

University of Tsukuba

筑波大学



INTERNATIONAL
GRADUATE PROGRAMS IN
**MEDICAL
SCIENCES**



Introduction

Thank you for picking up this brochure. Here at the University of Tsukuba we invite you to “IMAGINE THE FUTURE”. This could be the start of your future – part of this dynamic, innovative, and exciting research environment in Tsukuba Science City, Japan.

Many of the students currently enrolled in our Graduate Program in Medical Sciences have obtained their undergraduate degree in an areas outside medicine, including pharmacy, biology, and chemistry. Such diversity has helped to create a unique academic environment in which students to can conduct frontline research through discussion and cooperation amongst their peers. We aim to significantly increase the number of students from overseas to further diversify our program.

One of the special features of our Doctoral Program in Medical Sciences is the *Musha-shugyo* (samurai errantry) system of study, which began in 2005. *Musha-shugyo* study is an active learning program in which students propose assignments by themselves and complete these assignments through collaboration with practicing researchers from abroad and from industry.

The program originated from medical education reforms advocated by McMaster University in Canada and Harvard University in the United States. The program has also been adopted throughout Finland, a country noted for its innovative education system.

Previous trends in Japanese graduate school education reform have often overly focused on producing doctoral degree recipients who meet international standards in substantiveness, comprehensiveness, and reliability. However, the drawback of these prior experimental reforms was the production of students who had a general acquaintance with the field but

poor applied skills, an inability to design and manage a research program independently, a lack of communication skills, and a lack of a well-rounded academic mind.

Although we still endeavor to produce doctoral recipients who meet international standards in substantiveness, comprehensiveness, and reliability, we consider active learning *Musha-shugyo* study as the best way to cultivate scientists of the highest quality who are truly worthy of receiving the doctoral degree, and so have adopted it as the primary focus of our research curriculum. We believe that *Musha-shugyo* is a superior strategy for training students who are aiming to become the researchers of tomorrow – and this is one of the standout features of the University of Tsukuba’s Doctoral Program in Medical Sciences.





Contents

Introduction	1
Message from Associate Provost, Dr. Mitsuyasu Kato.....	3
Master's Programs in Medical Sciences	5
Doctoral Programs in Medical Sciences	7
Student Life	9
Recent Activities.....	11
Research Groups	15
English-Language Program for Medical Science	29
How to Apply.....	30
Map and Directions.....	32

Welcome

Message from Associate Provost Dr. Mitsuyasu Kato

Full Name:

Mitsuyasu Kato, M.D., Ph.D.

Nationality:

Japanese

Position/Year:

Professor, Faculty of Medicine;
Associate Provost, Graduate School
of Comprehensive Human Sciences,
University of Tsukuba

Field of study/Major:

Experimental Pathology / Oncology



Imagine the Future and Become a Challenger!

The University of Tsukuba was founded in 1973 as a university with a new concept that reflected the ideals of Japan after its economical development. For over 40 years since, we have continued to make unprecedented growth as a forerunner of university reform in Japan. Still today, with our slogan, “Imagine the Future,” we are forging ahead with reforms to further strengthen our uniqueness as a global research and education center by being a university of the future that leads the way in finding solutions to the global issues of the day.

The Graduate School of Comprehensive Human Sciences was established in 2001 as a school

of interdisciplinary research on human life and activity. Its aim is to foster individuals with a comprehensive viewpoint and creative research ability who can bring about a paradigm shift in confronting the issues that humankind will face in the twenty-first century. Compared with other universities' faculties of human sciences that mainly include schools of education, psychology, and social science, the University of Tsukuba is greatly distinguished by the fact that its medical faculty is also part of the Graduate School of Comprehensive Human Sciences.

In 1979, the graduate school of the University of Tsukuba's medical school set up its Department of Medical Science Research, the forerunner of today's Master's Program of Medical Sciences. It was the first master's program in medical sciences in Japan and admitted university graduates as well as people with working experience from diverse academic backgrounds. The curriculum included foundation courses in basic, clinical, and social medicine as well as a rich variety of elective courses. Students were nurtured to become researchers, educators, and other highly trained professionals who could respond to the social and academic needs of various walks of life and thus contribute to making and maintaining a safe and healthy society. This educational philosophy was driven further forward by the merging of the Graduate School of Comprehensive Human Sciences that brought about an academic environment in which, even at the doctoral level, students with nonmedical backgrounds comprise almost half the number of students. In addition, in recent years we have formed partnerships with many institutions overseas. These partnerships allow our students to participate in overseas *Musha-Shugyo** study, in teaching assistantships at the Summer School for students from our partner institutions, and in presentations and

discussion at the Leading Graduate Schools International Conference. Through these many opportunities to participate in international activities, we are striving to develop individuals who can participate actively in the international community. Moreover, through the G30 International Program, courses taught in English are offered not for overseas students only but for overseas and Japanese students together, thus making an academic environment that promotes "day-to-day internationalization."

In striving for an ideal graduate school, we faculty members have cooperated sincerely with each other to build up this program. It is a program that brings together talented students both from within and from outside Japan and develops them into individuals who can contribute to advancing the health and welfare of humankind by overcoming global challenges. We strongly hope to carry this program forward with students who have high ideals and a passion for learning. To make great leaps forward is the prerogative of youth. Let's take up the challenge. You are the builders of the next new era.

**Musha-Shugyo*: voluntary apprenticeship of young Musha (= Bushi) away from their hometown in the feudal period (see: Inazo Nitobe. *Bushido: the Soul of Japan*.)



Master's Programs in Medical Sciences

The Master's degree programs in medical sciences were established to provide opportunities for students who had received undergraduate education other than in medicine to obtain knowledge of medicine and medical sciences, and to develop the Skills necessary for its application. Graduates of this program are expected to contribute to the progress of research in the fields of basic medical sciences, clinical medicine and community medicine. It is also the aim of this program to train professionals who can serve as experts in various medicine-related fields, such as preventive medicine, occupational medicine, medical welfare, medical engineering and medical administration, and other related fields.

Global 30 Master of Public Health Program:

There is a growing need for highly-trained public health professionals skilled in preventing illness and protecting health in the local, national, and international communities. This program is designed for professionals in various medicine-related fields who intend to incorporate public health skills into their current work and to change their careers. We aimed to equip the students with competence to become tomorrow's public health leaders, educators and researchers, namely, a new generation of public health professionals who help people to achieve healthier life around the world. Students can select either one of two programs, Accelerated Master of Public Health Program or Master of Public Health Program, according to their prior professional experiences, academic backgrounds, and future plans. *Accelerated Master of Public Health Program:* The curriculum with 30 credits is designed to develop abilities in key public health skills and to finish in one year. This program includes core coursework in public health such as Biostatistics, Epidemiology, Environmental Health, Public Health Management and Policy, Public Health Practice,

and Social and Behavioral Sciences and aims to produce ethically, culturally, and scientifically competent, topnotch public health practitioners. Instead of a master's thesis, each student must conduct a special project, Advanced Exercise in Public Health, in the last term which covers overall cross-disciplinary fields of public health. The Advanced Exercise in Public Health offers the student the opportunity to synthesize both theoretical and practical coursework. Its outcome is assessed by a written report and a final oral presentation near the end of the program. *Master of Public Health Program:* This is a two-year, 30-credit program. The first year mainly involves core coursework in public health such as Biostatistics, Epidemiology, Environmental Health, Public Health Management and Policy, Public Health Practice, and Social and Behavioral Sciences, while the second year is devoted to research on public health. Students who wish to learn more about the methods and research of public health and pursue a PhD are encouraged to select this program. All students must prepare a master's thesis and make an oral presentation to show their competence in research activities.

Master's Program in Medical Sciences: This program is designed for student to enroll in the existing Master's programs offered in Japanese at the University of Tsukuba, Faculty of Medicine. Students in this program may also elect to take courses taught in English toward their degree. Japanese applicant living abroad may apply to this program.

Dual Master's Degree Program: The program gives students of the Master's Program in Medical Sciences, University of Tsukuba, and National University of Ho Chi Minh City and Ho Chi Minh City University of Medicine and Pharmacy an opportunity to study in the master's program reciprocally, and the students are able

to acquire degrees from both universities (dual degree) through academic studies and research activities in each institution. The learning period will be two years for students from Vietnam and a year for Japanese students. Students from Vietnam are expected to earn 10 credits out of 30 required credits in Vietnam, and with the remaining 20 credits in Japan. That, including a thesis, will fulfill the requirement for the degree (Medical Sciences). The students of the University of Tsukuba will acquire a master's degree either in Science or in Pharmacy in Vietnam. The curriculum instructed in English

in the Master's Program in Medical Sciences, University of Tsukuba, is organized with a variety of courses which extend to clinical, basic and community medicine in the comprehensive fields of medical sciences. Thus students are able to select courses of their interest and future goals. Through basic research in life sciences and research leading to medical care, students of both countries are expected to devote themselves toward the betterment of society. With an international mind, they will practice as medical professionals such as researchers, educators or highly skilled specialists.



Curriculum: In order to meet the changing and growing demands of medical sciences, public health, health care and welfare, the curriculum has been structured to accommodate the diversity of student backgrounds. The requirements for students admitted to any of the above programs are generally the same. The curriculum is comprised of (1) fundamental subjects, including human anatomy, physiology, biochemistry, overview of clinical medicine, overview of social medicine and English in

medical science, (2) electives and advanced subjects including all of the basic medical science disciplines, biotechnology, pathology, clinical medicines, sports and health, social medicine, medical welfare, medical information technology, experimental animal sciences, and (3) thesis for the Master's degree. Total required credit units for graduation are 30 units, most of which have to be finished in the first year. The thesis work should be carried out under the direction of an advisor.

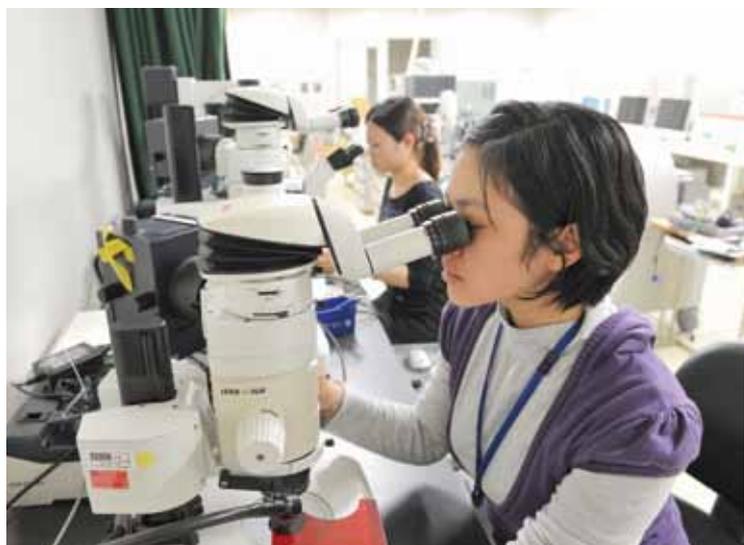
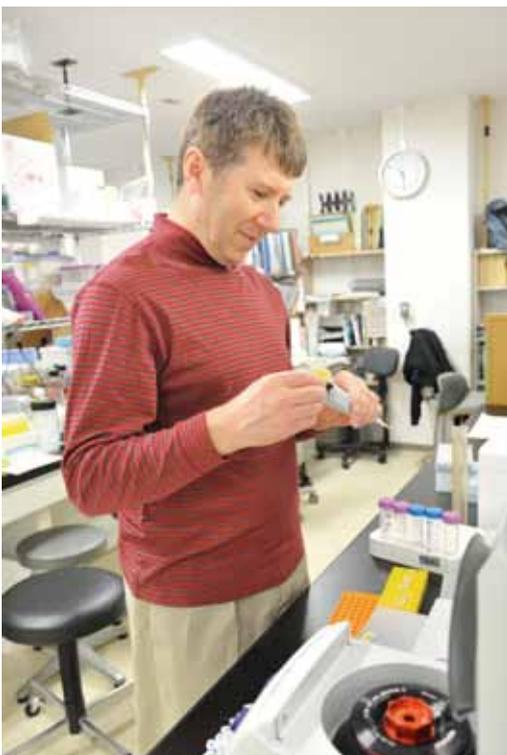
Doctoral Programs in Medical Sciences

The Doctoral Programs in Medical Sciences of the University of Tsukuba will cultivate in our scholars a spirit of creativity and cooperation so that they can become innovative and leading biomedical researchers and educators. Through the program, we will advance knowledge and problem solving skills through rigorous scientific debate conducted always in a spirit of mutual and abiding respect.

Research fields in our program cover basic experimental medicine as well as social and environmental medicine: Biochemistry, Molecular Biology, Cell Biology, Human Genetics, Physiology, Animal Models, Anatomy and Embryology, Pathology, Pharmacology, Oncology, Infection Biology, Immunology, Epidemiology, Environmental Medicine, Legal Medicine, and Public Health. Students can select their specialties from 18 different fields.

The program is designed to have many faculty members so that students can learn each subject from the specialists in the field. More than 70 members participate in the program.

Another characteristic of our program is the emphasis on rigorous scientific debates. Students are expected to participate in rigorous discussion during the seminars and periodic meetings in order to sharpen their communication skills and creative thinking. They are expected to be able to judge and evaluate the objectives, methods, results and significance of research to understand the science and logistics behind the research work. Organization and preparation for publication and thesis is also important. While working toward their theses, students gain advice from their mentor as well as from faculty and students outside their own laboratory. The entire faculty is willing to support and contribute to the quality of theses.



Global 30 International Doctoral Program:

The University of Tsukuba aims to cultivate human resources with a global view by promoting international exchange to improve academic standards. The University of Tsukuba was selected as a member of "Global 30 Project for Establishing Core Universities for Internationalization" in 2009 by the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT). This project aims to promote internationalization of Japanese universities. All courses are offered in English for students to obtain a Doctorate degree.

Doctoral Program in Biomedical and Clinical Sciences:

The program is designed for students to enroll in the existing Doctoral programs offered in Japanese at the University of Tsukuba, Medical Branch. Students in this program may also elect to take English courses toward their degree. Japanese applicants living abroad may apply to this program. Please visit http://www.md.tsukuba.ac.jp/renais/e/home/about_r/about/about_prj.htm for more information.

Dual Doctoral Degree Program: This program is for students currently enrolled in a foreign graduate school affiliated with the University of Tsukuba to obtain a Master's or Doctoral degree from both institutions. Affiliated Universities are: The University of Medicine and Pharmacy at Ho Chi Minh City (Vietnam), University of Sciences at Ho Chi Minh City (Vietnam) and National Taiwan University (Taiwan).

Curriculum: The Doctoral degree programs include the satisfactory completion of at least 30 credit hours of formal course work, including required courses. Each student is required to take a preliminary examination during the 2nd year of enrollment, and defend their dissertation in English for their final examination. It is expected that doctorate students will publish two first author original articles in a professional journal written in English. Students must also demonstrate English proficiency by obtaining a score over 750 in TOEIC.



Student Life



I have been studying the epigenetic mechanism of leukemogenesis. There are unlimited research opportunities here; the laboratories are well equipped, and research is done at the highest standards. There are common facilities for use at any time for carrying out high quality experiments. In this PhD course, we have gained scientific problem solving skills through periodic meetings with our supervisors, group meetings, and international conferences held in Tsukuba.

Full Name: Sadik Çiğdem
Nationality: Turkish
Position/Year: Doctoral Program 3rd Year

Field of study: Cancer Epigenetics
Educational: Middle East Technical University, Turkey



Currently, I am working on research at the laboratory of physiological chemistry. When I was an undergraduate student, I never thought I would pursue research at a doctoral level. However, I am very satisfied with and enjoy the research environment here, for example, being inspired by interacting with international students of the same-age and doing research at the laboratory as much as I want. You might think that going on to a doctoral program is challenging, but I believe that the experiences you have when you seriously devote yourself to research in the Biomedical Sciences will reward you invaluablely in your future research career.

Full Name: Yohei Yamauchi
Nationality: Japanese
Position/Year: Doctoral Program 2nd Year-
Research Fellow for Young Scientist, Japan
Society for the Promotion of Science

Field of study: Physiological Chemistry
Educational: University of Tsukuba



After completing a master's degree at a different institution, I started to pursue my doctoral degree at the University of Tsukuba as a student of the Doctoral Program in Medical Sciences, part of the Graduate School of Comprehensive Human Sciences. I am working at the Laboratory of Molecular Cell Biology conducted by Professor Irie. Currently, using budding yeasts, we are investigating gene expression control by RNA-binding proteins, in an effort to unlock the mysteries of life. The research environment at Tsukuba is dramatically different from my previous experience. Here, I'm always pushing myself to the max for my research and trying not to get left behind by my colleagues. By placing myself in this environment, where research is taken so seriously, it is a good chance for me to perform important work and make great contributions to medical science. I am enjoying very productive days here.

Full Name: Yuichi Kimura
Nationality: Japanese
Position/Year: Doctoral Program 4th Year

Field of study: Molecular Cell Biology
Educational: Tokyo University of Agriculture





I am conducting research analyzing the molecular mechanisms and genetic factors that limit the gene crossover of avian influenza virus between humans. As students of the Doctoral Program, we strive to expend our capabilities and knowledge in order to push forward our own independent research. In the laboratory that I am a part of, other research is being carried out besides avian influenza, so we can interact with other researchers from a variety of fields. To secure a position as a researcher, I think it is very important to develop not only good research skills but also good communication, so I try to communicate with many researchers from different labs. As well as doing work in the lab, we participate in a variety of activities and programs as part of our graduate school. For example, we carried out joint research during an internship in Vietnam, and I improved my English communication skills and learned about doing research in Vietnam. In the last two years of my doctoral program I want to continue working towards becoming an independent researcher by building up my knowledge and research skills, and by improving my ability to express my ideas, so that I can share my enthusiasm for my research with others from different fields.

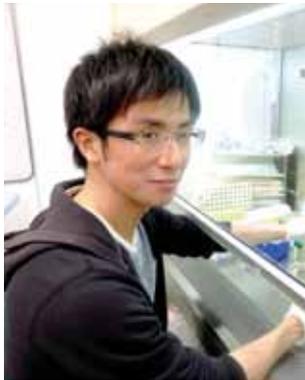
Full Name: Harada Yoshimi

Field of study: Infection Biology

Nationality: Japanese

Educational: Kanagawa University

Position/Year: Doctoral Program 2nd Year



I continued to study for my doctoral degree right after completing my master's program here at the University of Tsukuba's School of Medicine. As part of the master's program at the School of Medicine, I resolved questions by asking my professors, by reading papers or textbooks, and, in the area of basic research, by conducting experiments. Answering questions is really important to me because I'm the kind of person who has endless questions, so I decided to continue studying after my medical training. I was lucky enough to be selected as a research fellow of the Japan Society for the Promotion of Science, which provides me with financial support. Under the guidance of professors, I'm paving the way for my future career as a researcher.

Full Name: Kazumasa Kanemaru

Field of study: Immunology

Nationality: Japanese

Educational: University of Tsukuba

Position/Year: Doctoral Program 2nd Year-
Research Fellow for Young Scientist, Japan
Society for the Promotion of Science



In 2006 I became the first Vietnamese student to join the Graduate school of Comprehensive Human Sciences at the University of Tsukuba. In 2011, I returned to Tsukuba to pursue my doctoral studies. The University of Tsukuba, and Tsukuba City as a whole, is a unique scientific and international environment, which makes Tsukuba a special place. I have had many good opportunities to do research and discuss with many erudite professors from different countries. The innovation of the educational program at the University of Tsukuba supports students very well, not only in studying, but also in life. At this university, besides the opportunities to widen our knowledge, we can also improve our skills for studying and living. I have participated in many overseas internship studies as well as international conferences and become more active and self-confident. I can imagine my future and believe that I can create my own future and overcome challenges by myself. The University of Tsukuba has the largest campus in Japan that offers students great sports facilities and good dormitories, so it's a good place to live and study.

I became the first President of Vietnamese student Association in the University of Tsukuba in 2011. This has helped me improve my organizational skills and has given me many chances to share my experiences with other international students. Furthermore, I help new Vietnamese students make contact with the International Student Center, professors, and the Vietnamese Student Association, and introduce scholarships such as MEXT, JDS, and JASSO, to help them to enter the University. Through these social activities, I can feel the meaning of life and have a balance between studying and living. I am proud to be a student of the University of Tsukuba. Studying and living in such a scientific and international environment is a great opportunity for me to build my future.

Full Name: Tran Cam Tu

Field of study: Regenerative Medicine and stem
cell biology

Nationality: Vietnamese

Educational: Vietnam National University,
University of Natural Sciences

Position/Year: Doctoral Program 3rd Year

Recent Activities

Summer Research Program at the University of Tsukuba: Graduate programs in Medical Sciences at the University of Tsukuba held an annual summer research program from July 29 to August 10, 2013. This year, twelve students from National Taiwan University, five students from Bordeaux University, and twelve students from various universities in Vietnam participated in this program. Each student selected a laboratory to conduct a research program under direct guidance by the faculty members of the University of Tsukuba. An oral presentation session was held on the final day and course completion certificate was awarded to all participants.



The Annual Leading Graduate Schools International Conference: This conference aimed to bring together a diverse group of scientists tightly linked with our department in the field of medical sciences and life sciences. This meeting provides a foundation and opportunities to help strengthen the networks and promote the exchange of ideas and experiences among partner universities. The fourth annual Leading Graduate Schools International Conference was held as part of Tsukuba Global Science Week in November 2013. Sixty representatives from thirty universities/institutes from 11 countries (including the United Kingdom, France, Germany, Hungary, the United States, Brazil, Australia, Vietnam, Laos, Taiwan and Japan) were invited and nearly 600 researchers and students attended at the Tsukuba International Congress Center. The 2013 conference focused on Chemical Biology, Cell Signaling, Chromatin, Re-programming, Neuroscience, Systems Biology, Public Health and Nursing.



Musha-shugyo Program: The graduate students set a goal by themselves and make a research plan through negotiations with their supervisors, foreign graduate students and industry representatives. The plans include participation in the international conferences and training. In 2011, doctoral students attended conferences in Sweden, Portugal, the USA, Australia, and the UAE through this *Musha-shugyo* program.



The 8th Tsukuba Medical Science Research Meeting: This meeting aims to cultivate young researchers, especially giving graduate school students an opportunity to discuss and present their research with cutting-edge researchers from over all the world. Representatives from partner institutes participated as judges to evaluate the quality of research contents, presentation, and discussion. In 2013, this meeting was held in part of Tsukuba Global Science Week in November 2013. Twenty-nine oral presentations and twenty-seven posters were presented from 9 different countries. This year, an outstanding speaker award was given to Katherine Long from the University of Edinburgh. The best poster award was given to Kenza Snoussi from the University of Tsukuba.



Internship Program in Ho Chi Minh City, Vietnam: Students of the Ph.D. program in Life System Medical Sciences visited the Institute of Tropical Biology (ITB) to support a course in experimental molecular biology. This experimental course consisted of lectures, laboratory experiments and presentations. All parts of this experimental course were planned and conducted by doctoral students under the guidance of professors from the University of Tsukuba. The University of Tsukuba and ITB jointly recognized the work of program participants with a certificate of completion.



Short-term Visiting Program in Taiwan: Graduate students from the University of Tsukuba participated in a “Short-term Visiting Program” at National Taiwan University. During the first week, the students participated in lectures and mastered advanced laboratory techniques. In the second week, they applied what they had learned and conducted research in the laboratory. The entire course was taught in English and all the participants presented in a research seminar at the end of the program.



Long Distance Course Lecture with National Taiwan University: The aims of this course are to promote international academic and research exchanges to stimulate scientific communication and learning in English. The Spring 2011-12 and 2012-2013 courses in Molecular Cell Biology and the Fall 2011-2013 courses in Cancer Cell Biology were conducted as collaborations between National Taiwan University, Kyoto University, and the University of Tsukuba.



Ph.D. Program in Human Biology: The University of Tsukuba offers a 5-year Ph.D. program in Human Biology starting 2012. This program adopts a multi-perspective methodological approach, integrating the disciplines of biological science, medicine, computational science, and materials science, to understand the mechanisms of human survival, adaptation, and inheritance. Students will be given training allowing them to develop the outstanding research skills and specialist knowledge required at this level of study. The aim is to nurture global leaders of the future, who are able to create a rich human society. For more information, please visit: <http://hbp.tsukuba.ac.jp/en/index.html>.



Research Groups

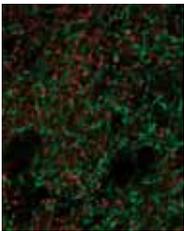
Basic Medicine



FUKAMIZU, Akiyoshi
Molecular Biology

akif@tara.tsukuba.ac.jp
<http://akif2.tara.tsukuba.ac.jp/>, <http://tmsystem.tara.tsukuba.ac.jp/>

Biological homeostasis is regulated by a series of chemical reactions in response to external and environmental stimulus. A variety of signals through the plasma membrane are integrated into the nucleus, where histones and transcription factors are modified by phosphorylation, acetylation, ubiquitination, and methylation that are catalyzed by modification enzymes, thereby controlling gene expression. In my laboratory, we aim to understand the molecular mechanisms of lifestyle-related and pregnancy-associated diseases, or lifespan, how nutritional and stress conditions regulate epigenomic functions, by using genetic techniques with animal models such as mice and *Caenorhabditis elegans* (*C. elegans*).



HISANO, Setsuji
Laboratory of Neuroendocrinology

shisano@md.tsukuba.ac.jp
<http://www.kansei.tsukuba.ac.jp/~shisanolab/>

Research interests of Prof Hisano's group relate to the morphology and physiology of vesicular glutamate transporter (VGLUT), which transports neurotransmitter glutamate into synaptic vesicles at neuronal terminals in the CNS. Our morphological studies leading the study of VGLUT have clarified the overall distribution of three different VGLUT types in the CNS. Recently, we found the expression of VGLUT in some hypothalamic peptidergic neurons, indicating that peptidergic neurons, in general, also release glutamate. What is the physiological significance of glutamate release in the peptidergic neurons? Besides this theme, we are studying the brain function related to Kansei in humans using near-infrared spectroscopy (NIRS), and the functional development of the hypothalamo-pituitary axis in rodents using molecular biological and morphological strategies.



HISATAKE, Koji
Laboratory of Gene Regulation

kojihisa@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/basic-med/biochem/gene/>

Our group studies transcription factors and chromatin structure to understand cellular differentiation and the roles of gene expression in this process. Utilizing the iPS cell induction and adipocyte differentiation systems, we analyze regulatory mechanisms of transcription factors and chromatin structure through biochemical, molecular biological and cell biological methods. We particularly focus on epigenetic mechanisms of coactivators and histone modifying enzymes that interact functionally with the transcription factors that are pivotal for maintaining pluripotency of iPS cells as well as inducing differentiation of adipocytes. These studies will provide an invaluable intellectual background necessary for medical application of these cells.



ISHII, Shunsuke
Molecular Genetics

sishii@rtc.riken.jp
<http://rtcweb.rtc.riken.jp/lab/mg/mg.html>

Our lab is located in Riken Tsukuba campus of Tsukuba Science City. Via analysis of transcriptional regulators, we are studying the mechanisms of cancers, various diseases (neuronal, immunological, and metabolic), and developmental defects. Recently, we are investigating the possibility of "inheritance of stress-induced epigenome change", which can be connected with "inheritance of acquired characteristics". We are also working on the mechanism of reprogramming of somatic cells, which can lead to development of a new method of iPS cell generation.



IRIE, Kenji
Biochemistry, Molecular Cell Biology

kirie@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/public/basic-med/molcellbiol/index.html>

Post-transcriptional regulation of gene expression has a significant role in various cellular processes such as cell growth, cell differentiation, adaptation to stress, and cell death. Post-transcriptional regulation—including processing, transport, localization, degradation, and translation of mRNA—is coordinated by association of specific RNA-binding proteins to specific mRNA sequences usually found in the 5' or 3' untranslated region. In our laboratory, we are focusing on understanding the molecular mechanism and the physiological function of the post-transcriptional regulation by RNA-binding proteins using yeast and mammalian cells.





KANAHO, Yasunori
Physiological Chemistry

ykanaho@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/basic-med/biochem/kanaholab/index.html>



We have been investigating physiological and pathological functions of cellular signaling mediated by lipid-metabolizing enzymes and their activity-regulating small GTPase Arf6 at molecular, cellular and whole animal levels. We have recently found that deletion of Arf6 from vascular endothelial cells inhibited the tumor angiogenesis and tumor growth, demonstrating that Arf6 plays an important role in tumor angiogenesis and thereby in tumor growth. These results suggest that Arf6 is a potential target to develop an anti-cancer drug. We also found that the lipid-metabolizing enzyme phospholipase D plays a crucial role in suppression of tumor growth. Now we are analyzing its molecular mechanisms in my laboratory.



KATO, Mitsuyasu
Experimental Pathology

mit-kato@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/epath/>



We study the molecular mechanisms of how cancer related genes (TMEPAI, THG-1, MafK) work, which we originally identified from the study of transforming growth factor- β in cancer development. Through these works, we are aiming to establish novel methods to treat and prevent cancers. At the same time, we analyze the kinetics of cancer stem cells in the earliest carcinogenic lesions by combined research in molecular biology including the ageneration of genetically modified mice and 3 dimensional quantitative histopathology in which cell numbers and cellular growth kinetics are analyzed in 3 dimensional tissue units reconstructed in computers from serial sections to propose a novel theory of carcinogenesis.



KUMAGAI, Yoshito
Environmental Medicine

yk-em-tu@md.tsukuba.ac.jp
http://www.md.tsukuba.ac.jp/community-med/environmental_medicine/main/toppage.html



There are numerous reactive chemicals in the environment; in particular, environmental electrophiles that covalently modify cellular proteins with reactive thiol groups (sensor proteins) to form protein adducts associated with loss of enzyme function and/or alteration in protein structure. Under these situations, however, current consensus is that there are a variety of protection systems against environmental electrophiles (detoxification and excretion into extracellular space, removal of the electrophiles from modified protein with cellular components, degradation of proteins bound to the electrophiles etc). With polycyclic aromatic hydrocarbon quinones in the atmosphere and methylmercury contamination in fish as the model for environmental electrophiles, we attempt to identify such protection systems in cells and then elucidate the mechanistic details.



MASU, Masayuki
Molecular Neurobiology

mmasu@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/duo/molneurobi/>



Our main research focus is to study the molecular mechanisms that regulate neural circuit formation and higher brain functions. Our brain activities are totally based on the complex neuronal networks that are formed during development, but how they are formed remains unknown. Using integrative approaches including molecular biology, biochemistry, neuroanatomy, and developmental biology, we have been investigating how the complex brain network is formed in the developing brain and how the mature brain functions are acquired and regulated. We are particularly interested in the molecules that play a role in neural differentiation, cell migration, axon guidance, and synaptogenesis.



MATSUMOTO, Masayuki
Cognitive and Behavioral Neuroscience

mmatsumoto@md.tsukuba.ac.jp

The goal of our research is to understand neural mechanisms underlying psychological phenomena such as attention, emotion, memory, learning and decision making. Experiments in our laboratory center on the brain of awake behaving monkeys as a model for similar systems in the human brain. In particular, we are investigating the role of monoamine systems, such as dopamine and serotonin, in cognitive functions. Using electrophysiological and pharmacological techniques, we are identifying monoamine signals associated with cognitive processing and are examining how these signals promote cognitive operations. Using rodents as another animal model, we are also investigating the autonomic nervous system, especially the neurogenic cardiovascular and respiratory regulations, which are closely related with emotional experiences such as fear and pleasure. These studies will provide more mechanistic accounts of cognitive and emotional disorders.



NAGASAKI, Yukio
Biomaterials Research Laboratory

yukio@nagalabo.jp
http://www.ims.tsukuba.ac.jp/~nagasaki_lab/index.htm



The field of biomaterials science is progressing steadily and spreading in versatile directions. Under these circumstances, we are focusing on creation of biocompatible surfaces, so called biointerfaces. Using this technique, we are studying biosensors, bioimaging, diagnostics and therapy. For example, we prepared a nanoparticle possessing antioxidant characteristics. Since this nanoparticle scavenges excessive generated reactive oxygen species effectively, it is applicable to cerebral, cardiovascular and renal ischemia-reperfusion injuries, cancer, gene delivery systems, Alzheimer's disease and ulcerative colitis. Combinations of nanoparticles and other treatments such as neutron capture, laser-photodynamic and hyperthermia therapies have been also investigated. We are collaborating extensively with medical doctors and pharmaceuticals scientists in order to open up the new interdisciplinary field of biomaterials science.



NAGATA, Michio
Kidney and Vascular Pathology

nagatam@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/basic-med/pathology/rvpatho/>



The kidney is a beautiful organ with rational structure-function relationships and thus renal pathological research is the best way to characterize the pathophysiology of kidney diseases. We investigate the pathogenesis and progression mechanism of kidney disease using specific disease models and in vitro systems. What we particularly focus on is glomerular podocyte damage and progression of focal segmental glomerulosclerosis. With a newly established transgenic mice model with podocyte specific injury, we recently identified the Notch signaling pathway as a promoter of glomerulosclerosis. In addition, we are also interested in the renal vascular system that involves chronic kidney disease particularly aging and metabolic syndrome.



NARIMATSU, Hisashi
Research Center for Medical Glycoscience (AIST)

h.narimatsu@aist.go.jp
<http://unit.aist.go.jp/rcmg/ci/index.html>



The Research Center for Medical Glycoscience (RCMG) at the National Institute of Advanced Industrial Science and Technology (AIST) focuses on coordination between two research fields, medical science and glyco-engineering. Under the concept of glycoproteomics, we work on the development of effective disease-related biomarkers such as tumor markers and further study basic glycoscience. Our research themes are: 1) development of glyco-biomarkers, 2) analysis of glycan functions using knock-out mice, 3) construction of a glycoscience database "JCGGDB", 4) development of new lectins recognizing specific glycans, 5) development of glycoproteomics technology, 6) development of novel technologies for glycan synthesis and glycan structure analysis, and 7) development of drug delivery system technology based on glycan function.



NOGUCHI, Masayuki
Diagnostic Pathology

nmasayuk@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/basic-med/pathology/diagpatho/>



The Diagnostic Pathology Group is investigating the molecular mechanisms of human diseases, especially malignant tumors. Our research on malignant tumors has been focusing on the areas of "prevention", "diagnosis", and "therapy". We are interested in 1) the molecular mechanisms of cancer development, 2) the molecular mechanisms of tumor invasiveness, 3) the molecular background of tissues in which malignant tumors arise, and 4) the creation of new diagnostic criteria based on clinical prognosis. Recently, we have characterized stratifin (SFN), DDAH2, and OCIAD2 as critical biomarkers of lung adenocarcinogenesis and malignant progression, and have been analyzing their biological significance. Using these molecules, we are developing new diagnostic methods for early lung adenocarcinoma and strategies for the prevention and therapy of lung cancer.



OGAWA, Sonoko
Laboratory of Behavioral Neuroendocrinology

ogawa@kansei.tsukuba.ac.jp
<http://www.kansei.tsukuba.ac.jp/~ogawalab/>



Our main research focus is to study neuroendocrine bases of various behaviors, including emotional, socio-sexual, and affiliative behaviors. Using a number of active gene manipulation methods, we have been investigating how these behaviors are regulated by hormonal action in the central nervous system. We are interested in determining the roles of estrogen receptors in the regulation of behaviors and their underlying molecular and neural mechanisms. We have a strong research training program in behavioral, neuroanatomical and neuroendocrine studies as well as active ongoing collaborations with other research laboratories in medical and biological sciences both on and off-campus. We recruit students with a strong background in psychology, biology, and neuroscience, and provide professional training in behavioral neuroscience and behavioral neuroendocrinology.



OHNEDA, Osamu
Regenerative Medicine and Stem Cell Biology

ohneda@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/stemcell/>



Our research group is focusing on developing useful therapy for cancers and intractable diseases using human stem cells. We isolate human stem cells and study their functional mechanisms in vitro and by using animal models of human diseases and gene knockout or knockdown mice. Especially we are studying the following 4 themes: 1) to analyze the differentiation mechanism of human embryonic stem cells, 2) to isolate and study functional human tissue stem cells, 3) to isolate and characterize primary cancer cells to develop useful stem cell therapy, and 4) to study how hypoxic stress affects stem cell proliferation and differentiation.



OKAMURA, Naomichi
Reproductive Biochemistry

naooka@md.tsukuba.ac.jp
http://www.md.tsukuba.ac.jp/basic-med/biochem/reproductive_biochem/index.html



In the reproductive processes of mammals, precisely regulated mechanisms have been evolved for the maintenance of the germ line. In order to understand the mammalian reproductive system, we focus on the following two major subjects.

- 1) Molecular mechanisms involved in the acquisition of the fertilizing ability of sperm: identification of proteins expressed at the specific stages of spermatogenesis and analysis of signal transduction underlying functional sperm maturation especially in "capacitation".
- 2) Molecular mechanisms of mammogenesis and milkstasis: analysis of novel functions of monoamines produced in the mammary gland in the regulation of lactation.



SAKAE, Takeji
Medical Physics

tsakae@md.tsukuba.ac.jp
<http://www.pmrc.tsukuba.ac.jp/>



Medical physics is the scholarship of analyzing the physical and technical problems in clinical medicine, and develops various new technologies useful to medicine. Our group is performing basic research which is useful for clinical medicine. Moreover, the University of Tsukuba has a proton therapy institution (Proton Medical Research Center : PMRC), and we also perform the quality control for carrying out radiotherapy safely. Some of our themes : Research to improve safety and high-precision in radiotherapy / Development of new radiotherapy techniques using an accelerator / Research on the new technology of radiation measurement (dosimetry) / New techniques for quality control in radiotherapy / Development of a new calculation method to estimate the patient dose distribution.



SHIBUYA, Akira
Immunology

ashibuya@md.tsukuba.ac.jp
<http://immunologylab-tsukuba.org/>



The immune system is crucial to human survival. In the absence of a working immune system, even minor infections can take hold and prove fatal. We are under constant threat from infectious diseases that are hard to cure. The immune system is also involved in the pathogenesis of autoimmune diseases, allergy, cancer, and transplantation. It is therefore important to understand and regulate the immune system. In our laboratory, we identified for the first time in the world several novel immunoreceptors, which are involved in the development of allergy, cancer, infectious diseases or autoimmune diseases. Our goal is to develop therapies targeting novel molecules that we identified for these intractable diseases.



SHIDARA, Munetaka
Systems Neuroscience

mshidara@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/basic-med/physiology/sys-neurosci/>



How is our brain working while we are consciously thinking, watching, planning, deciding, or speaking with others? We are studying brain functions and their mechanisms in motivation, reward expectancy, visual recognition, decision making, learning, and social interaction by recording neuronal activities in animal models and analyzing information processing mechanisms by statistical models and information theory analysis. Research themes: 1) Brain information processing mechanisms in motivation and reward expectancy 2) Research on reinforcement learning and decision making mechanisms in the brain 3) Research on visual recognition mechanisms under visual noise 4) Brain mechanisms in emotional and social interaction



SHIGA, Takashi
Anatomy and Neurobiology

tshiga@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/basic-med/anatomy/shiga-group/anatomy3rd.html>



We are examining the mechanisms underlying the formation of neural networks by multidisciplinary approaches from molecules to behavior, using mice and rats. Our research projects are as follows. 1) Runx family transcription factors are involved in acute myeloid leukemia and various cancers. We are examining roles of Runx1 and Runx3 in neuronal differentiation and the formation of neural connections using gene-knockout mice. 2) We are examining roles of monoamines (serotonin, noradrenalin and dopamine) in dendrite formation and synaptogenesis, using dissociation culture of the cerebral cortex of rat embryos. 3) We are examining effects of environmental factors (prenatal stress, postnatal tactile stimulation, maternal care etc) on behaviors (learning/memory, anxiety) and brain development, with special reference to the serotonergic system.

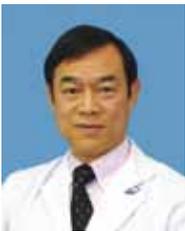


TAKAHASHI, Satoru
Anatomy and Embryology

satoruta@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/basic-med/anatomy/embryology/index.html>



We are working on the functional analysis of transcription factors in the body by using transgenic and knockout mice. We are focusing on the following research themes: 1) Molecular mechanism of the development of organs: We are researching the molecular mechanisms of the development of organs by analyzing the function of transcription factors Large Mafs. 2) Developmental program of hematopoietic and vascular system: We try to elucidate the developmental program of the hematopoietic and vascular systems. We are also interested in ES cell pluripotency. 3) Molecular mechanism of autoimmune disease: We are interested in analyzing the function of transcription factors against disease sensitivity determination. 4) Study for generation mechanism of neural circuit: We are interested in the generation mechanism of neural circuits.



TSUBOI, Koji
Radiobiology

tsuboi-k@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/basic-med/radiation/>



The radiation biology research group is actively doing biological research on radiotherapy of malignant tumors, especially aimed at improving the safety and efficacy of proton beam radiotherapy. The following are the main research interests of our group; proton beam induced DNA damage and repair, radiation induced tumor immunological reactions, biological effects of x-ray micro beams and radiation protection.



TSUCHIYA, Naoyuki
Molecular and Genetic Epidemiology

tsuchiya@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/community-med/publiccmd/GE/CCP004.html>



Human genome analysis provides a powerful approach to identify causally involved molecular pathways in complex diseases, where a highly complicated network of genetic and environmental factors plays a role. Our laboratory is interested in human genome diversity associated with systemic autoimmune diseases such as systemic lupus erythematosus, systemic sclerosis, rheumatoid arthritis and ANCA-associated vasculitis. Identification of disease-associated polymorphisms will provide us with insight into the pathogenesis of such intractable complex diseases, as well as valuable information eventually useful for drug discovery and personalized medicine. We are also interested in human genome diversity associated with the clinical course of malaria and Dengue fever, as well as development of statistical genetics approaches in the association study of complex diseases.



URUSHIHARA, Hideko
Genome Informatics

hideko@biol.tsukuba.ac.jp
<http://nenkin.gene.tsukuba.ac.jp/>



We use cellular slime molds as research materials to study the basic mechanisms of development and cell differentiation. The standard strain of *Dictyostelium discoideum* is widely used as a model organism. It is also used for studies on infection mechanisms of pathogenic bacteria, drug discovery etc.. Our research projects include the followings:
Comparative genomics of the slime mold species with or without cell differentiation ability. (Genome sequencing and analyses are being done)
Studies on the molecular mechanisms of sexual cell interactions (Used as a prototype for the sexual reproduction system)
Analysis of signaling pathways during chemotaxis (A model system for leukocyte movement to the inflammation site)



YAGAMI, Ken-ichi
Laboratory Animal Science

kenyagam@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/basic-med/yagami/index.html>



Laboratory animals are essential and important bio-resources for investigating bio-medical sciences. We develop animal models for human diseases with generation and evaluation of genetic engineered mice, genetic mapping of metabolic syndrome or agenesis of the corpus callosum (ACC) candidate genes and development of mouse embryonic stem (ES) cell lines from inbred mice and rats. We also investigate pathogenic mechanisms in viral infection of laboratory animals, especially in parvovirus and Norovirus infections, and develop diagnostic techniques for microbiologic monitoring in laboratory mice and rats.



YANAGISAWA, Masashi
Center for Behavioral Molecular Genetics

yanagisawa.masa.fu@u.tsukuba.ac.jp
<http://sleepymouse.tsukuba.ac.jp/>



We spend nearly one-third of our lives asleep. The mechanism and function of sleep, however, remains unclear. Many factors such as mental illnesses, food, drugs, and emotions, can affect sleep/wake regulation. Disorder of sleep is not only by itself a major problem in modern society, but also an established risk factor for metabolic syndrome and other lifestyle diseases.
We discovered the neuropeptide "orexin" that regulates sleep. Over 10 years of orexin research has convinced us that we have to take boldly new approaches to gain fundamental insights into the mechanism of sleep/wake regulation. Our approaches include real-time visualization and manipulation of the activity of multiple neurons within the sleep/wake regulatory circuits in freely behaving mice. We also carry out a large-scale forward genetic screen in mice, looking for new genes directly responsible for sleep/wake regulation.



HO, Kiong
Molecular Parasitology and RNA Processing

kiongho@md.tsukuba.ac.jp
http://www.md.tsukuba.ac.jp/basic-med/kiongho/Ho_Lab/Welcome.html



A primary research interest is to understand the gene expression in protozoan parasites responsible for major public health concerns, such as Malaria and sleeping sickness disease, with a goal in identifying parasite-specific processes that can be exploited as targets for novel therapeutic interventions. Analysis of mRNA cap formation in these parasites suggests that capping enzyme is an attractive target for anti-protozoan drug development because the mechanism of cap formation is completely different between the parasite and in the human host. A second research area aim to understand how damages in the RNAs are recognized and repaired in the cells. One of the few facts that has been established is that RNA ligase - an enzyme that joins the two ends of RNA together - is a key component of this repair process. Understanding of the function and mechanism behind cellular responses to RNA damage may also provide useful therapeutic targets, as breakages in the RNA accumulate in cancer cells and during stress condition.



OHNIWA, Ryosuke
Bacterial Pathogenicity

ohniwa@md.tsukuba.ac.jp
http://www.md.tsukuba.ac.jp/microbiology/ohniwa/top_page.html



The research aim of our lab is to understand how pathogenic bacteria cope with bactericidal factors from host and environment. A specific interest is on the nucleoid in the regulation of cellular processes such as genomic DNA maintenance, phospholipid dynamics, DNA competence activation etc. We mainly handle *Staphylococcus aureus* and *Escherichia coli*. We are also trying to develop a new experimental system to study the protective effect of nasal environment against pathogens.



NISHIMURA, Ken
Stem Cell Biology and Biotechnology

ken-nishimura@md.tsukuba.ac.jp
<http://tweb.sec.tsukuba.ac.jp/nishimura.html>



Induced pluripotent stem (iPS) cells are expected to be useful for many applications including regenerative medicine. However, the mechanisms of the cell reprogramming remain largely unknown. We developed "Persistent RNA vector" which is capable of sustained expression of multiple transgenes without chromosomal integration. This vector can produce transgene-free iPS cells more efficiently than conventional methods. Using the unique system of iPS cell production, we are analyzing the molecular mechanism of the cell reprogramming to establish an efficient method of the production of well-reprogrammed iPS cells. Moreover, we are also trying to apply these vectors to obtain safe differentiated tissue cells from iPS cells.



KAWAGUCHI, Atsushi (NAGATA, Kyosuke)
Molecular Virology

ats-kawaguchi06@ob.md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/basic-med/infectionbiology/virology/>



The research aim of this group is to understand the molecular mechanism of replication and pathogenicity of animal viruses such as influenza viruses, measles virus, adenovirus, etc. The structure and function of virus-encoded factors and host cell-derived factors involved in the above processes are being studied at the atomic, molecular, cellular, and body levels. Based on the obtained information, we are developing novel strategies for the control of virus diseases. In addition, we are particularly interested in clarifying the physiological function of host factors as well as their roles in infection. On this line, as a basis of regenerative medicine, we are studying the molecular mechanism of genetic reprogramming, since factors identified in our virus research have been found to be involved in this process.



FUNATO, Hiromasa
Functional Neuroanatomy

funato.hiromasa.km@u.tsukuba.ac.jp

Major Scientific Interests of the Group

- 1) Identification of novel genes that regulate sleep/wakefulness behavior using forward genetic approach.
- 2) Molecular mechanism underlying feeding and body weight homeostasis, anxiety and depressive behavior

Projects for Regular Students in Doctoral or Master's Programs

- 1) Functional characterization of novel sleep-regulating genes
- 2) Combined approaches using viral vectors and gene-modified mice to uncover neural circuits underlying sleep/wakefulness behavior, feeding and body weight homeostasis, and anxiety and depressive behavior



KANO, Shigeyuki
International Medicine

kano@ri.ncgm.go.jp
<http://www.rincgm.jp/department/lab/01/>



Major Scientific Interests of the Group

The objectives of our research group are to develop appropriate medical technologies that are transferable to developing countries, in order to promote their primary health status. The following two subjects are our biggest research targets.

- 1) Research on controlling emerging and re-emerging infectious diseases of international importance.
- 2) Research on international medical cooperation.

Projects for Regular Students in Doctoral or Master's Programs

- 1) Biology and pathophysiology of re-emerging infectious diseases
 - a) Basic and clinical research on malaria
 - b) Research on the development of malaria vaccine
- 2) Social technology development for controlling diseases in developing countries
 - a) Researches on global malaria and parasite control strategy
 - b) Evaluation of international health cooperation projects



KOKANEZAWA, Tadachika
Neurophysiology

t-kogane@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/basic-med/physiology/t-kogane/index.html>



Cardiovascular and respiratory regulation by the central nervous system plays crucial roles in human homeostasis. Disorder of this regulatory system causes serious problems in a living body. Despite this importance, there remain lots of unknown mechanisms in the cardiovascular and respiratory centers. We are electrophysiologically approaching the mechanisms of cardiovascular and respiratory regulation by the central nervous system using in vivo preparation and in situ preparation (arterially perfused preparation) of rodents. At present, we are particularly studying the following: 1) the chemosensitive mechanism in the cardiovascular center, 2) the relationship between cardiovascular and the respiratory centers (cardiorespiratory coupling), and 3) diseases which are induced by disorder of these systems.



KURANE Ichiro
Virology

kurane@nih.go.jp
<http://www.nih.go.jp/niid/index.html>



Major Scientific Interests of the Group

Elucidation of the pathogenesis of dengue fever and dengue hemorrhagic fever

Projects for Regular Students in Doctoral or Master's Programs

- 1) Establishment of animal models of dengue fever
- 2) Role of immune responses in the pathogenesis of dengue hemorrhagic fever



LAZARUS, Michael
Systems Sleep Biology

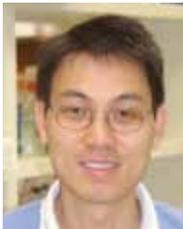
lazarus.michael.ka@u.tsukuba.ac.jp

Major Scientific Interests of the Group

- 1) Role of adenosine and dopamine in sleep-wake regulation
- 2) Motivational state as fundamental regulator of sleep and wake
- 3) Exploring methamphetamine-sensitive circadian oscillation

Projects for Regular Students in Doctoral or Master's Programs

- 1) Neuronal mechanisms of dopamine in sleep-wake regulation
- 2) Characterization of neuronal firing in the nucleus accumbens during sleep-wake states
- 3) Role of cannabinoid or opioid receptors in the striatum for sleep-wake regulation



LIU, Qinghua
Biochemistry and Molecular Genetics

qinghua.liu@utsouthwestern.edu
<http://profiles.utsouthwestern.edu/profile/50723/qinghua-liu.html>



Major Scientific Interests of the Group

- 1) RNA Interference and MicroRNAs
- 2) Sleep Research
- 3) Odor-induced Innate Fear

Projects for Regular Students in Doctoral or Master's Programs

- 1) We use genetic screen and biochemical fractionation to identify novel factors (e.g. R2D2, C3PO, and others) and characterize their precise functions in the RNA Interference (RNAi) and MicroRNA pathways.
- 2) We aim to understand the molecular circuits of Sleep/Wake control, a fundamental mystery in neuroscience, by integrating mouse genetic screen, quantitative mass spectrometry, and biochemical reconstitution.
- 3) We are conducting the first genetic screen in mice in search of the "fearless" mutants to understand the molecular circuits of odor-induced innate fear (of predator).



MATSUMOTO, Masayuki
Cognitive Behavioral Neuroscience

mratsumoto@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/basic-med/cog-neurosci/index.html#>



The goal of our research is to understand neural mechanisms underlying cognition such as attention, memory, prediction, learning, and decision-making. In particular, we are investigating the role of monoamine systems, such as dopamine and serotonin in cognitive functions. Experiments in our laboratory center on the brain of awake behaving monkeys as a model for similar systems in the human brain. Using electrophysiological and pharmacological techniques, we examine what signals monoamine neurons convey while monkeys are performing cognitive tasks and how the signals, released monoamine, worked in targeted brain areas to achieve the tasks. These studies will provide more mechanistic accounts of cognitive disorders.

Projects for Regular students in Doctoral or Master's programs

- 1) Electrophysiological studies on roles of monoamine systems in cognitive functions
- 2) Pharmacological studies on roles of monoamine systems in cognitive functions
- 3) Optogenetical manipulations of monoamine systems in awake monkeys



NAGASE, Hiroshi & KUTSUMURA, Noriki
Medicinal Chemistry, Organic Chemistry

nagase.hiroshi.gt@u.tsukuba.ac.jp
kutsumura.noriki.gn@u.tsukuba.ac.jp
<http://nagase.wpi-iis.tsukuba.ac.jp>



Major Scientific Interests of the Group:

- 1) Design and Synthesis of Orexin Agonists
- 2) Design and Synthesis of Opioid Receptor Agonists and Antagonists
- 3) Clarification of Mechanism of Drug Resistance and Dependence

Projects for Regular Students in Doctoral or Master's Programs:

- 1) Study of Medicinal Chemistry
- 2) Study of Organic Chemistry
- 3) Research Development of New Drugs



NAKAMURA, Yukio
Experimental Hematology

yukionak@brc.riken.jp
<http://www.brc.riken.jp/lab/cell/>



Major Scientific Interests of the Group

Our goal is the in vitro production of red blood cells (RBCs) for clinical use. We are attempting to establish immortalized human RBC progenitor cell lines from various cell sources such as hematopoietic stem cells, ES cells and iPS cells. In addition, we are studying the mechanisms of enucleation of RBC progenitor cells so as to improve the efficiency of in vitro enucleation.

Projects for Regular Students in Doctoral or Master's Programs

- 1) Cell culture of human ES and iPS cells. Induction of hematopoietic cells from human ES and iPS cells. Establishment of immortalized human hematopoietic cell lines from various cell sources such as hematopoietic stem cells, ES cells and iPS cells.
- 2) Molecular mechanisms of enucleation of RBC progenitor cells.

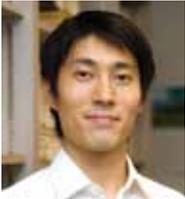


NOGUCHI Emiko
Medical Genetics

enoguchi@md.tsukuba.ac.jp
<http://tsukuba-medicalgenetics.org>



Our research focus is the identification of novel genomic mutations associated with asthma/atopic dermatitis/allergic rhinitis/food allergy and to find novel disease pathway for the development of the allergic diseases by genome-wide association study, linkage and candidate gene analysis, and expression profiling using both human and animal tissues. We also work on the identification of mutations for rare Mendelian diseases by using next generation sequencers. The goal of our laboratory is to promote personalized medicine based on the individual genomic information.



SAKAGUCHI, Masanori
Memory, Adult Neurogenesis, and Sleep

masanori.sakaguchi@gmail.com
<http://researchmap.jp/masanorisakaguchi/?lang=english>



Major Scientific Interests of the Group
 At IIS our group strives to investigate the relation between sleep, adult neurogenesis and memory. We hope to clarify the still unanswered questions regarding sleep and its significance towards memory and adult neurogenesis. I readily welcome motivated and self-driven students and researchers interested in sleep and memory.

- Projects for Regular Students in Doctoral or Master's Programs
- 1) Function of sleep in memory consolidation
 - 2) Activation of adult born neurons in sleep and its significance in memory
 - 3) Mapping brain regions activated in each sleep stages



TANAKA, Keiji
Biochemistry and Molecular Cell Biology

tanaka-kj@igakuken.or.jp
<http://www.igakuken.or.jp/>



Major Scientific Interests of the Group:
 In-depth analyses of ubiquitin-, proteasome-, and autophagy-mediated regulatory proteolysis

- Projects for Graduate Students:
- 1) Molecular mechanisms for assembly and diversity in eukaryotic proteasomes
 - 2) Physiological and Pathological roles of the autophagy system
 - 3) Control of mitochondrial homeostasis by PINK1/Parkin whose impairment causes Parkinson's disease

Clinical Medicine



AONUMA, Kazutaka
Cardiology

kaonuma@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/cardiology/index.html>



Major clinical activities Pharmacological and non-pharmacological management of both atrial and ventricular tachyarrhythmia / Pharmacological and non-pharmacological therapy for management of heart failure / Catheter intervention for coronary, peripheral artery and structural heart disease / Echocardiographic evaluation to investigate the underlying cardiovascular physiology Major Scientific Interests Molecular biology in atrial fibrillation and ventricular tachycardia / Epidemiological research of Brugada syndrome and atrial fibrillation / Left ventricular remodeling in ischemic heart disease / Basic research in heart failure and myocarditis / Basic and Clinical research of 2D, 3D, 4D echocardiographic imaging Projects for Regular Students in Doctoral or Master's Programs Research on arrhythmia, pharmacological and non-pharmacological management including catheter ablation / Research on ischemic heart disease / Research on heart failure / Research on echocardiography



ASADA, Takashi
Neuropsychiatry

tasada@md.tsukuba.ac.jp
<http://www.tsukuba-psychiatry.com>



The specialties of our group are: old age psychiatry including dementia and depression; child psychiatry such as pervasive development disorder, and mental health of university students. As to study of dementia, we have conducted a 10-year intervention study to prevent development of dementia in a community and examined the efficacy of the intervention. Using the technique of proteomics, we have also studied the biological background of the development of dementia. On the other hand, we have conducted a series of studies regarding child psychiatry in cooperation with the faculty of psychology and department of pediatrics. Finally we recently started a large study for the promotion of the mental health of university students.



BUKAWA, Hiroki
Oral and maxillofacial surgery

bukawah-cuh@umin.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/oral-maxillo/index.html>



In the field of oral and maxillofacial surgery, the subject of research is the disease in the oral region. Especially oral cancer and bone tissue engineering are our main researches. The examples are as follows.
 Development of diagnostic methods for oral cancer using micro RNA.
 Molecular Target therapy of oral cancer using anticancer chimera peptide.
 Functional analysis of bone differentiation from mesenchymal stem cells of human wisdom teeth.
 Analysis of oral diseases using various gene knockout mice.
 Development of oral cancer markers by using oxidative stress inducible protein.



CHIBA, Shigeru
Hematology

schiba-ky@umin.net
<http://www.md.tsukuba.ac.jp/hematology/index.html>



Our research is focused on molecular pathogenesis of hematopoietic malignancies, such as leukemia and myelodysplastic syndrome (MDS), aiming for clues to developing new therapies. We are particularly interested in the regulation of epigenome, raising questions such as how impaired regulation of DNA demethylation leads to emergence of hematologic malignancies. On the other hand, abnormalities in the hematopoietic microenvironment are also postulated to be involved in the pathogenesis of MDS. In this context, we focus on the Notch signaling system in the microenvironment in the bone marrow. In both epigenome-oriented and microenvironment-oriented research projects, we are using cell-based and mouse-based techniques, as well as a number of clinical samples.



HARA, Akira
Otorhinolaryngology

haraakir@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/otorhinolaryngology/index.html>



Otorhinolaryngology is a specialization for sensory organs. The main focus in our department is the auditory organ. There are a lot of causes which damage the auditory organ, for example, ischemia-reperfusion injury, ototoxic substances and acoustic overstimulation. Those factors mainly injure the hair cells of the organ of Corti and the spiral ganglion cells, and cause sensori-neural hearing loss. Most of the cases of sensori-neural hearing loss are difficult to cure. Translational research using various animal models is going forward to elucidate the mechanisms and to develop the therapeutic strategy for sensori-neural hearing loss.



HASHIMOTO, Koichi
Lifestyle-related diseases and management of technology

koichi.hashimoto@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/clin-res/index.html>



Major activities of our group are, 1) Development of effective prevention treatments for lifestyle-related diseases, 2) Construction of a seamless platform for clinical translational research in Tsukuba Critical Path Research and Education Integrated Leading (CREIL) Center, 3) Education of experts in the integrative celerity research process for clinical translational research.

Our major scientific interests are, 1) Effective and practical management of technology in the clinical trials field, 2) Effective prevention treatments for lifestyle-related diseases.

The following are examples of projects for students in doctoral or master's programs. 1) Study of the amelioration of processes for reliable clinical translational research 2) Extraction of problematic points in specific clinical trials and propositions for solutions



HIZAWA, Nobuyuki
Pulmonary Medicine

nhizawa@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/pulmonology/>



The division of Pulmonary Medicine provides comprehensive research to improve the understanding, diagnosis, and treatment of a wide range of respiratory diseases, including chronic obstructive pulmonary disease (COPD), bronchial asthma, respiratory infectious diseases, pulmonary fibrosis, and lung cancer. Our research focuses on tissue injury and its remodeling mechanism on the cellular basis to elucidate the pathophysiological processes of pulmonary diseases. This division will continue to conduct research projects which investigate the expression of mediating factors and their intertwined regulatory mechanisms using genetic, molecular biological, and biochemical techniques. Furthermore, in the design and delivery of our graduate training programs, we aim to produce worldwide academic leaders with outstanding careers in the field of pulmonary research.



HYODO, Ichinosuke
Gastroenterology

ihyodo@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/gastroenterology/>



Our research interests are development of novel molecular targeted therapeutics and diagnostic methods as follows.

- 1) Using nude mouse models with peritoneal or subcutaneous xenograft of various gastrointestinal cancer cell lines, we investigate the effectiveness of small molecular targeted agents, oncolytic adenovirus and nucleic acid drugs.
- 2) Moreover, we focus on the detection of cancer-specific proteins using clinical samples to develop novel tumor biomarkers and molecular targets for cancer therapy, including porphyrin transport mechanisms.
- 3) We study gastrointestinal diseases other than cancer including inflammatory bowel disease on genetic polymorphisms and detection of inflammatory markers.



KAWAKAMI, Yasushi
Department of Laboratory Medicine

y-kawa@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/lab-med/>



Our major projects for regular students in master's programs are as follows.

- 1) Molecular and genetic analysis of human diseases and its application for diagnosis, especially endocrine tumors.
- 2) Molecular analysis of chromaffin cell proliferation.
- 3) Mechanism of adrenergic regulation on adiponectin production.



MAENO, Tetsuhiro
Primary Care and Medical Education

maenote@md.tsukuba.ac.jp
<http://pcmed-tsukuba.jp/>



- 1) Clinical research in primary care
- 2) Development of community-based medical systems.
- 3) Health promotion in the community
- 4) Clinical medical education



MASUMOTO, Kouji
Pediatric Surgery

kmasu@md.tsukuba.ac.jp

Pediatric surgery is a subspecialty of surgery for children and newborn babies with congenital and/or acquired abnormalities. A pediatric surgeon's responsibilities are to support a child's life by surgical intervention. In addition to general thoracic and abdominal procedures, pediatric surgeons participate in laparoscopic surgery and liver transplantation. We also address the treatment of solid malignant tumors. In our institute, we do two main areas of research, which include regenerative medicine related to lung development and oncology related to solid malignant tumors.

- 1) Regenerative Medicine i) Congenital Diaphragmatic Hernia: To investigate the progress of hypoplastic lungs, affected by umbilical stem cells / To investigate the regeneration of bioengineered diaphragms ii) Anorectal malformation: To investigate the regeneration of the bioengineered anal muscle complex
- 2) Pediatric Oncology: To investigate gene aberrations related to calcinogenesis and to track the progression of malignant solid tumors



MATSUMURA, Akira
Neurosurgery

a-matsumur@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/neurosurgery/section/research/index.html>



We are performing researches about the following themes.

- 1) Boron neutron captured therapy for malignant brain tumors
- 2) Angiogenesis and invasion in brain tumor cells
- 3) Vaccine therapy for malignant brain tumors
- 4) Drug Delivery Systems for brain diseases
- 5) Brain imaging using magnetic resonance spectroscopy
- 6) Brain Machine Interface including the clinical application of HAL



MINAMI, Manabu
Diagnostic Radiology and Interventional Radiology

mminami@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/radiology/>



Our group focuses research projects on investigations of 1) radiologic-pathologic correlation, 2) new imaging techniques, and 3) new interventional techniques. Research on radiologic pathologic correlation has been performed not only with two-dimensional images but also using three-dimensional images in the pathologies of the brain, lung tumors, liver and pancreas tumors, GI tract tumors and gynecologic tumors. New imaging techniques have been developed using CT and MRI, especially diffusion-weighted imaging in the abdomen and diffusion tensor imaging in the brain, peripheral nerves and muscles. Now new imaging methods are investigated in PET scanning as well. Novel IVR techniques are innovated in the field of RFA in liver tumors and new navigation methods are also produced using non-contrast vascular MR imaging.



MIZUTANI, Taro
Emergency and Critical Care Medicine

mizutani@md.tsukuba.ac.jp

Major Scientific Interests

- 1) septic (endotoxemic) shock, circulatory collapse, 2) acute respiratory distress syndrome (ARDS), multiple organ failure (MOF), 3) toxicology, 4) delirium

Projects for Regular Students in Doctoral or Master's Programs

- 1) Clinical and animal model research on predictors and markers for delirium, 2) Clinical and animal model research on treatments for septic shock, 3) Clinical and animal model research on resuscitation, 4) Clinical and animal model research on treatments for ARDS, 5) Clinical and animal model research on pathophysiology of extreme hypercapnia



NINOMIYA, Haruhiko
Hematology

ninomiya.haruhiko.ft@u.tsukuba.ac.jp
<http://www.sakura.cc.tsukuba.ac.jp/~ninomiya/>



Megakaryocytes differentiate from hematopoietic stem cells under the control of a lineage-specific cytokine, thrombopoietin (TPO). Maturation of megakaryocytes is characterized by the expansion of cytoplasmic mass and polyploidization. Although platelets are produced from the ends of cytoplasmic processes called proplatelets in the final stage of megakaryopoiesis, molecular mechanisms of megakaryopoiesis including proplatelets are still not clearly defined. Therefore, effective treatments of thrombocytosis and thrombocytopenia are largely unknown. Our laboratories have analyzed molecular mechanisms of megakaryocyte differentiation and proplatelets by using knockout or transgenic mice of various genes. 2) Pathophysiological analysis of paroxysmal nocturnal haemoglobinuria.



NISHIYAMA, Hiroyuki
Urology

nishiuro@md.tsukuba.ac.jp
<http://tsukuba-urology.com>



In our urologic tumor research group, the early stages of the carcinogenic process in genitourinary cancer are analyzed. We use cultured cells, animal carcinogenic models, and clinical specimens as a model for testicular tumors or urothelial carcinoma and perform a functional analysis of redox signals and small G-protein. In addition, the recurrence of urothelial cancer is still in the process of being elucidated using molecular techniques. Based on the findings, we are now developing novel immunotherapy with liposome containing a cell membrane of the BCG bacteria or peptide therapies that target cell cycles. In the future, we will conduct the clinical trials.



OHKOHCHI, Nobuhiro
Tumor Oncology and Organ Transplantation

nokochi3@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/ge-surg/>



The specific activities are as follows: 1) Characterization and new treatment for cancer; 2) differentiation and regeneration of stem cells and liver; 3) mechanism of rejection and induction of tolerance in organ transplantation; 4) surgical stress, metabolism and nutrition; 5) Control of tumor angiogenesis and metastasis. The focus of the section for studies on cancer lies in the development of early diagnosis of cancer, prognostication of patients, and cancer prevention and therapy. We analyze epigenetic alterations in natural antisense transcripts to find the molecular markers of human cancers and examine molecular mechanisms for understanding cancer development.



OSHIKA, Tetsuro
Ophthalmology

oshika@eye.ac <oshika@eye.ac>
<http://www.md.tsukuba.ac.jp/clinical-med/ophthalmology/>



- 1) Visual science
- 2) Visual optics
- 3) Minimally invasive ocular surgery
- 4) Vision-related quality of life



SAKURAI, Hideyuki
Radiation Oncology

hsakurai@pmrc.tsukuba.ac.jp
<http://www3.pmrc.tsukuba.ac.jp/>



The department of radiation oncology makes a comprehensive study of cancer. We study a multidisciplinary approach to cancer patients to evaluate quality of life (QOL) and outcome of patients, and to maximize the probability of cure. The department of radiation oncology at the University of Tsukuba has an exceptionally comprehensive radiation treatment program. Special radiation technologies available include: 1) Intensity modulated radiation therapy (IMRT) 2) High dose rate brachytherapy 3) Proton therapy So, we are able to conduct advanced research. We also can do translational research with radiation biology and medical physics.

Research Subject: 1) Evaluation of radiation sensitivity and radiosensitization for treatment resistant tumors 2) Development of radiation treatment planning using diagnostic imagings 3) Development of new cancer treatment using proton therapy



SATOH, Makoto
Sleep Medicine

mk-satoh@md.tsukuba.ac.jp <mk-satoh@md.tsukuba.ac.jp>

Sleep Medicine was established as a new division financially maintained by private donations in 2005. Sleep is one of the rhythm phenomena to be seen in the world of creatures widely. Homo sapiens was able to stand at the top of the world of creatures by developing a large cerebrum. The main role of sleep is to let the huge cerebrum take a rest effectively. In our division, we focus on fundamental research and clinical study. In fundamental research, we study the physiologic relationship between the maintenance of healthy life and the role of sleep. In clinical research, we are developing new therapeutic modalities for sleep disordered breathing.



SATO, Yukio
General Thoracic Surgery

ysato@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/respiratory/index.html>



Lung cancer has become a major cause of death in most countries. Surgical resection is most effective for the treatment of lung cancer. Minimal invasive video assisted thoracic surgery (VATS) lobectomy appears to be a safe and effective procedure for treatment of lung cancer. We are making progress not only in reducing surgical stress but also in improving the quality of surgery by developing original devices and techniques. We are focusing also on the multimodal treatment of lung cancer, the mechanism of invasion of lung cancer, and the mechanism of acute lung injury.



SHIMANO, Hitoshi
Endocrinology and Metabolism

hshimano@md.tsukuba.ac.jp
<http://www.u-tsukuba-endocrinology.jp/>



The increasing prevalence of obesity, metabolic syndrome, and diseases such as diabetes, dyslipidemia, NAFLD, and atherosclerosis, heightens the requirement for new approaches for both the management and prevention of these diseases. In our research, we try to understand the molecular mechanisms of energy metabolism using the newest technologies, such as molecular and cellular biology, gene-engineered animals, genome informatics. We also extend our investigations to understand the molecular basis of metabolic disease, and try to develop new therapeutic approaches for preventing obesity, diabetes, and cardiovascular disease.



SHODA, Junichi
Molecular Sportology

shodaj@md.tsukuba.ac.jp
<http://www.taiiku.tsukuba.ac.jp/sportsmed/03shoda.html>



High calorie intake because of Westernized food habits and chronic lack of exercise have increased the number of obese subjects and the morbidity rate of obesity-related liver diseases in Japan. There are no therapies, other than diet and exercise, which have gained a consensus to prevent the onset and progression of the obesity-related liver diseases. In the laboratories of Molecular Sportology, we have conducted several research projects to establish scientific evidence of the health benefits of exercise for liver diseases, based on the long-standing outcome from the research projects of exercise programs for obese subjects and subjects with metabolic syndrome. For basic medicine research, in order to explore the usefulness of exercise, we have identified new molecules that are induced by exercise, generated gene-knockout mice or gene-transgenic mice of the newly identified molecules, and moreover, conducted experiments using specific drugs activating the molecules. In addition, we have applied the findings to supporting patients with obesity-related diseases in the Sports & Health Clinics of the University of Tsukuba Hospital. We say, "Exercise is medicine." We look forward to you joining our team of Molecular Sportology.



SUMAZAKI, Ryo
Pediatrics

rsuma@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/pediatrics/>



Our research subject includes a variety of organ systems in the pediatric field such as metabolic syndrome, low dose radiation effect on child health, neonatal medicine, hematology, oncology, cardiology and gastroenterology. We often use ultrasonography to gather physiologic data especially in vascular, abdominal and thyroid research. We also do investigations using transgenic mice and human hormone analyses in the metabolic field. Therefore, we welcome you to join us if you want to contribute to the science of pediatrics by familiarizing yourself with such analytic methods. We also encourage you to obtain a higher level of technique in ultrasonography and molecular biology.



SUMIDA, Takayuki
Rheumatology

riumachi@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/rheumatology/>



We offer expert medical care for patients with various autoimmune diseases including rheumatoid arthritis, Sjogren's syndrome, and systemic lupus erythematosus. At the same time, we are committed to developing new therapeutics through elucidation of autoimmune disease at the molecular level. Our goal is to develop and practice 'science based medicine', and we are always moving forward towards this goal.



TAKEKOSHI, Kazuhiro
Molecular Sportology

K-takemd@md.tsukuba.ac.jp
<http://med.taiiku.tsukuba.ac.jp/>



High calorie intake because of Westernized food habits and chronic lack of exercise have increased the number of obese subjects and the morbidity rate of obesity-related diseases, such as metabolic syndrome, diabetes, hypertension, dyslipidemia in Japan. Although it is established that exercise is very helpful to prevent the onset and progression of the obesity-related diseases, appropriate subscription for exercise is difficult. In our research, we are planning several research projects to seek scientific evidence for personalized treatment for exercise through using genetic information. We believe that we can extend our new genetic approaches to develop new therapies for preventing obesity, diabetes, and cardiovascular disease.



TAMAOKA, Akira
Neurology

atamaoka@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/neurology/>



1) Molecular pathophysiological research on Alzheimer's disease (AD), especially on the generation, aggregation and deposition of amyloid b protein, one of the common characteristics of AD neuropathology. 2) Molecular biological research on neurodegenerative diseases, especially on the pathogenesis of the mutated genes of familial disorders including familial amyotrophic lateral sclerosis and familial spinocerebellar degeneration. 3) Morphological and biochemical research on neuromuscular diseases, especially on progressive muscular dystrophies, mitochondrial encephalomyopathies and metabolic myopathies. 4) Neurophysiological research on neuromuscular diseases, especially on the neuro-ophthalmological characteristics of neurodegenerative disorders. 5) Clinical, epidemiological and radiological research on organoarsenic intoxication, especially on its pathogenesis in model animals.



TANIGUCHI, Akiyoshi
Biomaterials and Tissue engineering

taniguchi.akiyoshi@nims.go.jp
http://samurai.nims.go.jp/TANIGUCHI_Akiyoshi-j.html



Nanotechnology is becoming increasingly important for products used in our daily lives, such as nanoparticles used in the pharmaceutical industry, for cosmetic products, or for pigments. Meanwhile, a serious lack of detailed information concerning the interaction between the nanomaterials and cells limits their biological and medical applications. In this group, we have attempted to investigate the interaction between nanoparticles and cells. We expect our work to advance the understanding of the interactions between bio-nanomaterials and mammalian cells to improve applications in biology and medicine.



YAMAGATA, Kunihiro
Nephrology

kidney@md.tsukuba.ac.jp
<http://www.tsukuba-igaku-kidney.com/>



Welcome to Department of Nephrology, University of Tsukuba. Our department provides expertise for clinical nephrology in a wide area including chronic kidney diseases, glomerular diseases, hypertension, renal failure, dialysis and transplantation. Moreover, our subjects of basic research include onset mechanism in IgA nephropathy, transcriptional regulation of glomerular diseases, vascular damage due to uremic toxin, and kidney regeneration using multipotent stem cells. We have prepared well-developed programs for fellowship, master's and doctor's courses. Please freely contact us and visit our lab.



YOSHIKAWA, Hiroyuki
Obstetrics and Gynecology

hyoshi@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/clinical-med/ob-gyn/>



At our laboratory, we are analyzing genetic aberrations and protein expression abnormalities of various oncogenes and tumor suppressor genes, i.e. PTEN, PIK3CA, AKT, p53, and p27 etc., in gynecologic malignancies including endometrial cancer, ovarian cancer, and cervical cancer. By comparing responses to treatment methods such as surgery, chemotherapy, and radiotherapy, and to various chemotherapeutic agents, we are aiming at personalizing therapies based on abnormalities in individual cancers. Recently numerous kinds of molecular therapeutics targeting the PI3K/PTEN/AKT signaling pathway are being actively developed. We are also conducting research on responses of gynecologic cancers to those molecular targeted agents according to genetic and protein abnormalities in individual cancers.

Human Care Science



ICHIKAWA, Masao
Global Public Health

masao@md.tsukuba.ac.jp

"The existing gross inequality in the health status of people, particularly between developed and developing countries as well as within countries, is politically, socially, and economically unacceptable and is, therefore, of common concern to all countries." (The Declaration of Alma-Ata, September 1978) With this statement in mind, we have conducted action-oriented researches into global public health problems among socially disadvantaged and vulnerable populations. Making change happen is difficult but we believe it is possible through scientifically sound research. Current topics of our research include injury prevention, post-migration refugee health, mobility and health in the aging society of Japan as well as in Asian region.



MATSUDA, Hitomi
Gerontological Nursing & Caring

hitomim@md.tsukuba.ac.jp
<https://www.hcs.tsukuba.ac.jp/~koureicare/>



Evaluation of the effect of nursing intervention for adjustment of circadian rhythm of the elderly: Sleep-awake disorder and insomnia lower the immune system and may provoke depression or dementia in the elderly. I manage fieldwork in the Kanto area, and major cities from Hokkaido to Okinawa, with active elder citizens on their circadian rhythm and the quality of sleep. I have found a strong relationship between tuning factors of sleep (light, exercise, eating, and communication) and contracting lifestyle related disease or dependence of favorite food, the correlation between taking daytime sleep (nap), or having conversation on a moderate pleasant topic and on initiating nighttime sleep.



MORITA, Nobuaki
Social Psychiatry & Mental Health

nobuakim@nifty.com
http://www.md.tsukuba.ac.jp/community-med/mental_health/index.html



The Department of Social Psychiatry & Mental Health is looking into the causes and solutions of sociopathological phenomena such as crime, alcohol & drug abuse, child abuse and domestic violence, maladaptation, through forensic psychiatric evidence and field work. Main recent achievements are as follows. Assessment tools of problematic behaviors. Structured Interview of Disorder of Extreme Stress not Other Specified-Japanese version.; Sexual Behavior Checklist for ASD; Juvenile Sex Offender Assessment Protocol II-Japanese version, The Scale of Self-efficacy to cope with drug dependence; Stimulant Relapse Risk Scale. Development of programs of problematic behaviors Attachment based program for a child and care worker in child welfare facilities. Cognitive Behavior Therapy programs for drug abusers. Respectful Relation Program for DV abusers Concurrent program for mother and children exposed to DV



OKUBO, Ichiro
Health Care Policy and Management

iokubo@md.tsukuba.ac.jp
http://www.hcs.tsukuba.ac.jp/~health_policy/



Our department, Health Care Policy and Management, aims to develop effective policy based on evidence from analysis and evaluation of issues among the health system, health care management, and quality of health services with a multidisciplinary approach including public administration, economics, epidemiology, environmental sciences, and international health. Recent major research projects include health economic analysis of infectious diseases control and cancer care. Research techniques such as cost-effectiveness analysis and market analysis of health services are mainly employed. Research projects on international health and development of adaptation programmes for global warming based on health impact assessment are also being conducted.



TAMIYA, Nanako
Health Services Research

ntamiya@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/hsr/>



Health services research is a multidisciplinary science that analyzes through empirical analysis, from a comprehensive and scientific perspective, the quality of medical care (including health care, nursing and welfare) from several points of view, including the structure (Policy, staffing, facility, budget, insurance, health system, etc.), process (Utilization, accessibility, referral under health system, etc.) and outcome (QOL, cost, satisfaction, ADL, well-being, survival, etc.).

Our research group, not only studies the arrangement of the medical care field alone, but also the multidisciplinary points of view of policy, law, economics, sociology, anthropology and so on, incorporating effectively their fruits, in order to achieve better medical services for all people, and aiming to help transmit their success inside and outside the country, and with this, improving the quality of service "achieving medical care in harmony with life".

Public Health



HONDA, Katsuya
Legal Medicine

k-honda@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/community-med/legal-medicine/index.html>



In our laboratory, we are developing a technique to diagnose the cause of death in medico-legal autopsy cases. We are based on and make full use of the discrimination of identity (DNA analysis) of the unidentified body, a biochemistry diagnosis from body fluid, blood gases examination, drug-poison detection, the highest technique including harmful metal detection and promote medical study to contribute to crime-investigation from various aspects. From our laboratory, four post-graduated students found work in a crime laboratory institute. We take pride in having the world's best level in DNA analysis technology in particular. We welcome students who want to practice study that can contribute to the maintenance of social order.



MATSUZAKI, Ichiyo
Occupational Psychiatry / Space Medicine Longevity Medicine Endowed Chair

ZAW00312@nifty.com
<http://www.md.tsukuba.ac.jp/community-med/envhlth/>



Environmental and occupational prevention of work-related diseases.

Empirical and epidemiological study on risk factors for work-related diseases and prevention.

Projects for Regular Students in Doctoral or Master's Programs

- 1) Various mental disorder patients' treatment in occupational health. Training of psychiatric clinical ability demanded on site of industrial medicine.
- 2) Training in techniques for managing working people's mental/physical health issues as industrial physicians.
- 3) Research by epidemiology techniques.

Study Programs for Short Stay Students (one week ~ one trimester)

- 1) Health care for workers, mainly their mental health.
- 2) Clinical psychiatry (Major depressive disorder, Adjustment disorder etc.)
- 3) Return-to-work support

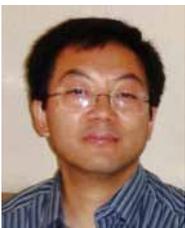


WAGATSUMA, Yukiko
Clinical Epidemiology

ywagats@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/epidemiology/index.html>



Clinical epidemiology has evolved in modern medicine, based on the two disciplines of clinical sciences and epidemiology. That helps to understand the conceptual gaps between the structured experience of basic science and the more complex, open-ended problems arising for the care of patients. Based on the principals of clinical trials and the use of clinical epidemiology, we try to provide evidence for improving the care of patients.



MA, Enbo
Epidemiology

mae@md.tsukuba.ac.jp
<http://www.md.tsukuba.ac.jp/epidemiology/en/>



Public health research for disease control and prevention is focusing on identifying and understanding lifestyle-related factors and other determinants. Recent major research is on disparities of risk factors of stroke and ischemic heart disease between Japan and China, aiming to obtain new evidence and strategies for risk control in different populations. Biostatistical methods and applications in medical research are also being explored. Clinical research activities in the CREIL Center are involved, particularly for trial data analysis.

English-Language Program for Medical Science



Flaminia Miyamasu
Nationality: British
Position: Associate Professor



Brian Purdue
Nationality: New Zealander and Irish
Position: Associate Professor



Thomas Mayers
Nationality: British
Position: Assistant Professor

In addition to teaching medical sciences courses in English, we also offer courses that focus specifically on developing English skills for scientific communication. Native speakers who hail from different corners of the world teach the courses, so students have the opportunity to experience different versions of native English as well as different cultural viewpoints from the English-speaking world.

All master's degree students take the English in Medical Science and Technology course. They learn from three professors—Flaminia Miyamasu (United Kingdom) and Brian Purdue (New Zealand) and Thomas Mayers (United Kingdom). The emphasis of the course is on spoken activities that resemble the real-life situations students will encounter in their future careers as scientists. Thus, in the first module, students learn about effective presentation of conference posters. They create their own posters and present them at a “poster presentation session” held at the end of the module. In the second module, they learn about effective oral presentation. They prepare their own talks and present them at a final grand “English Presentations Conference.”

Various English courses are offered to doctoral students. In the Technical English in Medical Sciences course, Flaminia Miyamasu teaches the principles of effective scientific writing. All students aim towards writing a paper that will be ready for submission to an international journal by the end of the year. The Research and Presentation and Discussion course is team-taught by Hiroyuki Suzuki (Laboratory of Experimental Pathology) and Brian Purdue. Each week, a student gives a presentation of his or her research, after which classmates and professors engage in lively Q&A and discussion of the presentation.

In addition to these English courses, students can also benefit from the English-language support service offered by the Medical English Communications Center (MECC). This center helps students revise and prepare their research papers for submission to English-language journals. It also prepares students to participate in international conferences by providing advice on students' posters and presentations as well as opportunities to rehearse the presentations.

How to Apply

The Faculty of Medicine at the University of Tsukuba has established research and study programs for international students, leading to the degree of Doctor of Medical Sciences, Master's in Public Health, or Master's in Medical Sciences. These programs are designed for students who have completed a Bachelor's degree or equivalent and wish to pursue in-depth study in the Medical Sciences or Public Health.

The University of Tsukuba aims to improve academic standards by cultivate globally-minded human resources through the promotion of international exchange. In 2009, the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) selected the University of Tsukuba to be part of the Global 30 Project to Establish Core Universities for Internationalization. This project aims to promote the internationalization of Japanese universities. All courses are offered in English for students to obtain Master's or Doctoral degrees. Entrance requirements are listed on the electronic application form available at: <http://www.md.tsukuba.ac.jp/G30/application.html>

Doctoral Programs in Biomedical and Clinical Sciences, and Master's Program in Medical Sciences

This program is designed for students who wish to enroll in the Master's or Doctoral programs offered in Japanese at the School of Medicine, University of Tsukuba. Students in this program may also elect to take English courses toward their degree. Japanese applicants living overseas may also apply to this program.

Dual Master's and Doctoral Degree Program

This program is for students currently enrolled in overseas graduate schools affiliated with the University of Tsukuba who wish to obtain a Master's or Doctoral degree from both institutes. Affiliated Universities are: The University of Medicine and Pharmacy, Ho Chi Minh City, Vietnam; University of Science, Ho Chi Minh City, Vietnam; and the National Taiwan University, Taipei, Taiwan. Entrance requirements are listed on the electronic application form available at: <http://www.md.tsukuba.ac.jp/G30/application.html>

Japanese Government (MEXT) Scholarship Program:

MEXT (Ministry of Education, Culture, Sports, Science and Technology) offers scholarships to international students who wish to study as graduate students at the Graduate School of Comprehensive Human Sciences for the Master's Program in Medical Sciences and Doctoral Program in Biomedical Sciences. The special application package and detailed instructions are available at: <http://www.md.tsukuba.ac.jp/gradmed/en/exam/index.html>

PhD Program in Human Biology

The students in the Human Biology Program will be trained in multidisciplinary courses that cover medical, biological, computational, and physical sciences, to understand how human beings can adapt, inherit and sustain their life. For admission requirements and application form, please visit: <http://hbp.tsukuba.ac.jp/en/>



Contact

For further information about the International Graduate Programs in Medical Sciences, please contact us at the following address or e-mail:

Academic Service Office for the Medical Sciences Area
University of Tsukuba
1-1-1 Tennodai, Tsukuba, JAPAN 305-8575

Application Information: iga-in@un.tsukuba.ac.jp
General Information: med.office@md.tsukuba.ac.jp

University of Tsukuba, Majors of Medical Sciences
<http://www.md.tsukuba.ac.jp/gradmed/en/>

International Graduate Program in Medical Sciences
<http://www.md.tsukuba.ac.jp/G30/index.html>

International Office, Medical and Faculty & Students
<http://www.md.tsukuba.ac.jp/int.office/en/>

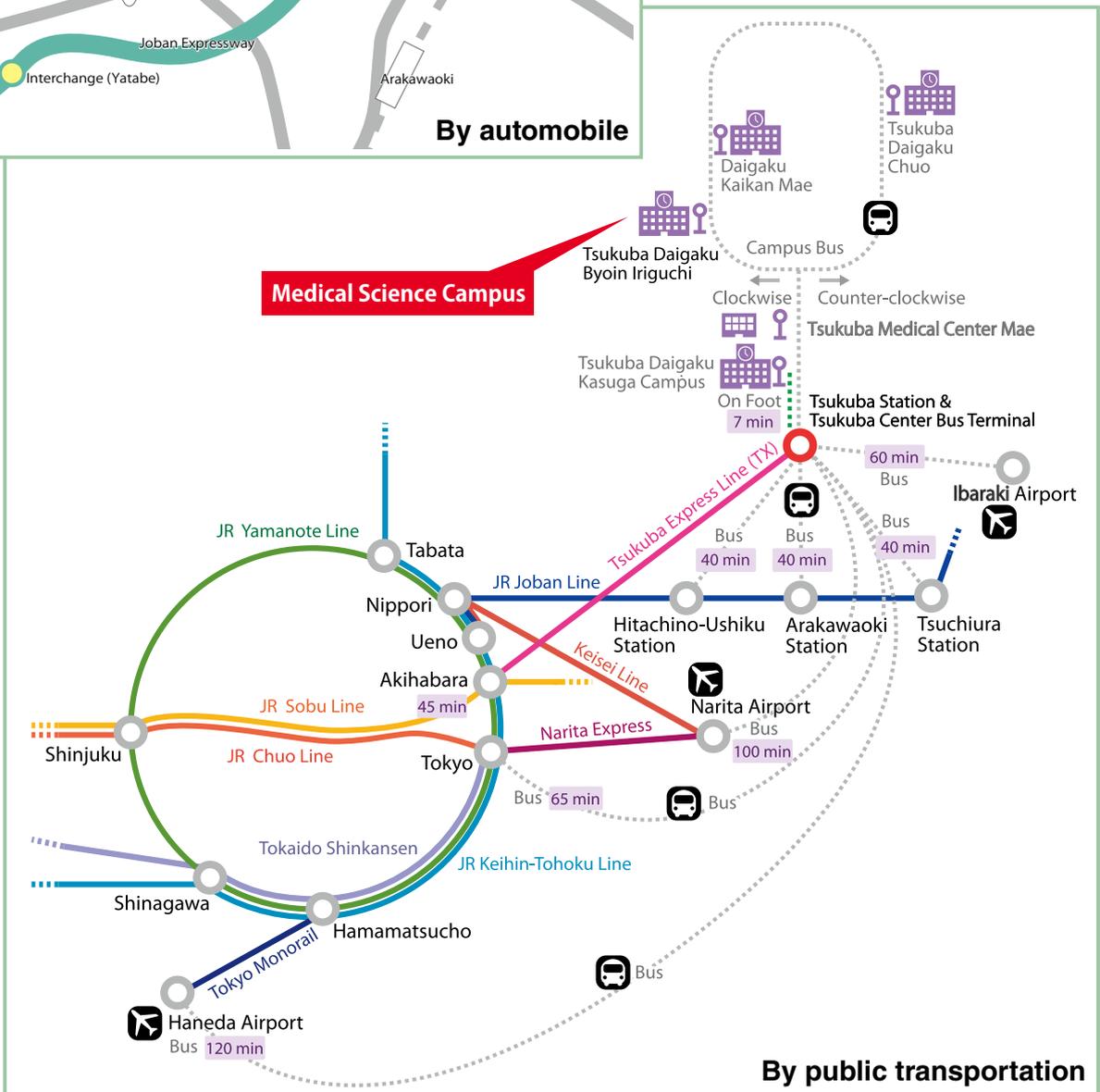
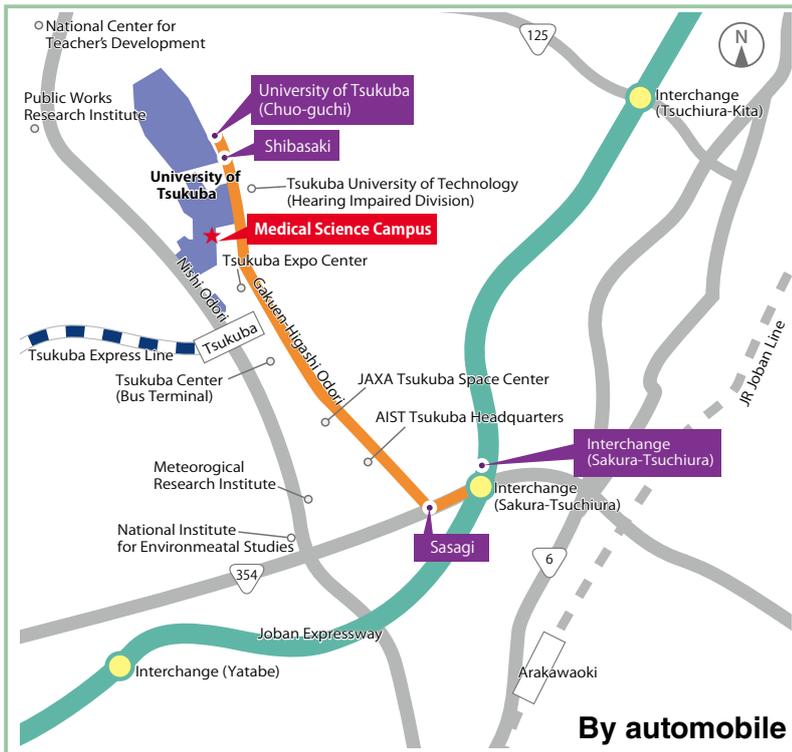
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University of Tsukuba
<http://www.tsukuba.ac.jp/english/>



Tsukuba Global Science Week 2013

Map and Directions





UNIVERSITY OF TSUKUBA FACULTY OF MEDICINE

1-1-1 TENNODAI, TSUKUBA, 305-8575 JAPAN

University of Tsukuba

<http://www.tsukuba.ac.jp/english/index.html>

International Graduate Programs in Medical Sciences

<http://www.md.tsukuba.ac.jp/G30/>

Academic Service Office for the Medical Sciences Area

e-mail: iga-in@un.tsukuba.ac.jp