

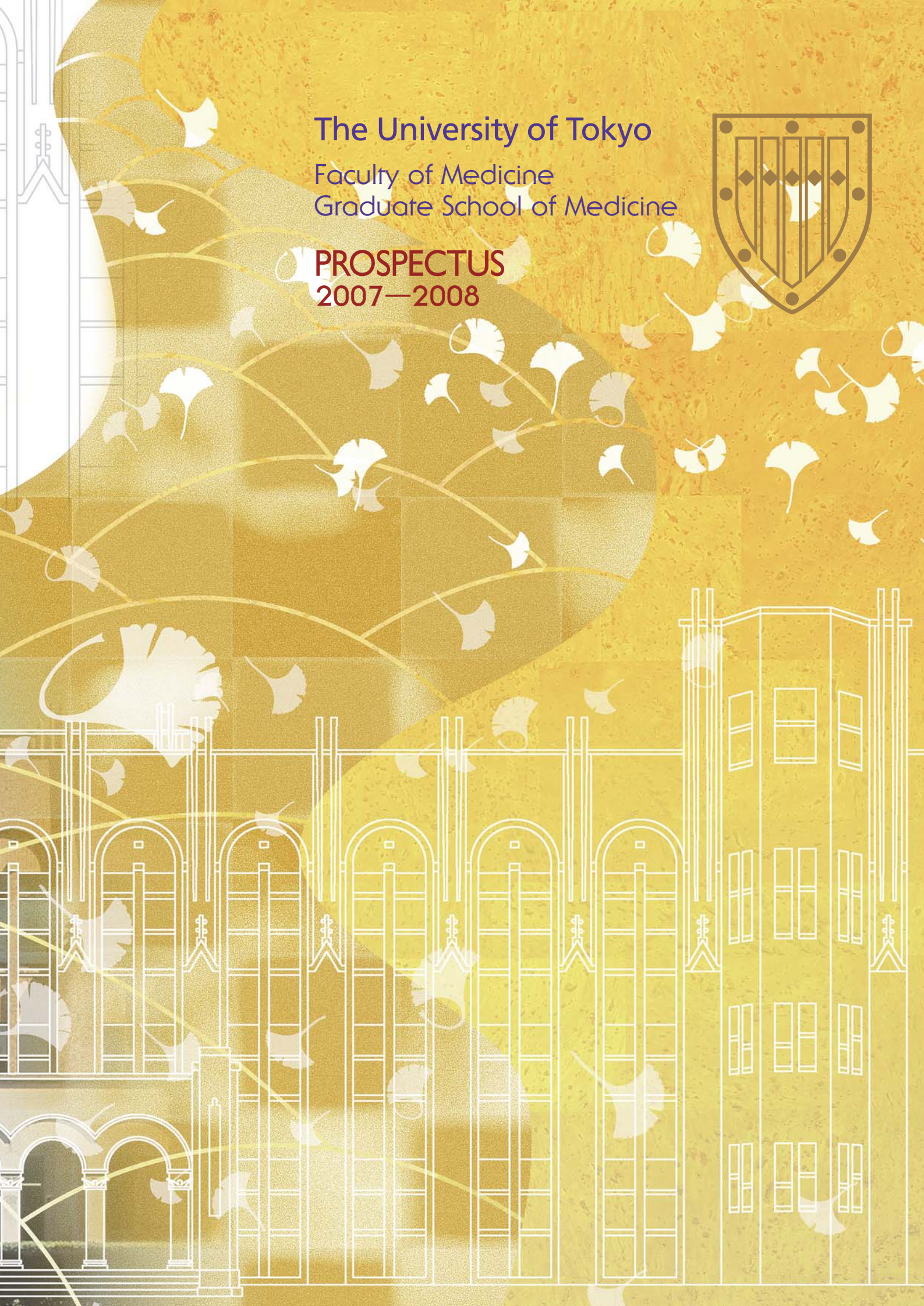
The University of Tokyo

Faculty of Medicine

Graduate School of Medicine



PROSPECTUS
2007—2008





Welcome to Faculty of Medicine, Graduate School of Medicine The University of Tokyo

The Faculty of Medicine and the Graduate School of Medicine focus on education and research in medicine, nursing, and health sciences, to train future international leaders in these fields. Having its roots in a vaccination facility established in 1858, our medical school has the longest history of any in Japan. Each year, the Faculty of Medicine admits about 100 new students and the School of Health Sciences and Nursing admits about 40. As many as 200 new graduate students enroll each year in Master's and Doctoral programs in the Graduate School of Medicine, and a new graduate-level School of Public Health was established in 2007.

Entering the 21st century, we are well aware of the challenges posed by rapid developments in the life sciences, and by the importance of nursing, public health, health sciences, and environmental medicine to Japan's mature population. To meet the need for internationally active educators and researchers in this variety of fields, and to stay at the forefront of new knowledge, we build institutions that are flexible and dynamic. One example is our Center for Disease Biology and Integrative Medicine, established in 2003, which nurtures developments at the interface of Engineering and Medicine. Our physical infrastructure has been also strengthened by the recent completion of new university hospital buildings and new laboratory facilities for biomedical research.

Promoting transdisciplinary approaches to the most modern medical education and research, we continue pursuing knowledge of the human body in health and disease, diagnosis and therapeutics, nursing and long-term care, preventive medicine, and health-care services; and we make the fruits of our efforts available to benefit society.

While extending modern medicine's greatest achievements, our goal is always to foster the talent needed to take on the challenges posed by the future of medical science and health care.



Takao Shimizu

Takao Shimizu
Dean, Faculty of Medicine,
Graduate School of Medicine
The University of Tokyo



HISTORY

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

1961	Mar.	The Medical Library was built in commemoration of the centenary.
	Apr.	The Institute of Medical Electronics was established.
1965	Apr.	The Research Institute of Logopedics and Pediatrics was established. The School of Health Care and Nursing was reorganized as the School of Health Sciences. The Graduate School of The University of Tokyo was reorganized and the Division of Medical Doctor Biological Science became the Faculty of Medicine. The Health science Course was established in the Medical Science Division.
1966	Sep.	The third building of the Faculty of Medicine was constructed.
1971	Apr.	The Laboratory of Animal Experiments was established.
1973	Mar.	The Animal Center for Biomedical Research was constructed.
1983	Jan.	An annex of the third building of the Faculty of Medicine was constructed.
1985	Sep.	The office of International Academic Affairs was established.
1987	Apr.	Specialized courses were introduced to the Graduate School of Medicine.
1992	Apr.	The School of Health Sciences became the School of Health Science and Nursing. The School of International Health was established in the Medical Science Division.
	Jul.	The Radiation Research Institute was established.
1995	Apr.	As a result of the shift to the chair system of the Graduate School of Medicine, four divisions, Third Basic Medicine, Social Medicine, Third and Fourth Clinical Medicine, were replaced with Pathology, Immunology and Microbiology, Social Medicine, Reproduction and Development, and Aging Science and Surgery.
1996	Apr.	As a result of the shift to the chair system of the Graduate School of Medicine, three divisions, First Clinical Medicine, Health Science, and International Health, were replaced with Internal Medicine, Health Science and Nursing, and International Health.
1997	Apr.	As a result of the shift to the chair system of the Graduate School of Medicine, three divisions, First and Second Basic Medicine, and Second Clinical Medicine, were replaced with Molecular Cell Biology, Functional Biology, Radiology and Biomedical Engineering, and Neuroscience. As a result of the above-mentioned reorganization, three institutes, the Institute of Brain Research, the Institute of Medical Electronics, and the Institute of Logopedics and 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.
2003	Apr.	The Center for Disease Biology and Integrative Medicine was established.
2007	Apr.	The School of Public Health was established. This school offers programs for Master of Public Health.

Graduate School of Medicine	
Molecular Cell Biology	Cell Biology and Anatomy <ul style="list-style-type: none"> Cell Biology • Structural Biology • Structural Cell Biology • Cellular Neurobiology Biochemistry and Molecular Biology <ul style="list-style-type: none"> Molecular Biology • Cellular Signaling • Physiological Chemistry and Metabolism
Functional Biology	Physiology <ul style="list-style-type: none"> Integrative Physiology • Cellular and Molecular Physiology • Neurophysiology Pharmacology <ul style="list-style-type: none"> Cellular and Molecular Pharmacology • Molecular Neurobiology
Pathology, Immunology and Microbiology	Pathology <ul style="list-style-type: none"> Human Pathology and Diagnostic Pathology • Molecular Pathology Microbiology <ul style="list-style-type: none"> Microbiology • Infection Control and Prevention Immunology
Radiology and Biomedical Engineering	Radiology <ul style="list-style-type: none"> Diagnostic Radiology • Radiotherapy • Nuclear Medicine Biomedical Engineering <ul style="list-style-type: none"> System Physiology • Bioimaging and Biomagnetics • Biosystem Construction and Control
Neuroscience	Basic Neuroscience <ul style="list-style-type: none"> Neuropathology • Neurochemistry • Neurobiology Speech and Cognitive Sciences <ul style="list-style-type: none"> Speech Science • Cognitive Neuroscience • Speech Physiology Clinical Neuroscience <ul style="list-style-type: none"> Neuropsychiatry • Neurology • Neurosurgery
Social Medicine	Occupational, Environmental and Preventive Medicine <ul style="list-style-type: none"> Molecular Preventive Medicine • Public Health • Radiological Health Forensic Medicine, and Medical Informatics and Economics <ul style="list-style-type: none"> Forensic Medicine • Medical Informatics and Economics
Internal Medicine	Medicine I <ul style="list-style-type: none"> Cardiovascular Medicine • Vascular Biology • Respiratory Medicine • Gastroenterology • Nephrology Medicine II <ul style="list-style-type: none"> Endocrinology • Nutrition and Metabolism • Hematology and Oncology • Allergy and Rheumatology Infectious Diseases • Stress Science and Psychosomatic Medicine Clinical Laboratory Medicine and Pathology <ul style="list-style-type: none"> Clinical Laboratory Medicine • Transfusion Medicine
Reproductive, Developmental and Aging Sciences	Obstetrics and Gynecology <ul style="list-style-type: none"> Reproductive Endocrinology • Gynecological Oncology • Perinatal Medicine • Molecular Cellular Reproductive Medicine Pediatric Sciences <ul style="list-style-type: none"> Pediatrics • Developmental Pediatrics • Pediatric Surgery • Pediatric Oncology Aging Sciences <ul style="list-style-type: none"> Geriatrics • Aging Research
Surgical Sciences	Surgery <ul style="list-style-type: none"> Thoracic Surgery • Cardiovascular Surgery • Gastrointestinal Surgery Hepato Biliary Pancreatic Surgery • Urology • Artificial Organ and Transplantation Division Surgical Oncology • Vascular Surgery • Metabolic Care and Endocrine Surgery Sensory and Motor System Medicine <ul style="list-style-type: none"> Dermatology • Plastic and Reconstructive Surgery • Oral and maxillofacial Surgery • Orthopaedic Surgery Ophthalmology • Otorhinolaryngology, and Head & Neck Surgery • Rehabilitation Medicine Vital Care Medicine <ul style="list-style-type: none"> Anesthesiology • Emergency and Critical Care Medicine
Health Sciences and Nursing	Health Sciences <ul style="list-style-type: none"> Health Sociology • Mental Health • Epidemiology and Preventive Health Sciences • Biostatistics Social Gerontology • Health Promotion Sciences • Biomedical Ethics Preventive and Administrative Nursing <ul style="list-style-type: none"> Advanced Clinical Nursing • Nursing Administration • Family Nursing • Community Health Nursing • Public Health Nursing Clinical Nursing <ul style="list-style-type: none"> Adult Nursing • Palliative Care Nursing • Midwifery and Women's Health Psychiatric Nursing • Gerontological Nursing • Wound Care Management
International Health	International Social Medicine <ul style="list-style-type: none"> Health Policy and Planning • International Community Health International Biomedical Sciences <ul style="list-style-type: none"> Human Genetics • Developmental Medical Sciences • Human Ecology • Biomedical Chemistry
School of Public Health	Epidemiology and Health Sciences <ul style="list-style-type: none"> Biostatistics • Social and Preventive Epidemiology • Health Economics and Epidemiology Research Health Communication Behavioral Health Sciences <ul style="list-style-type: none"> Mental Health • Health Sociology and Health Education • Social Gerontology Health Promotion Science • Biomedical Ethics Health Services Sciences <ul style="list-style-type: none"> Health Policy • Healthcare Informatics • Clinical Information Engineering • Forensic Medicine and Medical Law
Center for Disease Biology and Integrative Medicine	<ul style="list-style-type: none"> Basic Medical Sciences(I)Molecular Biomedicine for Pathogenesis Basic Medical Sciences(II)Biophysics • Biomedical Materials and Systems Clinical Biotechnology • Environmental Health Sciences Animal Research • Radiation Biology • Bioinformatics

Endowed Department	<ul style="list-style-type: none"> Pharmacoepidemiology • Integrated Traditional Medicine (Tsumura) Corneal Tissue Regeneration (ArBlast Co., Ltd.) • Vascular Regeneration (Daiichi Pharmaceutical Co.) Bone & Cartilage Regenerative Medicine • Cartilage & Bone Regeneration (Fujisoft) Clinical Renal Regeneration • Developmental and Medical Technology (Sankyo) • Metabolome Hospital Logistics by Sagawa Express Co., Ltd. • Clinical Molecular Epidemiology (Tanabe Seiyaku Co., Ltd.) Immunotherapeutics (Medinet) • Healthcare Related Informatics (NTT DATA CORPORATION) Total Renal Care Medicine • Integrated Molecular Science on Metabolic Diseases Advanced Clinical Science and Therapeutics • Sato Sports Plaza Co., Ltd Kaatsu Training Sleep Disorder Research (Alfresa) • Translational Research Based on the Clinical Database Joint Disease Research • Health Care Management and Policy Computational Diagnostic Radiology and Preventive Medicine • Hospital Environment Clinical Motor System Medicine • Clinical Drug Evaluation • Medical Safety Management (Tokio Marine & Nichido) Molecular Cardiovascular Metabolism • Healthcare Quality Assessment • Coca-Cola Anti-Aging Medicine Integrated Imaging Informatics • Nutriproteomics • Clinical Epidemiology and Systems Clinical Trial Data Management • Pharmacology and Pharmacokinetics
Research Unit	<ul style="list-style-type: none"> Center for Biomedical Ethics and Law • Nano-Bioengineering Education Program Health Care and Social Policy Leadership Program
COE Program	<ul style="list-style-type: none"> Center for Integrated Brain Medical Science Sundy on Diseases Caused by Environment/Genome Interactions
Institution	<ul style="list-style-type: none"> International Academic Affairs • Medical Library
Faculty of Medicine	
School of Medicine	<ul style="list-style-type: none"> Cell Biology and Anatomy • Biochemistry and Molecular Biology • Physiology • Pharmacology Pathology • Microbiology • Immunology • Radiology • Biomedical Engineering • Basic Neuroscience Speech and Cognitive Sciences • 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 • Sugery • Sensory and Motor System Medicine • Vital Care Medicine
School of Health Sciences and Nursing	<ul style="list-style-type: none"> Family Nursing • Community Health Nursing • Fundamental Nursing • Adult Health and Nursing Mental Health and Nursing • Health Sociology • Health Administration • Epidemiology and Biostatistics Human Ecology • Biochemistry and Nutrition • Maternal and Child Health
University Hospital	
	<p>Clinical Division</p> <p>Internal Medicine</p> <ul style="list-style-type: none"> General Medicine • Cardiovascular Medicine • Respiratory Medicine Gastroenterology • Nephrology and Endocrinology • Metabolic Diseases Hematology and Oncology • Allergy and Rheumatology • Infectious Diseases Neurology • Geriatric Medicine • Psychosomatic Medicine <p>Surgery</p> <ul style="list-style-type: none"> General Surgery • Stomach and Esophageal Surgery • Colon and Rectal Surgery Hepato Biliary Pancreatic Surgery • Vascular Surgery • Breast and Endocrine Surgery Artificial Organ and Transplantation Surgery • Cardiovascular Surgery • Thoracic Surgery Neurosurgery • Anesthesiology and Pain Relief Center • Urology and Andrology • Gynecologic Surgery <p>Sensory and Motor System Medicine</p> <ul style="list-style-type: none"> Dermatology and Photolaser Medicine • Ophthalmology and Vision Correction Orthopaedic Surgery and Spinal Surgery Otorhinolaryngology, and Auditory and Voice Surgery • Rehabilitation Medicine Plastic, Reconstructive, and Aesthetic Surgery Oral-Maxillofacial Surgery, Dentistry and Orthodontics <p>Pediatrics, Perinatal and Women's Medicine</p> <ul style="list-style-type: none"> Pediatrics • Pediatric Surgery • Obstetrics and Gynecology <p>Neuropsychiatry</p> <ul style="list-style-type: none"> Neuropsychiatry <p>Radiology</p> <ul style="list-style-type: none"> Radiology <p>Central Clinical Facilities</p> <ul style="list-style-type: none"> Clinical Laboratory Center • Surgical Center • Radiological Center • Emergency Services Transfusion Medicine • Department of Maternal, Fetal, and Neonatal Medicine • Rehabilitation Service Central Supply Service • Department of Medical Engineering • Intensive Care Unit • Pathology Section of Corneal Transplantation • Department of Cell Therapy and Transplantation Medicine Department of Endoscopy and Endoscopic Surgery • Department of Hemodialysis and Apheresis Department of Medical Community Network and Discharge Planning • Clinical Research Center Infection Control and Prevention Service • Department of Planning, Information, and Management University Hospital Medical Information Network Center • Organ Transplantation Service Department of Nutrition • Labor Safety and Health Management Office Department of Child Psychiatry • Public Relations • Tissue Bank • Office of University Corporate Relations Center for Epidemiology and Preventive Medicine • Division of Tissue Engineering Department of Clinical and Genetic Informatics • Department of Palliative Medicine Department of Clinical Genomics • Cooperative Unit of Medicine and Engineering Reserch Translational Research Center • 22nd Century Medical and Research Center <p>Pharmaceutical Department</p> <p>Nursing Department</p> <p>Administration Office</p>
Center	
	<ul style="list-style-type: none"> Health Service Center • The International Research Center for Medical Education
Administrative Division	
	<ul style="list-style-type: none"> General Affairs Office • Personnel Office • Research Liaison • Educational Affairs Graduate Student Affairs • Budget Office • Purchasing Office • Finance Office Facilities Office • Reception Service Medical Library Administration Office Medical Library • Information Service Medical Library



Molecular Cell Biology

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Cell Biology and Anatomy*

Department of Cell Biology

Professor Nobutaka Hirokawa
Associate Professor Yosuke Takei

Department of Structural Biology

Associate Professor Takao Nakata

Department of Structural Cell Biology

Associate Professor Yoshimitsu Kanai

Department of Cellular Neurobiology

Professor Shigeo Okabe

Biochemistry and Molecular Biology

Department of Molecular Biology*

Professor Hiroto Okayama
Associate Professor Shigeki Jinno

Department of Cellular Signaling*

Professor Takao Shimizu
Associate Professor Motonao Nakamura
Associate Professor Satoshi Ishii

Department of Physiological Chemistry and Metabolism*

Professor Hiroki Kurihara



Functional Biology

P16

Physiology

Department of Integrative Physiology*

Professor Yasushi Miyashita
Associate Professor Seiki Konishi

Department of Cellular and Molecular Physiology*

Professor Kensaku Mori

Department of Neurophysiology*

Professor Masanobu Kano

Pharmacology

Department of Cellular and Molecular Pharmacology*

Professor Masamitsu Iino

Department of Molecular Neurobiology*

Professor Masayoshi Mishina



Pathology, Immunology and Microbiology

P18

Pathology

Department of Human Pathology and Diagnostic Pathology*

Professor Masashi Fukayama
Associate Professor Noriyoshi Fukushima

Department of Molecular Pathology*

Professor Kohei Miyazono
Associate Professor Keiji Miyazawa

Microbiology

Department of Microbiology*

Professor Akio Nomoto

Department of Infection Control and Prevention*

Professor Kazuhiko Koike

Immunology

Department of Immunology*

Professor Tadatsugu Taniguchi



Radiology and Biomedical Engineering

P20

Radiology*

Department of Diagnostic Radiology

Professor Kuni Ohtomo
Associate Professor Shigeki Aoki

Department of Radiotherapy

Associate Professor Keiichi Nakagawa

Department of Nuclear Medicine

Associate Professor Toshimitsu Momose

Biomedical Engineering

Department of System Physiology*

Professor Joji Ando

Department of Bioimaging and Biomagnetics

Department of Biosystem Construction and Control*

Associate Professor Yusuke Abe



Neuroscience

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Basic Neuroscience

Department of Neuropathology*

Professor Takeshi Iwatsubo

Department of Neurochemistry*

Associate Professor Haruhiko Bito

Department of Neurobiology

Speech and Cognitive Sciences

Department of Speech Science

Department of Cognitive Neuroscience*

Associate Professor Katsuyuki Sakai

Department of Speech Physiology

Clinical Neuroscience

Department of Neuropsychiatry*

Associate Professor Nobuo Nakayasu

Department of Neurology*

Professor Shoji Tsuji
Associate Professor Shin Kwak

Department of Neurosurgery*

Professor Nobuhito Saito
Associate Professor Nobutaka Kawahara



Social Medicine

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Occupational, Environmental and Preventive Medicine

Department of Molecular Preventive Medicine*

Professor Kouji Matsushima
Associate Professor Sho Ishikawa-Yamawaki

Department of Public Health*

Professor Yasuki Kobayashi
Associate Professor Kazuo Inoue

Department of Radiological Health

Forensic Medicine, and Medical Informatics and Economics

Department of Forensic Medicine*

Professor Ken-ichi Yoshida

Department of Medical Informatics and Economics*

Professor Kazuhiko Ohe



Internal Medicine

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Medicine I

Department of Cardiovascular Medicine*

Professor Ryoza Nagai
Associate Professor Yasunobu Hirata

Department of Vascular Biology

Department of Respiratory Medicine*

Professor Takahide Nagase

Department of Gastroenterology*

Professor Masao Omata

Department of Nephrology*

Medicine II

Department of Endocrinology*

Professor Toshiro Fujita

Department of Nutrition and Metabolism*

Professor Takashi Kadowaki
Associate Professor Kohjiro Ueki

Department of Hematology and Oncology*

Professor Mineo Kurokawa

Department of Allergy and Rheumatology*

Professor Kazuhiko Yamamoto

Department of Infectious Diseases*

Professor Kazuhiko Koike

Department of Stress Science and Psychosomatic Medicine*

Professor Akira Akabayashi
Associate Professor Hiroaki Kumano

Clinical Laboratory Medicine and Pathology

Department of Clinical Laboratory Medicine*

Professor Yutaka Yatomi
Associate Professor Hitoshi Ikeda

Department of Transfusion Medicine*

Professor Koki Takahashi



Reproductive, Developmental and Aging Sciences

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Obstetrics and Gynecology

Department of Reproductive Endocrinology*

Professor Yuji Taketani
Associate Professor Tomoyuki Fujii

Department of Gynecological Oncology*

Associate Professor Tetsu Yano

Department of Perinatal Medicine*

Associate Professor Shiro Kozuma

Department of Molecular Cellular Reproductive Medicine*

Professor Osamu Tsutsumi

Pediatric Sciences

Department of Pediatrics*

Professor Takashi Igarashi

Department of Developmental Pediatrics*

Professor Takashi Igarashi
Associate Professor Takashi Sekine

Department of Pediatric Surgery*

Professor Tadashi Iwanaka

Department of Pediatric Oncology*

Professor Tadashi Iwanaka

Aging Sciences

Department of Geriatrics*

Professor Yasuyoshi Ouchi (Cardiology)
Associate Professor Masahiro Akishita

Department of Aging Research



Surgical Sciences

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Surgery

Department of Thoracic Surgery*

Professor Shinichi Takamoto
Associate Professor Jun Nakajima

Department of Cardiovascular Surgery*

Professor Shinichi Takamoto
Associate Professor Arata Murakami

Department of Gastrointestinal Surgery*

Professor Michio Kaminishi
Associate Professor Sachiyo Nomura

Department of Hepato Biliary Pancreatic Surgery*

Associate Professor Norihiro Kokudo

Department of Urology*

Professor Tadaichi Kitamura
Associate Professor Takumi Takeuchi
Kyoichi Tomita

Department of Artificial Organ and Transplantation Division*

Associate Professor Norihiro Kokudo
Associate Professor Yasuhiko Sugawara

Department of Surgical Oncology*

Professor Hirokazu Nagawa

Department of Vascular Surgery*

Professor Hirokazu Nagawa
Associate Professor Tetsuro Miyata

Department of Metabolic Care and Endocrine Surgery*

Professor Michio Kaminishi
Associate Professor Toshihisa Ogawa
Associate Professor Yoshikazu Mimura

Sensory and Motor System Medicine

Department of Dermatology*

Professor Kunihiro Tamaki
Associate Professor Kanako Kikuchi

Department of Plastic and Reconstructive Surgery*

Professor Isao Koshima

Department of Oral and Maxillofacial Surgery*

Professor Tsuyoshi Takato
Associate Professor Takafumi Susami
Associate Professor Yoshiyuki Yonehara

Department of Orthopaedic Surgery*

Professor Kozo Nakamura
Associate Professor Yoshio Takatori
Associate Professor Hiroshi Kawaguchi

Department of Ophthalmology*

Professor Makoto Araie
Associate Professor Satoshi Kato
Associate Professor Yasuhiro Tamaki

Department of Otorhinolaryngology and Head & Neck Surgery*

Professor Tatsuya Yamasoba (Otology, Neurotology and Audiology)

Department of Rehabilitation Medicine*

Professor Nobuhiko Haga

Vital Care Medicine

Department of Anesthesiology*

Professor Yoshitsugu Yamada
Associate Professor Tomoki Nishiyama

Department of Emergency and Critical Care Medicine*

Professor Naoki Yahagi



Health Sciences
and Nursing

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Health Sciences

Department of Health Sociology*

Associate Professor Yoshihiko Yamazaki

Department of Mental Health*

Professor Norito Kawakami
Associate Professor Akihito Shimazu

Department of Epidemiology and Preventive Health Sciences*

Professor Yasuo Ohashi

Department of Biostatistics*

Associate Professor Yutaka Matsuyama

Department of Social Gerontology*

Professor Ichiro Kai

Department of Health Promotion Sciences*

Associate Professor Jung Su Lee

Department of Biomedical Ethics*

Professor Akira Akabayashi

Preventive and Administrative Nursing

Department of Advanced Clinical Nursing*

Professor Katsuya Kanda

Department of Nursing Administration*

Professor Katsuya Kanda

Department of Family Nursing*

Associate Professor Kiyoko Kamibepu

Department of Community Health Nursing*

Professor Sachiyo Murashima

Department of Public Health Nursing

Clinical Nursing

Department of Adult Nursing*

Professor Keiko Kazuma

Department of Palliative Care Nursing*

Professor Keiko Kazuma

Department of Midwifery and Women's Health*

Professor Sachiyo Murashima

Department of Psychiatric Nursing*

Professor Norito Kawakami

Department of Gerontological Nursing*

Professor Hiromi Sanada

Department of Wound Care Management*

Professor Hiromi Sanada



International
Health

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International Social Medicine

Department of Health Policy and Planning*

Associate Professor Chushi Kuroiwa

Department of International Community Health*

Professor Masamine Jimba

International Biomedical Sciences

Department of Human Genetics*

Professor Katsushi Tokunaga
Associate Professor Akihiko Mabuchi

Department of Developmental Medical Sciences*

Professor Masashi Mizuguchi

Department of Human Ecology*

Professor Chiho Watanabe
Associate Professor Masahiro Umezaki

Department of Biomedical Chemistry*

Professor Kiyoshi Kita
Associate Professor Yoh-ichi Watanabe



School of Public
Health

P52

Epidemiology and Health Sciences

Department of Biostatistics

Professor Yasuo Ohashi
Associate Professor Yutaka Matsuyama

Department of Social and Preventive Epidemiology*

Professor Satoshi Sasaki

Department of Health Economics and Epidemiology Research*

Professor Hideki Hashimoto
Associate Professor Takashi Fukuda

Department of Health Communication

Professor Takahiro Kiuchi
Associate Professor Noriaki Aoki

Behavioral Health Sciences

Department of Mental Health

Professor Norito Kawakami
Associate Professor Akihito Shimazu

Department of Health Sociology and Health Education

Associate Professor Yoshihiko Yamazaki

Department of Social Gerontology

Professor Ichiro Kai

Department of Health Promotion Science

Associate Professor Jung Su Lee

Department of Biomedical Ethics

Professor Akira Akabayashi

Health Services Sciences

Department of Health Policy

Professor Yasuki Kobayashi
Associate Professor Kazuo Inoue

Department of Healthcare Informatics

Professor Kazuhiko Ohe

Department of Clinical Information Engineering*

Professor Hiroshi Oyama

Department of Forensic Medicine and Medical Law

Professor Ken-ichi Yoshida



**Center for Disease
Biology and
Integrative Medicine**

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Director Tadatsugu Taniguchi

Division of Basic Medical Sciences (I)Molecular Biomedicine for Pathogenesis*

Professor Toru Miyazaki

Division of Basic Medical Sciences (II)Biophysics*

Professor Haruo Kasai

Division of Biomedical Materials and Systems*

Professor Takashi Ushida
Associate Professor Yasuyuki Sakai

Division of Clinical Biotechnology*

Professor Kazunori Kataoka

Division of Environmental Health Sciences*

Professor Chiharu Tohyama
Associate Professor Seiichiroh Ohsaka

Division of Research Resources and Support Section of Animal Research*

Professor Akio Nomoto

Division of Research Resources and Support Section of Radiation Biology*

Professor Kiyoshi Miyagawa
Associate Professor Yoshio Hosoi

Division of Research Resources and Support Section of Bioinformatics*

Endowment Department

Pharmacoepidemiology

Associate Professor Kiyoshi Kubota

Department of Integrated Traditional Medicine (Tsumura)

Associate Professor Tetsuro Okabe

Department of Corneal Tissue Regeneration (ArBlast Co., Ltd.)

Associate Professor Satoru Yamagami

Department of Vascular Regeneration (Daiichi Pharmaceutical Co.)

Associate Professor Hiroyuki Koyama

Department of Bone & Cartilage Regenerative Medicine

Department of Cartilage & Bone Regeneration (Fujisoft)

Associate Professor Kazuto Hoshi

Department of Clinical Renal Regeneration

Associate Professor Keiichi Hishikawa

Department of Developmental and Medical Technology (Sankyo)

Professor Hiroshi Suzuki

Department of Metabolome

Professor Ryo Taguchi
Associate Professor Yoshiya Oda

Hospital Logistics by Sagawa Express Co., Ltd.

Professor Hirohito Kuse

Clinical Molecular Epidemiology (Tanabe Seiyaku Co., Ltd.)

Associate Professor Takanari Gotoda

Immunotherapeutics (Medinet)

Associate Professor Kazuhiro Kakimi

Healthcare Related Informatics (NTT DATA CORPORATION)

Associate Professor Shinya Oku

Division of Total Renal Care Medicine

Associate Professor Akira Ishikawa

Integrated Molecular Science on Metabolic Diseases

Associate Professor Toshimasa Yamauchi

Department of Advanced Clinical Science and Therapeutics

Associate Professor Masataka Sata

Sato Sports Plaza Co., Ltd Kaatsu Training

Associate Professor Toshiaki Nakajima

Department of Sleep Disorder Research (Alfresa)

Associate Professor Takashi Ebisawa

Translational Research Based on the Clinical Database

Associate Professor Dobun Hayashi

Department of Joint Disease Research

Associate Professor Noriko Yoshimura

Health Care Management and Policy

Computational Diagnostic Radiology and Preventive Medicine

Associate Professor Naoto Hayashi
Associate Professor Kansei Uno

Hospital Environment

Associate Professor Yushi Uetera

Clinical Motor System Medicine

Clinical Drug Evaluation

Associate Professor Fumihiko Kanai

Medical Safety Management (Tokio Marine & Nichido)

Professor Yasushi Kodama
Associate Professor Shoichi Maeda

Molecular Cardiovascular Metabolism

Associate Professor Katsuyuki Ando

The Department of Healthcare Quality Assessment

Associate Professor Noboru Motomura

Coca-Cola Anti-Aging Medicine

Professor Satoshi Inoue

Integrated Imaging Informatics

Associate Professor Naoki Yoshioka

The Department of Nutriproteomics

Professor Kazumi Yagasaki

Clinical Epidemiology and Systems

Professor Tsutomu Yamazaki
Associate Professor Daisuke Koide

Clinical Trial Data Management

Associate Professor Takuhiro Yamaguchi

Pharmacology and Pharmacokinetics

Associate Professor Akihiro Hisaka

Research Unit

Center for Biomedical Ethics and Law

Nano-Bioengineering Education Program

Health Care and Social Policy Leadership Program

COE (Center of Excellence) Program

Center for Integrated Brain Medical Science

Associate Professor Hiroshi Kawasaki

Study on Diseases Caused by Environment/Genome Interactions

Associate Professor Makoto Miyagishi

Associate Professor Seiji Ogawa

Institution

Office of International Academic Affairs

Head Kazuhiko Yamamoto

Medical Library

Head Yasuyoshi Ouchi

Faculty of Medicine

Dean Takao Shimizu

University Hospital

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Director Yuji Taketani

Clinical Division (Department of Internal Medicine)

General Medicine

Professor Kazuhiko Yamamoto

Cardiovascular Medicine

Professor Ryozi Nagai

Associate Professor Yasunobu Hirata

Respiratory Medicine

Professor Takahide Nagase

Gastroenterology

Professor Masao Omata

Nephrology and Endocrinology

Professor Toshiro Fujita

Metabolic Diseases

Professor Takashi Kadowaki

Hematology and Oncology

Professor Mineo Kurokawa

Allergy and Rheumatology

Professor Kazuhiko Yamamoto

Infectious Diseases

Professor Kazuhiko Koike

Neurology

Professor Shoji Tsuji

Associate Professor Shin Kwak

Geriatric Medicine

Professor Yasuyoshi Ouchi

Associate Professor Masahiro Akishita

Psychomatic Medicine

Professor Akira Akabayashi

Associate Professor Hiroaki Kumano

Clinical Division (Department of Surgery)

General Surgery

Professor Michio Kaminishi

Stomach and Esophagus Surgery

Professor Michio Kaminishi

Associate Professor Sachiyo Nomura

Colon and Rectal Surgery

Professor Hirokazu Nagawa

Hepatobiliary Pancreatic Surgery

Associate Professor Norihiro Kokudo

Vascular Surgery

Professor Hirokazu Nagawa

Associate Professor Tetsuro Miyata

Breast and Endocrine Surgery

Professor Michio Kaminishi

Associate Professor Toshihisa Ogawa

Artificial Organ and Transplantation Surgery

Associate Professor Norihiro Kokudo

Cardiovascular Surgery

Professor Shinichi Takamoto

Associate Professor Arata Murakami

Thoracic Surgery

Professor Shinichi Takamoto

Associate Professor Jun Nakajima

Neurosurgery

Professor Nobuhito Saito

Associate Professor Nobutaka Kawahara

Anesthesiology and Pain Relief Center

Professor Yoshitsugu Yamada

Associate Professor Tomoki Nishiyama

Urology and Andrology

Professor Tadaichi Kitamura

Associate Professor Takumi Takeuchi

Kyoichi Tomita

Gynecologic Surgery

Professor Osamu Tsutsumi

Associate Professor Tetsu Yano

Clinical Division (Department of Sensory and Motor System Medicine)

Dermatology and Photolaser Medicine

Professor Kunihiro Tamaki

Associate Professor Kanako Kikuchi

Ophthalmology and Vision Collection

Professor Makoto Araie

Associate Professor Yasuhiro Tamaki

Associate Professor Satoshi Kato

Orthopaedic Surgery and Spinal Surgery

Professor Kozo Nakamura

Associate Professor Yoshio Takatori

Associate Professor Hiroshi Kawaguchi

Otorhinolaryngology, and Auditory and Voice Surgery

Professor Tatsuya Yamasoba

Rehabilitation Medicine

Professor Nobuhiko Haga

Plastic, Reconstructive and Aesthetic Surgery

Professor Isao Koshima

Oral-Maxillofacial Surgery Dentistry and Orhtodontics

Professor Tsuyoshi Takato

Associate Professor Takafumi Susami

Associate Professor Yoshiyuki Yonehara

Clinical Division (Department of Pediatric, Perinatal and Women's Medicine)

Pediatrics

Professor Takashi Igarashi

Associate Professor Takashi Sekine

Pediatric Surgery

Professor Tadashi Iwanaka

Obstetrics and Gynecology

Professor Yuji Taketani

Associate Professor Shiro Kozuma

Associate Professor Tomoyuki Fujii

Clinical Division (Department of Neuropsychiatry)

Neuropsychiatry

Associate Professor Nobuo Nakayasu

Cinical Division (Department of Radiology)

Radiology

Professor	Kuni Ohtomo
Associate Professor	Keiichi Nakagawa
Associate Professor	Shigeki Aoki
Associate Professor	Toshimitsu Momose

Central Clinical Facilities

Clinical Laboratory*

Director	Yutaka Yatomi (Professor of Medicine, Department of Clinical Laboratory Medicine)
Vice Director	Hitoshi Ikeda (Associate Professor of Medicine, Department of Clinical Laboratory Medicine)

Department of Surgical Center*

Professor	Hiroshi Yasuhara
Associate Professor	Yoshikazu Mimura

Department of Radiological Center

Professor and Director	Kuni Ohtomo (Diagnostic Radiology)
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Department of Emergency Services

Professor	Naoki Yahagi
-----------	--------------

Department of Transfusion Medicine and Immunohematology

Professor	Koki Takahashi (Transfusion Medicine)
-----------	---------------------------------------

Department of Maternal, Fetal, and Neonatal

Associate Professor	Shiro Kozuma
---------------------	--------------

Department of Rehabilitation Service

Professor	Nobuhiko Haga
-----------	---------------

Department of Medical Engineering

Central Supply Service

Associate Professor	Yoshikazu Mimura
---------------------	------------------

Department of Intensive Care Unit

Professor	Naoki Yahagi
-----------	--------------

Department of Intensive Pathology

Professor	Masashi Fukayama
Associate Professor	Noriyoshi Fukushima

Department of Corneal Transplantation

Associate Professor	Shiro Amano
---------------------	-------------

University Hospital Medical Information Network Center*

Professor	Takahiro Kiuchi
Associate Professor	Noriaki Aoki

Department of Cell Therapy and Transplantation Medicine

Associate Professor	Shigeru Chiba
---------------------	---------------

Department of Infection Control and Prevention

Professor	Kazuhiko Koike
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Department of Endoscopy and Endoscopic Surgery

Associate Professor	Takao Kawabe
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Center for Hemodialysis and Apheresis

Professor	Toshiro Fujita
-----------	----------------

Clinical Research Center

Professor	Masao Omata
Associate Professor	Yoshihiro Arakawa

Department of Medical Social Service and Welfare

Professor	Yasuyoshi Ouchi
-----------	-----------------

Department of Planning, Information and Management

Professor	Kazuhiko Ohe
-----------	--------------

Department of Organ Transplantation Service

Associate Professor	Norihiro Kokudo
Associate Professor	Yasuhiko Sugawara

Pharmacy

Pharmaceutical Department*

Professor	Hiroshi Suzuki
Associate Professor	Kousei Ito

Nursing Department

Administration Office



Center

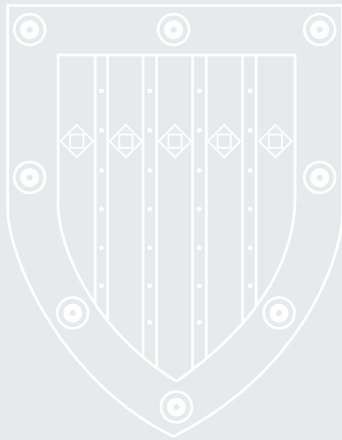
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Health Service Center*

Director	
Associate Professor	Yoshio Uehara
	Tsukasa Sasaki
	Yasushi Ookubo

The International Research Center for Medical Education*

Director	Kazuhiko Yamamoto
Professor	Kiyoshi Kitamura
Associate Professor	Yuko Takeda



Faculty of Medicine Graduate School of Medicine The University of Tokyo

Graduate School of Medicine

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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.

- 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

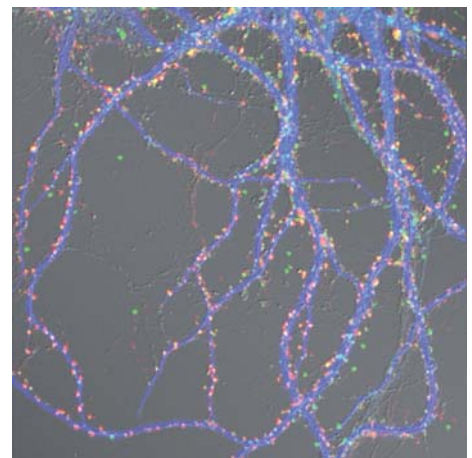


Quick freeze-deep etch electron micrograph of a mouse nerve axon showing a microtubule (25 nm diameter, linear tube-like structure) and a cross-bridge linking the microtubule and a membranous organelle. Microtubules are a major component of the cytoskeleton and serve as a type of rail along which motor proteins transport organelles inside cells. (Reproduced from the cover of Science vol. 279, Jan 23 1998.)

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.

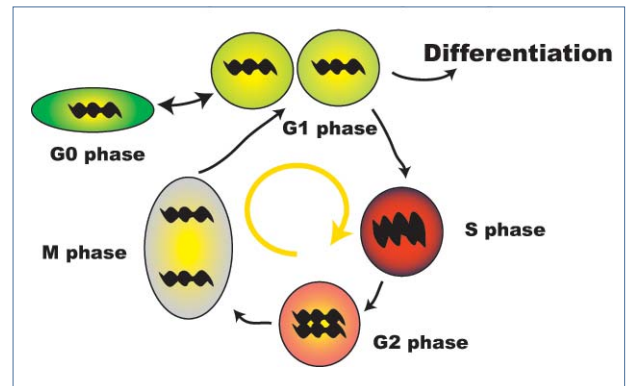
- Molecular architecture of the postsynaptic density
- Molecular mechanisms of activity-dependent synapse remodeling
- Regulation of synapse functions by glial cells
- Regulation of synapse formation and maintenance in vivo



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

With the goal of understanding the molecular mechanisms controlling growth and differentiation, we have been studying the cell cycle with cultured mammalian cells and fission yeast as model systems.

- Understanding the molecular mechanism enabling the anchorage-independent S phase onset that is the key for malignant transformation
- Understanding the G1 and G2 cell cycle checkpoint controls
- Understanding the molecular switch between growth and differentiation

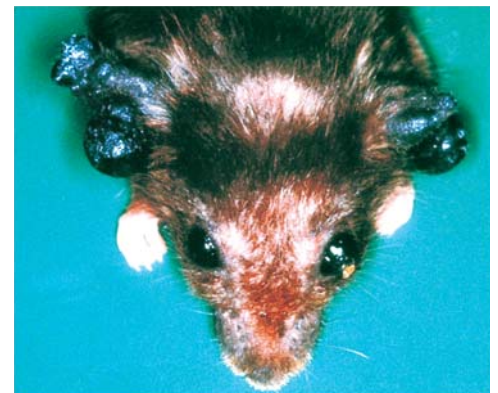


Eukaryotic cell cycling

Cellular Signaling

Our laboratory specializes in biochemistry, molecular and cellular biology, and genetic engineering to elucidate the roles of lipid mediators *in vivo*. In collaboration with the Department of Metabolome, we analyze stimulus induced dynamic changes in the lipid composition of the cellular membrane.

- Discovery and structural determination of novel lipid mediators
- Cloning, functional characterization and K/O studies of receptors for lipid mediators
- Cloning, functional characterization and K/O studies of enzymes involved in the metabolism of lipid mediators
- Functional regulation of GPCR
- Roles of lipid mediators in the central nervous and immunological systems

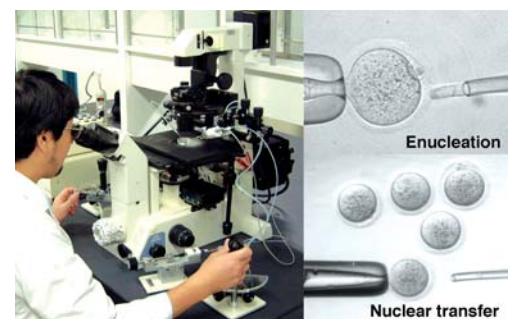


Melanocytic tumor in platelet-activating factor receptor transgenic mice

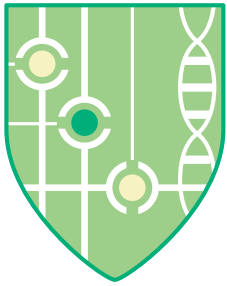
Physiological Chemistry and Metabolism

Developmental and regenerative medicine group is investigating the molecular mechanisms of embryogenesis and is establishing a unique basis for regenerative medicine; metabolic regulation group is studying the signaling mechanisms regulating metabolism and cell growth to develop new therapy for metabolic syndrome.

- Developmental biology and regenerative medicine
 - Neural crest development and formation of the branchial arch and cardiovascular system
 - Reprogramming in early embryogenesis
 - Organogenesis and regeneration of vessels, inner ear and lung
 - Establishment and analysis of disease model mice
 - Establishment of therapeutic cloning models in mice
- Metabolism regulation and pathophysiology
 - Analysis of protein complexes in intracellular signaling and transcription
 - Proteomics and localization analysis of proteins constituting intracellular organelles
 - Analysis of a novel Akt-binding protein, APE
 - Molecular mechanisms of insulin-resistance in metabolic syndrome



Transfer of somatic nuclei into enucleated mouse oocytes using a Piezo-driven micromanipulator



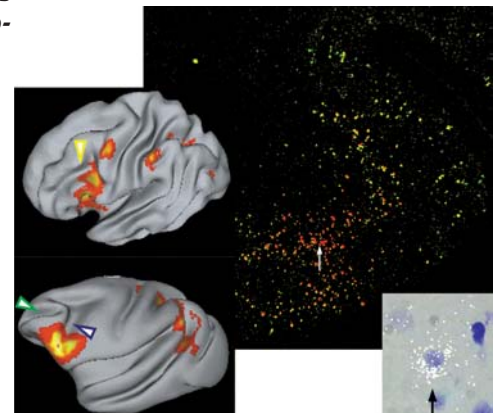
Functional Biology

Integrative Physiology

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

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.

- Functions of memory neurons in the temporal cortex
- Roles of the top-down signal from the prefrontal cortex
- Functional differentiations of the prefrontal cortex in memory
- Molecular biological basis of declarative memory in the primate
- Development of high-field MRI for humans and monkeys



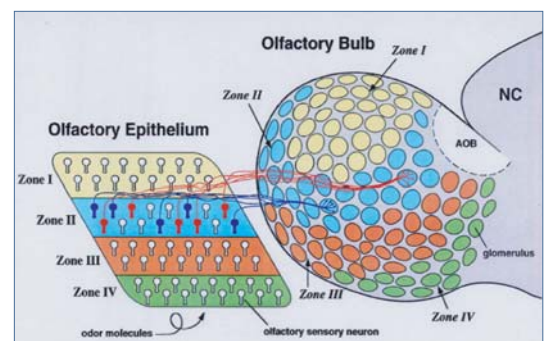
Brain activation in cognitive tasks (left) and gene expression (BDNF) in cortical neurons

Cellular and Molecular Physiology

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

We aim at a better understanding of neuronal mechanisms involved in sensory perception of the external world and for the emotional state induced in the brain by sensory inputs. 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 contact-mediated interactions between neurons and immune cells that occur in pathological and physiological conditions.

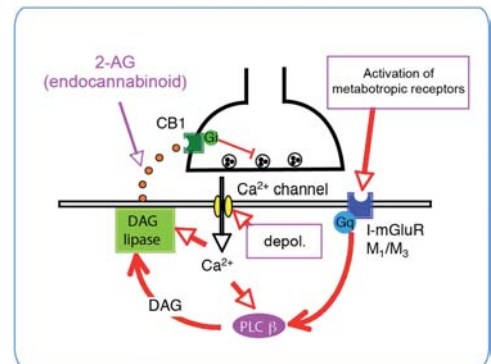
- Functional analysis of the neuronal circuit in the central olfactory nervous system (Analysis of odor maps in the brain)
- Neurogenesis and neuron-elimination in the adult brain
- Molecular and cellular mechanisms for the axonal recognition of specific target neurons and for the formation of specific neuronal circuits
- Cellular and molecular mechanisms for the contact-mediated interactions between neurons and immune cells in physiological and pathological conditions



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

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 make real time monitoring of neuronal activities, 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
- Crosstalk between G-protein-coupled receptors
- Synaptic integration in intact animals
- Synaptic plasticity and motor learning in the cerebellum

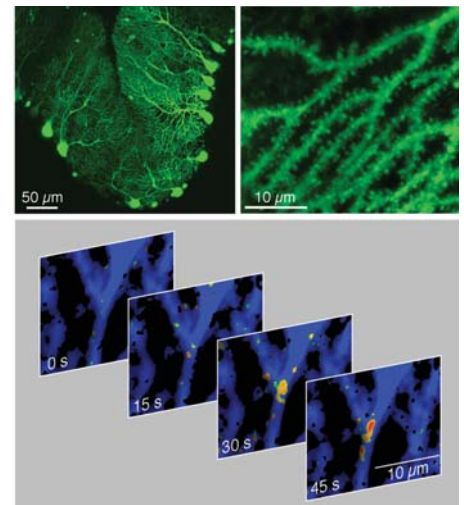


Molecular mechanisms of endocannabinoid-mediated retrograde modulation of synaptic transmission

Cellular and Molecular Pharmacology

Spatiotemporal distribution of signalling molecules is extremely important in defining cell signals. We are developing indicators of important signalling molecules and visualize their spatiotemporal distribution within intact cells. Using such novel imaging methods we aim at elucidation of the physiological roles of calcium signalling and related signalling mechanisms in various types of cells including neurons of the central nervous system.

- Development of genetically coded indicators of important cell signals
- Molecular approaches to the study of IP₃ receptor-mediated Ca²⁺ signalling
- Elucidation of the relationship between Ca²⁺ signalling and cell functions
- Visualization and analysis of molecular events at synapses

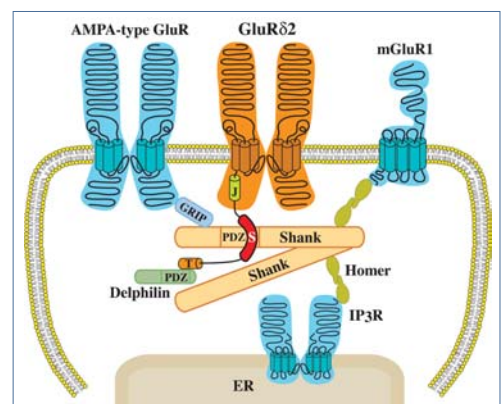


Imaging of synaptically induced nitric oxide dynamics in cerebellar Purkinje cell

Molecular Neurobiology

We have been investigating the molecular basis of higher brain functions by focusing on the glutamate receptor and memory. Previous studies have led to the hypothesis that there is a common principle between memory signaling and synapse formation. The combination of conditional gene targeting in mice and molecular genetics in zebra fish will facilitate our understanding of the mechanism of higher brain function at the molecular, cellular and neural network levels.

- Regulation of brain functions by glutamate receptors in specific brain regions
 - Identification of neural networks for learning and memory
 - Regulation of learning and memory
 - Roles of glutamate receptors in decision-making
- Signaling from glutamate receptors to memory
- Molecular mechanisms of synapse formation and remodeling
 - Molecular mechanism of synapse formation during development
 - Molecular mechanism of synapse remodeling in the adult brain



Glutamate receptor δ2 selectively expressed in cerebellar Purkinje cells



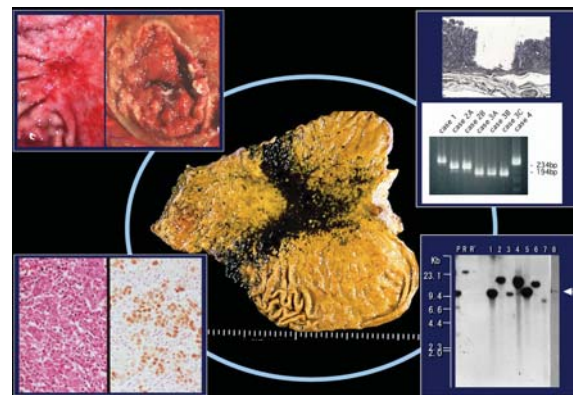
Pathology, Immunology and Microbiology

Human Pathology and Diagnostic Pathology

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 cancer therapy target by DNA chip technology
 - Establishment of objective criteria for cancer grading
 - Streamlining and acceleration of pathological diagnostic processes



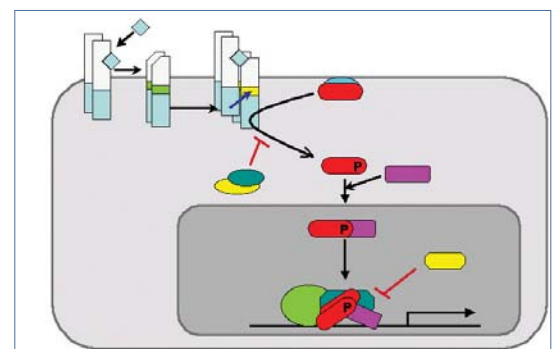
Investigation of the development of EB virus-associated gastric carcinoma

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- β superfamily, including TGF- β 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.

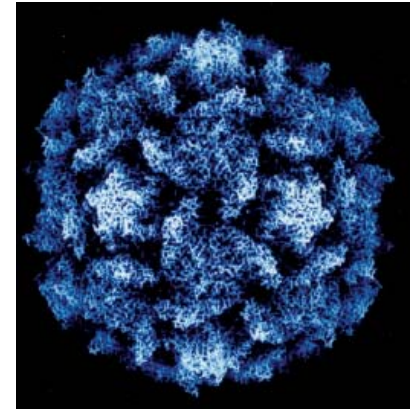
- Negative regulation of TGF- β signaling by inhibitory Smads and oncogene c-Ski
- Molecular mechanisms of growth regulation by TGF- β
- Roles of TGF- β in epithelial-to-mesenchymal transition
- Differentiation of mouse ESCs into vascular cells
- Roles of TGF- β superfamily cytokines in vascular and lymphatic diseases
- Differentiation of vascular and lymphatic endothelial cells and mechanisms of diseases



Signaling by TGF- β receptors and Smad proteins

Our major objective is elucidation of the molecular mechanisms for replication and pathogenesis of RNA viruses, such as poliovirus and hepatitis C virus. Based on the outcome, we will develop new strategies against those viral diseases.

- Roles of the human poliovirus receptor in poliovirus infection
- Molecular mechanisms for the dissemination pathways of poliovirus
- Molecular mechanisms for the replication of poliovirus in neurons
- Molecular mechanisms for the development of hepatocellular carcinoma following hepatitis C virus infection
- Replication mechanisms of the hepatitis C virus RNA replicon
- IRES (internal ribosome entry site) activity-dependent virus tropism
- Host and viral protein synthesis during poliovirus infection



Three-dimensional structure of poliovirus
(Courtesy of James M.Hogle)

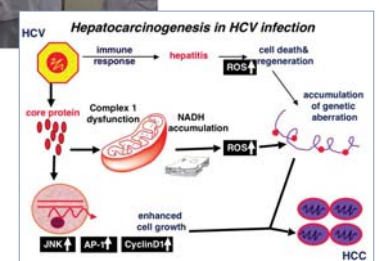
Infection Control and Prevention

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

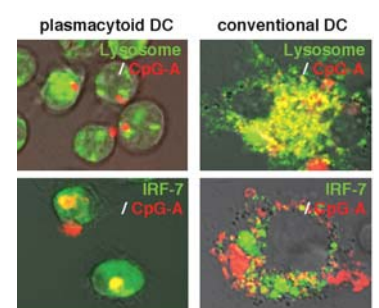


Immunology

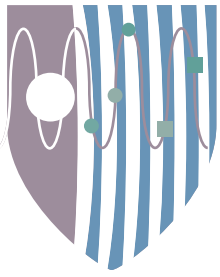
<http://www.immunol.m.u-tokyo.ac.jp/english>

Since the original identification of two cytokine genes, *interferon-β* and *interleukin-2*, our laboratory has been continuing to elucidate the regulatory mechanisms of signal transduction and transcription in these and other cytokine systems in the context of immunity and oncogenesis. More recently, we have also initiated a project on spatiotemporal regulation in lymphocytes and antigen-presenting cells in the context of cytokine signaling cross talk.

- The mechanisms of signaling and transcription networks operating in the IFN- α/β system in innate immune responses
- The function and regulation of the transcription factor family, i.e., the interferon regulatory factors (IRFs), in innate and adaptive immune responses, such as Th1/Th2 differentiation mechanism, natural killer (NK) cell differentiation
- The mechanisms of regulation of antigen-presenting cells (APCs), typically dendrite cells (DCs), by IFN- α/β and other cytokines and toll-like receptors (TLRs)
- The regulation of oncogenesis by IFN- α/β and the tumor suppressor p53, particularly their mutual cooperation and function on target genes (Noxa etc.)
- Regulation of hematopoiesis and autoimmunity by IFNs and IRFs
- Spatiotemporal regulation of the TLR and cytokine signaling in lymphocytes and antigen-presenting cells



Spatiotemporal regulation of the TLR9-IRF-7 pathway in dendritic cells. The TLR9 ligand CpG-A DNA is retained in endosomes of plasmacytoid dendritic cells (or IFN producing cells), wherein the labeled CpG-A merges with IRF-7 transcription factor. This is critical to sustain the TLR9 signal for prolonged activation of IRF-7 to efficiently induce IFN- α/β genes (left). On the other hand, in conventional dendritic cells, CpG-A undergoes rapid trafficking to lysosomes, therefore these cells fail to achieve high-level IFN- α/β induction (right).



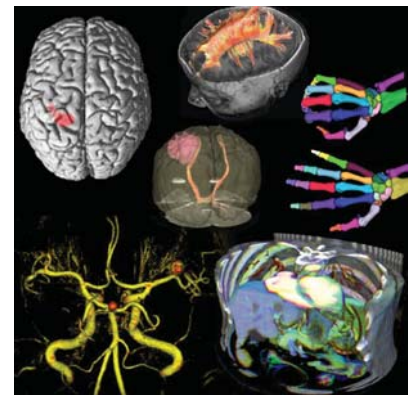
Radiology and Biomedical Engineering

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)



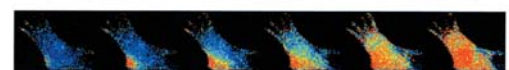
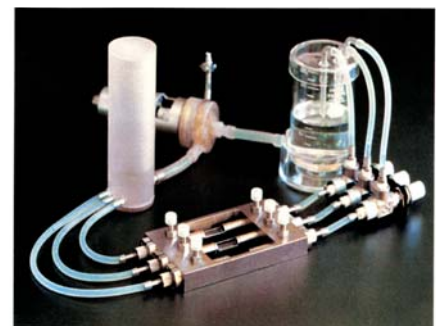
Representative images analyzed with computer-assisted technology

System Physiology

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

A variety of living cells respond to mechanical forces occurring both inside and outside a body. We have been pursuing biomechanical research focusing on the effects of shear stress generated by flowing blood on vascular cells and circulatory functions. Our analyses range all the way from genes to whole organs and systems. Research on the molecular mechanism of arterogenesis and biomechanical tissue engineering is also ongoing.

- Vascular cell responses to shear stress
- Identification of flow-sensing molecules
- Mechanical stress responsive genes
- Tissue engineering using mechanical stresses
- Atherosclerosis research from the aspect of hemodynamics
- Vascular system physiology
- Microcirculation study using optical imaging



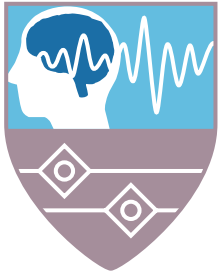
Mechanical force-loading apparatus and calcium response in vascular cells

Our research fields include medical engineering technologies represented by artificial organs. Especially the research of artificial heart has gotten excellent results such as the world longest survival record in animal replaced with a total artificial heart. We are performing the researches from the basic to the application.

- Implantable total artificial heart
- Implantable ventricular assist device
- Polymer artificial valve
- Next generation artificial lung
- Tissue engineered artificial organs
- Blood compatible material
- Implantable pressure sensor
- Implantable angiogenesis observation probe
- Space medicine
- Laser surgery and medicine



Implantable total artificial heart (Undulation pump total artificial heart) and artificial heart animal (goat)

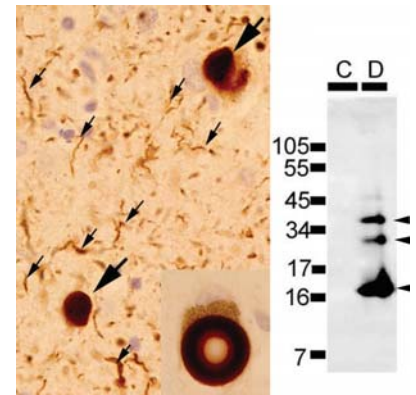


Neuroscience

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 γ -secretase
- Molecular analysis of the mode of action of γ -secretase inhibitors
- Mechanism of A β production, aggregation and clearance
- Pathological function of β -amyloid binding proteins (e.g., CLAC)
- Mechanism of aggregation and neurotoxicity of α -synuclein
- Pathological function of familial Parkinson disease gene LRRK2
- Strategies for development and validation of disease modifying therapies for Alzheimer disease



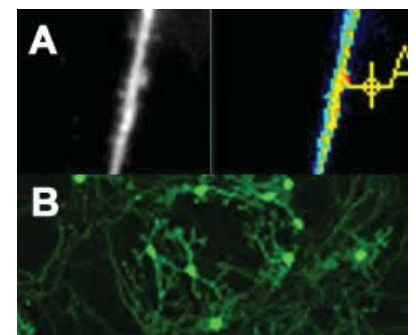
Identification of phosphorylated α -synuclein in Lewy bodies
Phosphorylated α -synuclein deposited in Lewy bodies of Parkinson's disease

Neurochemistry

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

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

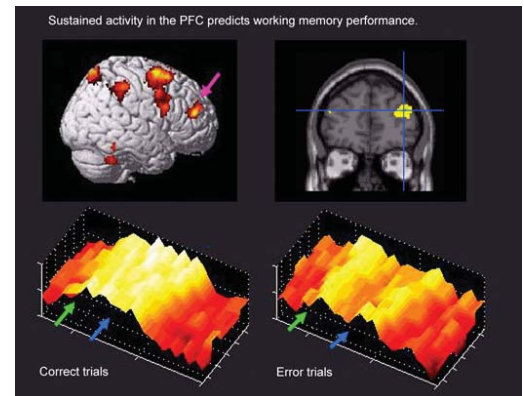
- Molecular investigation (including identification, characterization and real-time visualization) of signaling molecules involved in calcium-dependent synaptic modification, especially during signaling from synapse-to-nucleus, and back from nucleus-to-synapses
- Understanding molecular mechanisms controlling cytoskeletal dynamics and remodeling on both sides of the synapses, in the dendritic spines and in axon terminals



Real-time measurement of biochemical events triggered by glutamate uncaging at hippocampal spines (A); Visualization of actin cytoskeleton in cerebellar Purkinje cell dendrites (B)

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

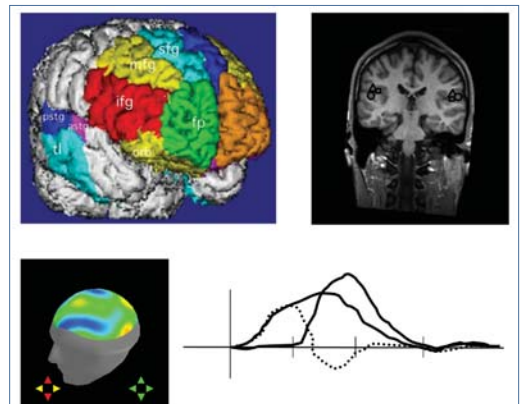
- Working memory and cognitive control
- Attention, perception and consciousness
- Theory of mind and social behavior
- Mind-reading and prediction of behavior



Neuropsychiatry

Our department has provided a leading role in biological psychiatry of stress-related disorders and schizophrenia. Recently, we have promoted cutting-edge biological studies of pervasive developmental disorders.

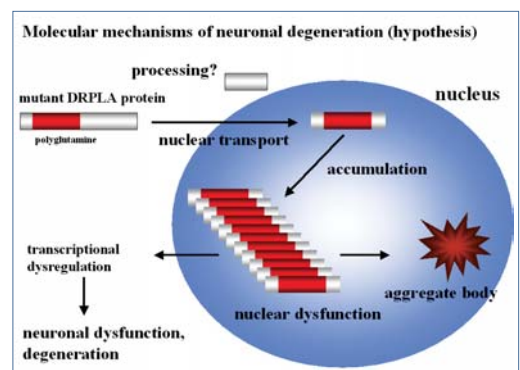
- Genetic, molecular, and neuroimaging studies of pervasive developmental disorders
- Molecular biology of epilepsy and stress-related disorders
- Genetic studies in schizophrenia, autism, and anxiety disorders
- Multimodal neuroimaging studies of schizophrenia, PTSD, and autism
- Clinical psychopharmacology
- Molecular studies in sleep-related disorders
- Clinical studies on dementia and schizophrenia



Neurology

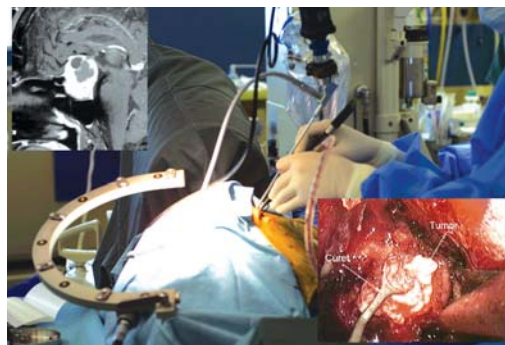
Our Department is promoting research programs to elucidate the pathophysiological mechanisms of neurological diseases including neurodegenerative diseases, immune-mediated diseases and neuromuscular diseases, and to establish therapeutic approaches for these diseases. We are also providing excellent programs to train neurologists.

- Molecular Genetics (identification of disease genes and development of therapeutic approaches)
- Molecular pathophysiology of neurological diseases (RNA editing, and protein structures)
- Immune-mediated diseases (autoantibodies)
- Neuropsychology 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
- Development of new therapeutics



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.

- Advanced Clinical Neurosurgery
 - Skull base surgery in managing benign or malignant skull base tumors and cerebrovascular disorders
 - Advancement of less invasive surgical techniques to maintain the quality of life (QOL) of patients : application of endoscopy and γ -knife radiosurgery
 - Development of new therapeutic strategies for malignant glioma
 - Functional neurosurgery including epilepsy surgery
- Neuroscience Research
 - Application of stem cells in regenerating damaged neuronal networks
 - Treatment of brain tumors using conditionally replicating virus vectors and nano drug delivery systems
 - Tailor-made therapy of malignant brain tumors using genetic analyses



Endonasal endoscopic pituitary surgery under navigation guidance





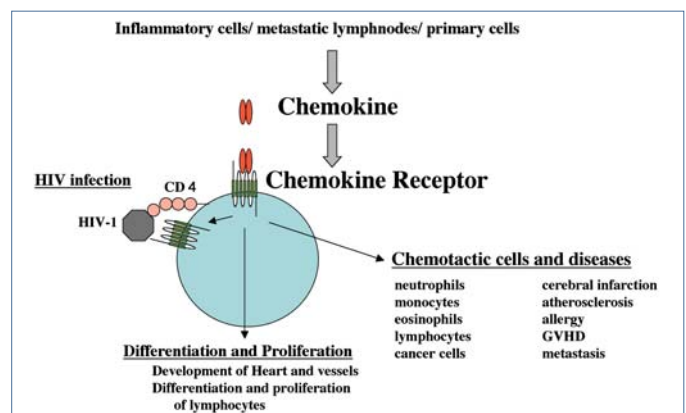
Social Medicine

Molecular Preventive Medicine

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

Chemokines play critical roles in the pathogenesis of diseases including acute inflammation, autoimmune diseases, allergic diseases, HIV infection, atherosclerosis and tumor metastasis through the regulation of chemotaxis, activation and differentiation. We hope chemokine research will contribute to Molecular Preventive Medicine.

- Pathogenesis of diseases by chemokine
 - Autoimmune diseases, liver injury, GVHD
 - Atopic dermatitis, bronchial asthma
- Activation of the chemokine receptor and its signal transduction
- Serial analysis of gene expression (SAGE) for hematopoietic cells
- Development of vaccinations to cancers and infectious diseases



Public Health

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

Public health is the science and art of preventing disease, prolonging life, 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 services
- Health manpower policy
- Occupational and environmental health
- Policy analysis on health and environmental issues
- Clinical epidemiology (QOL, outcome studies, economic evaluation)



A Malay farmer with a pesticide sprayer on his back and a tobacco farm, subjects of one of our health surveys

Our practice is to determine the cause of unusual death by autopsy and examinations. For the progress of the practice, we are pursuing molecular pathological studies on sudden cardiac death and sociomedical studies on the death investigation system and risk management.

- Ischemic death of cardiomyocyte
- Toxic or protective role of carbon monoxide
- Oxidative stress and lipid peroxidation in pathogenesis
- Law and system of death investigation and medical risk management
- Analytical toxicology



Forensic autopsy room

Medical Informatics and Economics

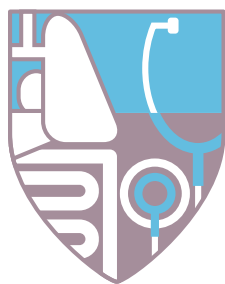
http://www.m.u-tokyo.ac.jp/medinfo/index_e.html

The department continually develops and manages the entire clinical and administrative information system of the University of Tokyo Hospital such as hospital management works. The research and postgraduate education programs cover basic medical informatics, advance applications of information technology to clinical medicine, technology assessment and standardization of healthcare information.

- Development of the new architecture of our hospital information system is based on distributed computing technology
- Development of intelligent computer-based medical record systems
- Standardization of medical terminology and communication protocol for electronic exchange of healthcare information
- Patient-centered medical information systems
- Development and management of a clinical data collection system using the University Hospital Medical Information Network(UMIN)



Computer room of the hospital computer center



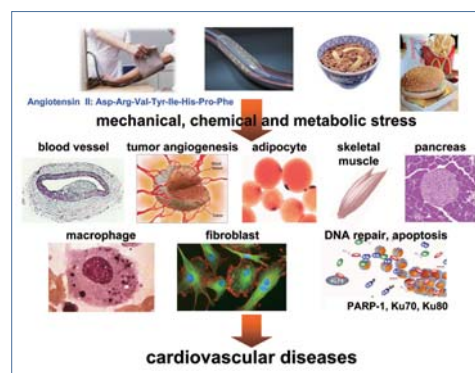
Internal Medicine

Cardiovascular Medicine

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

We are investigating the pathogenesis, pathophysiology, diagnostic methods, and novel therapeutic measures of various cardiovascular diseases (ischemic heart disease, heart failure, cardiomyopathy, arrhythmias, atherosclerosis, hypertension, etc.) using a variety of research tools (from molecular biology to epidemiology, bioinformatics).

- Transcriptional regulation of various genes in cardiovascular development and pathogenesis
- Cardiac hypertrophy and heart failure: analyses of pathogenic mechanisms and developments of novel therapies (gene therapy, etc.)
- Immunological basis of cardiovascular diseases
- Imaging techniques (echocardiography, MRI, RI, NOGA) in cardiovascular diseases
- Mechanisms of anti-arrhythmia therapy
- Molecular mechanisms of ischemia-reperfusion injury
- Genetic polymorphisms and risk factors in cardiovascular disease
- Differentiation of smooth muscle cells (atherosclerosis and restenosis after vascular interventions)
- Mouse genetic models of cardiovascular diseases and vascular development
- Neurohumoral factors in cardiovascular diseases



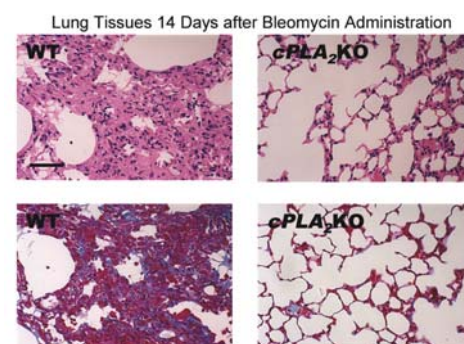
Intraventricular mapping using the NOGA system

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 21st 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.

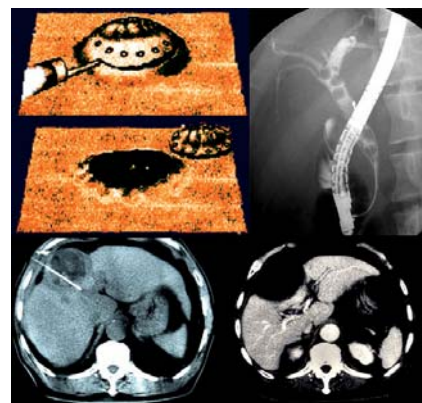
- Clinical studies of lung cancer, COPD, bronchial asthma and pulmonary fibrosis
- Epidemiological studies of diffuse panbronchiolitis (DPB) and interstitial lung disease
- Molecular mechanisms underlying the pathogenesis of acute lung injury or ARDS
- Molecular mechanisms underlying the pathogenesis 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.
- DNA methylation and lung cancer
- Establishment of conditional vectors for hairpin siRNA knockdowns
- Establishment of CpG island searcher



Murine model of pulmonary fibrosis

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 liver injury mechanisms 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 hepatic fibrosis and liver regeneration
- Development of better diagnostic & therapeutic strategy for small intestinal diseases

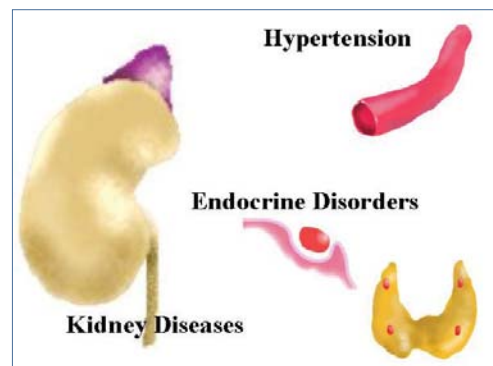


Nephrology / Endocrinology

<http://plaza.umin.ac.jp/~kid-endo/top.html>

We are investigating the pathophysiology of renal and endocrine disorders for the development of innovative diagnostic and therapeutic tools. Hypertension is our special interest because not only is it a serious medical problem which impairs many vital organs and the QOL of our patients, but also we have the great advantage of organizing the strategic research approach since hypertension is closely related with both nephrology and endocrinology.

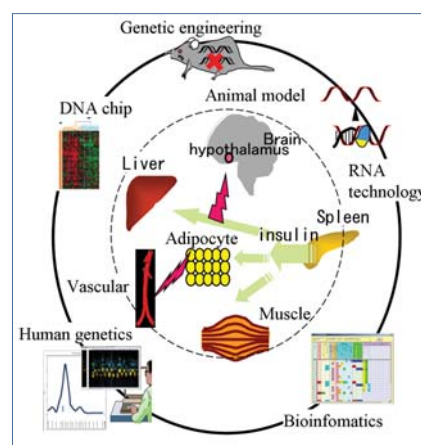
- Renal physiology and morphology
- Pathophysiology of immune-mediated renal injury
- Analysis of pathophysiology and prognostic factors of chronic renal failure
- Endothelial injury and vascular biology in kidney disease
- Role of nitric oxide and oxidative stress in renal disease and hypertension
- 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



Nutrition and Metabolism

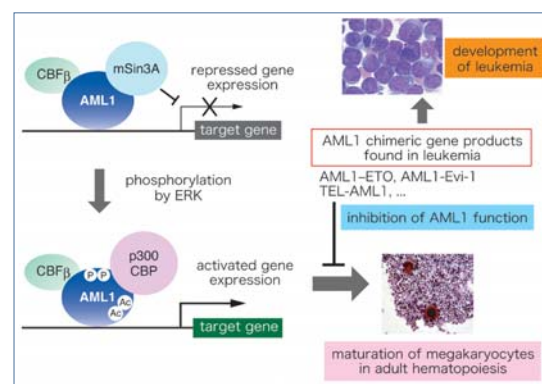
We are investigating to reveal the molecular mechanisms underlying the development of metabolic diseases (diabetes mellitus, lipid metabolic disorders, obesity, metabolic syndrome and atherosclerosis) using interdisciplinary approaches and state-of-the-art technology including genetically engineered model animals, DNA chip, 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



We are investigating the pathogenesis, diagnostic methods, and novel therapeutics of hematological disorders by making comprehensive use of research technologies in molecular biology, developmental biology, and immunology. We are also performing basic and clinical studies based on genomics, regenerative medicine, and transplantation medicine, which aim at application to therapeutic strategies.

- Self renewal and differentiation of hematopoietic stem cells
- Establishment of *ex vivo* expansion of hematopoietic cells
- Genome-wide analyses of hematological malignancies
- Identification of molecular pathogenesis of leukemia
- Identification and regulation of leukemic stem cells
- Analyses of the immune system by developmental biology
- Establishment of antigen-specific immunological therapeutics against cancer
- Development of therapeutic strategies for GVHD by engineered immune cells

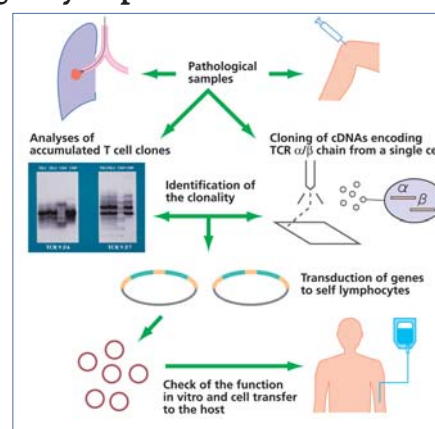


Transcription factor AML1 in normal hematopoiesis and leukemia

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.

- Clonal analyses of T cell receptor (TCR), *in vitro* reconstitution of the TCR function using such information and antigen specific immunotherapy
- Mechanisms of oral tolerance and application to therapeutic strategies
- Mechanism of immunological tolerance to autoantigens and immunoregulation
- Development and induction of regulatory T cells and their applications
- Intracellular signaling in immune disorders
- Genomic analyses of rheumatic diseases
- Development of molecular targeting immunosuppressive reagents
- Airway hypersensitivity and remodeling of bronchial asthma
- Mechanisms of IgE mediated allergic disorders and applications for therapies
- Involvement of chemokines in allergic diseases and applications to therapeutic strategies

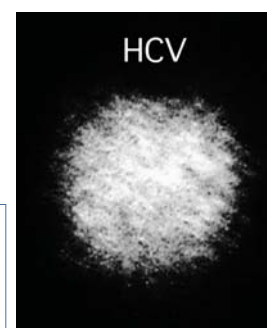
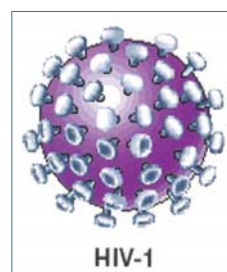


Clonal analyses of T cell receptor (TCR) and *in vitro* reconstitution of the TCR function for an antigen specific immunotherapy

Infectious Diseases

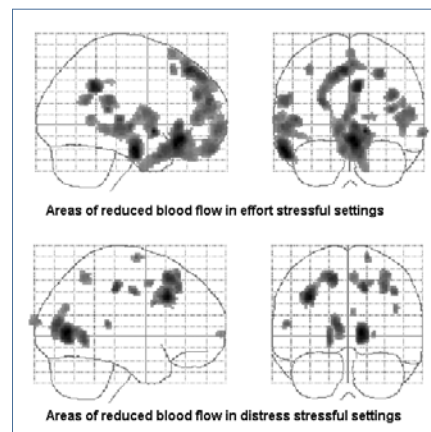
We are investigating both clinical and basic aspects in infectious diseases, in particular, on HIV infection and hepatitis viral infections, the latter of which is the major cause of liver disease worldwide. Our research topics cover the wide areas in microbiology, immunology and pathobiology of infectious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

- Clinical studies of HIV infection
- Development of new methods in infection control and treatment 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 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



Targeting stress-related diseases such as psychosomatic and lifestyle-related diseases, we are investigating their pathophysiology and psychopathology through assessing higher brain function, autonomic nervous function, and bio-psycho-behavioral time-series data. We are also actively conducting basic as well as clinical research on stress and relaxation responses and eating-related substances.

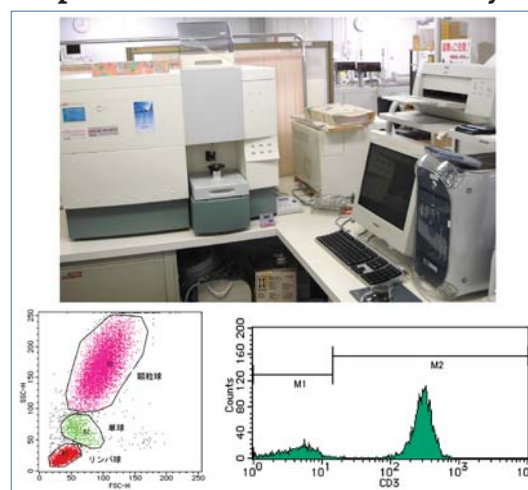
- Elucidation of brain processes closely related to mind/body correlation in stress-related diseases by use of brain functional analysis methods such as positron emission tomography, magnetoencephalography, and event-related potentials
- Investigation into the pathophysiology, psychopathology and neurobehavioral basis of stress-related diseases by use of ecological momentary assessment methods
- Behavioral scientific studies and interventional studies using psychobehavioral treatment procedures on stress-related diseases
- Development and clinical application of questionnaires concerning mental health
- Interventional studies of various relaxation procedures
- Psychophysiological and biochemical studies on stress responses and relaxation responses
- Investigation on the effects of newly-found neuropeptides such as orexin and ghrelin in the brain particularly on emotion and stress responses



Clinical Laboratory Medicine

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.

- Elucidation of (patho)physiological roles of lysophospholipid mediators, and its application to laboratory medicine
- Platelet biology, Hepatology
- Genetic testing
- Research on 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

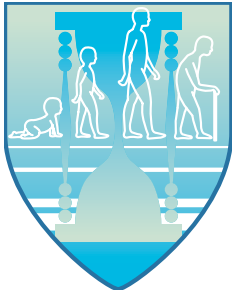


Flow cytometer and analysis patterns

Transfusion Medicine

Control, testing and supply of all blood products for transfusion are the main clinical activities of the department of transfusion medicine, which is responsible for the provision of safe blood products and the control of the transfusion practice in the hospital. It actively takes part in autologous blood collection, preservation, and supply for patients receiving routine surgery. In addition, apheresis procedures for collection of peripheral blood stem cells for transplantation, and of peripheral blood mononuclear cells for dendritic cell-based vaccine therapy of cancer patients are performed. Also, lymphocyte-based vaccine is prepared for the immunotherapy of recurrent abortion cases. Special laboratory testings, including HLA typing (serologic and DNA-based) for bone marrow and organ transplantations and the detection of anti-HLA, anti-platelet (HPA) and anti-granulocyte antibodies, as well as the phenotyping and genotyping of platelet- and granulocyte-specific antigens for patients with adverse reactions after transfusion, are performed. The research fields include 1) the development of immunological methods for antigen-antibody testing of red cells, lymphocytes, granulocytes, platelets and endothelial cells, 2) the development and clinical application of dendritic cell-based and other vaccines for immunotherapy of cancer, and 3) the development of new anti-thrombotic materials for clinical use.

- Detection of platelet alloantigens and alloantibodies / • Detection of leukocyte alloantigens and alloantibodies
- Detection of anti-endothelial cell antibodies and investigation on their clinical relevance
- Development of a novel method for the evaluation of platelet function
- Dendritic cell-based immunotherapy for malignant diseases
- Development of new anti-angiogenic strategies to treat cancer
- Development of new immunotherapeutic approaches to treat malignant diseases
- Development of new anti-thrombotic materials for clinical use / • Use of stem cells in regenerative medicine



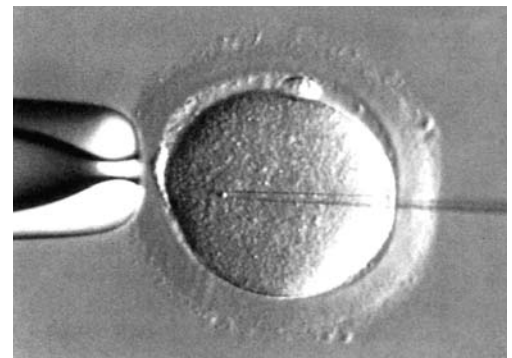
Reproductive, Developmental and Aging Sciences

Reproductive Endocrinology

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

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
- Interaction between the endometrium and embryo during the implantation period
- Pathophysiology of endometriosis
- Local regulation of folliculogenesis
- Technical development of advanced endoscopic surgery
- Development of hormone replacement therapy for postmenopausal women
- Medical treatment for menopausal women



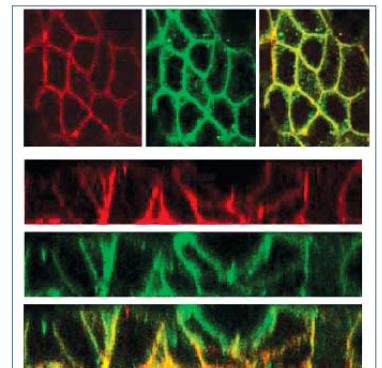
ICSI (intracytoplasmic sperm injection)

Gynecological Oncology

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

We are developing the intensive surgical management and selection of the most suitable chemotherapy regimen, which improved prognosis of the patients with ovarian cancer. The basic researches are focusing on the mechanism of gynecological malignancies, especially cervical cancer. We have identified the tumor suppressors involving in the process of cervical carcinogenesis. We are investigating a possible clinical application of the vaccine against human papillomavirus, which is a causative agent of cervical cancer.

- Intensive surgery including pelvic and paraaortic lymphadenectomy
- Selection of adjuvant chemotherapy based on the pathological and molecular marker
- Tumor suppressors involving carcinogenesis of gynecological malignancy
- Analysis of the molecular marker in tumor cells related to clinical behavior
- Prevention of cervical cancer using the human papillomavirus vaccines



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, and for investigation of fetal physiology using animal models. We are also focusing on the immunological aspects in patho-physiology of pregnancy, developing the immunotherapy for habitual abortion or gestational toxicosis.

- Early diagnosis of abnormal pregnancy
- Development of three dimensional ultrasonography
- Experimental fetal physiology
- Immunotherapy for pregnancy
- Management of complicated pregnancy

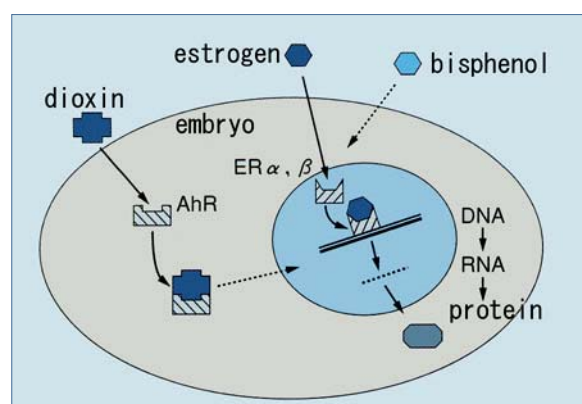


Three dimensional ultrasonography of fetus

Molecular Cellular Reproductive Medicine

We are approaching the molecular mechanisms in various reproductive pathological states, using the knowledge and techniques of molecular biology, cellular biology and genetics. The studies are proceeding on the effects of endocrine disruptors on reproductive phenomena, such as embryogenesis, spermatogenesis and fetal development, and on the prenatal genetic diagnosis.

- Effect of endocrine disruptors on reproduction
 - Embryogenesis
 - Spermatogenesis
 - Intrauterine fetal development
- Prenatal diagnosis using molecular genetics
- Molecular mechanisms of embryonic development



Molecular mechanisms of endocrine disruptors

Pediatrics / Developmental Pediatrics

We are studying all the issues concerning the health of infants, children and adolescents. We have achieved very important investigations to clarify the molecular pathogenesis of human congenital disorders.

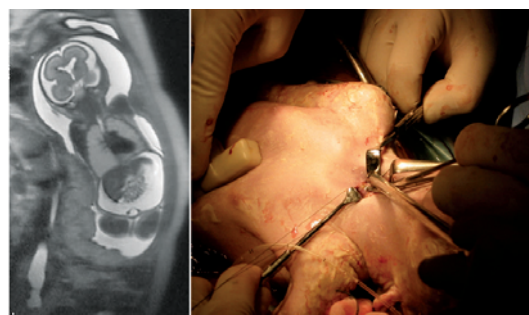
- Molecular diagnosis and analysis and collaborative treatment of intractable renal glomerular and tubular diseases
- Molecular diagnosis and analysis of hematological malignancy and bone marrow transplantation
- Study of Embryonic stem cell (ESC) treatments for various human congenital diseases
- Diagnosis, molecular analysis and collaborative treatment of congenital heart diseases
- Molecular analysis and collaborative treatment of congenital immunodeficiency and allergic diseases
- Collaborative treatment of extremely premature neonates and babies with pulmonary hypoplasia
- Enhancement of the immunological resistance of premature neonates using a new type of lactobacillus
- Diagnosis and treatment of neurological, endocrine and metabolic diseases
- Collaborative study and treatment of psychological disorders
- Investigation of new systems to promote mother and baby co-relationships during rearing



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
- Probiotics and prebiotics applied to pediatric surgical patients
- The development and differentiation of intestinal lymphoid organs
- Renal functions in congenital hydronephrosis
- Biliary atresia and biliary dilatation: their treatment and long-term prognosis
- Surgical treatment of pediatric respiratory malformations

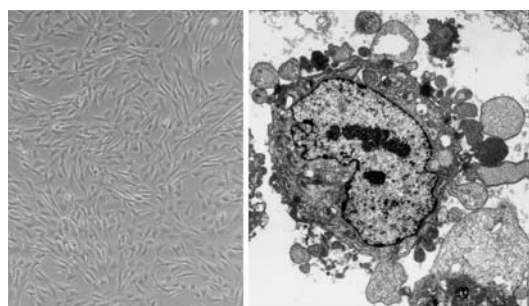


EXIT(ex utero intrapartum treatment):Tracheostomy on a fetus with laryngeal atresia

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



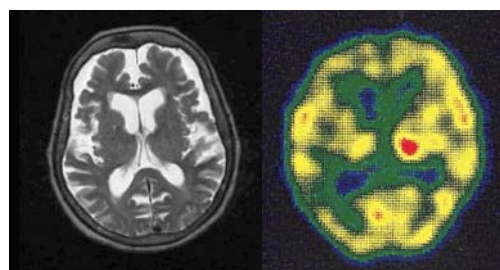
Microscopic and ultramicroscopic features of Wilms tumor cell line

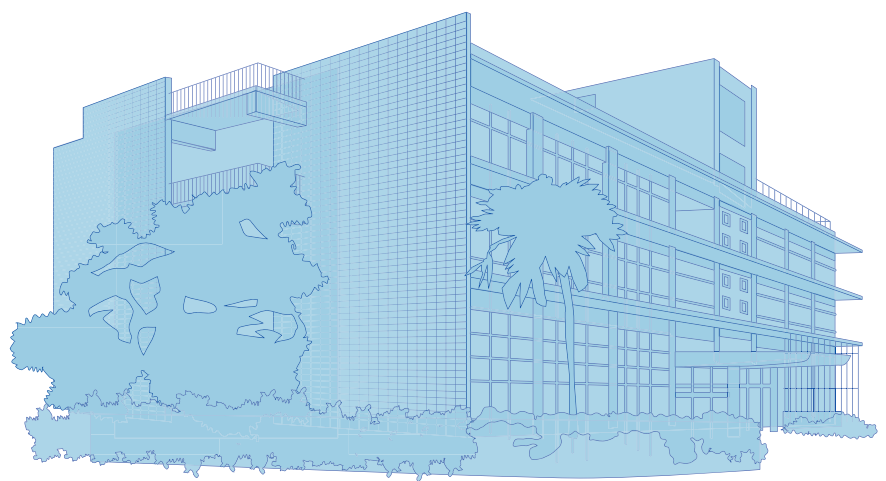
Geriatrics

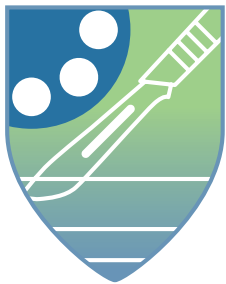
<http://www.h.u-tokyo.ac.jp/patient/depts/1510rounenbyou.html>

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 molecular mechanisms of vascular injury in sleep apnea syndrome







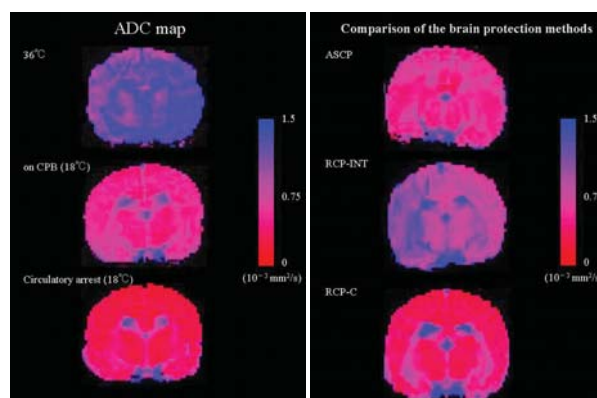
Surgical Sciences

Cardiovascular Surgery, Thoracic Surgery

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

We are leading in Japan by annual surgery case volume of 550. 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 surgery
 - Valve or vascular tissue allograft transplantation
 - Ventricular assist device for end-stage heart failure
 - Pathophysiology of thymoma
- Basic and experimental research
 - Development of real-time 3D echo
 - Development of myocardial regeneration therapy
 - Analysis of resistance to infection of tissue allograft
 - Analysis of suppressor gene of lung cancer



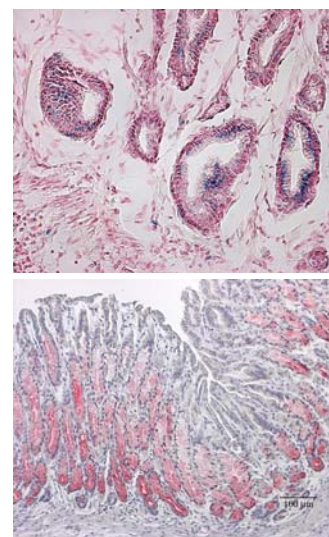
MRI diffusion-weighted images of brain by various brain perfusion techniques

Gastrointestinal Surgery

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

Our research activities range from basic topics to clinical ones with close inter-connections. Basic research topics encompass underlying molecular mechanisms and the regulation of carcinogenesis, progression, metastasis and prevention of gastrointestinal cancer. Clinical research topics include the establishment of tailored treatment strategies from a patients-by-patient point of view, which ultimately provide a better quality of life while improving survival quality.

- Carcinogenesis, progression, metastasis and prevention of gastrointestinal cancer
 - Inflammation and gastrointestinal carcinogenesis (gastroduodenal reflux, H. pylori infection)
 - Are cancer cells derived from bone marrow?
 - Earlier detection of cancer and micrometastasis by new genetic markers
 - Roles of epigenetic alteration (DNA methylation) in gastrointestinal carcinogenesis
 - Chemoprevention of gastric cancer with PPAR γ ligand
- Establishment of tailored treatment strategies
 - Less invasive treatment of early cancer by laparoscopic (assisted) surgery
 - Sentinel node navigation surgery for early cancer
 - Extended radical treatment of advanced cancer
 - Induction of neoadjuvant chemotherapy and improvement of survival
 - Estimation of chemotherapy effects by new bio- and genetic-markers
 - Alternative gastrointestinal reconstruction and estimation of the results



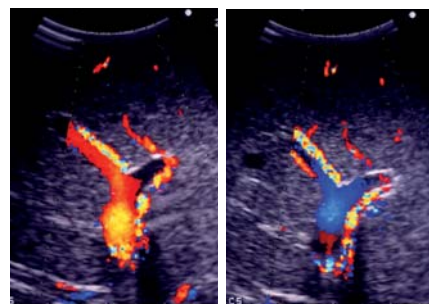
Bone marrow cell homing into gastric mucosa of *Helicobacter* infected mouse

Hepato Biliary Pancreatic Surgery

<http://square.umin.ac.jp/hbp-t/index21.htm>

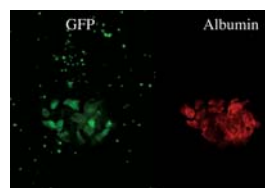
We constantly perform nearly 200 hepatectomies every year on patients with hepato-biliary malignancies including hepatocellular carcinoma and metastatic liver tumors. The surgical results can be classified as amongst the highest ranking in the world. In order to improve the surgical outcome for hepato-biliary-pancreatic 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.

- 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 the underlying mechanisms of acute pancreatitis using rats
- The prediction of recurrence of hepatocellular carcinoma by measuring AFP mRNA in the peripheral blood
- Induction of hepatocyte differentiation from bone marrow cells



Color flow mapping of intraoperative Doppler ultrasonography before division of the middle hepatic vein. Portal flow was hepatopetal (shown in red).

Color flow mapping of intraoperative Doppler ultrasonography after transection of the middle hepatic vein. Portal flow was hepatofugal (shown in blue) in the veno-occlusive area.



Bone marrow cells from the GFP transgenic mouse differentiated into hepatocytes by coculture with non-parenchymal liver cells. Bone marrow derived GFP positive cells expressed albumin.

Urology

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

We constantly perform more than 1,000 urological surgeries a year, including nephrectomy, cystectomy and prostatectomy, with increasing trend of laparoscopic maneuvers and brachytherapy for organ confined prostate cancer. Surgical or Non-surgical means are employed for non-cancer diseases including renal transplantation, urinary dysfunction, urinary incontinence, urolithiasis and male infertility. With regard to laboratory research, not only oncology but also JC virus, PCK disease and vascular biology are now under extensive investigation.

- Tailor medicines on estramustine phosphate (EMP) has been investigated for newly diagnosed advanced prostate cancer (Fig.1)
- JC viral genomic analyses and its distribution in the world
- Estrogen receptor beta and its metabolic cascade analysis
- Hormonal regulation of prostatic proliferation and atrophy
- Human E&H-cadherin correlation with invasiveness of transitional cell carcinoma and prostate cancer
- Oncolytic viral therapy using HSV-1 (Fig.2)
- PCK disease and genetic analysis
- Urolithiasis: ion channels membrane transport (NaDC-1)
- Vascular biology and erectile dysfunction (ED)
- Fluorescence in situ hybridization (FISH) flow cytometry
- Immunotherapy for renal cancer by IL-2 blocking with anti-IL-2-mAb

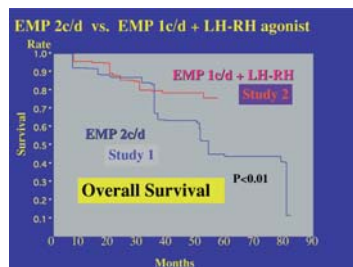


Fig.1 Overall Survival; EMP 2Cp versus EMP 1Cp + LH-RH agonist

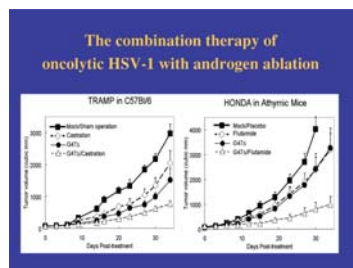


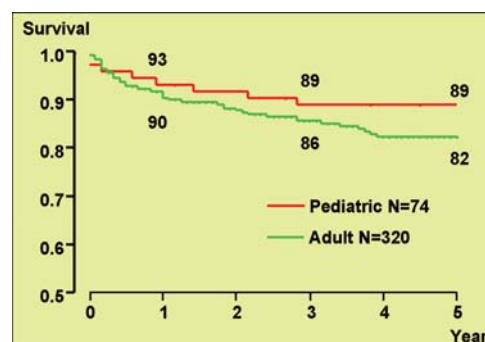
Fig. 2 The combination therapy of oncolytic HSV-1 with androgen ablation led to significantly enhanced inhibition of the tumor growth.

Artificial Organ and Transplantation Division

<http://www.h.u-tokyo.ac.jp/patient/depts/1512ishokugeka.html>

We have performed liver transplantation for end staged liver diseases. Until March 2007, we have experienced 394 cases of living donor liver transplantation and 5 deceased donor liver transplantation case.

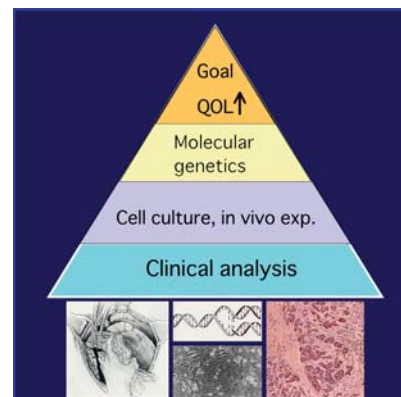
- Surgical technique on living donor liver transplantation
 - Right lateral sector graft
 - Criteria and technique on middle hepatic vein reconstruction in right liver graft
 - Vascular reconstruction using homograft vein
- Diagnosis on acute rejection
- Artificial Organ
 - Artificial Liver



The 5-year survival rate in our 320 adult patients who underwent living donor liver transplantation was 82%, which was much higher than overall Japan series (70%).

We had a great deal of experience in treating patients with various cancers and vascular diseases, and we have performed much research on carcinogenesis, cancer metastasis, immunology, 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 the novel and order-made therapy for cancer
 - Genetic mutation analysis of various cancers
 - Radiosensitivity and chemosensitivity of cancer
 - Detection of sentinel lymph nodes using magnetic particle
 - Immunotherapy using dendritic cells
 - Characterization of tumor vasculature and its therapeutic application
 - Gene therapy for disseminated metastasis
 - Drug development to target the receptor and signal transduction cascade of bioactive lipids
- Development of a novel method to diagnose and treat the vascular diseases
 - Vascular regeneration therapy for atherosclerotic obliterans (ASO)
 - Visualization of atherosclerotic lesions
 - Robotics surgery for vascular diseases

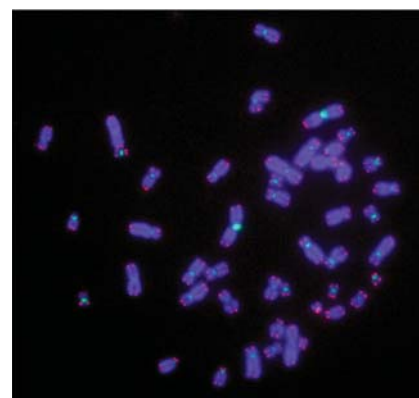


Diagrammatic representation of clinical-oriented research, with the ultimate goal of improving patient QOL

Metabolic Care and Endocrine Surgery

Our department has two main divisions. Division of surgical metabolism and nutrition performs research on vital response to surgical stress and on metabolic and nutritional care during peri-surgical period. Division of breast and endocrine surgery performs surgery for 200 cases of breast, thyroid and parathyroid tumors a year, and performs research on tumorigenesis, establishment of treatment and prevention of breast and thyroid cancers.

- Surgical metabolism and nutrition
 - Induction of tolerance against surgical stress and endotoxemia
 - Response to endotoxemia through Toll-like receptors
 - Effects of surgical stress on tumor development
 - Gender difference in the response to surgical stress
 - Bacterial translocation during chemotherapy for cancer
 - Establishment of metabolic care and nutritional support team
- Breast and endocrine surgery
 - Roles of nuclear receptor in development of breast cancer
 - Micrometastasis of breast cancer
 - Diagnosis of breast and thyroid tumors by fluorescence in situ hybridization of telomere
 - Apoptotic gene expression in endocrine neoplasm
 - Roles of carbohydrate in breast cancer metastasis
 - Establishment of evaluation on QOL of the patients with breast cancer



Detection of telomere and centromere by FISH. Fluorescence volume of telomere attenuates with increase of cell division. (red: telomere, green: centromere, blue: chromosome)

Dermatology

Our department performs very varied of basic and clinical research concerning the cutaneous immune system that is orchestrated by Langerhans cells, pathogenesis of skin fibrosis in the scleroderma, and mechanism of growth and metastasis of skin cancers (especially in malignant melanoma). Our specific interest is to develop new therapeutic approaches to the relevant skin diseases using the knowledge we obtain through the data generated by our research .

- Molecules of Langerhans cells that regulate antigen presentation
- The role of chemokines in allergic skin diseases
- Understanding and clinical application of the regulatory mechanisms of allergy inducing factors produced by the epidermis
- Understanding and clinical application of mechanisms of up-regulated expression of the type I collagen gene in scleroderma fibroblasts
- The role of transforming growth factor- β Smad signaling in fibrosis
- The role and signal transduction of transforming growth factor- β receptors in dermal fibroblasts
- The mechanisms of up-regulated expression of integrins in fibrosis
- Mechanisms of growth and metastasis in malignant melanoma cell lines
- Early diagnosis of metastatic lymph nodes by the sentinel lymph node biopsy technique
- Early diagnosis of malignant melanoma with dermoscopy

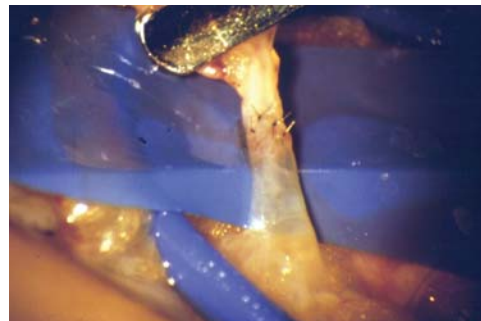


Axillary sentinel lymph node in patients with chest malignant melanoma (2% patent blue staining)

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
 - Mechanisms of embryonic craniofacial morphogenesis
 - Angiogenesis in embryo and vascular malformations
 - 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
 - Cranio maxillo facial surgery
 - Lymphedema



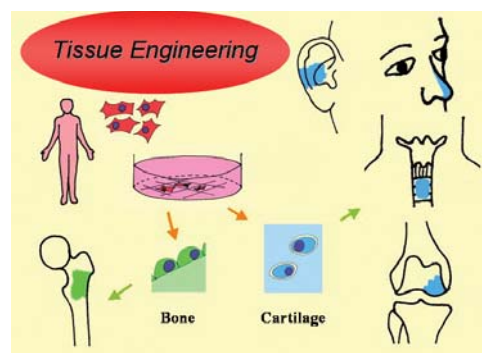
Microsurgical lymphaticovenular anastomosis(0.5mmφ) for human arm lymphedema

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:
 - Mandibular lengthening by distraction osteogenesis
 - Correction of facial deformity in patients with cleft lip and palate
 - Facial growth in craniofacial anomalies
 - Surgical-orthodontic treatment of dentofacial deformities
 - Evaluation of the treatment outcomes in patients with cleft lip and/or palate
- Basic and experimental research:
 - Cartilage and bone regeneration using the tissue engineering technique
 - Gene analysis of congenital anomalies in the oral and maxillofacial region
 - Effect of free radicals on bone metabolism
 - COX-2 regulation on bone metabolism
 - Mandibular lengthening by the floating bone method



Cartilage and bone regeneration using the tissue engineering technique

Orthopaedic Surgery

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

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.

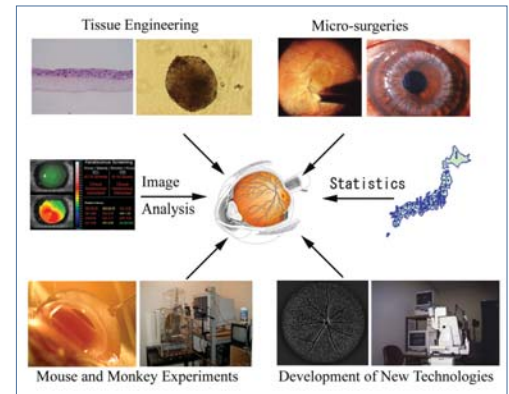
- Systemic and comprehensive study for osteoarthritis
- Bone, cartilage and nerve regeneration
- Regulation of anabolic and catabolic bone metabolism by cytokines (FGFs, PGs)
- Molecular mechanism of age-related bone loss (klotho, PPARγ)
- Molecular mechanism of osteoclast differentiation and apoptosis (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



Surgical navigation system

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.

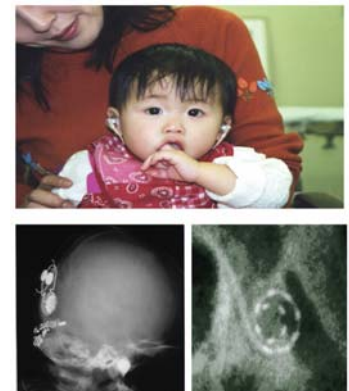
- Investigation of primary glaucomas and relating factors
- Development of new methods of glaucoma treatment and validation by RCT
- Investigation of new ocular hypotensive drugs and their mechanism of action by using transgenic or KO mice or experimental glaucoma monkeys
- Investigation of mechanism 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

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

- Clinical research
 - Cochlear implantation in deaf children and their development of hearing, speech and language
 - Surgical correction of 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 epipharyngeal cancer and hypopharyngeal cancer
 - Molecular biology of differentiation and development of inner ear and olfactory epithelium
 - Origins of vestibular myogenic potential
 - Aging and regeneration of olfactory epithelium
 - Binaural hearing

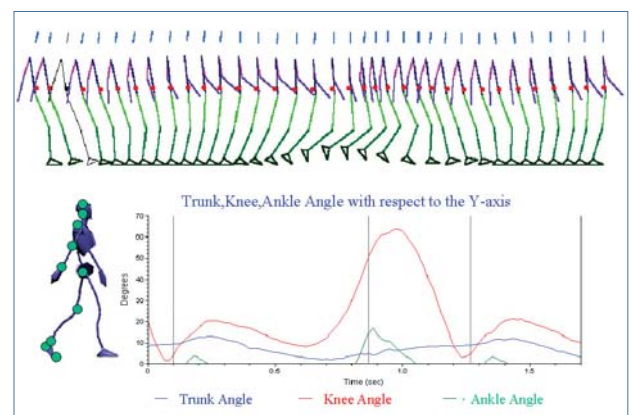


Cochlear implant

Rehabilitation Medicine

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

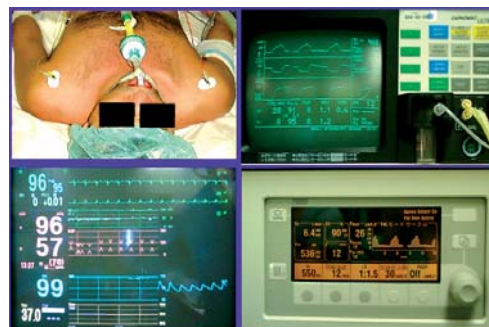
- Gait analysis
 - Measurements of 3 dimensional ground reaction forces with a force platform
 - Measurements of foot pressures with a computerized insole sensor system
 - 2-dimensional image analysis with a video camera system
- Cognitive Rehabilitation
 - Functional localization using event related potential and MEG
 - Simple evaluation system of higher brain dysfunction
- Clinical and biological study on disuse syndromes
 - Joint contracture and disuse atrophy in molecular biology
 - Development of a proper program for recovery from deconditioning



2D sagittal gait analysis

We conduct research into various subjects concerned with anesthesia and the pain clinic. There are 6 laboratories in our department. Comprising respiratory, circulatory, nervous and muscular, immune and pain research, and research into anesthetic instruments including monitoring systems.

- **Respiratory system** Our areas of research include changes in pulmonary vascular resistances in pulmonary edema; and influence of anesthetic drugs on the pulmonary system; and pathophysiological changes in neurogenic pulmonary edema
- **Circulatory system** Studies are now being performed on the relationship between the sympathetic nerve system and cardiac function; the influence of inhibitory enzymes upon organic microcirculations; and the ventilation-perfusion distributions during artificial positive pressure ventilation
- **Nervous and muscular system** Studies are now in progress on the mechanism of epidural-spinal anesthesia (using Hanaoka's needle); the influence of anesthetics on the auditory brain stem response; the influence of inhalation anesthetic drugs on the autonomic nervous system; and the pharmacology of neuromuscular blocking agents; and the development of a new monitoring system for neuromuscular blockade
- **Immune system** Themes include the response of immune systems to endotoxins in blood and the influences of anesthetics on hepatic Kupffer cells
- **Pain** We have performed many studies in this area, including the effects of epidural drugs on thermal nociception with different stimulus intensity; the clinical applications of current perceptive thresholds; the mechanism of the analgesic action of laser energy; the clinical applications of drug challenge tests; the examination of the application of epidroscopic therapy; the analgesic mechanism of hyperventilation; the applications of patient controlled analgesia; the effects of epidural narcotics; and the optimal combination of low dose opioids and inhaled anesthetics
- **Anesthesia machines and other medical equipment** The development of simulators for anesthetic education, and the development of new equipment for tracheal intubation are now in progress

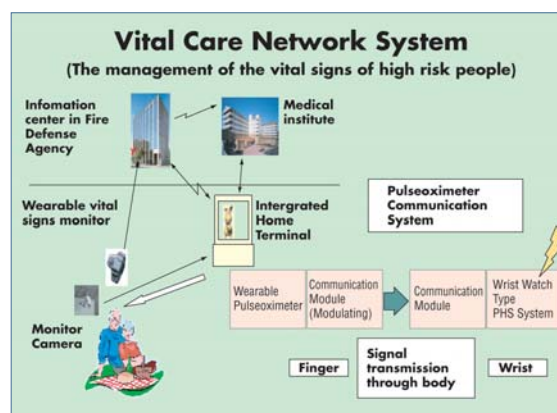


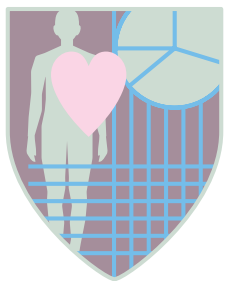
Anesthesia and monitors

Emergency and Critical Care Medicine

We are collaborating with the School of Engineering, and now concentrating on the development of the infrastructure of emergency medicine including “the Vital Care Network System”, which allows us to manage continuously large numbers of high risk patients. We are also making efforts to improve sterilization and wound healing.

- Vital Care Network System
- Telemonitoring system for prehospital medicine
- High-performance transfer system for the ambulances
- Electrolyzed water
- Autonomic nervous system regulation of the heart





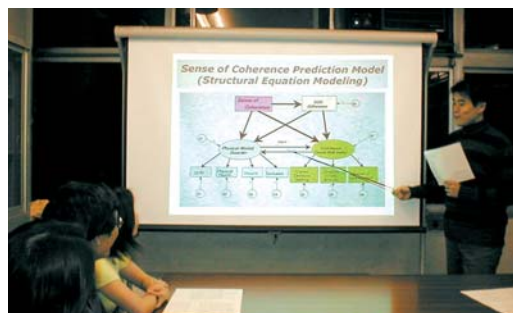
Health Sciences and Nursing

Health Sociology

<http://www.hlthsoc.m.u-tokyo.ac.jp/index.htm>

Our department studies social and psychological factors related to health problems and health care systems, through developing and applying theories, concepts and methods, which have been developed in sociology and social psychology. We carry out studies in interdisciplinary academic fields, involving health, medicine and nursing as well as the field of sociology.

- Studies on Antonovsky's Salutogenesis and Sense of Coherence (SOC)
- Study on medically infected HIV subjects
- Studies on the current situation and theories of changing professional-patient relationship and patient autonomy
- Studies on the effects of changes in industrial society on "Ways of Working and Living" and fatigue / stress among workers
- Studies on social differences and inequalities in health
- Studies on theory and research methodology on the lives of ill and disabled people and their families



An example of a visual presentation on research results

Mental Health / Psychiatric Nursing

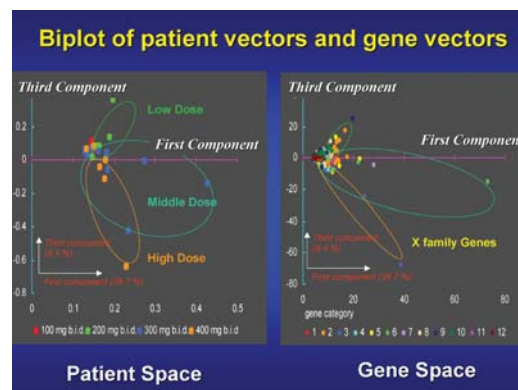
Our departments conduct research on mental health and psychosocial stress and provide education/training of professionals in related fields from global perspectives.

- Mental Health
 - Mental health epidemiology
 - Occupational mental health/Occupational health psychology
 - Psychoeducation/Stress management
 - Evaluation of school counseling
 - Practice and Evaluation of Psychotherapy
 - Early detection and therapeutic education of PDD
- Psychiatric Nursing
 - Supporting people living with mental health problems
 - Practice and evaluation of home visiting psychiatric nursing
 - Illness self-management in mental health
 - Recovery for people with mental illness
 - Patients' satisfaction with psychiatric services



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
 - Analysis of microarray data
- Collaborative projects
 - Japan Arteriosclerosis Longitudinal Study
 - Comprehensive Support Project for Oncology Research- Breast Cancer
 - Comprehensive Support Project for Adequate Treatment of Osteoporosis
 - Investigator-initiated clinical trials of cell therapies



Multivariate analysis of cDNA-array data

Social Gerontology

<http://www.sg.m.u-tokyo.ac.jp/information.htm>

The three major research areas of this department include social gerontology, psychosocial oncology and biomedical ethics. The faculty and graduate students are multidisciplinary and include those whose primary training is in nursing, medicine, psychology, anthropology and health sciences. Using the theories and research methods of those disciplines, we aim to suggest practical ways to deal with a wide variety of public health problems.

- Exchange of social support and subjective well-being among the elderly
- Psychological well-being among the elderly who have experienced relocation
- Measurement of active life expectancy
- Sexuality and body image issues related to cancer treatments
- Treatment decision-making process among cancer survivors
- Self-help group activities for chronic, life-threatening illnesses
- Psychosocial issues related to infertility treatments
- Multi-disciplinary collaboration in the clinical setting



Class meeting of the department

Health Promotion Sciences

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

The main activity of the Department of Health Promotion Sciences is making health policy proposals concerning health promotion in the community and work place through experimental and survey research. The main research fields are health behavior and life-style related disease. The main focus of health behaviors are physical activity including exercise, diet and nutrition, and obesity. Our classes include lectures and practical training with the aim of helping students to understand the method of planning, implementation and evaluation of the health promotion programs in the community and work place.

- Development of effective health promotion programs
- Assessment of the supportive environments in the community and work place
- Assessment of and supporting methods for health behavior, and the impact on health status
- Short and long term effects of behavior change
- Influence of behavior change on medical costs, and cost effectiveness analysis
- Determinants in the social and physical environment on the adherence of behavior change



Physical fitness test as part of a community health promotion program

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.

- 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
- Publication of a medical ethics case book for Japan
- 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.

Nursing Administration / Advanced Clinical Nursing

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.

- Assessment and improvement of quality of nursing care
- Outcome management for nursing practice
- Risk management in acute care settings
- Nursing case management and critical pathways
- Cost-effectiveness of nursing services
- Patient classification systems
- Physiological studies of clients'/caregivers' activities
- Occupational safety and health of health care workers
- Nursing policy and strategies to meet the professional demands



Promoting quality nursing care

Family Nursing

Hand-in-hand with the changes occurring in society, the formation and the function of the family is also changing. Current Japanese society expects not only client-centered perspective but also family-centered perspective from nursing research. We are especially focusing on the childrearing and childbearing family nursing research issues.

- Late effects of treatment and posttraumatic stress disorder in children with cancer
- Psychological preparation for children undergoing minor surgery
- Child abuse
- Care of dying children and their families
- Qualitative research to explore childbearing family formation process
- Postnatal depression and difficulties in childrearing



Our research focuses on the development of health care programs, and establishment and evaluation of community health care systems, in response to the health care needs of individuals, families, aggregates and the communities. Also, we are performing research on standardization of skills of public health nurses and terminology of community health nursing.

- Establishment and evaluation of community health care systems
 - Around-the-clock in-home care system
 - Expansion of the target of visiting nurse
 - Hospital discharge planning
 - Comprehensive community care, care-networking
- Development of health care programs
 - Support for people with diseases or disabilities
 - Support for families with babies and children
 - Elderly care
 - Occupational health
- Definition and standardization of skills of public health nurses/ Development of community health program
- Terminology of community health nursing

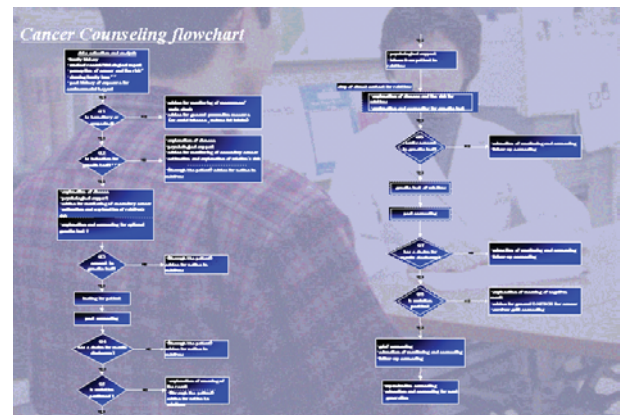


Concepts of the Community Health Nursing

Adult Nursing / Palliative Care Nursing

Mainly for subjects in their adulthood, we have been performing research in a variety of domains including prevention of cancer and several chronic illnesses, support for coexistence with disease, and palliative care. Focal points in our research, which we conduct under a team approach, are strategies in education and provision of relevant information based on the findings of molecular biology, and the team-approach nursing care system.

- Care for adaptation to physical alteration after surgery
- Cancer genetic counseling in nursing
- Physical activity in middle- aged / elderly
- Prevention and self care support for family with diabetes
- Symptom management for inflammatory diseases
- Evaluation of palliative care services
- Spiritual care for terminally ill persons and their families
- Continuity and dissemination of palliative care
- Nursing care system for out patients
- Nursing terminology



Midwifery and Women's Health

Having been in place since June, 2002, our research activities focus on maternal-child health care as well as health promotion to achieve an all-round good life for the well woman.

- Life style and oxidative stress during pregnancy
- Maternal body composition during pregnancy and infant birth weight
- Nutrition and weight management during pregnancy and postpartum
- Quality of sleep and sleeping posture of women
- Promotion of women's health care after delivery and during menopause
- Application of the ICF (International Classification of Functioning Disability and Health) to an assessment of quality of life among pregnant women

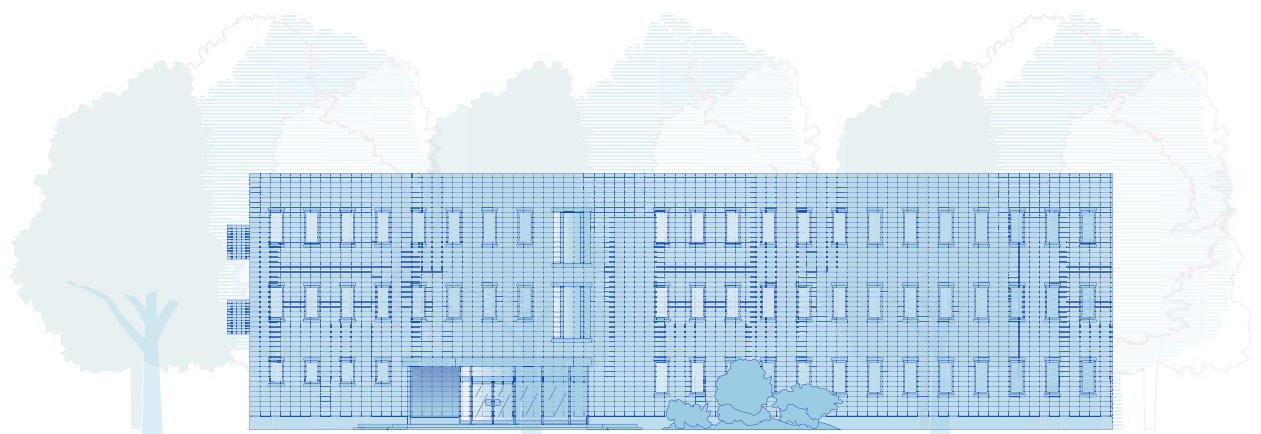


Photo by Sakae Kikuchi

The goal of our department is "Evidence-based practice and development of Gerontological nursing/ Wound care management", where we are striving to develop new techniques, instruments, and assessment skills in accordance of nursing science and engineering and clinical nursing. We are also involved in education and research to maintain physical ability of vulnerable elderly in community.

- Development of wound care management technique, instruments, and assessment skills
 - Research of evidence based wound care
 - Development of instruments to achieve the wound care management and prevention
 - Invention of assessment skills to manage wound care
- Development of education programs to maintain. Physical ability of vulnerable elderly in community
 - Research on status of nutrition management and disuse syndrom and development of education program for the vulnerable elderly in institution and at home







International Health

Health Policy and Planning

By pursuing alternative richness or happiness instead of economic growth, we would like to achieve health through respecting existing health systems, indigenous cultures, and our nature.

- International health policy and system analysis: MDGs, IMCI, ODAs/ NGOs, Health damages and real poverty caused by globalization
- Child Health: EPI, IMCI, Nutrition by Breast Feeding
- Environment Health (Medical waste management and international health policy, safety injection, aid and environmental damage)
- Reproductive Health, Gender (violence)
- Infectious Diseases: Malaria prevention; HIV/AIDS; Tuberculosis
- Allergic Diseases and Asthma Epidemiology
- Emergency Medicine



Mass vaccination campaign during National Immunization Days for poliomyelitis eradication

International Community Health

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

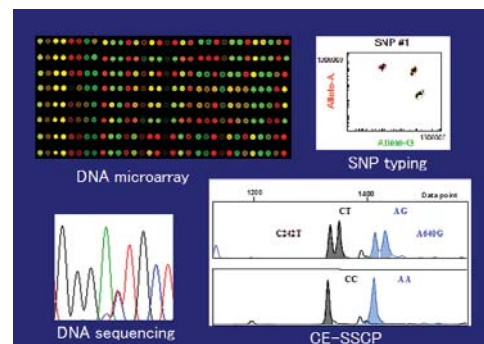
Our Department aims at bringing together clinical, public health and social science research to address following aspects of international health. We also conduct international cooperation activities with the U.N., JICA, local government and NGOs in developing countries. Our educational activities provide practical trainings for students, who are enthusiastic about contributing to research in international health and to international cooperation.

- Health promotion in developing countries
- Health and human rights
- Conflicts and health
- School health
- Infectious diseases (HIV/AIDS, TB, Malaria etc.)
- Environmental health
- Health policy and its impact on health



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 and gene expression analyses
- Analysis on the genome diversity of Asia-Pacific populations
- Development of methodologies for the analysis of protein interactions

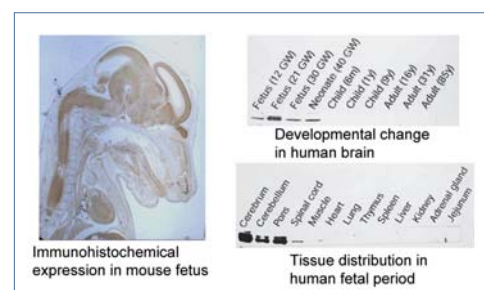


Tools for genomic analyses

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)
- Effects of fetal malnutrition on congenital anomalies and adulthood diseases
- Effects of urbanization on maternal and child health (high-rise living, child abuse, social epidemiology of infectious diseases)



Time- and space-specific expression of doublecortin, a protein regulating neuronal migration

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
- Genetic and environmental factors related with tolerance to infectious diseases



At a school in a survey area, West Java, Indonesia

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 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



Free-living nematode *Caenorhabditis elegans* expressing a recombinant green fluorescent protein inside the body under the control of the promoter of the iron-sulfur subunit (Ip) gene of succinate-ubiquinone reductase (complex II)





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.

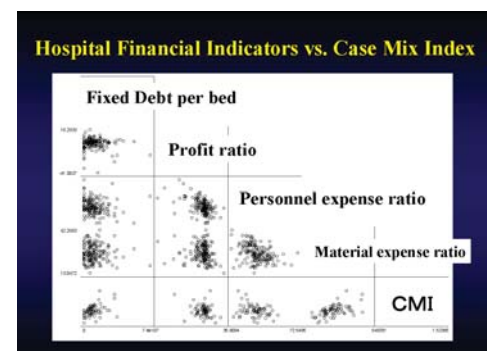
- Methodological studies on dietary assessments
- Nutritional epidemiologic studies on nutrient intakes/dietary behaviors and health status
- Studies on development of dietary promotion methods and evaluation of their effectiveness
- Establishment of literature database for "epidemiologic studies on 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



The scatter plots of financial indicators and case mix index among Japanese acute hospitals (Research in Aid from Ministry of Health Labor and Welfare, 2006)

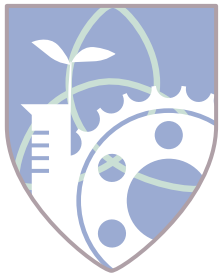
Clinical Information Engineering

Clinical Information Engineering 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 biomedical research and clinical care.

- Medical Decision Making
- Cancer informatics
- Data Mining & Knowledge Discovery in Database
- Virtual reality for medical science
- Social information engineering for Public Health



A virtual reality application for medical decision making



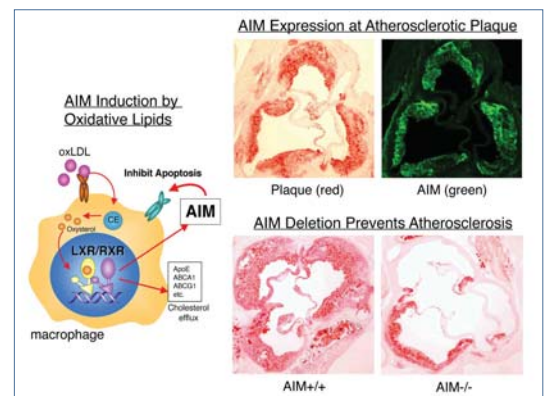
Center for Disease Biology and Integrative Medicine

Basic Medical Sciences (I) / Molecular Biomedicine for Pathogenesis

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

Focusing on functional analysis of newly isolated genes, particularly related to apoptosis, cell differentiation, or cell cycle, our laboratory is pursuing 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 vivo* analyses. Our overall goal is to apply our findings to development of novel and definitive therapies for types of diseases.

- Role of AIM (Apoptosis Inhibitor of Macrophage) in atherosclerosis development and other diseases
- Regulation of hematopoiesis and its relevance to leukemogenesis; via functional analysis of a newly identified Polycomb group molecule MBT-1
- Regulation of tumorigenesis by modulating apoptosis and cell cycle; via analysis of DEDD-deficient animals

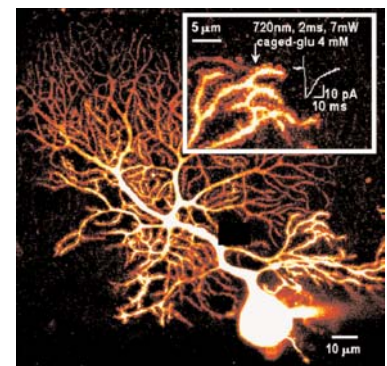


Basic Medical Sciences (II) / Biophysics

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

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

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



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

Biomedical Materials and Systems

<http://park.itc.u-tokyo.ac.jp/tissue/> <http://envchem.iis.u-tokyo.ac.jp/> <http://www.cdbim.m.u-tokyo.ac.jp/english/index.html>

Ushida Lab investigates regenerated cartilage, bone and blood vessel in combination of 3D scaffold technologies and tissue engineering. We also focus on the elucidation of cellular mechanism of signal transduction evoked by physical stimulations such as stretching, shear and hydrostatic pressure. Sakai Lab tries to develop novel experimental systems or devices for clinical or diagnostic applications and those for evaluation of environmental impacts on humans based on the approaches of chemical system engineering and on cultivation of human organ-derived cells in different scales, towards the final goal, "human body system engineering".

- Biodegradable polymers, bioceramics for tissue engineering
- Regenerated cartilage, regenerated bone and regenerated blood vessel
- Elucidation of signal transduction mechanism responding to physical stimulations
- Engineering of human large internal organs
- Evaluation of toxicological responses in humans using in vitro model organs
- Bioassay-based environmental assessment and management



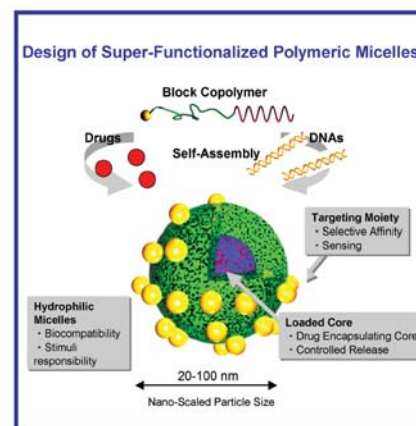
Tissue Engineering & Organ Engineering

Clinical Biotechnology

<http://www.bmw.t.u-tokyo.ac.jp/english/index.html> <http://park.itc.u-tokyo.ac.jp/NBEP/index-en.html> <http://square.umin.ac.jp/t-e/>

Nanodevices produced by nanotechnology integrate materials and systems on a nanometer scale, and hold the key to realizing the futuristic medical system that can serve the needed function at the right time and the right place with minimal invasiveness. Furthermore, nanodevices are expected to become an important interface between basic biomedical science and clinical medicine by facilitating the translation of basic achievements into clinical applications. Our division wishes to produce revolutionary medical nanodevices based on nanotechnology and thereby to spread the idea of "Nanomedicine" intranationally and internationally.

- Development of nano-scaled carriers of drugs and genes based on polymeric micelles
 - Functional diagnostic imaging
 - Pinpoint cancer therapy
 - Gene therapy
- Development of functional polymeric micelles responsive to external stimuli
- Development of functional cell arrays based on nano-fabrication of polymers
- Development of intelligent scaffolds delivering drugs and genes and their application to regenerative medicine

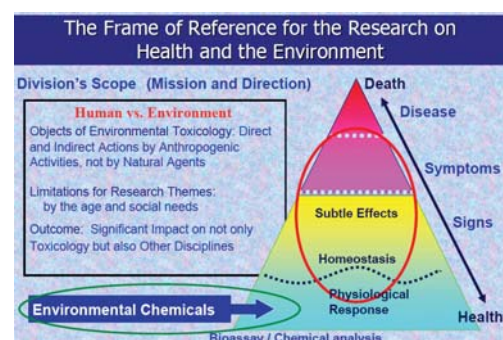


Environmental Health Sciences

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

The manifestation of diseases having modulation of advance brain function, endocrine system and immune system is known to be induced not only by 'internal environmental' factors, but also by 'external environmental' agents such as environmental chemicals. In order to provide scientific basis for health risk assessment of environmental chemicals by focusing upon children's health, we implement the mission of our division to characterize possible health effects of environmental hazardous chemicals and to clarify the toxicity mechanism with an integrative spectrum from the individual to molecular levels.

- Elucidation of the mechanism of toxicity of environmental hazardous chemicals, such as dioxins/PCBs and heavy metals at the molecular and cellular levels
- Clarification of the molecular basis of difference in susceptibility to toxic chemicals among strains of a particular animal species as well as among different animal species.
- Development and application of toxicity evaluation techniques at whole body, cells and molecular levels
- Development of risk assessment methodology to set up safety guidelines on the environment and food

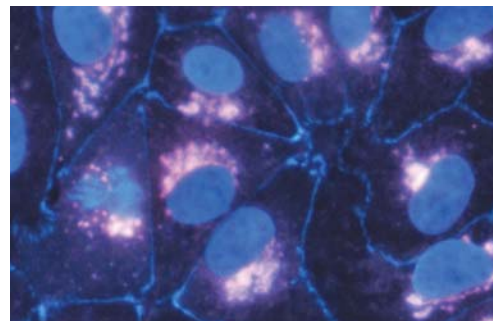


Research Resources and Support - Animal Research

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

All researchers are accountable for paying attention to "3R" in animal experiment. We give the researchers advice on their animal experiment plans and manage the facility of laboratory animals so that animal experiments are carried out in consideration of animal welfare. We also teach laboratory animal science to medical undergraduates. Research activities are the development of methods to detect trace amount of antigen and the study of interaction between host and parasite in protozoan disease.

- Histopathological diagnosis of BSE using nucleic acid signal amplification technique
- Improvement of immuno-PCR technique
- Elucidation of the mechanisms that parasite escapes host immunity



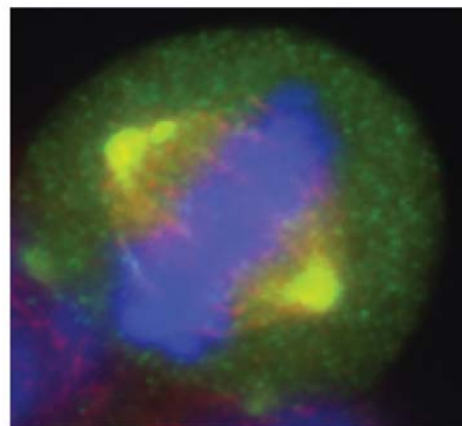
Immunofluorescence stain of Golgi apparatus and tight junction in Vero cells using nucleic acid signal amplification technique

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, our division performs management of the research network and the central servers of the Graduate School of Medicine, and basic research of medical informatics (medical terminology and standardization of medical vocabularies), privacy and anonymizing of personal information, security of research network, distributed processing system for medical information.

- Biomedical research support using network system
- Standardization of medical vocabularies and coding system
- Biomedical terminology and ontology
- Security of biomedical research network
- Privacy of personal data in medical research
- Distributed processing system for medical information using the internet



Computer System for Biomedical Research





Central Clinical Facilities

Clinical Laboratory

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

Our main duty is to provide the high-quality results of laboratory tests. We also emphasize the basic research on laboratory automation and standardization, development and improvement of laboratory tests, and pathophysiological analyses through laboratory tests, as follows.

- Laboratory automation system
- Clinical application of genetic analysis of leukemia and drug response genes
- Analysis of bioactive substances, and its application to laboratory medicine
- Analysis of the cardiac functions using ultrasound
- Relationship between the respiratory function and various pathophysiological conditions
- Investigation of brain function using magnetoencephalography



Laboratory automation system

Surgical Center

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

Operating rooms were centralized as a surgical center for the first time in Japan, in the surgical ward building of University of Tokyo Hospital on July 1955. The surgical center moved to the new central building on January 1988. In July 2001, the branch hospital of our university located in Mejiro was closed and joined to our University Hospital located in Hongo. Furthermore, a new ward building was opened in October 2001. Since then, the number of operations has been remarkably increasing. Another new central building including new operating rooms will be constructed in fall 2006. Over 8,300 operations were performed in the year 2006.

Teaching activities include lectures to the undergraduate and postgraduate medical students as well as nursing staffs and medical electronics engineers, regarding aseptic techniques, sterilization methods, disinfection methods, prevention of perioperative infections, humoral and cellular responses to trauma and shock, training of handwashing and gown techniques.

- Safety management in the operating rooms
- Efficient management of the operating rooms
- Cleaning, Disinfection and Sterilization
- Environmental control in the operating rooms
- Improvement of cost-effectiveness in the management of surgical center
- Perioperative infection control
- Precautions of accidental troubles in handling surgical instruments and medical devices
- Development of new surgical instruments and medical devices
- Three-dimensional processing of visual information



UMIN is the largest and most versatile academic medical information center in the world with 270 thousands registered medical professionals and 40 million pages per view monthly web accesses. UMIN is managed by the UMIN Council under the National University Hospital Association.

- Major information services
 - Electronic Library for Biomedical Sciences (ELBIS)
 - Internet Data and Information Center for clinical and epidemiological research (INDICE)
 - Evaluation system of Postgraduate Clinical training (EPOC)
 - Web-based Quality Management system of Educational effectiveness (Web-QME)
- Major research activities
 - Information systems for clinical and epidemiological research
 - Evaluation of medical schools and university hospitals
 - Library and information science
 - Network security





Pharmacy

Pharmaceutical Department

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

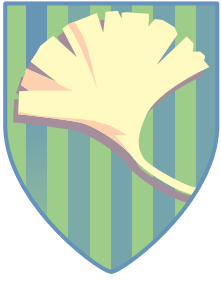
Our goal is to provide optimized pharmacotherapy for each patient, based on the analysis and prediction of individual pharmacokinetics, drug sensitivity and drug adverse reaction.

We are now advancing the basic study of the regulatory mechanism of gene function and gene expression, particularly focusing on the molecules related to osteoporosis and lifestyle diseases, as well as clinical application of genetic polymorphism analysis of drug metabolizing enzymes and drug transporters.

- Analysis of genotype and phenotype of drug metabolizing enzymes and drug transporters
- Strategies for accurate prediction of drug disposition, and pharmacokinetic/ pharmacodynamic (PK/PD) studies
- Transporters involved in lipid homeostasis
- Regulatory mechanisms of signaling molecules involved in bone homeostasis



Therapeutic drug monitoring

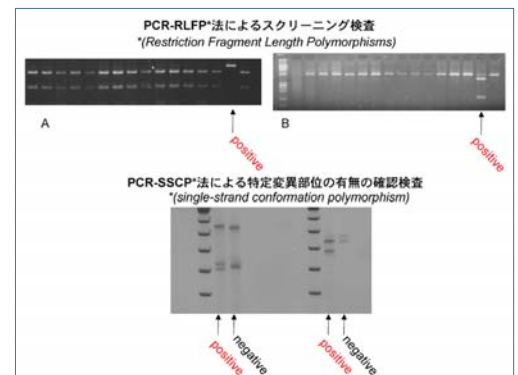


Center

Health Service Center

Health service center provides various annual health-checkups, health counselling and education to the students and university staff. We also provide clinical services at our outpatient clinics. Our search divisions are targeting elucidation of predictive factors of various diseases, presymptomatic diagnosis of fatal diseases and mechanisms of common disorders in young adults.

- Health management
 - Annual health-checkups for students and the university staff
 - Health counseling and education
- Clinical services at our outpatient clinics, including Internal Medicine, Psychiatry etc.
- Research divisions
 - Genetic and MRI diagnosis of cardiovascular diseases
 - Genetic mechanisms of psychiatric disorders
 - Predictors of malignancy in the stomach
 - Hypertensive genes and hemodynamics in the ocular fundi
 - Genetic analysis of asthma
 - Immune responses and cardiovascular disorders
 - Predictors of forthcoming cognitive dysfunction in the elderly



The stepwise-determination of genetic polymorphism responsible for cardiomyopathy

The International Research Center for Medical Education

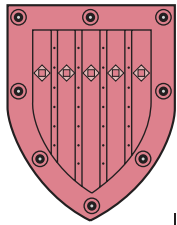
<http://www.ircme.u-tokyo.ac.jp/>

The International Research Center for Medical Education was installed as a joint educational study institution to promote interdisciplinary research on medical education and international cooperative studies in relation to medical education. This center consists of three sections: the medical educational international cooperation study section, the medical educational international cooperation enterprise plan coordination and information section, and the visiting professor section.

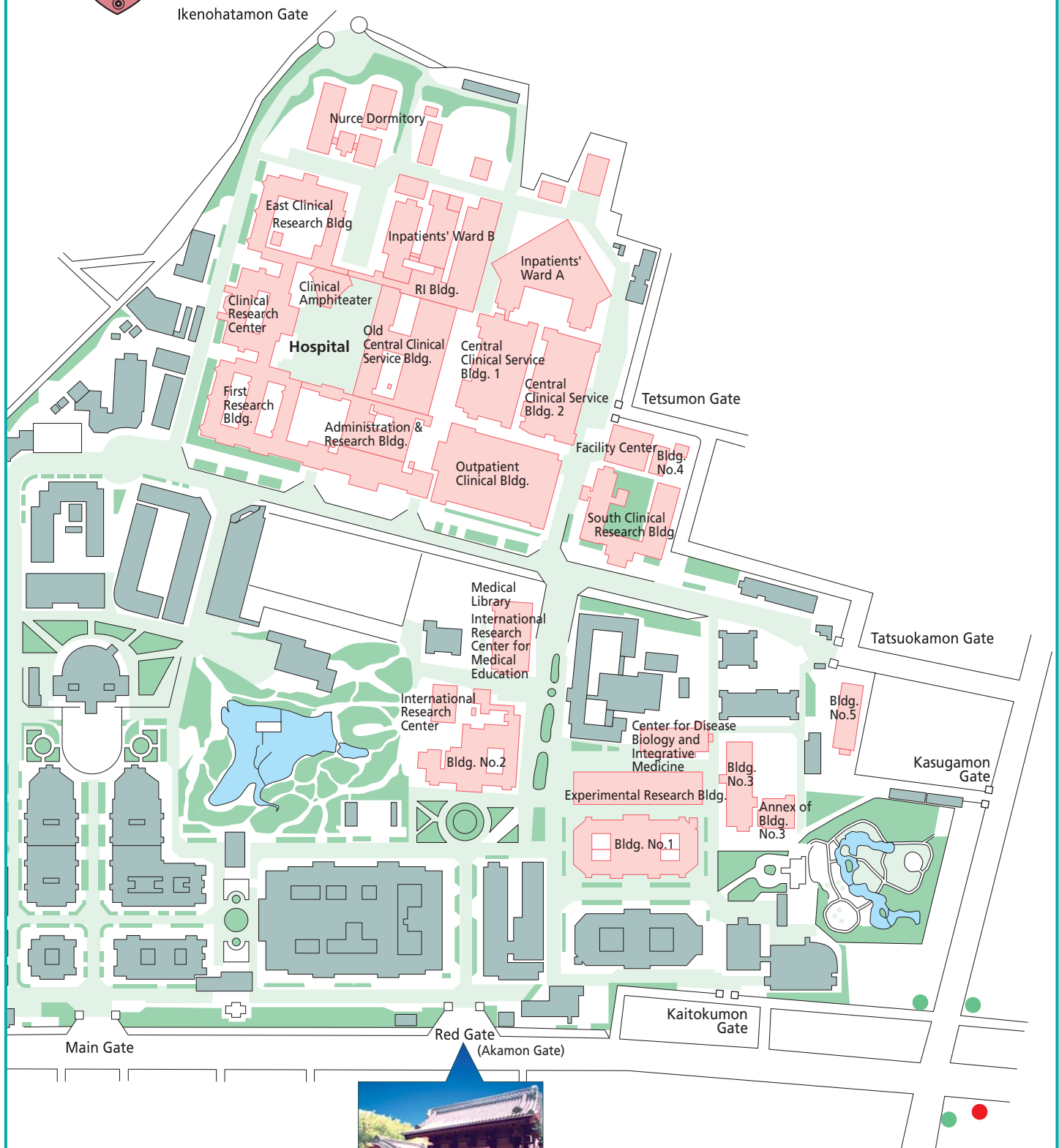
- Medical education theory / method
- Medical education curriculum / technique / evaluation
- Needs of medical educational international cooperation
- Strategies for international cooperation in medical education
- Evaluation method of international cooperation projects in medical education
- Drafting, planning, and implementing international cooperation in the field of medical education
- Network formation to promote international cooperation in the field of medical education



Prof. Snell (McGill Univ.) at her final lecture



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● : Oh-edo Line



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Issued on June 30, 2007

