strengthening preventive medicine; improving hospital management and medical services delivery; and communicating effectively in the wider social sphere.

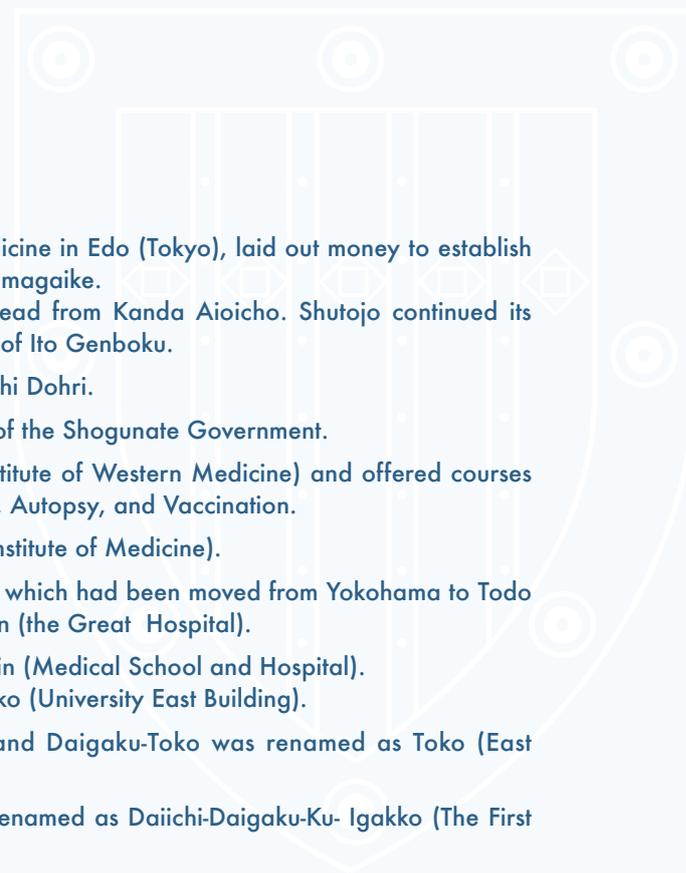
In brief, we continue on our missions to provide the best possible medical care to patients in need today and to train top-level research scientists who will lay the foundations of medicine for tomorrow.



Kohei Miyazono  
Dean, Faculty 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 Mitamagaie.
- 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 Seiyō Igaku-Sho (Institute of Western Medicine) and offered courses of Western Medicine in the fields of Education, Autopsy, and Vaccination.
- 1863 Feb. Seiyō 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 Phoniatics 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.
- 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.
- 2013 Apr. The International Research Center for Medical Education became a facility of the Graduate School of Medicine.



P14

### Molecular Cell Biology

<b>Cell Biology and Anatomy</b>	Cell Biology	Associate Professor	Yosuke Takei
	Structural Biology	Professor	Masahide Kikkawa
	Structural Cell Biology	Associate Professor	Yoshimitsu Kanai
	Cellular Neurobiology	Professor	Shigeo Okabe
<b>Biochemistry and Molecular Biology</b>	Molecular Biology	Professor Associate Professor	Noboru Mizushima Shigeki Jinno
	Cellular Signaling	Professor Associate Professor	Hiroyuki Mano Motonao Nakamura
	Physiological Chemistry and Metabolism	Professor	Hiroki Kurihara



P17

### Functional Biology

<b>Physiology</b>	Integrative Physiology	Professor	Yasushi Miyashita
	Cellular and Molecular Physiology	Professor	Kensaku Mori
	Neurophysiology	Professor Associate Professor	Masanobu Kano Kazuo Kitamura
<b>Pharmacology</b>	Cellular and Molecular Pharmacology	Professor	Masamitsu Iino
	Systems Pharmacology	Professor	Hiroki Ueda



P19

### Pathology, Immunology and Microbiology

<b>Pathology</b>	Pathology and Diagnostic Pathology	Professor Associate Professor Associate Professor	Masashi Fukayama Junji Shibahara Tetsuo Ushiku
	Molecular Pathology	Professor	Kohei Miyazono
	Surgical Pathology		
<b>Microbiology</b>	Microbiology	Professor	Masanori Hatakeyama
	Infection Control and Prevention	Professor	Kyoji Moriya
<b>Immunology</b>	Immunology	Professor	Hiroshi Takayanagi
	Clinical Immunology		
<b>*Collaborative Department</b>	Tumor Pathology / Infection Pathology / Molecular Oncology		



P21

### Radiology and Biomedical Engineering

<b>Radiology</b>	Diagnostic Radiology	Professor Associate Professor	Kuni Otomo Satoshi Kunimatsu
	Radiotherapy	Associate Professor	Keiichi Nakagawa
	Nuclear Medicine	Associate Professor	Toshimitsu Momose
<b>Biomedical Engineering</b>	System Physiology		
	Chemical Biology and Molecular Imaging	Professor	Yasuteru Urano
	Biosystem Construction and Control	Associate Professor	Yusuke Abe



P23

### Neuroscience

<b>Basic Neuroscience</b>	Neuropathology	Professor	Takeshi Iwatsubo
	Neurochemistry	Professor	Haruhiko Bito
	Neurobiology	Professor	Kenzo Hirose
<b>Integrative Medical Neuroscience</b>	Developmental Neuroscience		
	Cognitive Neuroscience	Associate Professor	Katsuyuki Sakai
	Systems Medical Neuroscience		
	Child Neuropsychiatry	Associate Professor	Yukiko Kano

<b>Clinical Neuroscience</b>	Neuropsychiatry	Professor Associate Professor Associate Professor	Kiyoto Kasai Hidenori Yamasue Chihiro Kakiuchi
	Neurology	Professor Associate Professor	Shoji Tsuji Jun Goto
	Neurosurgery	Professor Associate Professor	Nobuhito Saito Kensuke Kawai



P26

## Social Medicine

<b>Occupational, Environmental and Preventive Medicine</b>	Molecular Preventive Medicine	Professor	Kouji Matsushima
	Public Health	Professor	Yasuki Kobayashi
<b>Forensic Medicine, and Medical Informatics and Economics</b>	Forensic Medicine	Professor	Ken-ichi Yoshida
	Medical Informatics and Economics	Professor Associate Professor	Kazuhiko Ohe Kengo Miyo



P28

## Internal Medicine

<b>Medicine I</b>	Cardiovascular Medicine	Professor	Issei Komuro
	Vascular Biology		
	Respiratory Medicine	Professor	Takahide Nagase
	Gastroenterology	Professor	Kazuhiko Koike
	Nephrology	Professor	Masaomi Nangaku
<b>Medicine II</b>	Endocrinology	Professor	Masaomi Nangaku
	Nutrition and Metabolism	Professor Associate Professor	Takashi Kadowaki Kohjiro Ueki
	Hematology and Oncology	Professor	Mineo Kurokawa
	Allergy and Rheumatology	Professor	Kazuhiko Yamamoto
	Infectious Diseases	Associate Professor	Hiroshi Yotsuyanagi
	Stress Science and Psychosomatic Medicine	Professor Associate Professor	Akira Akabayashi Kazuhiro Yoshiuchi
	<b>Clinical Laboratory Medicine and Pathology</b>	Clinical Laboratory Medicine	Professor Associate Professor
Transfusion Medicine		Professor	Hitoshi Okazaki
<b>*Collaborative Department</b>	Molecular Diabetology		



P32

## Reproductive, Developmental and Aging Sciences

<b>Obstetrics and Gynecology</b>	Reproductive Endocrinology	Professor Associate Professor	Tomoyuki Fujii Kei Kawana
	Gynecological Oncology		
	Perinatal Medicine		
	Molecular Cellular Reproductive Medicine	Professor	Yutaka Osuga
<b>Pediatric Sciences</b>	Pediatrics	Professor Associate Professor	Akira Oka Junko Takita
	Developmental Pediatrics	Associate Professor	Sachiko Kitanaka
	Pediatric Surgery	Professor	Tadashi Iwanaka
	Pediatric Oncology	Professor	Tadashi Iwanaka
<b>Aging Sciences</b>	Geriatrics	Professor	Masahiro Akishita
	Aging Research		
<b>*Collaborative Department</b>	Health Policy for Children and Families		



p35

## Surgical Sciences

### Surgery

Thoracic Surgery	Professor	Jun Nakajima
Cardiovascular Surgery	Professor Associate Professor	Minoru Ono Noboru Motomura
Gastrointestinal Surgery	Professor Associate Professor	Yasuyuki Seto Sachiyo Nomura
Hepatobiliary Pancreatic Surgery	Professor Associate Professor	Norihiro Kokudo Kiyoshi Hasegawa
Urology	Professor Associate Professor Associate Professor	Yukio Homma Haruki Kume Hiroaki Nishimatsu
Artificial Organ and Transplantation Division	Associate Professor	Yasuhiko Sugawara
Surgical Oncology	Professor Associate Professor	Toshiaki Watanabe Joji Kitayama
Vascular Surgery	Associate Professor	Tetsuro Miyata
Metabolic Care and Endocrine Surgery	Associate Professor	Toshihisa Ogawa

### Sensory and Motor System Medicine

Dermatology	Professor Associate Professor Associate Professor	Shinichi Sato Takafumi Kadono Makoto Sugaya
Plastic and Reconstructive Surgery	Professor	Isao Koshima
Oral and Maxillofacial Surgery	Professor Associate Professor Associate Professor	Tsuyoshi Takato Takafumi Susami Yoshiyuki Mori
Orthopaedic Surgery	Professor Associate Professor Associate Professor	Sakae Tanaka Hiroshi Kawaguchi Katsushi Takeshita
Ophthalmology	Professor Associate Professor Associate Professor	Shiro Amano Satoshi Kato Miyuki Nagahara
Otorhinolaryngology and Head & Neck Surgery	Professor Associate Professor Associate Professor	Tatsuya Yamasoba Takahiro Asakage Shinichi Iwasaki
Rehabilitation Medicine	Professor	Nobuhiko Haga

### Vital Care Medicine

Anesthesiology	Professor	Yoshitsugu Yamada
Emergency and Critical Care Medicine	Professor Associate Professor	Naoki Yahagi Yoichi Kitsuta



p42

## Health Sciences and Nursing

### Health Sciences

Health Sociology	Associate Professor	Naoki Kondo
Mental Health	Professor Associate Professor	Norito Kawakami Akihito Shimazu
Epidemiology and Preventive Health Sciences	Professor	Yasuo Ohashi
Health Education	Professor	Hideki Hashimoto
Health Promotion Sciences	Associate Professor	Jung Su Lee
Biostatistics		
Biomedical Ethics	Professor Associate Professor	Akira Akabayashi Yoshiyuki Takimoto

### Preventive and Administrative Nursing

Advanced Clinical Nursing	Professor	Noriko Yamamoto-Mitani
Nursing Administration	Professor	Noriko Yamamoto-Mitani
Family Nursing	Professor	Kiyoko Kamibeppe
Community Health Nursing	Associate Professor	Satoko Nagata
Public Health Nursing		

### Clinical Nursing

Adult Health Nursing	Professor	Noriko Yamamoto-Mitani
Palliative Care Nursing		
Midwifery and Women's Health	Associate Professor	Megumi Haruna
Psychiatric Nursing	Professor	Norito Kawakami
Gerontological Nursing	Professor	Hiroimi Sanada
Wound Care Management	Professor	Hiroimi Sanada



p46

**International Health**

<b>International Social Medicine</b>	Global Health Policy	Professor Associate Professor	Kenji Shibuya Hiroshi Nishiura
	Community and Global Health	Professor	Masamine Jimba
<b>International Biomedical Sciences</b>	Human Genetics	Professor Associate Professor	Katsushi Tokunaga Akihiko Mabuchi
	Developmental Medical Sciences	Professor Associate Professor	Masashi Mizuguchi Teruyuki Tanaka
	Human Ecology	Professor Associate Professor	Chiho Watanabe Masahiro Umezaki
	Biomedical Chemistry	Professor Associate Professor	Kiyoshi Kita Yoh-ichi Watanabe



p49

**School of Public Health**

<b>Epidemiology and Health Sciences</b>	Biostatistics	Professor	Yasuo Ohashi
	Social and Preventive Epidemiology	Professor	Satoshi Sasaki
	Health Economics and Epidemiology Research	Professor	Hideo Yasunaga
	Health Communication	Professor Associate Professor	Takahiro Kiuchi Hirono Ishikawa
<b>Behavioral Health Sciences</b>	Mental Health	Professor Associate Professor	Norito Kawakami Akihito Shimazu
	Health Sociology and Health Education	Associate Professor	Naoki Kondo
	Health and Social Behavior	Professor	Hideki Hashimoto
	Health Promotion Sciences	Associate Professor	Jung Su Lee
	Biomedical Ethics	Professor Associate Professor	Akira Akabayashi Yoshiyuki Takimoto
<b>Health Services Sciences</b>	Health Policy	Professor	Yasuki Kobayashi
	Healthcare Informatics	Professor Associate Professor	Kazuhiko Ohe Kengo Miyo
	Clinical Information Engineering	Professor	Hiroshi Oyama
	Forensic Medicine and Medical Law	Professor	Ken-ichi Yoshida



p53

**Center for Disease Biology and Integrative Medicine**

Director Masamitsu Iino

Laboratory of Molecular Biomedicine for Pathogenesis	Professor	Toru Miyazaki
Laboratory of Structural Physiology	Professor	Haruo Kasai
Laboratory of Regenerative Medical Engineering	Professor Associate Professor	Takashi Ushida Taichi Ito
Laboratory of Clinical Biotechnology	Professor Associate Professor	Kazunori Kataoka Kanjiro Miyata
Laboratory of Environmental Health Sciences	Professor Associate Professor	Chiharu Tohyama Seiichiroh Ohsako
Laboratory of Animal Resources	Professor Associate Professor	Atsu Aiba Kazuki Nakao
Laboratory of Molecular Radiology	Professor	Kiyoshi Miyagawa
Divisions of Research Resources and Support		
(Section of Animal Research)	Professor	Atsu Aiba
(Section of Radiation Biology)	Professor	Kiyoshi Miyagawa
(Section of Bioinformatics)		



p56

**The International Research Center for Medical Education**

Director Kazuhiko Yamamoto

Department of Medical Education Studies	Professor	Kiyoshi Kitamura
Department of International Cooperation for Medical Education		



p57

**Institution**

The Office of International Academic Affairs	Head	Yasuyuki Seto
Medical Library	Head	Tsuyoshi Takato
Medical Scientist Training Program	Head	Masahide Kikkawa
Museum of Health and Medicine	Head	Kazuhiko Ohe
Office for Research Ethics Support	Director Deputy Director	Yutaka Yatomi Akira Akabayashi

## Endowed Department

Pharmacoepidemiology	Professor Associate Professor	Kiyoshi Kubota Satoko Setoguchi
Department of Bone & Cartilage Regenerative Medicine	Associate Professor	Taku Saito
Department of Cartilage & Bone Regeneration (Fujisoft)	Associate Professor	Kazuto Hoshi
Clinical Molecular Epidemiology (Mitsubishi Tanabe Pharma Corporation)	Associate Professor	Takanari Gotoda
Immunotherapeutics (Medinet)	Associate Professor	Kazuhiro Kakimi
Total Renal Care Medicine	Associate Professor	Norio Hanafusa
Integrated Molecular Science on Metabolic Diseases	Associate Professor	Kazuo Hara
Department of Advanced Clinical Science and Therapeutics	Associate Professor Associate Professor	Junichi Suzuki Hiroshi Akazawa
Ischemic Circulatory Physiology, Kaatsu Training	Associate Professor	Toshiaki Nakajima
Translational Research for Healthcare and Clinical Science	Associate Professor	Hiroyuki Morita
Department of Joint Disease Research	Associate Professor	Noriko Yoshimura
Health Management and Policy	Professor Associate Professor	Soichi Koike Ryuichi Yamamoto
Computational Diagnostic Radiology and Preventive Medicine	Associate Professor Associate Professor Associate Professor	Naoto Hayashi Kansei Uno Takeharu Yoshikawa
Clinical Motor System Medicine	Associate Professor	Toru Akune
Healthcare Safety Management (Tokio Marine & Nichido)	Professor	Yasushi Kodama
Molecular Cardiovascular Metabolism	Associate Professor	Katsuyuki Ando
Department of Healthcare Quality Assessment	Associate Professor	Hiroaki Miyata
Anti-Aging Medicine	Professor	Satoshi Inoue
Clinical Epidemiology and Systems	Associate Professor	Daisuke Koide
Clinical Trial Data Management	Associate Professor	Takuhiro Yamaguchi
Pharmacology and Pharmacokinetics	Associate Professor	Akihiro Hisaka
Ubiquitous Preventive Medicine	Associate Professor	Toru Suzuki
Science for Joint Reconstruction	Professor Associate Professor	Yoshio Takatori Toru Moro
Therapeutic Strategy for Heart Failure	Professor	Koichiro Kinugawa
Molecular Neuroscience on Neurodegeneration	Associate Professor	Atsushi Iwata
Chronic Kidney Disease	Associate Professor	Miki Nagase
Molecular Structure and Dynamics (JEOL / Zeiss)	Professor	Nobutaka Hirokawa
Molecular Vascular Endocrinology	Associate Professor	Masashi Isshiki
Department of Medical Genomics	Associate Professor	CHOI Young Lim
Continence Medicine	Professor	Yasuhiko Igawa
Department of Molecular Psychiatry	Associate Professor	Kazuya Iwamoto
Department of Life Support Technology (Molten)	Associate Professor	Taketoshi Mori
Quality Assessment and Control of Medical Device Sterilization	Associate Professor	Yushi Uetera
Department of Youth Mental Health	Associate Professor	Tsuyoshi Araki
Molecular Medicinal Sciences on Metabolic Regulation	Associate Professor	Hiroaki Okazaki
Department of Advanced Nephrology and Regenerative Medicine	Associate Professor	Keiichi Hishikawa
Department of Sensory-recognition and Locomotive-function Sciences in the Super-aged Society	Associate Professor	Kimihiko Kameyama
AXA Chair on Health and Human Security	Professor	Manami Inoue
Department of Advanced Translational Research and Medicine in Management of Pulmonary Hypertension	Associate Professor	Hideki Takimoto
Department of Immunotherapy Management	Associate Professor	Hiroko Kanda

## Social Cooperation Program

Department of Ubiquitous Health Informatics	Associate Professor	Hideo Fujita
Department of Lipidomics	Professor Associate Professor	Takao Shimizu Yoshihiro Kita
Functional Regulation of Adipocytes	Associate Professor	Hironori Waki
Advanced Nursing Technology	Associate Professor	Ryoko Murayama

## Research Unit

Research Unit	Associate Professor	Naoto Kubota
Translational Systems Biology and Medicine Initiative	Associate Professor	Satoshi Nishimura
Human Resource Development for Multidisciplinary Medical Teams	Associate Professor	Masato Eto
Graduate Program for Leaders in Life Innovation	Associate Professor Associate Professor	Keiji Itaka Daizo Koinuma
Center for early and exploratory clinical trials on dementia, intractable neurological disorders and psychiatric diseases	Associate Professor	Takashi Moritoyo

## Faculty of Medicine

Dean Kohei Miyazono

### 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 / Clinical Laboratory Medicine and Pathology / Obstetrics and Gynecology / Pediatric Science / Aging Science / Surgery / 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





Clinical Division

**Department of Internal Medicine**

General Medicine	Professor	Kazuhiko Koike
Cardiovascular Medicine	Professor	Issei Komuro
Respiratory Medicine	Professor	Takahide Nagase
Gastroenterology	Professor	Kazuhiko Koike
Nephrology and Endocrinology	Professor	Masaomi Nangaku
Metabolic Diseases	Professor Associate Professor	Takashi Kadowaki Kojiro Ueki
Hematology and Oncology	Professor	Mineo Kurokawa
Allergy and Rheumatology	Professor	Kazuhiko Yamamoto
Infectious Diseases	Associate Professor	Hiroshi Yotsuyanagi
Neurology	Professor Associate Professor	Shoji Tsuji Jun Goto
Geriatric Medicine	Professor	Masahiro Akishita
Psychosomatic Medicine	Professor Associate Professor Associate Professor	Akira Akabayashi Kazuhiro Yoshiuchi Yoshiyuki Takimoto

**Department of Surgery**

General Surgery	Professor	Norihiro Kokudo
Stomach and Esophageal Surgery	Professor Associate Professor	Yasuyuki Seto Sachiyo Nomura
Colon and Rectal Surgery	Professor Associate Professor	Toshiaki Watanabe Joji Kitayama
Hepatobiliary Pancreatic Surgery	Professor Associate Professor	Norihiro Kokudo Kiyoshi Hasegawa
Vascular Surgery	Associate Professor	Tetsuro Miyata
Breast and Endocrine Surgery	Associate Professor	Toshihisa Ogawa
Artificial Organ and Transplantation Surgery	Professor Associate Professor	Norihiro Kokudo Yasuhiko Sugawara
Cardiovascular Surgery	Professor Associate Professor	Minoru Ono Noboru Motomura
Thoracic Surgery	Professor	Jun Nakajima
Neurosurgery	Professor Associate Professor	Nobuhito Saito Kensuke Kawai
Anesthesiology and Pain Relief Center	Professor	Yoshitsugu Yamada
Urology and Andrology	Professor Associate Professor Associate Professor	Yukio Homma Haruki Kume Hiroaki Nishimatsu
Gynecologic Surgery	Professor Associate Professor	Yutaka Osuga Kei Kawana

**Department of sensory and Motor System Medicine**

Dermatology and Photolaser Medicine	Professor Associate Professor Associate Professor	Shinichi Sato Takafumi Kadono Makoto Sugaya
Ophthalmology and Vision Correction	Professor Associate Professor Associate Professor	Shiro Amano Satoshi Kato Miyuki Nagahara
Orthopaedic Surgery and Spinal Surgery	Professor Associate Professor Associate Professor	Sakae Tanaka Hiroshi Kawaguchi Katsushi Takeshita
Otorhinolaryngology, and Auditory and Voice Surgery	Professor Associate Professor Associate Professor	Tatsuya Yamasoba Takahiro Asakage Shinichi Iwasaki
Rehabilitation Medicine	Professor	Nobuhiko Haga
Plastic, Reconstructive and Aesthetic Surgery	Professor	Isao Koshima
Oral-Maxillofacial Surgery, Dentistry and Orthodontics	Professor Associate Professor Associate Professor	Tsuyoshi Takato Takafumi Susami Yoshiyuki Mori

<b>Department of Pediatrics, Perinatal and Women's Medicine</b>	Pediatrics	Professor Associate Professor	Akira Oka Sachiko Kitanaka
	Pediatric Surgery	Professor	Tadashi Iwanaka
	Obstetrics and Gynecology	Professor Professor	Tomoyuki Fujii Yutaka Osuga
<b>Department of Neuropsychiatry</b>	Neuropsychiatry	Professor Associate Professor Associate Professor	Kiyoto Kasai Hidenori Yamasue Chihiro Kakiuchi
<b>Department of Radiology</b>	Radiology	Professor Associate Professor Associate Professor Associate Professor	Kuni Otomo Keiichi Nakagawa Toshimitsu Momose Akira Kunimatsu

## Central Clinical Facilities

Pharmaceutical Department	Professor	Hiroshi Suzuki
Clinical Laboratory	Professor Associate Professor	Yutaka Yatomi Hitoshi Ikeda
Operation Center	Professor Associate Professor	Hiroshi Yasuhara Kazuhiko Fukatsu
Imaging Center	Professor and Director Associate Professor	Kuni Otomo Masaaki Akabane
Emergency Services	Professor Associate Professor	Naoki Yahagi Yoichi Kitsuta
Department of Blood Transfusion	Professor	Hitoshi Okazaki
Perinatal Center	Professor Associate Professor	Tomoyuki Fujii Naoto Takahashi
Rehabilitation Service	Professor	Nobuhiko Haga
Department of Medical Engineering		
Central Supply Service	Associate Professor	Kazuhiko Fukatsu
Intensive Care Unit	Professor Associate Professor	Naoki Yahagi Yoichi Kitsuta
Pathology	Professor Associate Professor Associate Professor	Masashi Fukayama Junji Shibahara Takeshi Sasaki
Department of Corneal Transplantation	Associate Professor	Satoru Yamagami
Department of Cell Therapy and Transplantation Medicine	Professor	Mineo Kurokawa
Department of Endoscopy and Endoscopic Surgery	Associate Professor	Mitsuhiro Fujishiro
Department of Hemodialysis and Apheresis	Professor Associate Professor	Masaomi Nangaku Eisei Noiri
Medical Community Network and Discharge Planning	Professor	Kiyoto Kasai
Infection Control and Prevention Service	Professor	Kyoji Moriya
Department of Planning, Information and Management	Associate Professor	Kengo Miyo
University Hospital Medical Information Network Center	Professor Associate Professor	Takahiro Kiuchi Hirono Ishikawa
Organ Transplantation Service	Professor Associate Professor	Norihiro Kokudo Yasuhiko Sugawara
Labor Safety and Health Management Office	Associate Professor	Shin Onishi
Child Psychiatry	Associate Professor	Yukiko Kano
Tissue Bank	Associate Professor Associate Professor	Noboru Motomura Sumihito Tamura
Epidemiology and Preventive Medicine	Professor	Tsutomu Yamazaki
Cancer Resource Center	Associate Professor	Sachiyo Nomura
Center for Liaison and Public Relations	Professor	Toshiaki Watanabe
Department of Chemotherapy	Professor	Norihiro Kokudo
Department of Medical Record Management	Professor	Toshiaki Watanabe
Critical Care Center	Associate Professor	Susumu Nakajima
Department of Palliative Medicine	Associate Professor	Keichi Nakagawa
Children's Medical Center	Professor Professor	Tadashi Iwanaka Akira Oka
Department of Disaster Medical Management	Associate Professor	Hiroyuki Nakao

International Medical Center	Associate Professor	Sumihito Tamura
Department of Clinical Nutrition Therapy	Professor	Yutaka Yatomi
	Associate Professor	Kazuhiko Fukatsu
Nursing Department		
Administration Office		

### Clinical Research Division

Clinical Research Support Center	Professor	Tsutomu Yamazaki
	Associate Professor	Yoshihiro Arakawa
22nd Century Medical and Research Center	Professor	Tsuyoshi Takato
Department of Tissue Engineering	Professor	Tsuyoshi Takato
Cooperative Unit of Medicine and Engineering Research	Associate Professor	Tetsuro Miyata
Translational Research Center	Professor	Mineo Kurokawa
Center for Genome Medicine	Professor	Shoji Tsuji
Unit for Early and Exploratory Clinical Development	Professor	Takeshi Iwatsubo
	Associate Professor	Yoshihiro Arakawa

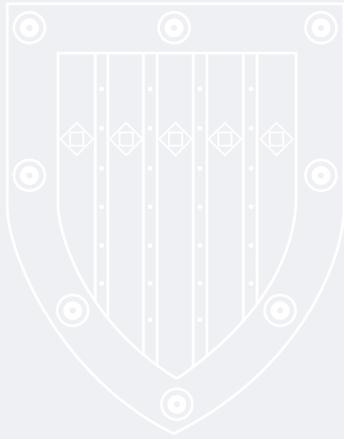
### Organization of Clinical Management Support

Department of Personnel Administration and Human Resource Management	Professor	Nobuhito Saito
Department of Performance Monitoring and Risk Management	Associate Professor	Shin Onishi
Department of Education and Staff Development	Associate Professor	Shin Onishi
Department of Hospital Planning and Management	Professor	Soichi Koike
Department of Research Support	Professor	Nobuhito Saito

### Organization of Clinical Management

Inpatient Services Administration	Associate Professor	Shin Onishi
Outpatient Services Administration	Professor	Kiyoto Kasai
Central Clinical Services Administration	Professor	Yutaka Yatomi





# Faculty of Medicine Graduate School of Medicine The University of Tokyo

## Graduate School of Medicine

Molecular Cell Biology .....	14
Functional Biology .....	17
Pathology, Immunology and Microbiology .....	19
Radiology and Biomedical Engineering .....	21
Neuroscience .....	23
Social Medicine .....	26
Internal Medicine .....	28
Reproductive, Developmental and Aging Sciences .....	32
Surgical Sciences .....	35
Health Sciences and Nursing .....	42
International Health .....	46
School of Public Health .....	49
Center for Disease Biology and Integrative Medicine ..	53
The International Research Center for Medical Education .....	56

## Institution

57

The Office of International Academic Affairs  
 Medical Library  
 Medical Scientist Training Program  
 Museum of Health and Medicine  
 Office for Research Ethics Support

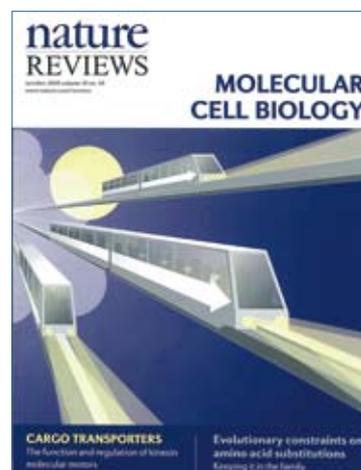


# Molecular Cell Biology

## Cell Biology and Anatomy

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

Cells transport various kinds of proteins, lipids and mRNAs after synthesis to their specific destinations such as several types of membranous organelles, protein complexes and the mRNA complex. Thus, intracellular transport is fundamental to cellular functions, survival and morphogenesis. Our laboratory is studying the mechanisms of intracellular transport and cellular morphogenesis, especially focusing on molecular motors, Kinesin superfamily proteins (KIFs) and microtubule associated proteins (MAPs) using molecular cell biology, biophysics, structural biology, and molecular genetics.



Schematic representation of intracellular transport performed by Kinesin superfamily motor proteins, KIFs. (Reproduced from the cover of Nature Review of Molecular Cell Biology 10, 2009)

- Molecular cell biological study of KIFs
- Studies of the mechanism for recognition of and binding to cargoes by KIFs and the regulation of this mechanism
- Studies of the mechanisms of differential directional transports and sorting
- Studies of the dynamics and mechanism of motility of KIFs using molecular biophysics and structural biology
- Molecular genetics of KIFs
- Studies of KIFs and related diseases
- Molecular cell biology and molecular genetics of MAPs

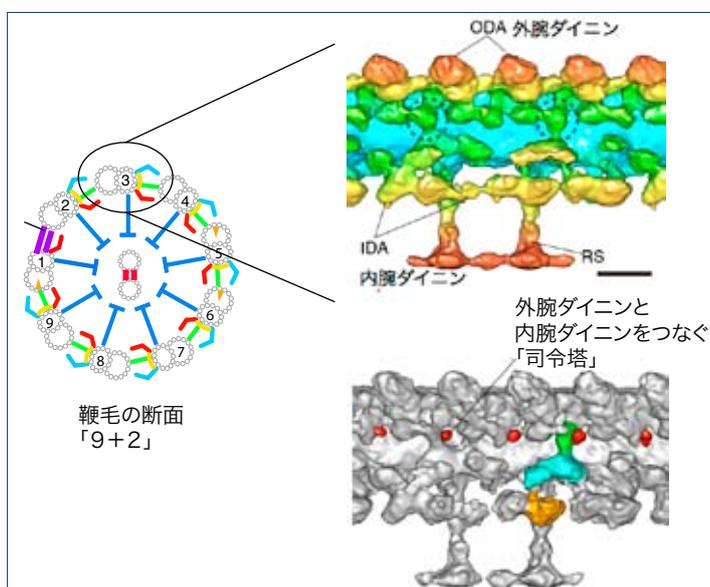
## Structural Biology

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

Kikkawa lab is interested in flagella/cilia, which works as a propeller as well as a sensor of cells. We are studying the regulatory mechanism of flagella/cilia using cryo-electron microscopy, optical microscopy with high-speed camera, cell biology, and genetics. We are also developing new technologies to analyze images taken by the microscopes.

Our focuses are:

- Molecular mechanisms of flagella and axonemal dyneins
- Structures of microtubule-associated proteins
- Development of new image analysis methods for cryo-electron microscope and high-speed camera

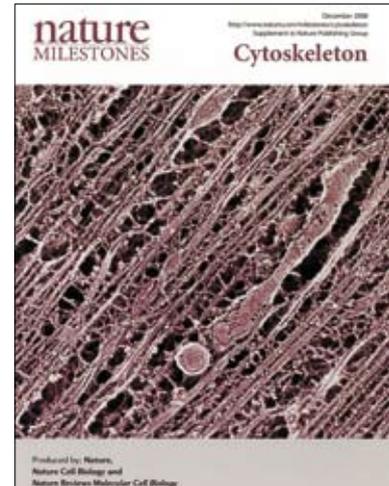


## Structural Cell Biology

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

Our research aims to elucidate the cellular architecture, especially focusing on the cytoskeleton by combining molecular cell biology, molecular genetics and structural biology.

- Structure of the cytoskeleton and the related proteins
- Dynamics of the cytoskeleton and the related proteins
- Function of the cytoskeleton and the related proteins

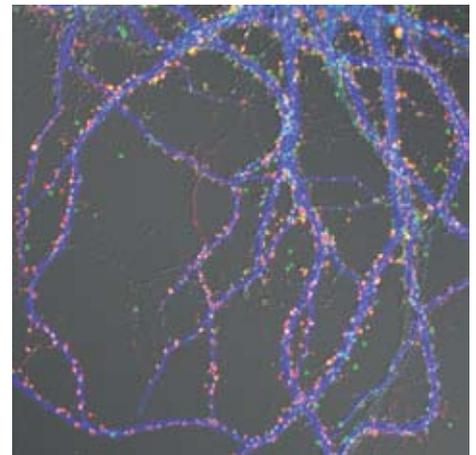


*The neuronal cytoskeleton  
(From Nature Milestones 2008)*

## 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



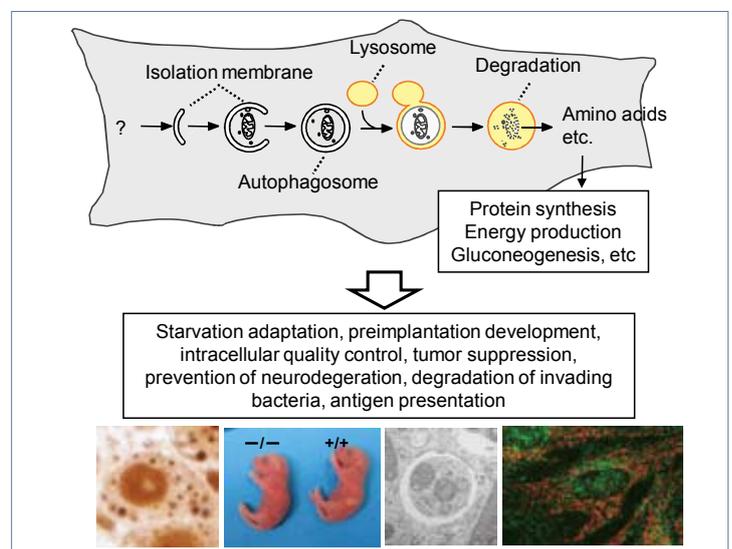
*Quantitative fluorescence imaging of cultured hippocampal neurons (green: postsynaptic protein and calibrated fluorescent microspheres, red: presynaptic protein, blue: microtubule-associated protein)*

## Molecular Biology

<http://www.cellcycle.m.u-tokyo.ac.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

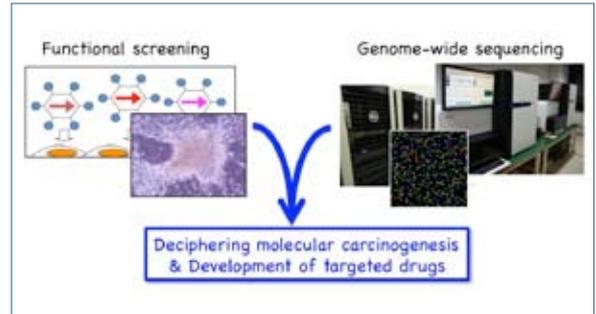


## Cellular Signaling

<http://mano-lab.umin.jp>

Through a combined approach of our original functional screening system and cancer-genome resequencing, we aim to identify essential growth drivers in human cancer and to develop effective means to treat this intractable disorder. Our research is conducted in a tight collaboration with Department of Medical Genomics.

- Discovery of genetic changes directly responsible for carcinogenesis
- Identification of therapeutic targets in human cancer
- Development of novel molecular diagnostics for cancer

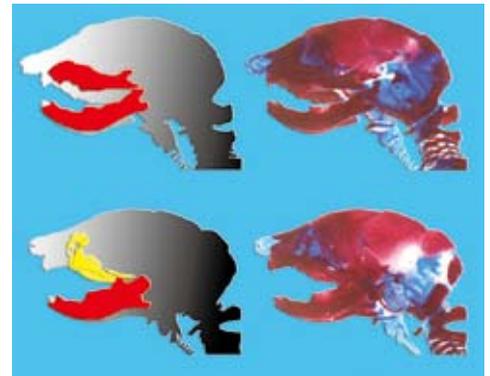


## Physiological Chemistry and Metabolism

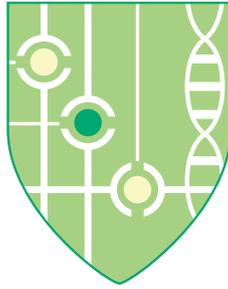
<http://bio.m.u-tokyo.ac.jp/>

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

- Molecular mechanisms of neural crest fate determination and craniofacial morphogenesis
- Molecular mechanisms of cardiovascular development
- Molecular mechanisms of stress responses in preimplantation development
- Roles of non-coding RNA in embryonic development



*Transformation of the upper jaw into a lower jaw in endothelin-1 knock-in (misexpressing) mouse (upper). The lower is the wild-type control.*



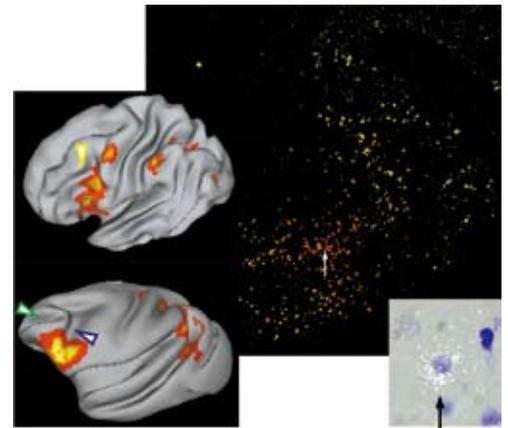
## Functional Biology

### Integrative Physiology

Our laboratory specializes in the neuroscience research on cognitive functions in the primate. We investigate interactions among many neurons in the cerebral cortex, which create human cognitive abilities such as memory and its cognitive control. These studies have been done through integrative efforts using electrophysiological, molecular biological and neuroimaging approaches.

- Neural circuits of memory neurons in the temporal cortex
- Roles of the top-down signal from the prefrontal cortex
- Functional architecture of the prefrontal cortex
- Molecular biological basis of declarative memory in the primate
- Development of optogenetics and viral gene-delivery methods in the primate
- High-field MRI for humans and monkeys

<http://www.physiol.m.u-tokyo.ac.jp/indexe/indexe.html>



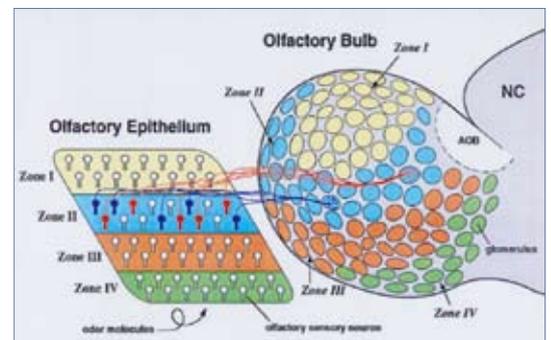
Brain activation in cognitive tasks (left) and gene expression (BDNF) in cortical neurons

### Cellular and Molecular Physiology

We aim at a better understanding of neuronal mechanisms that translate sensory information of the external world into motivational and emotional responses. We are currently analyzing the central nervous system for olfaction, a sensory modality that has a strong influence on human emotion. Another major focus is to understand cellular and molecular mechanisms for reorganization of neuronal circuits and memory consolidation in the central olfactory system.

- Functional analysis of the neuronal circuit in the central olfactory nervous system (olfactory bulb and olfactory cortex)
- Neurogenesis and neuron-elimination in the adult brain
- Cellular and molecular mechanisms for the reorganization of neuronal circuits and memory consolidation in the central olfactory system.

<http://morilab.m.u-tokyo.ac.jp/eindex.html>



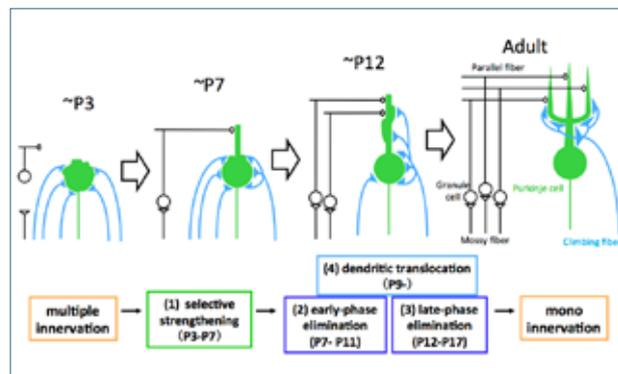
Neuronal circuits and 'odor maps' in the olfactory nervous system

## 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



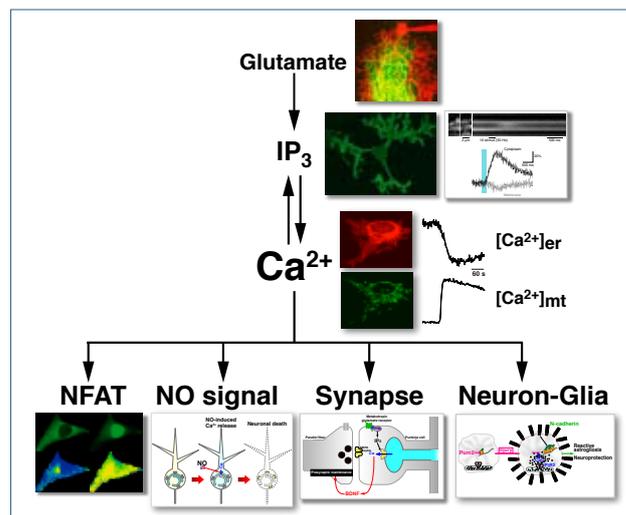
Postnatal development of cerebellar climbing fiber to Purkinje cell synapses

## Cellular and Molecular Pharmacology

<http://calcium.cmp.m.u-tokyo.ac.jp/index-e.html>

We are studying the basic principles of  $Ca^{2+}$  signaling, the fundamental signal transduction mechanism of life. Based on such studies, we are searching for new functions of  $Ca^{2+}$  signaling in the central nervous system, and are aiming at shedding new light on brain functions using innovative imaging methods.

- Elucidation of basic principles of  $Ca^{2+}$  signaling
- Search for new functions of  $Ca^{2+}$  signaling in the brain
- Functional analyses of neurons and glial cells using imaging methods of signaling molecules

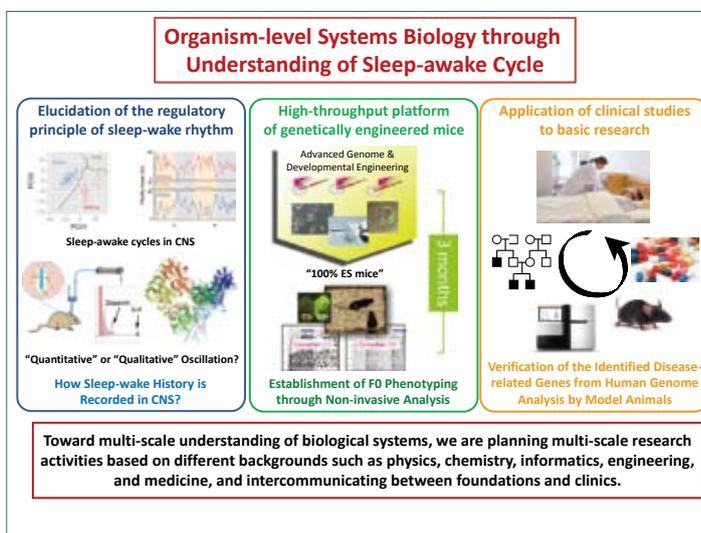


Outline of our research on  $Ca^{2+}$  signaling

## 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





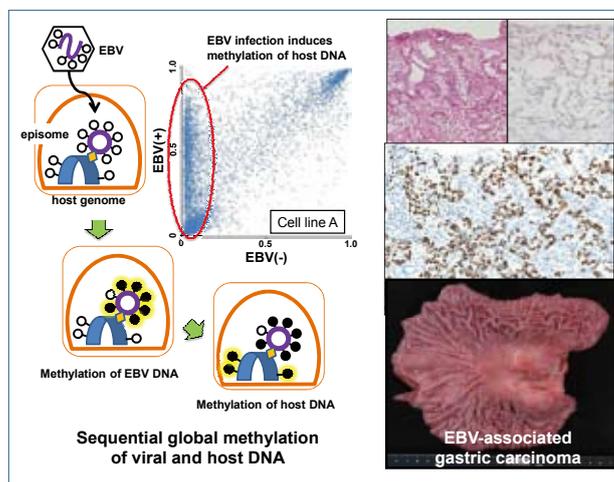
# Pathology, Immunology and Microbiology

## Pathology and Diagnostic Pathology

[http://pathol.umin.ac.jp/index\\_e.htm](http://pathol.umin.ac.jp/index_e.htm)

We investigate the pathogenesis and pathobiology of disease, 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.

- Chronic inflammation and neoplasm
  - Epstein-Barr virus associated gastric carcinoma
  - Epigenetics of carcinoma
  - Carcinoma-stromal interaction
  - Lung adenocarcinoma and its scar formation
  - Lung fibrosis and adenocarcinoma
- Application of molecular pathology to pathological diagnosis
  - Discovery of molecular target for cancer therapy
  - Establishment of objective criteria for cancer grading
- Streamlining and acceleration of pathological diagnostic processes

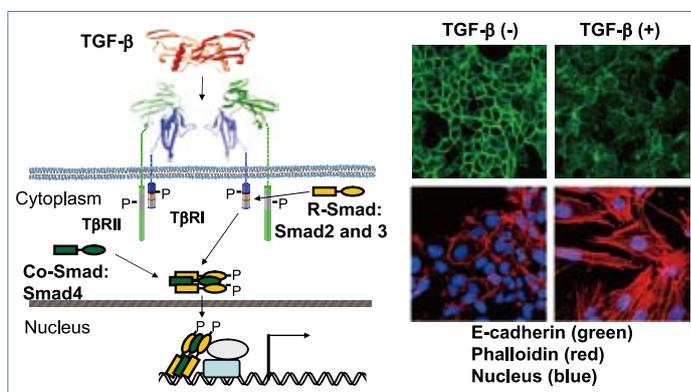


## Molecular Pathology

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

Our research is focused on the molecular mechanisms of carcinogenesis. We study the signaling mechanisms of the TGF- $\beta$  family, including TGF- $\beta$  and bone morphogenetic proteins (BMPs), and elucidate how they regulate progression of cancers. We also investigate the mechanisms of differentiation of murine embryonic stem cells (ESCs) into various cells, including vascular and lymphatic endothelial cells. Based on these findings, we will develop new strategies for the treatment of vascular and lymphatic diseases and cancer.

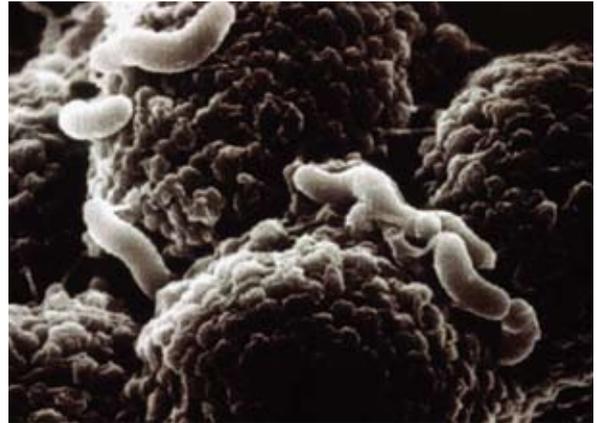
- Molecular mechanisms of growth regulation by TGF- $\beta$
- Roles of TGF- $\beta$  in epithelial-to-mesenchymal transition
- Effects of TGF- $\beta$  family cytokines on cancer-initiating cells
- Roles of TGF- $\beta$  family cytokines in vascular and lymphatic diseases
- Differentiation of vascular and lymphatic endothelial cells and mechanisms of diseases



Signaling by TGF- $\beta$  (left) and TGF- $\beta$ -mediated EMT of mammary epithelial cells (right)

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

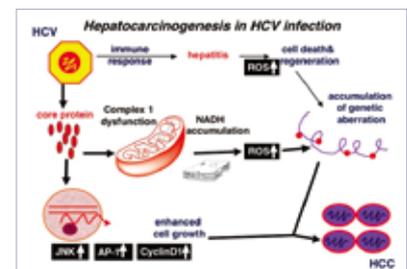
## Infection Control and Prevention

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



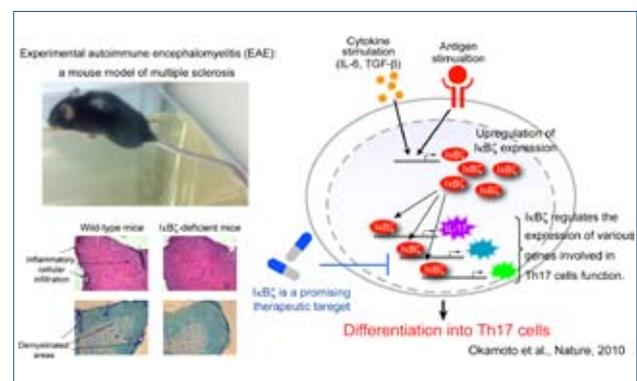
Infection control team rounds

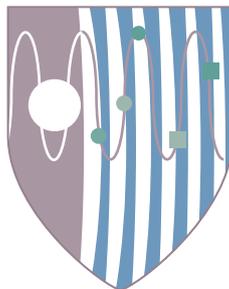


## Immunology

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 cytokine signal transduction and regulation of gene transcription, emphasizing the demonstration of in vivo role using genetically modified mice.

- The mechanisms underlying the development of immune cells
- The pathogenesis of autoimmune diseases such as rheumatoid arthritis and multiple sclerosis
- Interplay between the immune and bone systems
- The regulation of mucosal immune responses





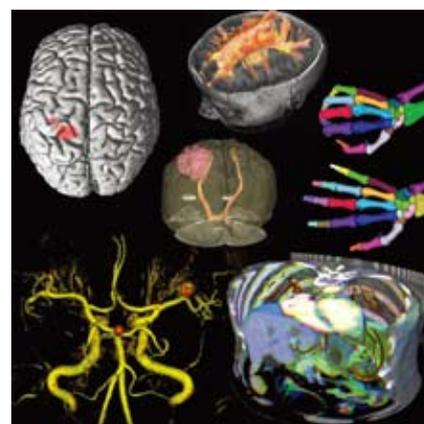
## Radiology and Biomedical Engineering

### Radiology

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

We have been performing a variety of clinically oriented research programs in biomedical imaging, voxel-based or ROI-based analysis, information analysis and radiotherapy, such as computer-assisted diagnosis (CAD), PET-based diagnosis, and intensity modulated radiotherapy (IMRT).

- Diagnostic Radiology
  - Multi-row detector (up to 16 rows) helical computed tomography
  - MR imaging, MR digital subtraction angiography, perfusion imaging, and diffusion tensor imaging/tractography
- Radiation Oncology
  - Physical engineering aspect of radiotherapy
  - Stereotactic irradiation by gamma knife and synergy system and IMRT
  - Clinical and biological studies for reduction of radiation-induced damage
- Nuclear Medicine
  - Functional imaging by radioisotope-labeled tracer technology
  - Evaluation of blood flow and metabolism by emission tomography (PET and SPECT)



Representative images analyzed with computer-assisted technology

### 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

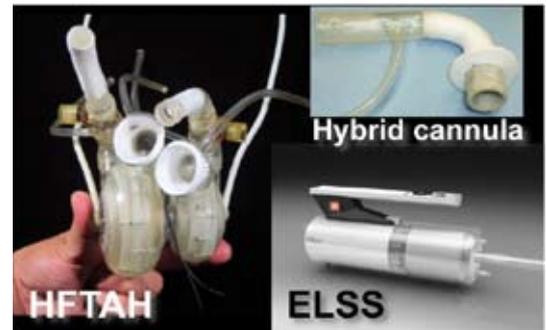


## Biosystem Construction and Control

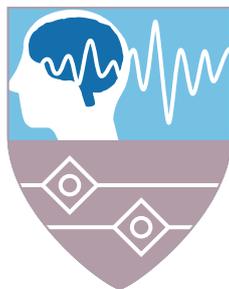
[http://www.bme.gr.jp/bme\\_E/](http://www.bme.gr.jp/bme_E/)

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 application of the information technology have been performed.

- Artificial heart
- Emergency life support system
- Hybrid technology of biological and artificial materials
- New blood pumps
- Implantable pressure sensor
- Implantable angiogenesis observation probe
- Application of the information technology



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

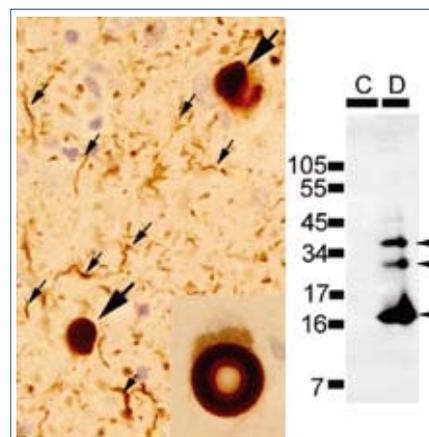


# Neuroscience

## 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.

- Structural and functional analysis of  $\gamma$ -secretase
- Molecular analysis of the mode of action of  $\gamma$ -secretase inhibitors
- Mechanism of A $\beta$  production, aggregation and clearance
- Pathological function of  $\beta$ -amyloid binding proteins (e.g., CLAC)
- Mechanism of aggregation and neurotoxicity of  $\alpha$ -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)



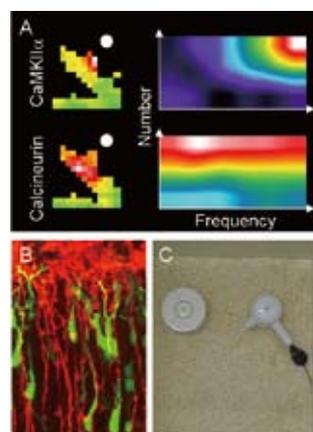
Phosphorylated  $\alpha$ -synuclein deposited in Lewy bodies of Parkinson's disease and Lewy body disease

## Neurochemistry

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.

- Molecular investigation (including identification, characterization, optical manipulation and real-time visualization) of signaling molecules involved in activity-dependent modification of synapse, gene expression and neural circuit formation.
- 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.

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



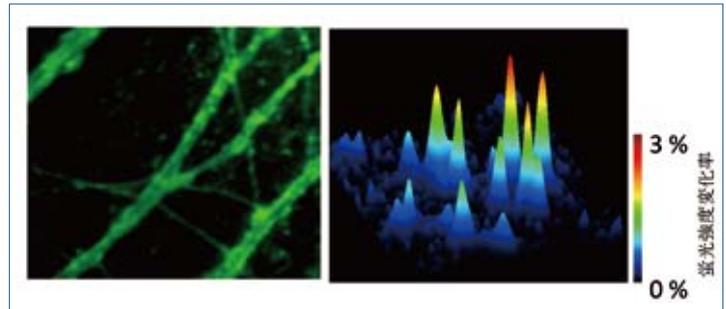
A. Single-synapse imaging (left) and frequency-number response profile (right) of CaMKII $\alpha$  and calcineurin  
 B. Visualization of migrating neurons (green) and radial glial fibers (red) during corticogenesis  
 C. Novel object recognition task

## Neurobiology

<http://www.neurobiol.m.u-tokyo.ac.jp/>

The goal of our research is to elucidate regulation mechanisms of various cell functions. Toward this goal, we have been developing novel technologies including live cell imaging and RNAi technologies.

- Development of novel strategy for generating fluorescent probes for live cell imaging
- We develop a high-throughput screening system for constructing high performance fluorescent probes for live cell imaging.
- Study of synapse physiology by glutamate imaging technique
- To clarify the dynamics of exocytosis in excitatory synapses, we have tried to quantitatively analyze released glutamate at individual synapses by using our original optical glutamate probe.
- Novel technology for construction of genome-wide RNAi library
- We are currently constructing a high performance genome-wide RNAi library based on our EPRIL technology.

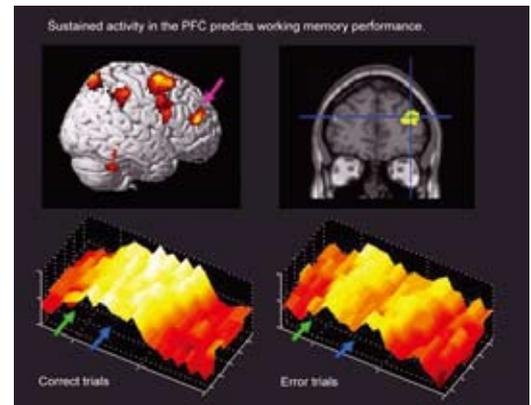


## Cognitive Neuroscience

<http://square.umin.ac.jp/dcntky/English/Etop.html>

We are trying to understand the neural mechanisms of human cognition using functional MRI, EEG and TMS.

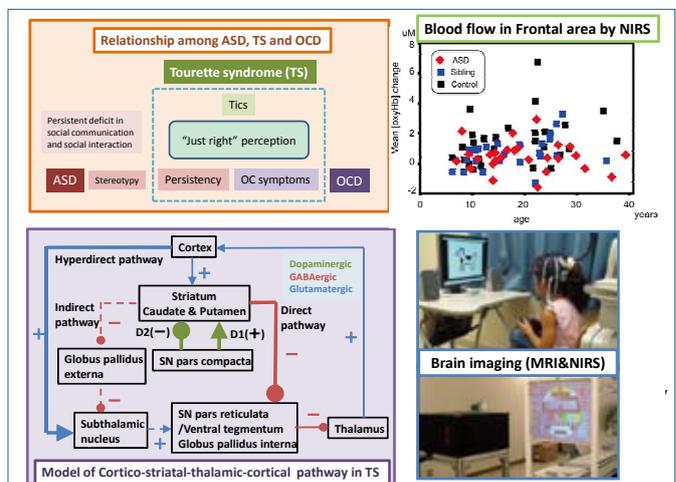
- Working memory and cognitive control
- Attention, perception and consciousness
- Mind-reading and prediction of behavior



## Child Neuropsychiatry

Main diseases of our current research are autism spectrum disorders (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.

- Behavior phenotype, neuropsychological and genetic study of Tourette syndrome and childhood OCD
- Brain-imaging study of ASD, ADHD and Tourette syndrome structural-MRI, functional-MRI and near-infrared spectroscopy
- Genomic and epigenomic analysis of ASD
- 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

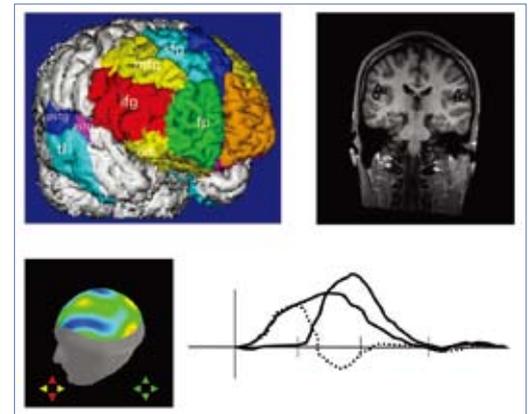


## Neuropsychiatry

<http://npsy.umin.jp/index-e.html>

Our department mainly investigates schizophrenia and pervasive developmental 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.

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



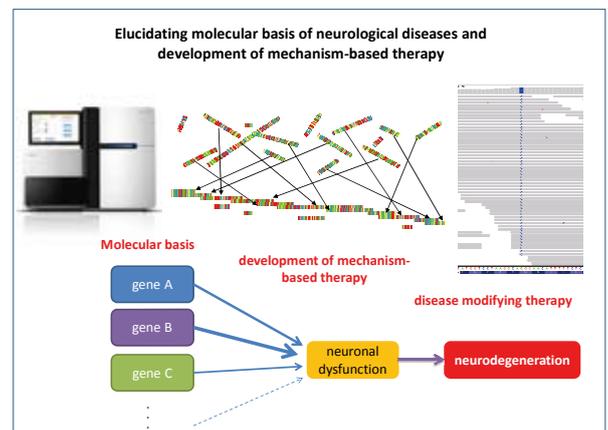
Multi-modality neuroimaging in neuropsychiatry using a combination of high-resolution MRI, EEG, MEG, NIRS, and PET

## 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

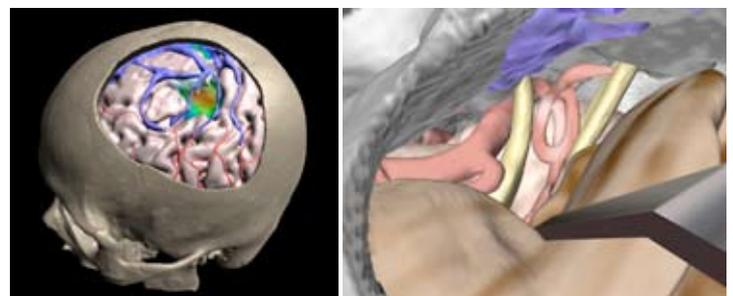


## Neurosurgery

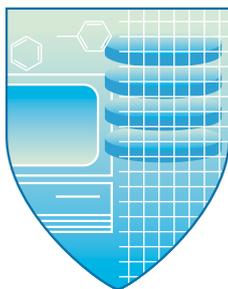
<http://www.h.u-tokyo.ac.jp/neurosurg/>

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.

- Skull base surgery in managing benign or malignant skull base tumors and cerebrovascular disorders
- Functional neurosurgery including epilepsy surgery
- Development of new therapeutic strategies for malignant brain tumors
- Clinical study on gamma-knife surgery
- Application of brain functional imaging for neurosurgery
- Application of VR technology for surgical simulation
- Experiment on cerebral ischemia
- Development of new stenting device for endovascular surgery



Pre-operative simulation using 3D-fusion images

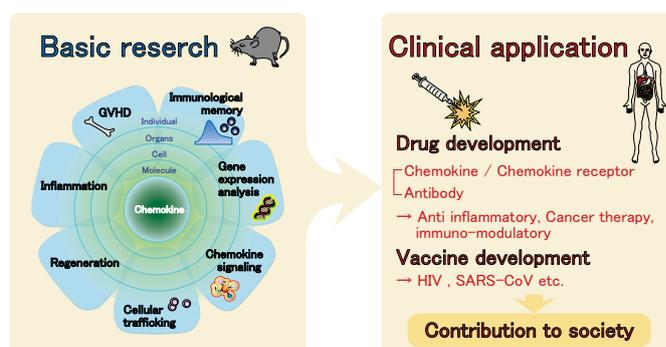


## Social Medicine

### Molecular Preventive Medicine

<http://www.prevent.m.u-tokyo.ac.jp/>

The immune system is maintained by continuous migration of immune cells between lymphoid organs and peripheral tissues. Immune cells change their function during this migration and interact with tissue cells at the periphery. In the context of disease, immune cells induce functional changes, destruction, and remodeling of affected tissues. We aim to clarify how immune cell migration regulates immune function, which may lead to the development of novel therapeutic and preventive strategies toward various diseases.



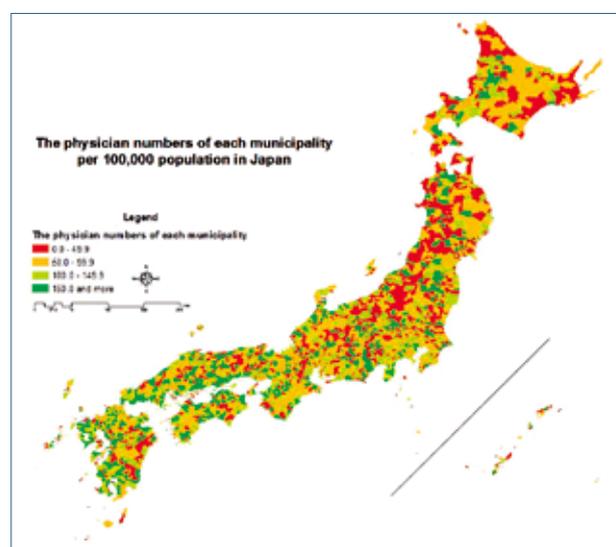
- Molecular and cellular basis of tissue fibrosis during chronic inflammation
- Pathophysiological regulation of the immune system by chemokines and the implication of this in GVHD, tumor development, infectious diseases, and autoimmunity
- Development of vaccines against cancers and infectious diseases
- Gene expression analysis of hematopoietic and other tissue cells by next-generation sequencing

### 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
- Evaluation of preventive services
- Health services research



Physician distribution by municipality in Japan

## Forensic Medicine

<http://plaza.umin.ac.jp/~forensic/>

We conduct autopsies and examinations related to unnatural deaths and therapeutic deaths. We also perform the following studies.

- Development of new animal model of sleep apnea syndrome, and the elucidation of the pathogenesis of heart failure and pulmonary hypertension
- Study on the mechanism underlying sudden cardiac deaths and myocardial lesions related to myocardial infarction and amphetamine-class drug poisoning
- Study on the Takotsubo cardiomyopathy-like pathology in restrained rats
- Study on the mechanism underlying propagation of brain contusion
- Study on the information disclosure, bereavement service, and research use of retained organs in death investigation system
- Development of new methods for examinations of drug, histological and DNA analyses in autopsy cases.



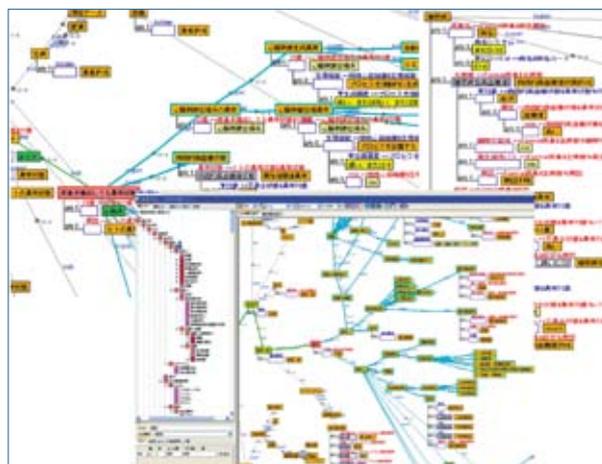
*Forensic autopsy room*

## Medical Informatics and Economics

[http://www.m.u-tokyo.ac.jp/medinfo/index\\_e.html](http://www.m.u-tokyo.ac.jp/medinfo/index_e.html)

The role of research and education of this department is provided as the department of the graduate school, and the role of practical management is conducted as the Department of Planning, Information and Management in the University of Tokyo Hospital. All teaching staffs are in charge of both the two roles and the department of health informatics of school of public health. The research and postgraduate education programs cover basic medical informatics, advance applications of information technology for clinical practice, technology assessment and standardization of healthcare information.

- 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
- Evaluation study of hospital management and analysis of medical resource placement



*Development of clinical ontology*



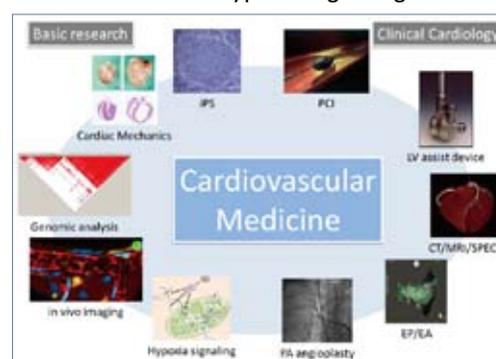
## Internal Medicine

### Cardiovascular Medicine

<http://plaza.umin.ac.jp/~utok-card/>

We are investigating the pathogenesis, pathophysiology, diagnostic tools and novel therapeutic approaches for various cardiovascular diseases including ischemic heart disease, heart failure, cardiomyopathy, arrhythmias, atherosclerosis and hypertension. To carry out the comprehensive study, we are adopting a wide variety of research modalities, such as molecular biology, iPS cells, genomic analysis, molecular imaging, cardiac mechanics, endothelial function and hypoxia signaling.

- Molecular mechanisms of human heart diseases using iPS cells
- Interplay between organs, cells and molecules in chronic inflammation
- Transcriptional regulation of various genes involved in cardiovascular development and pathogenesis
- Cardiac hypertrophy and heart failure: analyses of pathogenic mechanisms and development of novel therapies (gene therapy, etc.)
- Roles of hypoxia signaling in cardiovascular diseases
- Differentiation of smooth muscle cells (atherosclerosis and restenosis after vascular interventions)
- Endothelial dysfunction in various diseases
- Genetic polymorphisms and risk factors in cardiovascular disease
- Optimization of individual treatment using the Computer Heart Simulator
- Development of new integrated databases for clinical information and research
- Investigation of disease pathophysiology and development of novel therapies (severe heart failure, cardiac transplantation, Marfan's syndrome, pulmonary hypertension, congenital heart disease, cardiac rehabilitation, etc.)
- Imaging techniques (echocardiography, MRI, CT, SPECT) in cardiovascular diseases

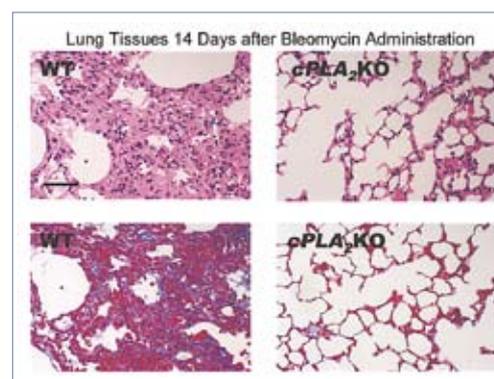


### Respiratory Medicine

<http://kokyuki.umin.jp/>

Based on the fact that a number of patients with respiratory diseases including lung cancer and COPD is tremendously increasing, fruitful results of respiratory research are more and more expected in the 21<sup>st</sup> century. In this era, we are conducting basic and clinical researches for wide variety of respiratory disorders including lung cancer, asthma and COPD. Especially, we have been intensively studying the molecular mechanisms underlying the pathogenesis of lung disorders. Our research goal is to develop novel therapeutic tools to manage these pulmonary diseases.

- Clinical studies of lung cancer, COPD, bronchial asthma and pulmonary fibrosis
- Epidemiological studies of diffuse panbronchiolitis (DPB) and interstitial lung disease
- Molecular mechanisms underlying the pathogenesis of acute lung injury or ARDS
- Molecular mechanisms underlying the pathogenesis of pulmonary fibrosis (as shown in Figure)
- Analysis of disease models using genetically-engineered mice
- Effects of air pollutants such as diesel exhausts on airway hyperresponsiveness
- Roles of chemokines/cytokines and eicosanoids on airway epithelial cells, smooth muscle cells and eosinophils.
- Molecular mechanisms of epithelial-mesenchymal transition in lung cancer and inflammatory lung disease
- DNA methylation and lung cancer
- Establishment of conditional vectors for hairpin siRNA knockdowns
- Establishment of CpG island searcher
- Search of a biomarker of lung cancer and inflammatory lung disease

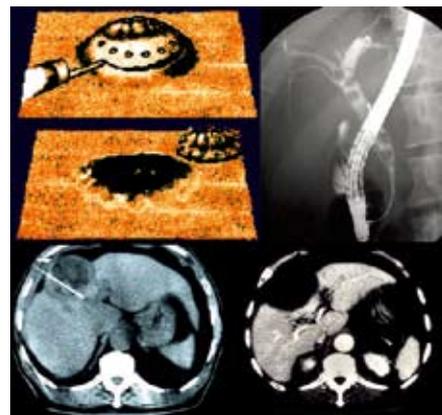


*Murine model of pulmonary fibrosis*

## 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.



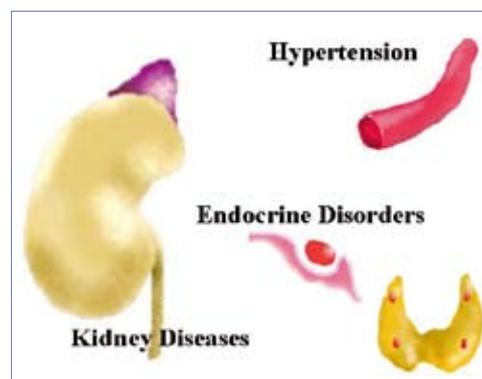
- Development of better therapeutic strategy for hepatitis B and C
- Elucidation of hepatocarcinogenesis mechanism in viral hepatitis
- Development of a better therapeutic modality for hepatocellular carcinoma & metastatic liver tumor
- Elucidation of gastric injury mechanisms by *Helicobacter pylori*
- Clarification of colon disease, especially right-sided colon carcinogenesis
- 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.

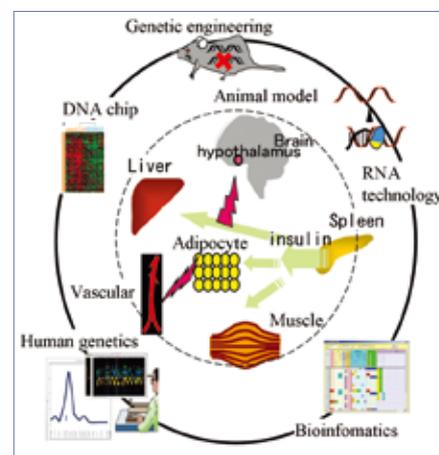
- Renal physiology and morphology
- Abnormal oxygen metabolism of kidney disease
- Analysis of pathophysiology and development of therapy of chronic kidney disease
- Development of biomarkers and therapy of acute kidney injury
- Role of nitric oxide and oxidative stress in renal disease and hypertension
- Clinical and basic investigation of bone and mineral disorders
- Mechanism of action of nuclear hormone receptors
- Pathophysiology of hypertension and roles of adrenomedullin
- G protein signaling in health and disease
- Epigenetics



## Nutrition and Metabolism

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

- Molecular mechanism of insulin resistance linked to obesity focusing on adipokines
- Transcriptional regulation of insulin resistance and obesity by nuclear receptors and cofactors
- 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
- Development of accurate diagnostic 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

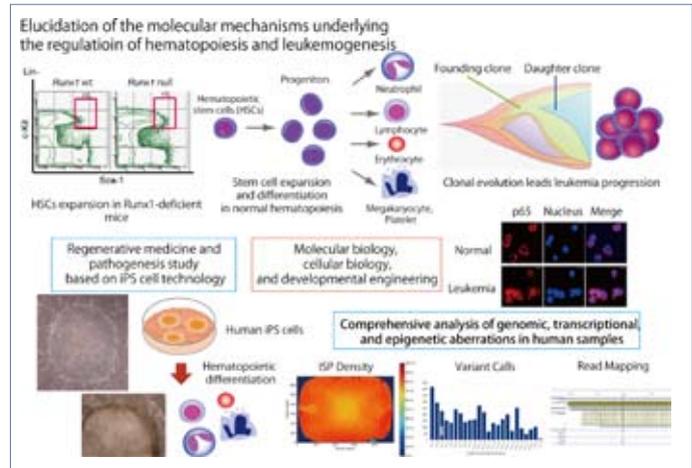


## Hematology and Oncology

<http://www.h.u-tokyo.ac.jp/hematology/>

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, and transplantation medicine, which aim at application to therapeutic strategies.

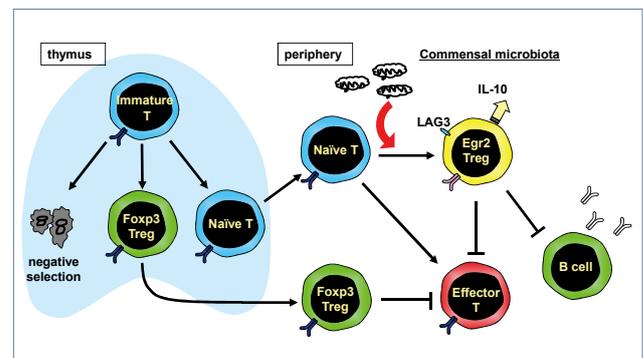
- Mechanisms in the regulation of self renewal and differentiation in hematopoietic stem cells
- Comprehensive genomic and epigenetic analysis of hematological malignancies
- Elucidation of the molecular mechanisms underlying the pathogenesis of leukemia
- Development and analysis of mouse models of leukemogenesis
- Regenerative medicine and pathogenesis study based on human iPS cell technology



## Allergy and Rheumatology

Allergy and rheumatic diseases are immune mediated disorders. We are investigating the fine mechanisms of such disorders. One of our final purposes is to establish novel therapies which control pathological immune disorders but do not suppress other physiologically important immune functions. We are combining recent findings in basic immunology and our own viewpoints base on our clinical experience.

- Functional analysis of a novel regulatory T cell subset that suppresses autoantibody production
- Clonal analyses of T cell receptor (TCR) , in vitro reconstitution of the TCR function using such information and antigen specific immunotherapy
- Genomic analyses of rheumatic diseases
- Development of molecular targeting immunosuppressive reagents
- Mechanism of immunological tolerance to autoantigens and immunoregulation
- Intracellular signaling in immune disorders
- Airway hypersensitivity and remodeling of bronchial asthma
- Involvement of chemokines in allergic diseases and applications to therapeutic strategies

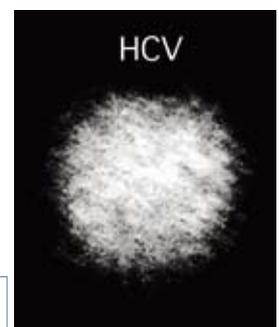
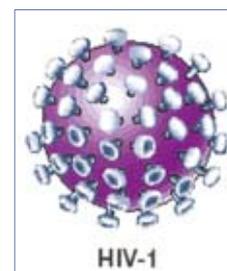


Development of CD4+CD25-LAG3+ regulatory T cells

## 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 disease worldwide. Our research topics cover the wide areas in microbiology, immunology and pathobiology of infectious diseases, including HIV and HCV 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
- Pathogenesis of progression of HIV infection
- Molecular pathogenesis of hepatocellular carcinoma in HBV infection
- Molecular pathogenesis of hepatitis B viral infection
- Host defences to microorganisms
- Molecular analysis of innate immunity in microorganism infection
- Pathogenesis of influenza viral infection
- Mechanism of multi-drug resistant microorganisms

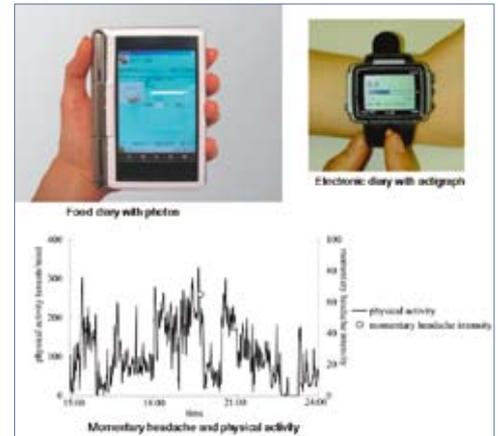


## Stress Sciences and Psychosomatic Medicine

<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.

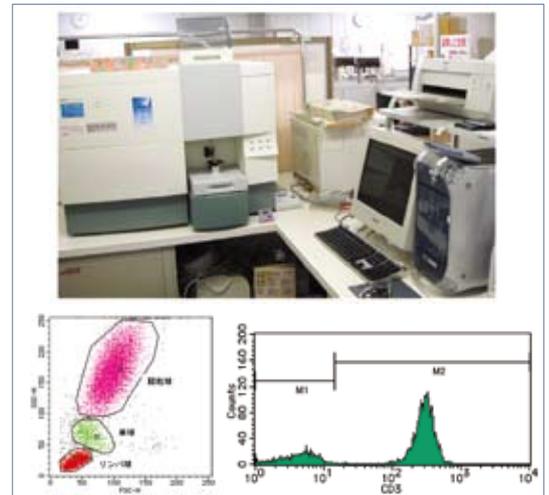


## Clinical Laboratory Medicine

<http://lab-ky.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
- Hepatology
- Genetic testing
- Bioactive peptides, especially adrenomedullin
- Oxidative stress and organ damage
- Cell surface analysis and quantification of cell surface antigens using flow cytometry
- Analysis of the ventricle functions using ultrasound
- Relationship between the respiratory function and various pathophysiological conditions
- Magnetoencephalographic (MEG) study on neural mechanisms for audiovisual integration



Flow cytometer and analysis patterns

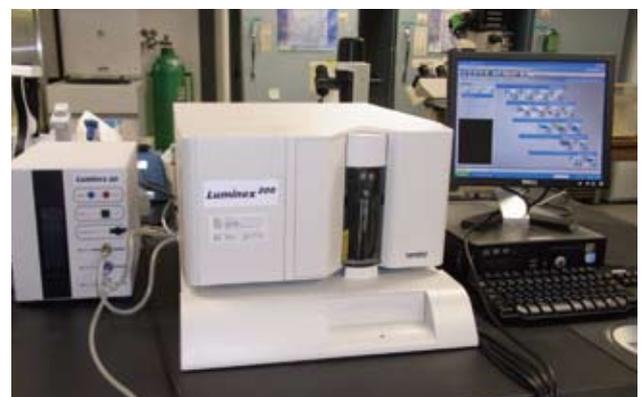
## Transfusion Medicine

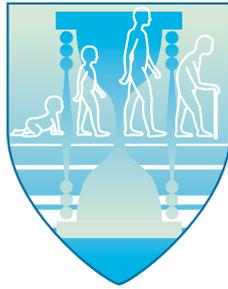
<http://square.umin.ac.jp/traf-ky/>

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 novel methods for the evaluation of platelet function
- Development of new anti-angiogenic strategies for the treatment of solid tumors
- Use of hematopoietic stem cells in regenerative medicine
- Investigation on the pathophysiology of the immunological adverse effects of transfusion
- Development of new anti-thrombotic materials for clinical use





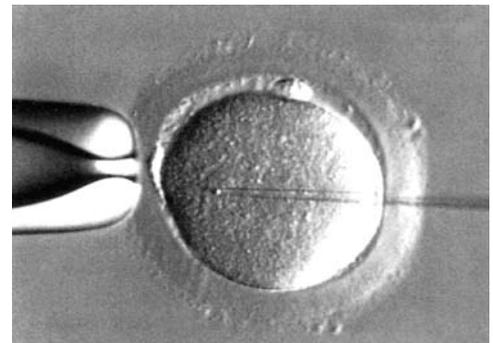
# Reproductive, Developmental and Aging Sciences

## Reproductive Endocrinology

<http://square.umin.ac.jp/kyobgyn/>

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
- 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 in perimenopausal / postmenopausal status
- Development of oncofertility



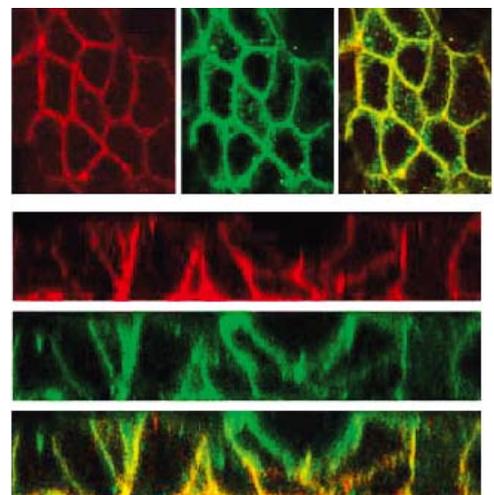
*ICSI (intracytoplasmic sperm injection)*

## Gynecologic Oncology

<http://square.umin.ac.jp/kyobgyn/>

Our basic research in cervical cancer focuses on carcinogenesis and roles of HPV (Human Papilloma Virus) infection, as well as development of therapeutic vaccines. In endometrial and ovarian cancers, we have identified novel cancer-related genes and their functions, and are exploring novel molecular-targeted therapies using oncogenomic analyses. Clinically, we are investigating intensive surgical management, as well as less invasive (fertility-sparing) surgery in gynecologic malignancies.

- Intensive surgery for advanced or recurrent tumors and less invasive (laparoscopic) surgery for selected patients
- Trachelectomy for early staged cervical cancer patients
- HPV genotyping and clinical trials of therapeutic vaccines for cervical intraepithelial neoplasias
- Identification of molecular-targeted therapies on basis of genomewide analyses
- Development of novel therapeutics using drug delivery system



*Expression of tumor suppressor scribble in malignant cells*

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

- Early diagnosis of abnormal fetuses using three dimensional ultrasonography
- Management of habitual abortion
- Management of complicated pregnancy
- Management of preterm labor
- Prevention of cerebral palsy of the newborn



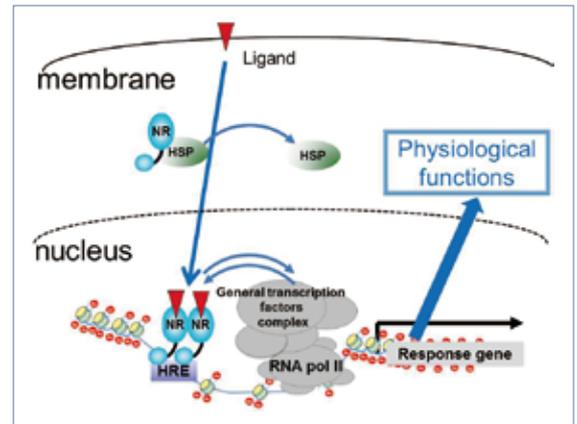
Three dimensional ultrasonography of fetus

## 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

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 and analysis and collaborative treatment of intractable renal glomerular and tubular diseases
- Molecular diagnosis and analyses of hematological malignancies 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
- Investigation of biotin and gut hormones in neonates
- Comprehensive analysis of biomarkers in neonatal diseases
- Cytokine expression and immunological SNP in neonatal 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
- Molecular analysis and collaborative treatment of congenital immunodeficiency and allergic diseases



## 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.

- The development and differentiation of the fetal lung
- Fetal diagnosis of congenital malformations
- Fetal surgery and treatment
- Pediatric minimally invasive surgery
- Pediatric robotic surgery
- Probiotics and prebiotics applied to pediatric surgical patients
- 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

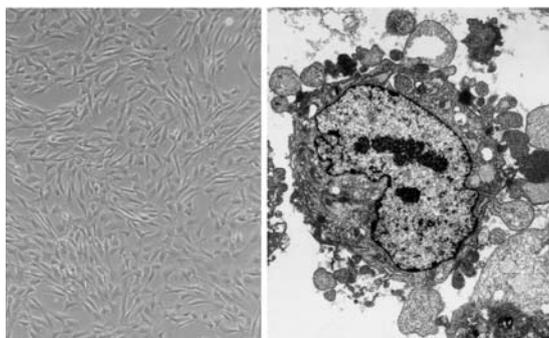


*EXIT(ex utero intrapartum treatment):Tracheostomy on a fetus with laryngeal atresia*

## Pediatric Oncology

Solid tumors in children are dealt with in our department. Appropriate care strategies combining surgical treatment and chemotherapy are decided and carried out on various malignant tumors after extremely close discussion with pediatric oncologists.

- Genetic analysis and investigations for prognostic factors in neuroblastoma
- Tumorigenesis in Wilms tumors
- Analysis of cellular biology in Wilms tumors
- Treatment of rhabdomyosarcoma
- Genetic mutation in hepatoblastoma



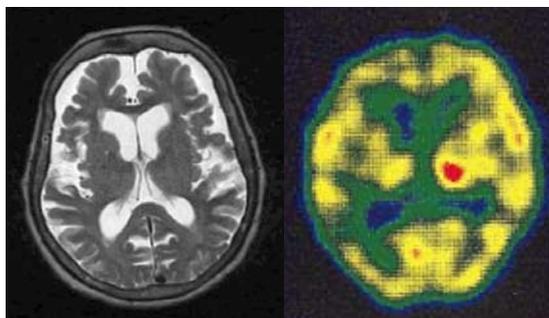
*Microscopic and ultramicroscopic features of Wilms tumor cell line*

## Geriatrics

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

Our department is the first established department of Geriatric Medicine in Japan. It is our goal to treat all the geriatric diseases, such as atherosclerosis, hyperlipidemia, osteoporosis, senile dementia, diabetes, COPD, and aspiration pneumonia, and to improve the quality of life of elderly patients.

- Vascular endothelial function and atherosclerosis
- Studies of molecular mechanisms in vascular calcification
- Antioxidants inhibit vascular smooth muscle cell proliferation and induce apoptosis
- Vascular gene therapy using adenoviral mediated gene transfer of estrogen receptors
- New guidelines for hormone replacement therapy in females in Japan
- Novel gene responsible for breast cancer
- Novel gene responsible for osteoporosis
- Molecular cloning of novel Ring finger protein
- Studies of pathophysiology and novel treatment for Alzheimer's disease
- Pathophysiological studies on bronchial asthma using gene-targeted mice
- The antimicrobial peptide, defensin
- The molecular mechanisms of vascular injury in sleep apnea syndrome





## Surgical Sciences

### Thoracic Surgery

<http://ctstokyo.umin.ne.jp/>

We specialize in surgical treatment for malignant neoplasms of the chest, such as primary lung cancer, pulmonary metastases, and mediastinal tumors. Patients with these diseases have been increasing recently in our country. We actively perform minimally invasive surgery through thoracoscopy for patients with comorbidities. We also perform extended surgery with extracorporeal circulation in collaboration with cardiac surgeons. In 2012 we performed chest surgery for approximately 300 patients in our institute. We also study on nonsurgical treatment for patients with postoperative recurrence of lung cancer or refractory malignant neoplasms, doing new clinical trials of immunotherapy. In response to increasing number of brain-death donor in our country, we are now establishing a lung transplantation program in our institute.

- Minimally invasive surgery for chest diseases
- Genetic studies on primary lung cancer
- Clinical or biological studies on thymic neoplasms
- Immunotherapy for lung neoplasms
- Basic studies on lung or tracheal transplantation

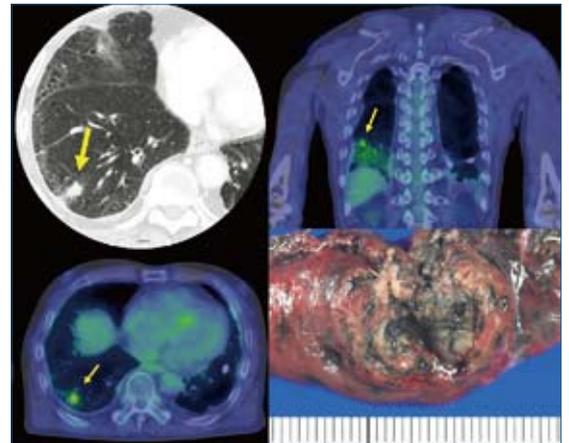


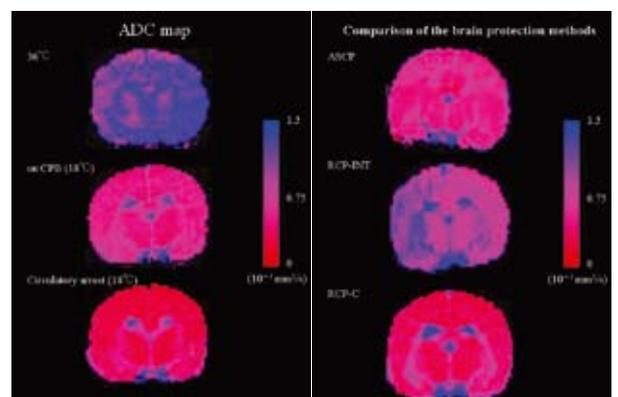
Figure: A case of lung cancer with interstitial pneumonia.  
 (left upper) High-resolution Computed Tomography  
 (left lower) Axial section of 18F-FDG-PET  
 (right upper) Frontal section of 18F-FDG-PET  
 (right lower) resected specimen

### Cardiovascular Surgery

<http://ctstokyo.umin.ne.jp/>

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
  - Brain and spinal cord protection in thoracic aortic surgery
  - Minimally invasive cardiac
  - Valve or vascular tissue allograft transplantation
  - Ventricular assist device for end-stage heart failure
- Basic and experimental research
  - Development of myocardial regeneration therapy
  - Analysis of resistance to infection of tissue allograft



MRI diffusion-weighted images of brain by various brain perfusion techniques

## Gastrointestinal Surgery

<http://todai3ge.umin.jp/>

Our goal is to cure the cancer patients by much better surgery. The development of better surgical methods has the highest priority. Better surgery means radicality of the cancer, minimal invasiveness, and good QOL after surgery. Recently, non-transthoracic radical esophagectomy with extended lymphadenectomy (NOVEL) has been applied, which shows less pulmonary complications and good respiratory functions after surgery (Figure).

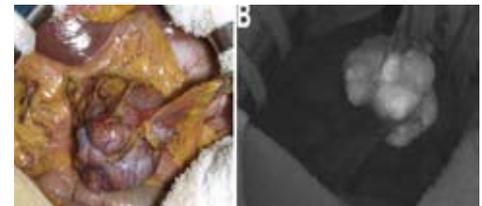


- For much better surgery
  - NOVEL (non-transthoracic esophageal cancer surgery)
  - NEWS (Non-exposed Endoscopic Wall-inversion Surgery for gastric tumor)
- For radicality of advanced cancer treatment
  - Phase II: S-1, CDDP, Herceptin combined chemotherapy for HER2-positive advanced gastric cancer
  - Chemo-Immunotherapy(DCF+ $\gamma\delta$ T) for advanced esophageal cancer
  - Adjuvant vaccination for Stage IIA esophageal cancer patients after surgery
- Carcinogenesis, progression, metastasis, and prevention
  - Inflammation and gastrointestinal carcinogenesis
  - Are cancer cells derived from bone marrow?
  - Early detection of cancer by new biomarkers
  - Carcinogenic analysis with reflux esophagitis model

## Hepatobiliary Pancreatic Surgery

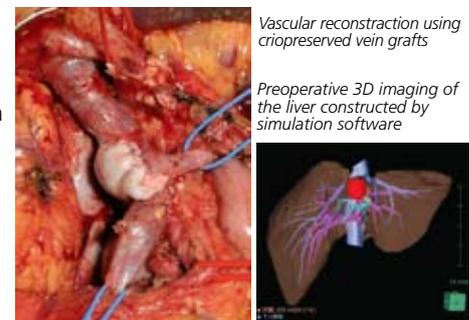
<http://www.h.u-tokyo.ac.jp/transplant/>

We constantly perform nearly 200 hepatectomies every year on patients with hepatobiliary malignancies including hepatocellular carcinoma and metastatic liver tumors. The surgical results can be classified as amongst the highest ranking in the world. 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.



ICG fluorescent imaging for detecting tumors

- The development of a radical and safe operative procedure for hepato-biliary malignancies
- 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
- Study of the effect of ischemic preconditioning on liver normothermic ischemia/reperfusion
- Study of intraoperative diagnosis (enhanced ultrasound and ICG fluorescent imaging)
- Clinical trials concerning adjuvant therapies after hepatic resection for hepatocellular carcinoma (HCC) or 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 reconstruction using criopreserved vein grafts
- Evaluation of the anti-adhesion materials



Vascular reconstruction using criopreserved vein grafts

Preoperative 3D imaging of the liver constructed by simulation software

## Urology

<http://www.h.u-tokyo.ac.jp/urology/>

We constantly perform more than 1,200 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.

- Virus therapy for prostate cancer (Fig.1)
- Genome analysis of renal cancer, renal pelvic cancer, ureteral cancer and testicular cancer (Fig.2)
- Bladder cancer therapy with a vaccine against NY antibody
- Dendritic cell therapy for metastatic renal cancer and bladder cancer
- Botulinum toxin injection 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

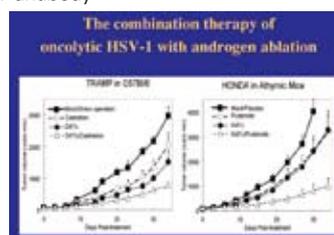


Fig.1 The combination therapy of oncolytic HSV-1 with androgen ablation led to significantly enhanced inhibition of the tumor growth.

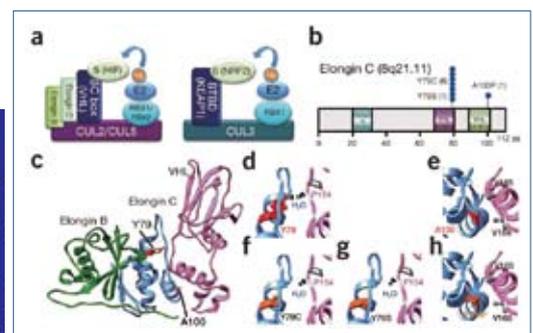


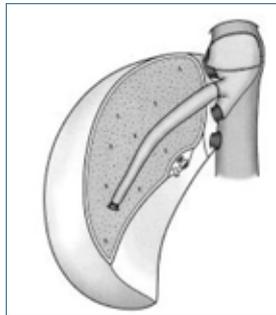
Fig.2 New TCEB1 mutations and HIF accumulation.

## Artificial Organ and Transplantation Division

<http://www.h.u-tokyo.ac.jp/transplant/>

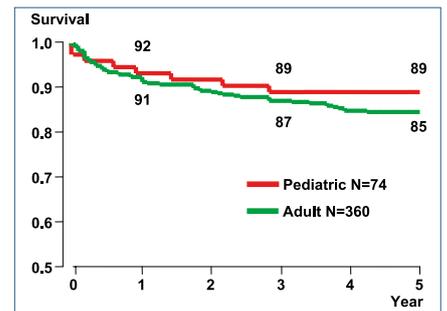
529 living donor liver transplantation and 18 deceased donor liver transplantation until June, 2013. The 5-year survival rate for adult case was 85%, which is significantly superior to that of the national data (70%).

- Surgical technique of liver transplantation: including right lateral sector graft, APOLT(Auxillary partial orthotopic liver transplantation)
- Hepatic vein reconstruction using criopreserved vein grafts
- Identification of veno-occlusive resions using ICG fluorescence imaging
- Antiviral treatment for hepatic 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 reconstruction using criopreserved vein grafts

Identification of veno-occlusive resions using ICG fluorescence imaging



Overall survivals after living donor liver trasplantation



## Surgical Oncology

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

We have performed basic and clinical research mainly on colorectal cancer. 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 surgergy (da Vinci), and preoperative chemoradiotherapy 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
- Genetic analyze of poorly differentiated colorectal cancer
- Development of chemoradioimmunotherapy
- Intraperitoneal chemotherapy for peritoneal carcinomatosis

Fig.1 Prediction of radio sensitivity with DNA microarray

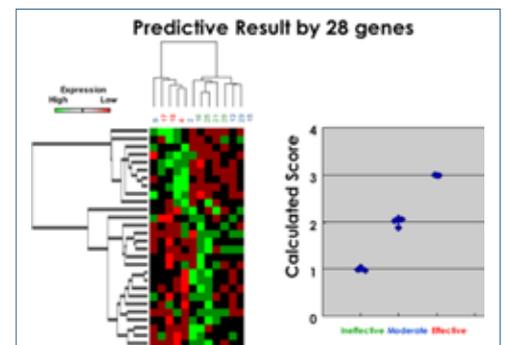
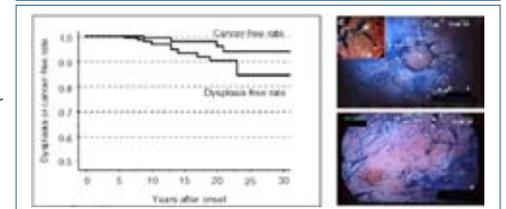


Fig.2 Incidece rate of cancer or dysplasia in patients with long-standing ulcerative colitis and surveillance with magnifying colonoscopy.



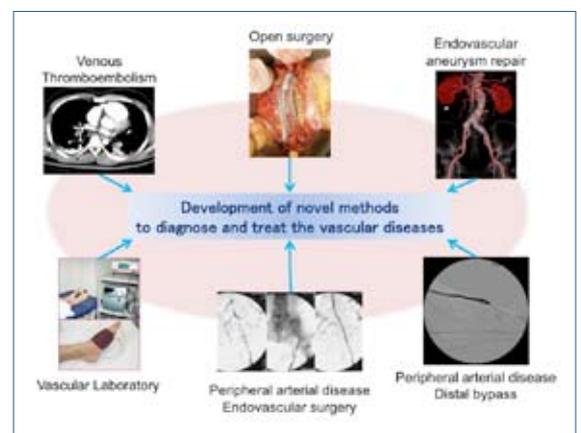
## Vascular Surgery

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

We had 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 vascular diseases.

- Vascular regeneration therapy for atherosclerotic obliterans
- 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



## Metabolic Care and Endocrine Surgery

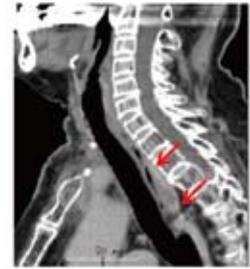
<http://todai3ge.umin.jp/>

Division of breast and endocrine surgery performs surgery for 300 cases of breast, thyroid and parathyroid tumors a year, and performs research on tumorigenesis, establishment of treatment and prevention of breast and thyroid cancers. We also performs several clinical trials concerning cancer chemotherapy.

- Detection of circulation tumor cells in breast and thyroid cancer patients
- Aberrant DNA methylation in human papillary thyroid cancer and its association with RAF/RAS oncogene mutation
- Development of a novel approach, the epigenome-based outlier approach, to identify tumor-suppressor genes silenced by aberrant DNA methylation
- A clinical effect of a new anti-cancer drug Eriburin for metastatic breast cancer
- Anti-cancer drug sensitivity test in breast cancer patients and clinical outcome
- Excision of ectopic parathyroid adenoma with intraoperative <sup>99m</sup>Tc sestamibi scanning



<sup>99m</sup>Tc sestamibi scintigram showing intense accumulation of the radioisotope in the left upper mediastinum



Computed tomographic scan showing an ectopic parathyroid adenoma posterior to the oesophagus



Intraoperative photograph showing radioisotope-guided navigation system with gamma probe and the ectopic parathyroid adenoma in the posterior superior mediastinum

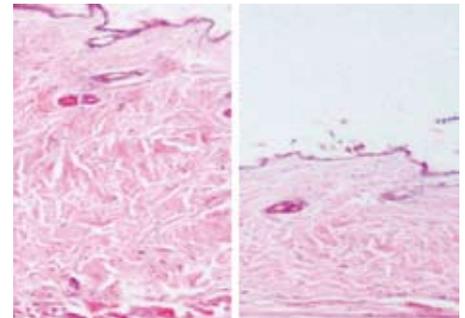


## Dermatology

<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

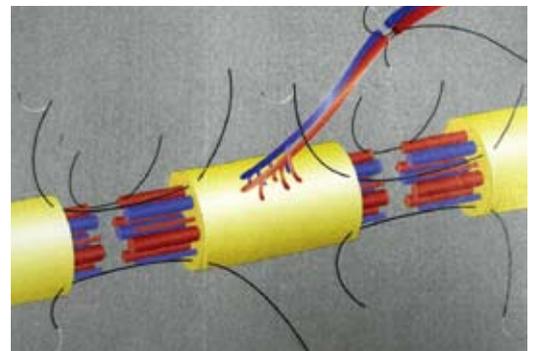


Skin fibrosis induced by bleomycin(left) is inhibited in CD19-deficient mice(right)

## Plastic and Reconstructive Surgery

In our lab, we are investigating the mechanisms of morphogenesis of congenital anomalies using a developmental biological approach. In addition, we are performing extensive research into the clinical application of engineered tissues such as skin, soft tissue, and cartilage. We also have several cosmesis-related projects such as clinical hair regrowth with cultured cells and analysis of skin aging mechanisms.

- Basic Research
  - Mesenchymal stem cells derived from lipoaspirates
  - Organ engineering with human adult stem cells
  - Hair regrowth with cultured dermal papilla cells
  - Research on aging skin-related factors
  - Regulation of skin aging using hormones and retinoids
  - Regulation of epidermis by factors derived from dermal fibroblasts
- Clinical Research
  - Ultramicrosurgical reconstruction using vascularized tissue transfers
  - Reconstructions for established nerve palsy
  - Esthetic microvascular surgery
  - Mechanism and surgical treatments of lymphedema
  - Vascularized ovarian preservation and transplantation
  - Free vascularized transfers of nerve cells, muscle cells, adiposal cells, and lymphnodes
  - Allogenic tissue transfer (uterus, ovary, anus etc.)
  - Training method for supermicrosurgical anastomosis



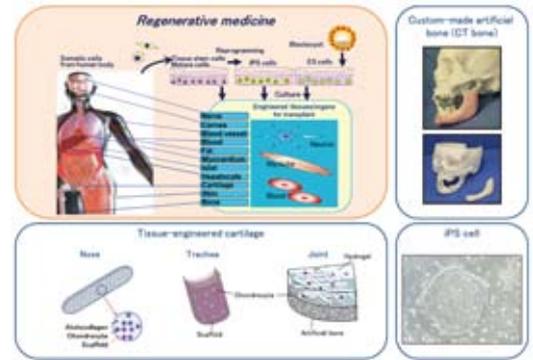
Supermicrosurgical vascularized nerve graft. 100% of Schwann cells within a nerve graft can survive with microvascular anastomosis(0.5mm).

## 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.



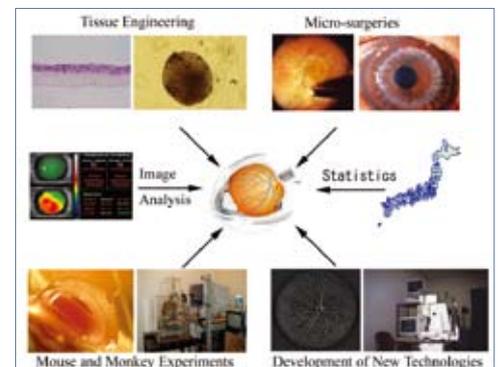
Surgical navigation system

- 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
- Non-invasive analyzing system to evaluate the mechanical properties of skeletal system *in vivo* using CT based finite element analyses
- Surgical navigation system with a three-dimensional display and navigation robot

## Ophthalmology

<http://plaza.umin.ac.jp/oph/>

Our department applies cutting-edge technologies and knowledge to diagnosis and treatment of eye diseases. To elucidate pathogenesis and establish more efficient ways of diagnosis and treatment of various refractory eye diseases, basic researches utilizing molecular biological, immunological and/or pharmacological techniques and clinical studies utilizing epidemiological, biostatistical and/or optical methods are conducted. Our efforts are also dedicated to regenerative medicine of the cornea and retina.



- Investigation of primary glaucomas and relating factors
- Development of new methods of glaucoma treatment and validation by RCT
- Investigation of new ocular hypotensive drugs and their mechanism of action by using transgenic or KO mice or experimental glaucoma monkeys
- Investigation of mechanism of neural cell death by using cultured RGCs or retinal glial cells and exploratory search for new neuroprotective agents
- Analysis of ocular circulation in glaucoma and retinal diseases
- Analysis of corneal topography and wave-front analysis of optical aberrations
- Development of tissue-engineered cornea by using cultured stem cells of corneal endothelium and epithelium
- Investigation of molecular mechanism of choroid-retinal neovascularization and new drug delivery system for it utilizing nanotechnology
- Regenerative medicine of the retina using retinal stem cells
- Investigation of immune responses in rejection of transplanted cornea and role of chemokines and receptors in uveitis

## Otorhinolaryngology and Head & Neck Surgery

<http://www.h.u-tokyo.ac.jp/orl/>

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.



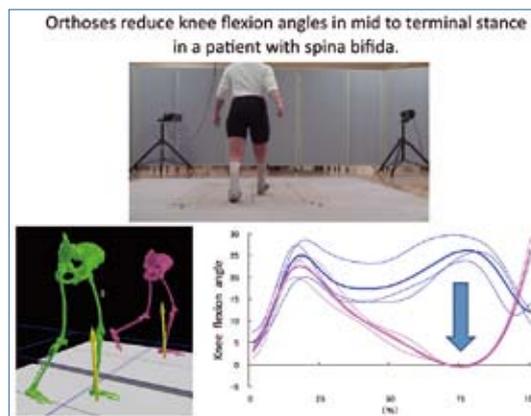
Cochlear implant

- Clinical research
- Cochlear implantation in deaf children and their development of hearing, speech and language
- Surgical correction of congenital 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
- Navigation of the paranasal sinuses and skull base surgery
- Surgical treatment of voice and swallowing disorders
- 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
- Physiology of vocal cord vibration

## 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
  - 3-dimensional image analysis with a infrared camera system
  - Measurements of 3 dimensional ground reaction forces with a force platform
  - Measurements of foot pressures with a computerised pressure sensor
- Clinical research on intractable rare diseases
  - Fibrodysplasia Ossificans Progressiva
  - Congenital Insensitivity to Pain
- Clinical research on congenital limb malformations
- Research on the effect of physical therapy in locomotive syndrome



Gait analysis

## 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.

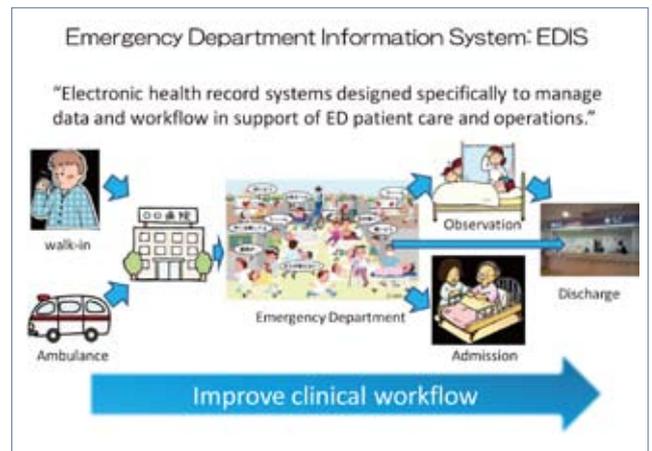
- Respiratory system: A role of cytokine signaling in acute lung injury; Exploring optimal ventilatory strategy for respiratory failure
- Immune systems: Modification of immune system by anesthesia; Signal transduction pathway related to apoptosis induced by sepsis or ischemia-reperfusion injury
- Shock: 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; Development and assessment of the system for treating waste anesthetic gases
- Glucose metabolism: Effect of anesthetics on glucose metabolism *in vivo*
- Epidemiological survey and outcome study with large administrative database.

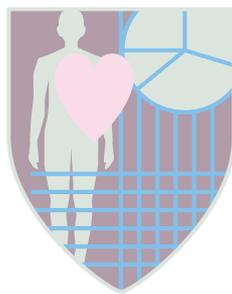


Anesthesia and monitors

We are developing emergency department information systems designed specifically for use in emergency departments. This systems will increase the efficiency of emergency medical care, leading to an accumulation of knowledge and an advancement of epidemiological research in Japan. Furthermore, we are collaborating with the School of Engineering, and now developing new medical device and monitoring system.

- Emergency Department Information Systems
- Vital Care Network System
- Telemonitoring system for prehospital medicine
- High-performance transfer system for the ambulances





## Health Sciences and Nursing

### Mental Health / Psychiatric Nursing

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
  - Psychoeducation/Stress management
  - Disaster and mental health
  - Global mental health
  - Practice and Evaluation of Psychotherapy
  - Early detection and therapeutic education of Pervasive Developmental Disorders
- Psychiatric Nursing
  - Supporting people living with mental health problems
  - Wellness self-management in mental health
  - Recovery for people with mental illness
  - Patients' satisfaction with psychiatric services



### Biostatistics / Epidemiology and Preventive Health Sciences

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

Biostatistics and epidemiology provide the methodological basis for health sciences. We are conducting basic methodological research of biostatistics and theoretical epidemiology as well as consultation works and collaborative projects with basic/clinical researchers. The NPO "Japan Clinical Research Support Unit" established by the staff of the department is supporting investigator-initiated clinical trials and large-scale epidemiological studies in respect of data management, statistics and quality assurance.

- Methodological research
  - Design of clinical trials
  - Analysis of correlated data and longitudinal data such as QOL data, multiple recurrence (events) data
  - Causal inference
- Collaborative projects
  - Japan Arteriosclerosis Longitudinal Study
  - Comprehensive Support Project for Oncology Research- Breast Cancer
  - Comprehensive Support Project for Adequate Treatment of Osteoporosis
  - Other investigator-initiated clinical trials



Our research programs aim to support clinical nurses in providing high quality care for their patients in efficient way. Under a nation-wide healthcare reform, improving the efficiency of healthcare delivery systems becomes essential. For nursing care, assessing the efficacy and the putting in place of quality assurance systems are required. Applying management theories to nursing administration, we focus on nursing quality improvement, nurse staffing, patient classification systems, budgetary management, staff development and continuing education.



Promoting quality nursing care

- Evaluation and improvement of quality of nursing care
- Benchmarking of nursing quality indicators
- Outcome management for nursing practice
- Risk management
- Human resources management
- Nursing case management and critical pathways
- Effect of care environment on patients
- International comparison of nursing quality indicators
- Nursing policy and economics

## Family Nursing

Hand-in-hand with the changes occurring in society, such as declining birthrate and a growing proportion of elderly people, vulnerability of regional network, and gender-equal society, the conformation and the function of the family are also changing. Current Japanese society expects not only client-centered perspective but also a perspective to refer family as 'client' in the nursing research. We are especially performing research on childrearing issues and caring for child with illness.

- Postnatal depression and difficulties in childrearing.
- Prevention of child abuse and neglect.
- Development of Pediatric QOL Inventory for child with chronic illness and their parents.
- Late effect of treatment and posttraumatic stress symptoms in children with cancer.
- The role and expertise of the nursing staffs in daycare centers.
- Primary caregivers' burden of the severely disabled children and the utilization of the respite care.
- Care for dying patients and their families (QOL, family function).



## Community Health Nursing

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/ mental health/ elderly's health
- Community health nursing for disaster prevention and recovery
- Skills of public health nurses



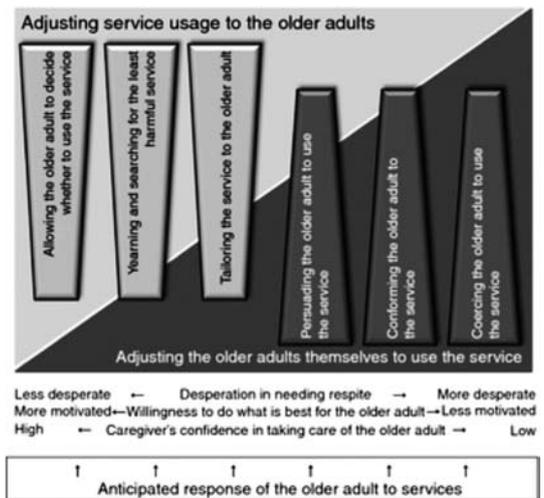
Research of community health nursing

## Adult Health Nursing/ Palliative Care Nursing

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

Our research activities are targeted at quality assurance/improvement of nursing care of those with chronic conditions, older adults as well as their family members. 1) Developing theoretical frameworks that guide nursing care by explaining the nature of illness/aging experience and experience of taking care of others. Focusing on chronic conditions such as dementia, cancer, pain or end-of-life, we aim at advancing knowledge grounded at nursing activities in Japan. 2) Developing quality improvement systems for nursing/healthcare in long-term care facilities, outpatients, and home healthcare. We focus on care of such conditions as pain, dementia, or stem-cell transplantation, as well as families.

- Developing quality indicators for gerontological homecare nursing
- Developing IT-based nursing care/educational programs
- Inter-professional collaboration for home end-of-life care
- Outpatient nursing care for clients with hematopoietic stem cell transplantation
- Quality assurance/improvement of care in the long-term care system
- Homecare nursing for those with dementia and their family
- Developing a community care system and nursing role
- Nursing care to improve QOL of persons with cancer



Family caregiver strategies to encourage older relatives with dementia to use social services

## Midwifery and Women's Health

<http://park.itc.u-tokyo.ac.jp/midwifery/index-e.html>

The physical and mental changes that occur during the perinatal period have a critical influence on women's health for their entire lives, including the child-rearing years, menopause, and old age. In addition, the influence extends to their children, family, and community. Specifically, our department focuses on the health of mothers and babies in the perinatal period, and mainly performs research in the following areas.

- Lifestyle in the perinatal period
  - Effects of prenatal lifestyle modifications on oxidative stress as biomarkers
  - Effects of exercise (yoga) during pregnancy on physical and mental well-being
  - Development of intervention methodology for improving dietary and weight management during pregnancy and postpartum
  - Health support for working women in the prenatal period and the child-rearing period
- Mental health in the perinatal period
  - Effects of fear of childbirth on physical and mental well-being among prenatal and postnatal women
- Identification of health problems in the perinatal period
  - Physical and mental conditions of pregnant women suffering from intimate partner violence
  - Prevalence of dysfunction of the pelvic floor muscles in the postpartum period and the identification of risk factors
  - Usage of maternal and child health handbooks in Mongolia
  - Relationship between the skin barrier function of infants and skin lesions
  - Disaster management in perinatal care



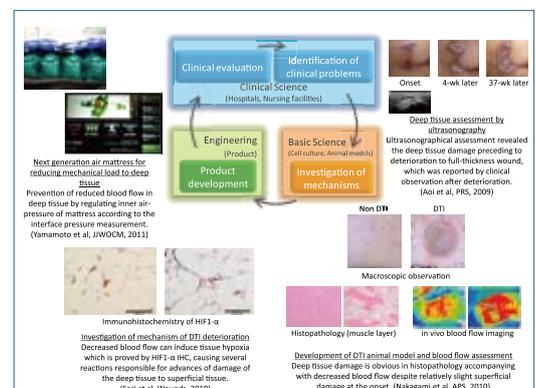
Photo by Sakae Kikuchi

## Gerontological Nursing / Wound Care Management

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



Example of Bioengineering Nursing research in our department. –Investigation of mechanism for deep tissue injury and its effective management strategy–

## Health Sciences and Nursing

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

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

**Health Promotion Science** *See* **Health Promotion Sciences**(p51)

**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>

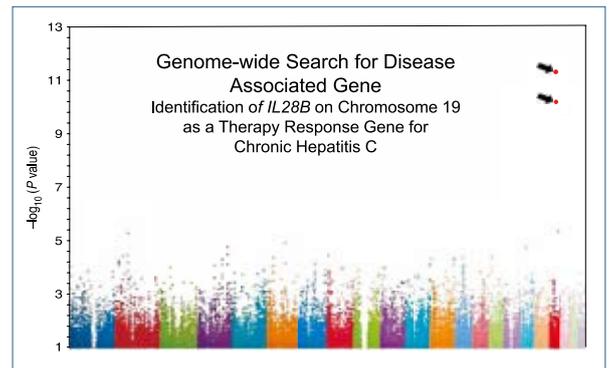
Our department acts for health and wellbeing of socially vulnerable people. Health itself is not necessarily our ultimate goal. How an individual can dream and reach her/his ultimate goal in life by making the best use of his/her health? This is more critical. We study and teach how it can be done in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

- Health and wellbeing
- Health and sustainable development
- Health promotion
- Ecology and infectious disease control



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 and microsatellite 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
- Development of new methodologies for genomic polymorphism
- 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
  - Abnormal neuronal differentiation and size control (tuberous sclerosis)
  - Neuronal migration disorders (lissencephaly, polymicrogyria)
  - Perinatal brain injury (periventricular leukomalacia)
  - Postnatal brain injury (acute encephalopathy)
  - Inherited metabolic disorders (peroxisomal and mitochondrial disorders)
- Molecular epidemiology of infectious diseases (diarrheal viruses)
- Field studies of maternal and child health (malnutrition, obesity)



*Inhibition of doublecortin expression by shRNA reduces the distance of neuronal migration from the ventricular zone to cortical plate.*

## Human Ecology

Ecological understanding of health and survival of contemporary human populations through the analyses of nutritional, demographic, and environmental aspects of each population is our primary goal. Both fieldworks on various Asia-Oceania populations as well as experimental studies dealing with nutrition and environmental chemicals are conducted, which would serve as the basis in challenging the International Health issues.

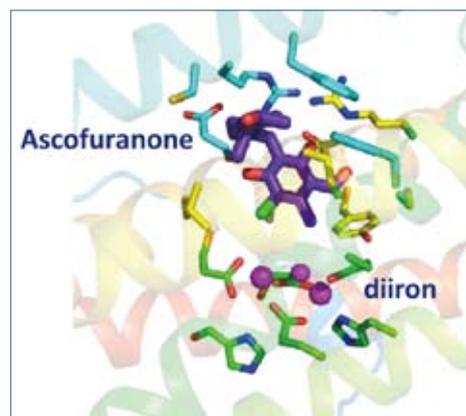
- Mechanistic analyses of the effect of subsistence transitions on the health and environment in rural and urban communities in developing countries
- Application of GPS, GIS, and remote sensing to health ecology and international health
- Exposure-effects evaluation of chemical pollution of watershed in rural Indonesian children
- Nutritional ecology, subsistence ecology, medical anthropology and biological demography in Asia-Oceania populations
- Development effects of perinatal exposures to heavy metals, pesticides, or endocrine disrupting chemicals
- Modulating effects of nutrients and nutritional status on environmental hazardous chemicals
- Sustainable society and health



## Biomedical Chemistry

The aim of our department is to contribute to the overall global health and welfare through basic research. Our current interests are: the energy metabolism of humans, parasites, and bacteria; and RNA and RNA-binding proteins.

- Human succinate dehydrogenase complex and mitochondrial myopathy
- *Ascaris suum* and *Caenorhabditis elegans*
- Molecular mechanism of adaptation to low oxygen tension
- Mitochondrial quinol-fumarate reductase
- *C. elegans* as a model system of parasitic nematodes and ageing
- Malaria and Trypanosome: characterization of mitochondria as a target for chemotherapy
- *Escherichia coli* and *Mycobacterium*: respiratory enzymes and regulation of energy supply
- RNA and RNA-binding proteins
- Mitochondrial translation system
- RNA biogenesis of Eukarya and Archaea



Structure of cyanide insensitive alternative oxidase, which is a promising target of anti-sleeping sickness, with drug candidate ascofuranone. This is a first report on the membrane-bound diiron proteins.



## 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.

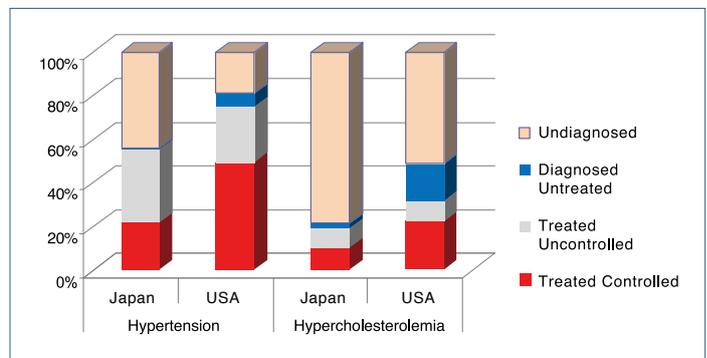
- Methodological studies on dietary assessments
- Nutritional epidemiologic studies on nutrient intakes/ dietary behaviors and health status
- Studies on development of dietary promotion methods and evaluation of their effectiveness
- Establishment of literature database for "epidemiologic studies on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



### Health Economics and Epidemiology Research

The department purports to help students become a health service practitioner with a sound theoretical and scientific ground underscored by quantitative methods of epidemiology and economics. The department will also contribute to the society through conducting empirical assessment of health practice and policy on the themes such as;

- Economic assessment of medical technology
- Clinical evaluation through patient-derived outcome
- Standardization and management of quality of care
- Health policy assessment
- Health impact of socio-economic policy



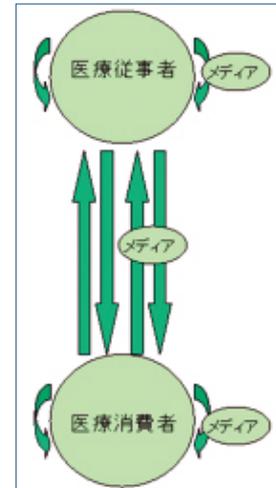
Comparison of quality of primary care; Japan vs. U.S. Hashimoto, et al. Lancet 2011

## 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, and prevention of mental disorders and suicide. 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
- Positive mental health and well-being
- Stress management
- 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 ill and their health



## Health Promotion Sciences

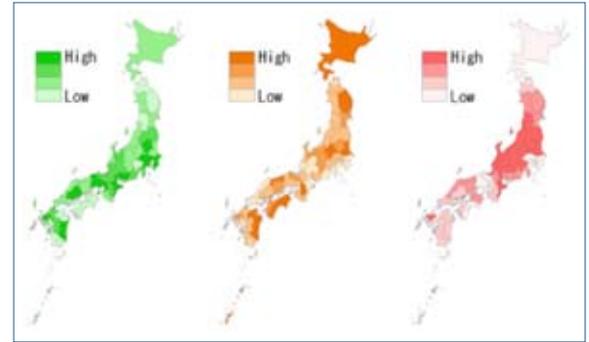
<http://www.ethps.m.u-tokyo.ac.jp/>

The department aims to develop scientifically effective and useful health promotion activities and systems to prevent lifestyle-related diseases, and to contribute to society, conducts research and education concerning the methods of planning, implementation and evaluation for various health promotion activities.

Specific research topics include:

- Development of effective health promotion programs in communities, worksites, and schools
- Assessment of the supportive environments for health behaviors
- Evaluation of the supporting methods for health behaviors
- Short- and long-term effects of behavior change
- Social and physical environments that influence health behavior and health status

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



Average number of walking steps (over 20 years old male)

Prevalence of obesity (over 20 years old male)

The number of owned private cars (per household)

## 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.cbhel.jp/>)

- 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



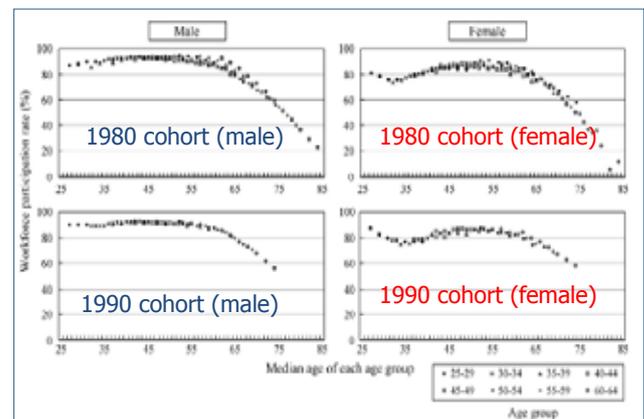
Outreach Program: CBEL provides training courses for ethics committee members. Participants include physicians, nurses and medical pharmaceutical representatives.

## 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.

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



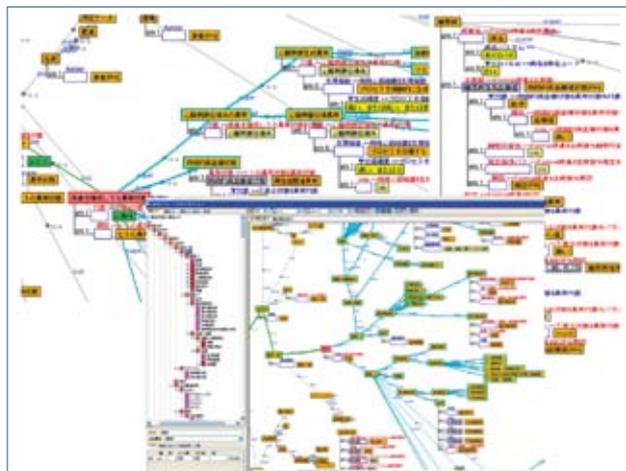
Physician workforce participation rate by age and gender in Japan

## Healthcare Informatics

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

The department conducts the practical education and research on various issues about design, development and implementation of healthcare information systems as well as electronic health record systems. These issues cover broad range of topics regarding healthcare informatics as follows: basic infrastructure of healthcare information systems and roles there, organizational theories, information management and its ethics and standardization. Solutions of various problems for promoting ICT in clinical fields are also targeted. Since both the education-research section and the practical management section in the department are organized as a single unit, students can benefit from education in many ways in the environment of practical system management field.

- Integration and big-data analysis of healthcare database
- Medical knowledge extraction using natural language processing
- Development of clinical ontology
- Development of real-time monitoring for patient safety



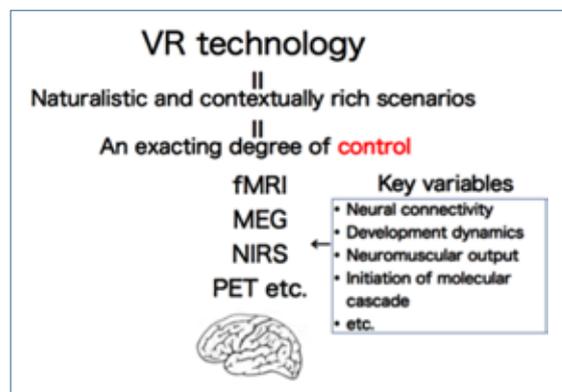
*Integrating multi-institutional healthcare data and medical ontology*

## Clinical Information Engineering

<http://home.cie.m.u-tokyo.ac.jp:8080/ciemutk>

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.

- CDecM: Clinical Decision Making (PEC model)
- ClinBi: Clinical Bioinformatics: Data Mining & Knowledge Discovery in Database
- ClinVR: Clinical Interactive 3D Computer Graphics & Virtual reality
- PHI: Social information engineering for Public Health (Public Health Informatics: GIS for Health Science etc.)



*A methodology of neuroscience using virtual reality*

## School of Public Health

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

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

**Forensic Medicine and Medical Law** See **Forensic Medicine**(p27)



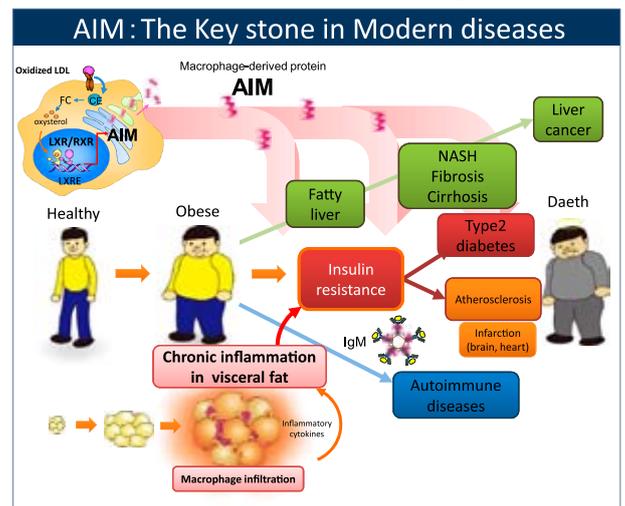
## Center for Disease Biology and Integrative Medicine

### Molecular Biomedicine for Pathogenesis

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

Our laboratory focuses on clarification of the pathogenesis of various diseases and the related physiological machineries in cellular and molecular aspects. Based on our technical advantage in gene manipulation via gene knockout and transgenesis, we give high priorities to *in vitro* analyses. Our overall goal is to apply our findings to develop a fundamental therapy against diseases via AIM (Apoptosis Inhibitor of Macrophage).

- Roles of AIM molecule in pathogenesis of metabolic disorders including obesity, diabetes, and atherosclerosis
- Involvements and roles of AIM molecule in diseases other than metabolic disorders, such as infertility, autoimmunity, and cancer
- Development of the direct therapeutic application of our findings

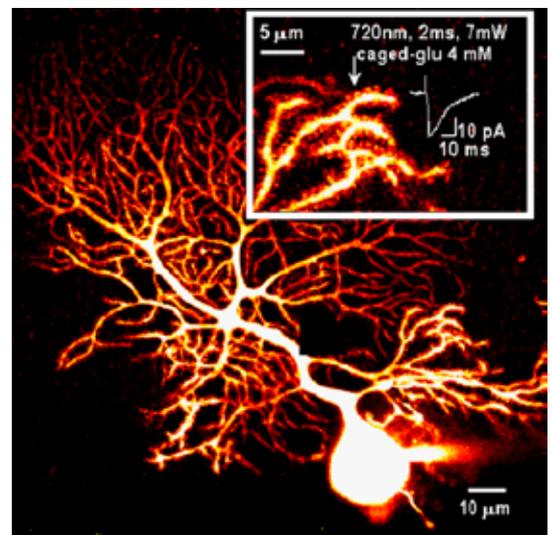


### Structual Physiology

<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*

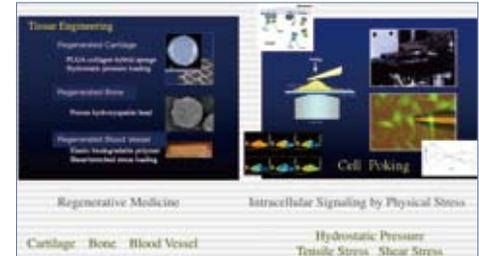
## Regenerative Medical Engineering

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

We aim to create a basic methodology for tissue engineering by integrating engineering sciences such as mechanical, material, and chemical system engineering into basic and clinical medicine. Especially for the regeneration of bones, cartilages, and blood vessels, we focus on cellular response to physical stimulations, which can be utilized instead of growth factors and cytokines. In addition, fabrication of new biomaterials is important. 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.

- Development of new polymeric and inorganic biomaterials for regenerative medicine
- *In vitro* regeneration of cartilages, bones, and small blood vessels
- Mechanism of cellular response to physical stimulations
- Fabrication of new biocompatible hydrogels
- Development of anti-peritoneal adhesion barrier and drug delivery system for peritoneal diseases
- Development of artificial pancreatic islet by a microcapsulation technique, and development of artificial red blood cells by a membrane emulsification technique

Ushida Lab



Ito Lab



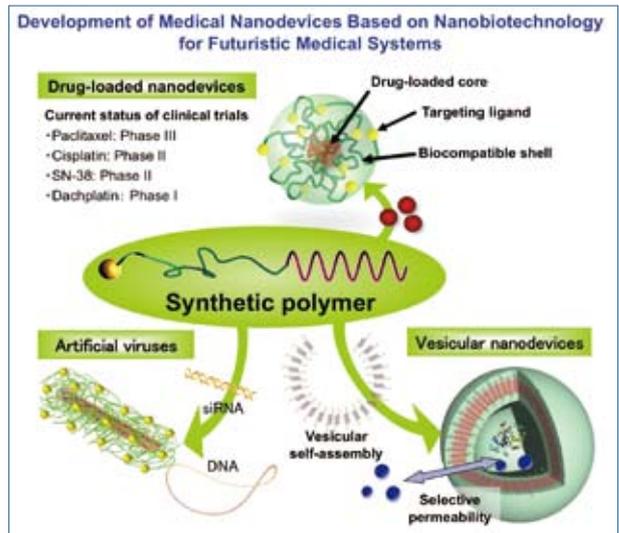
<http://www.bmw.t.u-tokyo.ac.jp/english/index.html>

<http://www.cdbim.m.u-tokyo.ac.jp/english/research/04.php>

## Clinical Biotechnology

"Medical nanodevices", which are constructed by integrating medical materials and systems, hold promise for the futuristic medical system that can serve the needed function at the right time and the right place with minimal invasiveness. Our division wishes to produce innovative medical nanodevices based on nanobiotechnology, and further, to spread the idea of "Nanomedicine" intranationally and internationally.

- Construction of multifunctional nanodevices based on self-assemblies of synthetic polymers
- Targeted cancer therapy with anticancer drug-loaded nanodevices
- Study on the packaging mechanism of plasmid DNA with block cationomers for creation of artificial viruses
- Development and applications of polyion complex-based vesicular nanodevices

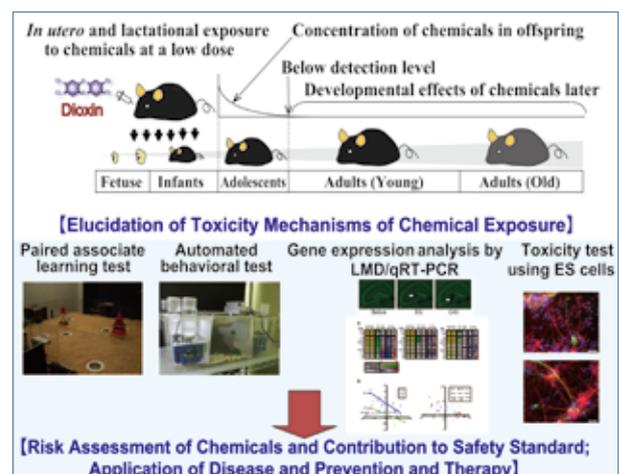


<http://env-health.m.u-tokyo.ac.jp/english.html>

## Environmental Health Sciences

Children's health problems of today include such conditions as disorders in the reproductive and immune functions, learning deficits, mental problem and metabolic syndrome. Our research is carried out on the recognition that the homeostasis is disrupted by various environmentally hazardous chemicals, to which expectant mothers and their newborn babies are exposed during their highly sensitive period of life, and that the contamination with these chemicals may lead to various disease conditions in children after birth. Our experimental investigations are focused on the following themes.

- Elucidation of mechanisms involved in the manifestation of toxicity at the molecular and cellular level due to exposure to environmental pollutants, such as dioxin/PCBs and heavy metals
- Clarification of epigenetic mechanisms that alter susceptibility to environmental chemicals
- Development of methodologies for evaluating the toxicity of chemicals to the learning and emotion of rodents and of *in vitro* toxicity techniques at the molecular and cellular levels
- Development and application of techniques and methodology for evaluating risks of toxic substances in formulating safety standard for the environment and food



## 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



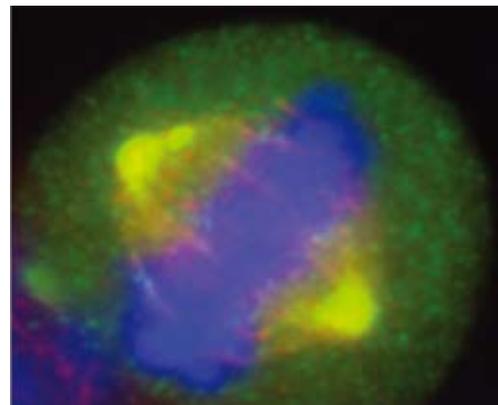
*A mutant mouse lacking metabotropic glutamate receptor subtype-1 (mGluR1)*

## Molecular Radiology / Research Resources and Support-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*

## Research Resources and Support-Bioinformatics

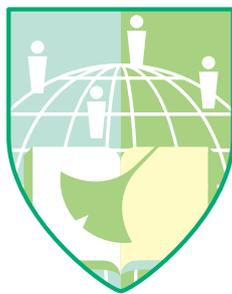
<http://www.cdbim.m.u-tokyo.ac.jp/english/index.html>

Targeting biomedical research support using information technologies, the division performs management of the research network and the central servers of the Graduate School of Medicine, and researches on knowledge infrastructure and processing techniques (e.g. information model, ontology, natural language processing, machine reasoning, etc.) and their application to clinical practice.

- Biomedical research support using network system
- Medical terminologies and ontologies
- Standardization of healthcare information and information models
- Natural language processing and its application to the medical domain
- Machine reasoning and clinical decision support systems



*Computer System for Biomedical Research*



## The International Research Center for Medical Education

### Department of Medical Education Studies

Faculty and staff in this department do research on a wide range of topics in undergraduate and postgraduate medical education. One goal is to move this field of inquiry forward by putting into practice the information obtained from action-oriented research done with full appreciation of the trends in international research on medical education. This department also makes important contributions to undergraduate and postgraduate medical curricula, in ways that promote the development of research-minded and clinically skilled medical practitioners who can meet and exceed the highest international standards and can become global leaders.



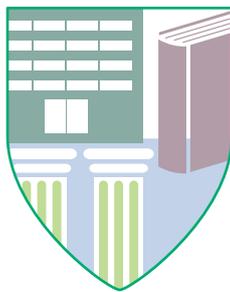
*Lecture by Prof. Kitamura*

### International Cooperation for Medical Education

This department is to aim at participating international cooperation projects in medical education area and conducting practical research and development through activities mainly in Asian countries. Furthermore the department domestically and internationally collects information and expands human exchanges regarding international cooperation in medical education area, and supports projects related to medical education.



*PBL class in Kabul Medical University, Afghanistan*



## 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 Library

<http://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) : 289,766 (Japanese 115,929 Foreign 173,837)
  - Periodicals(number of titles) : 5,208 (Japanese 3,021 Foreign 2,187)
- Visitors: 74,905
- Borrowed Books: 11,361



---

## Medical Scientist Training Program

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

Medical Scientist Training Program was launched in 2008, aiming that medical students have the opportunity to experience basic medical research in their early years and learn the attitude as a researcher. Students taking this program will attend activities such as journal club, medical English course, an assignment to the lab, and FQ, during their free time in addition to their usual curriculum. 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.



---

## Museum of Health and Medicine

Museum of Health and Medicine was planned as part of commemorative projects to celebrate the 150th anniversary of the founding of the School and the University of Tokyo Hospital, and was opened on January 20, 2011. The first permanent exhibition was a display of medical archives and instruments from the early Meiji era, Ishihara's Color Blind Test Charts and a gastroscope developed at the University. Special exhibitions are planned to promote understanding among the public regarding advances in medical science and health care. Following the first special exhibition is related to the beginnings of the School and the Hospital, entitled "the Challenge to Infectious Diseases", four special exhibitions which introduced blood vessel, cancer, brain, locomotive syndrome were held. We will hold two special exhibitions every year and special events for our visitors.

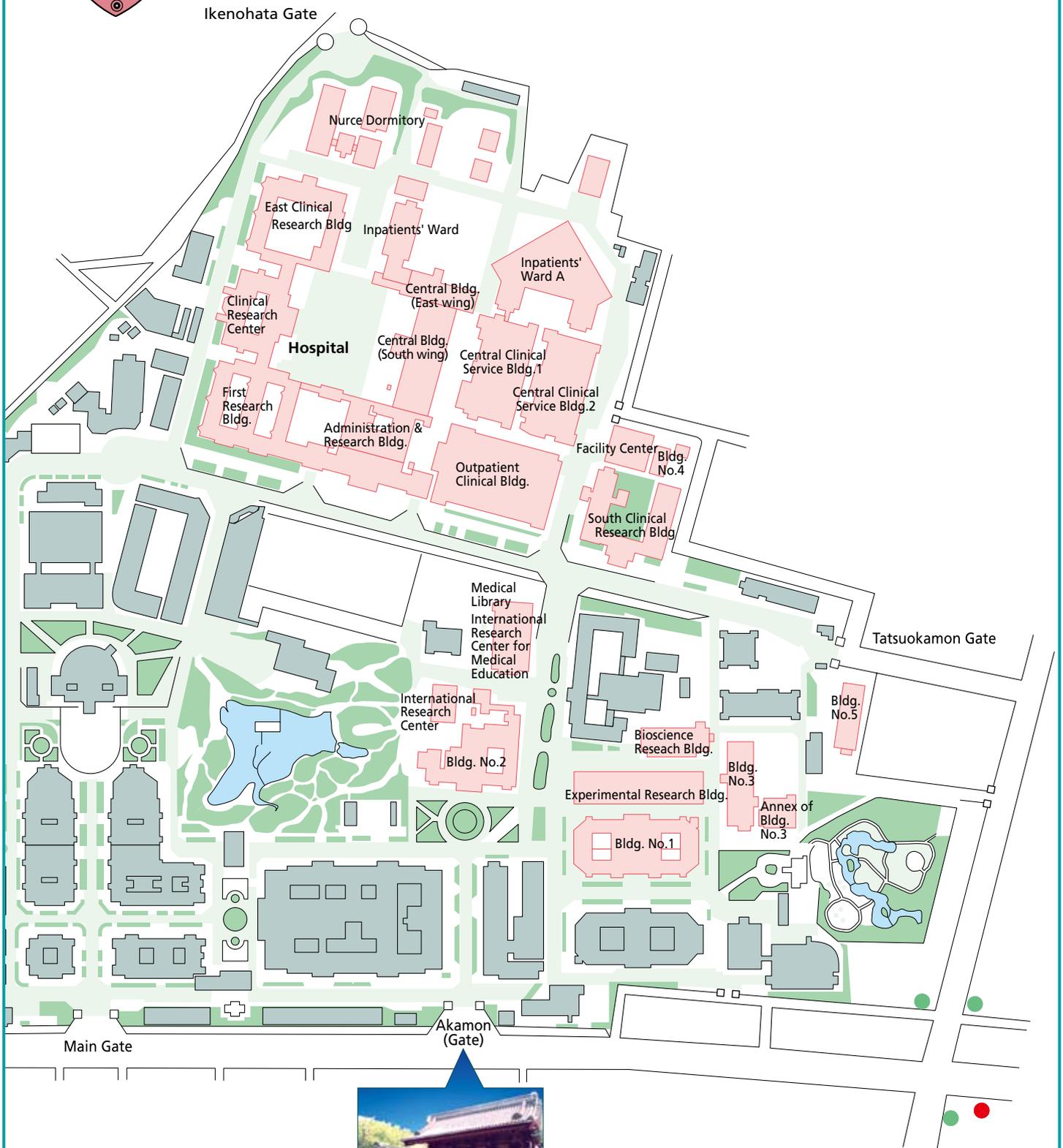
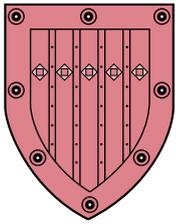


---

## Office for Research Ethics Support

The Office for Research Ethics Support (ORES) aims to protect the rights, health, and dignity of research participants. Based on this principle, ORES 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.

# Graduate School of Medicine Faculty of Medicine The University of Tokyo



Hongo-sanchoe Stn.  
on Subway Line  
● : Marunouchi Line  
● : Oh-edo Line



Kohei Miyazono  
Dean, Faculty of Medicine, Graduate School of Medicine  
The University of Tokyo  
Address: 7-3-1, Hongo, Bunkyo-ku, Tokyo, 113-0033, Japan  
<http://www.m.u-tokyo.ac.jp>

Issued on Sept. 1, 2013





The University of Tokyo

