筑波大学
University of Tsukuba

HBP
Ph.D. Program in Human Biology

IMAGINE THE FUTURE.

Develop your research abilities, gain professional experience,
learn international leadership skills, and more!!

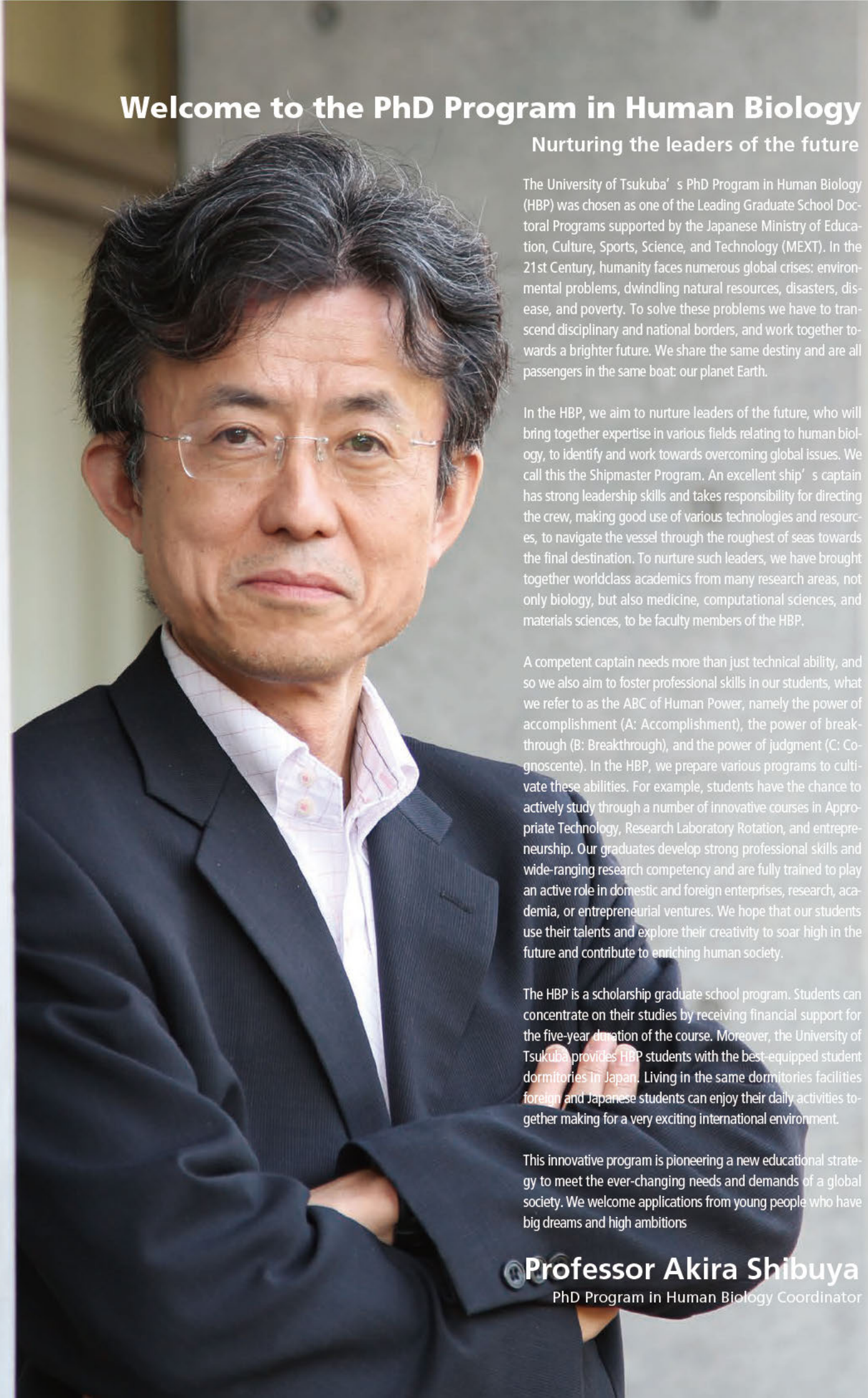
Ph.D. Program in Human Biology

MEXT Program for Leading Graduate Schools (adopted in 2011)

CONTENTS

Welcome to the PhD Program in Human Biology

Nurturing the leaders of the future



The University of Tsukuba's PhD Program in Human Biology (HBP) was chosen as one of the Leading Graduate School Doctoral Programs supported by the Japanese Ministry of Education, Culture, Sports, Science, and Technology (MEXT). In the 21st Century, humanity faces numerous global crises: environmental problems, dwindling natural resources, disasters, disease, and poverty. To solve these problems we have to transcend disciplinary and national borders, and work together towards a brighter future. We share the same destiny and are all passengers in the same boat: our planet Earth.

In the HBP, we aim to nurture leaders of the future, who will bring together expertise in various fields relating to human biology, to identify and work towards overcoming global issues. We call this the Shipmaster Program. An excellent ship's captain has strong leadership skills and takes responsibility for directing the crew, making good use of various technologies and resources, to navigate the vessel through the roughest of seas towards the final destination. To nurture such leaders, we have brought together worldclass academics from many research areas, not only biology, but also medicine, computational sciences, and materials sciences, to be faculty members of the HBP.

A competent captain needs more than just technical ability, and so we also aim to foster professional skills in our students, what we refer to as the ABC of Human Power, namely the power of accomplishment (A: Accomplishment), the power of breakthrough (B: Breakthrough), and the power of judgment (C: Cognoscente). In the HBP, we prepare various programs to cultivate these abilities. For example, students have the chance to actively study through a number of innovative courses in Appropriate Technology, Research Laboratory Rotation, and entrepreneurship. Our graduates develop strong professional skills and wide-ranging research competency and are fully trained to play an active role in domestic and foreign enterprises, research, academia, or entrepreneurial ventures. We hope that our students use their talents and explore their creativity to soar high in the future and contribute to enriching human society.

The HBP is a scholarship graduate school program. Students can concentrate on their studies by receiving financial support for the five-year duration of the course. Moreover, the University of Tsukuba provides HBP students with the best-equipped student dormitories in Japan. Living in the same dormitories facilities foreign and Japanese students can enjoy their daily activities together making for a very exciting international environment.

This innovative program is pioneering a new educational strategy to meet the ever-changing needs and demands of a global society. We welcome applications from young people who have big dreams and high ambitions

Professor Akira Shibuya

PhD Program in Human Biology Coordinator

What is Human Biology?

What is Human Biology?

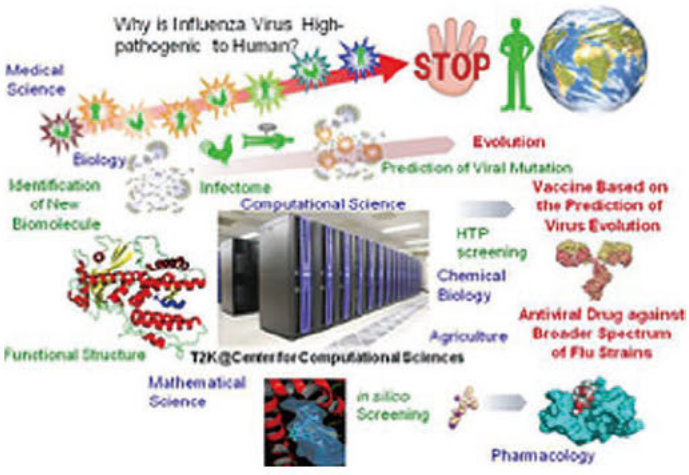
Human Biology is a relatively new area of study in the biological sciences, which uses an interdisciplinary approach to focus on understanding the human being as an organism in its biological and cosmological contexts – our place on the space-time axis of biological and cosmic evolution.

The PhD Program in Human Biology (HBP) aims to foster global leaders in the fields related to human biology; leaders who, through a deep understanding of the issues facing human society today, will contribute to the health, security, and happiness of the people generations of the future.

In the PhD Program in Human Biology, students will:

1. Learn the essential principles of human biology
2. Focus on DNA analysis to master the science and control of epigenetic molecules
3. Develop strength of judgment, the ability to make scientific breakthroughs, and the know-how and determination to carry research through to completion.

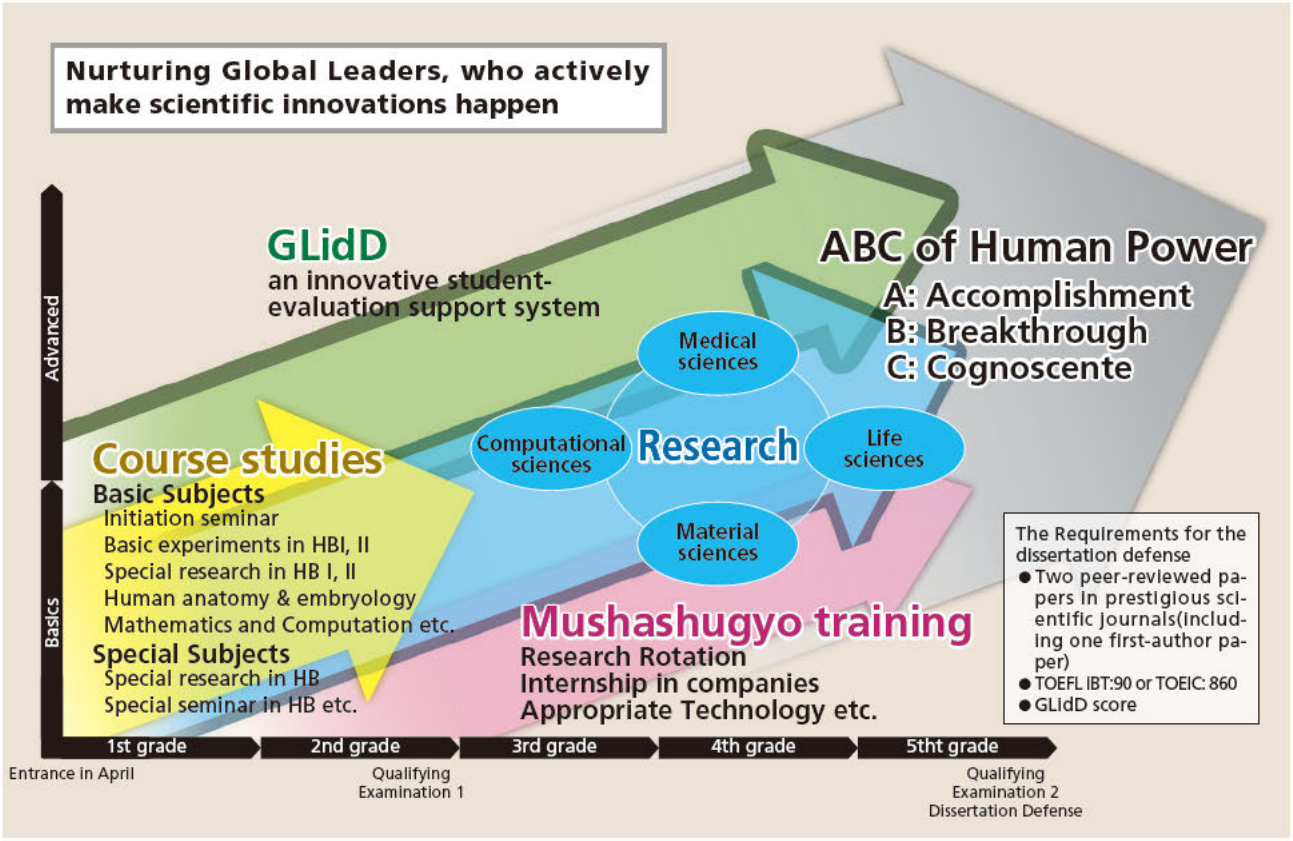
It is our hope that students will use their abilities and strengths to address some of the many problems facing humanity today



Our Vision for Human Biology Research

A truly interdisciplinary degree program

The study of human biology is multidisciplinary venture that brings together a wide range of expertise in medicine, biology, physics, chemistry, mathematics, and computational science. For this reason, first- and second-year HBP students take classes in a broad spectrum of disciplines.
First-year students have an opportunity to work in a number of different laboratories, where students can gain first-hand experience at addressing scientific questions through interdisciplinary research.



Domestic and Overseas Training

We offer HBP students numerous opportunities to engage in domestic and overseas training through a program that we refer to as Mushashugyou training. Mushashugyou refers to an important part of an apprentice samurai's training when the young samurai would travel around the country perfecting their skills in martial arts. Likewise we hope that through the HBP's Mushashugyou courses students will be filled with scientific curiosity and a sense of adventure as they engage in human biology training outside and inward of Japan. These courses are designed to train students in useful professional skills like organizational and strategic planning skills that are essential for future entrepreneurship. The courses also ignite a passion for scientific enquiry, a broadminded outlook, and the samurai's never-give-up spirit!

The perfect study environment created through international collaboration between academia, government, and industry

The PhD Program in Human Biology is proud of its multi-tiered teaching system that brings together international and domestic faculty members from a wide range of interdisciplinary fields – experts from academia, government, and industry. Through interaction with such a diverse and experienced faculty team, students receive invaluable insights and advice to steer them in their future career paths. Our program further encourages students to engage in coursework at overseas partner universities or in collaboration with industry.

The University of Tsukuba
Medicine, Biological Science, Computational Science and Material Science

Companies
Shimadzu Corporation, Kao Corporation, Mizuho Information & Research Institute,Inc. etc.

Overseas Universities
University of Edinburgh, National Taiwan University, Uppsala University, etc.

HBP Curriculum & Quality Assurance

Educational Policy

A student must complete the following requirements in order to earn a Ph.D. degree.

During 5 years, it is required to get at least 72 credits and pass the Qualifying Examination and the Dissertation Final Examination. In addition, the following abilities must be demonstrated:

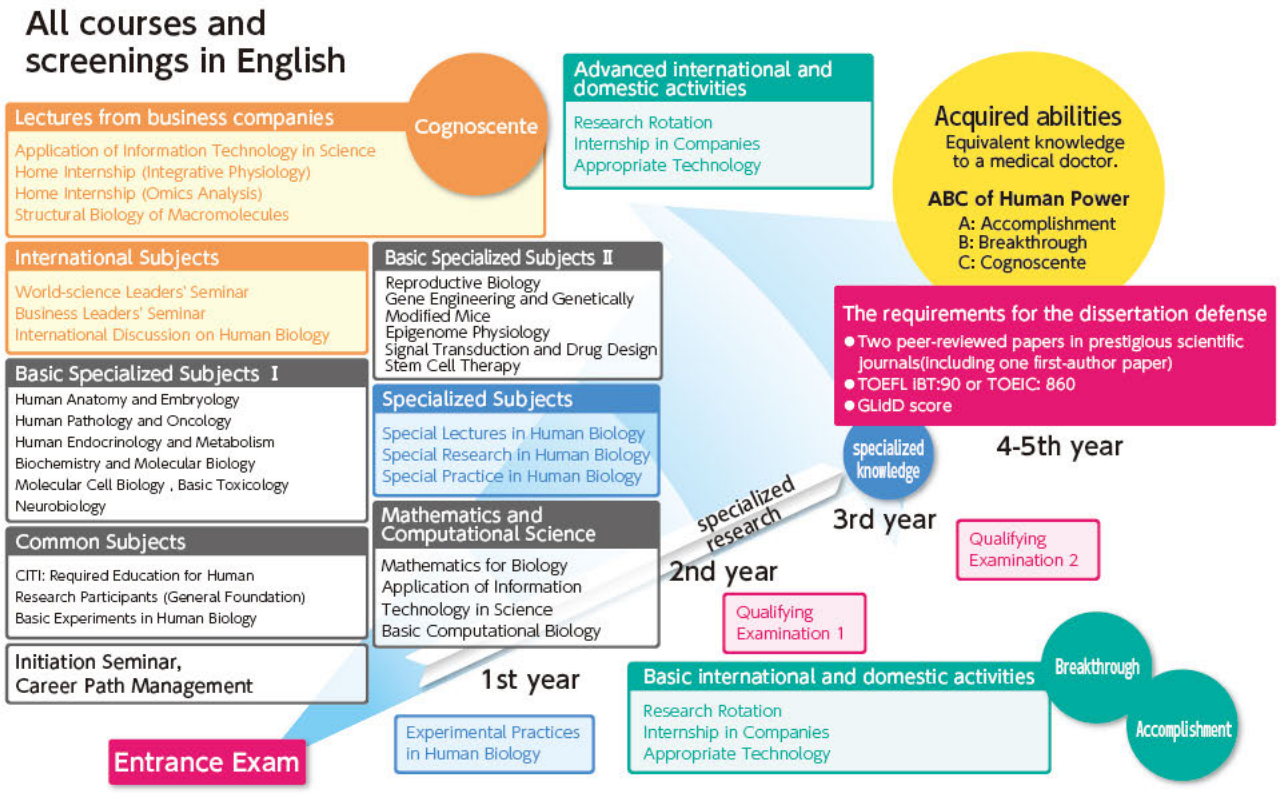
(1) To figure out problems and frameworks of possible solutions to global issues with broad perspective and deep insight.
(2) Possess knowledge, skills, intellect and creativity for planning research or activities to solve problems.
(3) To have enthusiasm, administrative ability on cooperative negotiation, leadership and integrated humanity, meeting the needs of the society on a global mass scale.

Aims and Objectives

The PhD Program in Human Biology of the University of Tsukuba will train specialists with integrated technical knowledge and research abilities in life science, medicine, chemistry and computing technology who study the mechanisms of maintenance, adaptation and inheritance of human life and can lead the establishment of sustainable human life in the global society.

Curriculum Policy

The curriculum of this program is designed to cultivate in our scholars a spirit of integrity and enthusiasm, keen eyes, and serendipity, as well as professional knowledge and technologies. Our global voyage style-study is an advanced stage of young samurai mushashugyo (errantry) study, which we have been carrying on for more than seven years, and will successfully build up robust professional captaincy with communication skills and leadership to accomplish the task for sustainable development.



Criteria for Degree Conferral

Doctoral degrees will be conferred on students who achieved the program aims as prescribed in the school regulations of the Graduate Schools of the University of Tsukuba and who demonstrate the following abilities:

(1) A clear determination and a sincere attitude to contribute to the world
(2) English language ability proven by international English-language proficiency tests
(3) Communicative ability to negotiate with ease in the international community
(4) Specialist knowledge of human biology equivalent to that acquired by medical doctors in Japan
(5) Ability to independently solve social issues using life sciences, computational science, and materials science

Students will take the QE1 and QE2 and the Final Examination to demonstrate that they have acquired the abilities listed above.

Qualifying Examination 1 (QE1):

At the end of the second year, students will be assessed to determine whether they have acquired the following: a clear determination to contribute to the world; the ability to negotiate with people from all over the world and to understand research problems with medical degree-level knowledge of human biology and fundamental knowledge of computational science; understanding of the fundamental techniques of human biology research and of the current situation of human biology research; the ability to conduct research and produce achievements in overseas activities.

Qualifying Examination 2 (QE2):

A: Required B: Elective: select 1 or more items from 1, 2, and 3

In the screening process, we evaluate students according to their Accomplishment power, Breakthrough power, and Cognoscente power to solve global-scale issues that they acquired through their Global Overseas Training.

A-1 Improvement of English proficiency (equivalent to a TOEFL iBT score of 90, a TOEIC score of 860 or higher, or other language proficiency test).
A-2 Leadership capability (ability to take initiative to solve problems in a group; debate skills; and leadership).
B-1 Practical project planning ability results achieved in the Appropriate Technology and International Research Rotation.
B-2 Achievements in Overseas Internship and Company Business Plan Competition.
B-3 Project management ability (from patent acquisition to organization and enterprise).

The Final Examination

Oral presentations of doctoral dissertation will be conducted in question-and-answer session.
The final examination committee will consist of at least one faculty member from overseas or industry.
The examination criteria are listed below:

(1) Humanity appropriate to a world-class leader who can steer the global voyage
(2) Planning ability and originality (ability to explain the plan' s background, significance, originality, feasibility, and expected outcomes)
(3) Practical accomplishments (quality and quantity of research activity and achievements)
(4) Ability to promote projects (credibility of its results, understanding the significance of the results, planning skills)
(5) Summarizing skills (ability to prepare project proposals or dissertations based on the results; to be able to create logical & persuasive documents; and oral presentation skills.

GLidD an innovative student-evaluation support system

GLidD
Growth & Learning identification powered by Instructional Design

Because the goal of the HBP is to train the leaders of the future who will play an active role in various fields within industry, academia, and government, we aim to nurture in our students not only academic skills, but also transferable professional skills, the "ABC of Human Power." But how do you evaluate such skills? The HBP is pleased to introduce GLidD – a nonconventional system of visualization and self-evaluation of personal development and progress. GLidD is a unique system created by Learning Initiatives Corporation to promote student' s development and to support their learning process. By using GLidD, an evidence-based evaluation system, we offer students opportunities to objectively reflect on their achievements, actions, and thinking. An experienced mentor from GLidD also conducts face-to-face interviews with each student over their 5 years of study. GLidD helps students to clearly visualize their next goal, the next step in their development.

LEARNING INITIATIVE

Core Capabilities
- Research Techniques Development & Application
- Knowledge Building & Application
- Research Planning and Execution
- Research Question Development & Verification
- Academic Performance

Promoting Capabilities
- Global Communication
- Influencing
- Project Management
- Networking
- Exploring

Student's voice

GLidD is a great tool for me to confirm and push forward my process of development. The GLidD system uses a series of questions to measure my achievements and capabilities. GLidD evaluation, including the interview session with my mentor, is very thorough, but it is an enjoyable and invaluable time for me to objectively reflect on my thinking, action and progress. It helps me to develop a specific plan for my career path and my mentor gives me some good advice to help create an action plan for my studies.

HBP Curriculum
An innovative approach to education

Entrepreneurship Training

In the Entrepreneurship Training course, taught by professional leaders from various fields, students learn the knowledge and skills necessary for developing scientific research into enterprising business ventures. As part of this course students also visit a number of companies to gain firsthand experience of entrepreneurial business. Students learn the entrepreneurial way of thinking, the determination to expand their own capacity in order to overcome any difficulties that life in the business world might throw at them.

Student's voice

"Entrepreneurship Training was one of the most interesting and interactive classes in HBP. I enjoyed the lectures by the guest speakers, as I was able to learn about different organizations and operations in companies from Japan and abroad. I particularly enjoyed the group work where we had to work as a team to come up with a business plan and give a proposal summarizing our business model and financial plan. It was a great opportunity for us to use our creativity and imaginations, and I would definitely recommend this course to anyone who is interested in starting up their own company."

Basic Experiments in Human Biology

The Basic Experiments in Human Biology course is designed for first-year students to gain their first experience at working in laboratory. In this course, students work in four different laboratories headed by program professors. The students learn the outline of each laboratories research, the basic experimental methods and techniques, and perform elementary experiments.

Student's voice

"This course has really expanded my academic perspective. In a relatively short period of time, I went from learning the basics to the experimental level in the fields of immunology, yeast research, bioinformatics, and embryology. I found it exciting that all the techniques being used conventionally in other research fields could be applied to my research interests."

"In this course I was able to deepen my interest and gain further insights into different areas of science. I did experimental studies using model organisms such as yeast and nematodes, which were different to the mice that I normally use in my laboratory. Those experiments in different fields enabled me to look at my research from different perspectives."

International Discussion on Human Biology

The International Discussion on Human Biology Course brings together three research and education powerhouses: Kyoto University, the National Taiwan University and the University of Tsukuba. Students from the three universities engage in interactive online distance learning via state-of-the-art telecommunications links. It is a great opportunity to present their thesis, enjoy discussion, and meet like-minded friends and colleagues.

Student's voice

"This course was challenging, but very exciting. It was very interesting to be able to connect with people from different cultures and backgrounds within an educational setting. This is such an important part of the reality of the interconnected society we live in nowadays. This course taught me about the power of collaboration, especially in the field of science, and gave me a deeper respect for people of other cultures."

Appropriate Technology

In Appropriate Technology, students work to address the needs of people living in rural areas or developing countries by generating a prototype to solve a specific local issue. Students take into consideration many factors such as culture, environment, resources, and the general circumstances of the end-user to develop their technology. This unique course strengthens problem-solving skills, improvisational capabilities, and the entrepreneurial abilities and passion students will need to tackle future social needs.

Student's voice

I was engaged in the field work at Fukushima, where people suffered from the catastrophic disaster, big earthquake and tsunami in 2011. Nowadays, the media pays less attention to the place than they used to. Therefore, I thought the recovering has been done well step by step. However, I realized the place was still quiet and had no change since the disaster happened. Throughout the field trip, we had a chance to talk with the local people who are taking actions to vitalize the place and they encouraged me to consider deeply what I can do or should do for them. What I learned from this course is the importance to understand the fact by visiting and looking at. In addition, I have decided to contribute to the society and carry out them throughout my research.

Faculty List

Teaching Faculty from the University of Tsukuba

Name	Specialism
Taisuke Boku	High performance computing, Parallel processing system, Interconnection network
Yuji Funakoshi	Biological pharmacy, General physiology
Yoshinori Harada	Project management
Keiko Hirota	Molecular biology, Genetics
Kiong Ho	RNA modification and repair
Hiroya Igarashi	Product design, Kansei information mechanics
Yuji Inagaki	Evolutionary biology, Biodiversity, Systematics
Koichiro Kako	Functional biochemistry, Biomolecular chemistry
Yasunori Kanaho	Physiological Chemistry
Yumi Kanemaru	Immunology
Yoshinori Kanemori	Molecular biology
Shin-ichi Kashiwabara	Applied molecular and cellular biology
Kosuke Kato	Molecular biology
Kazuhiro Kawamura	Geometric Topology
Hideo Kigoshi	Natural product chemistry
Keiji Kimura	Cell biology
Yuichi Kimura	Molecular biology
Tadachika Koganezawa	Neurophysiology, Autonomic neuroscience
Yuya Kondo	Collagen disease, Immunology
Isao Matsumoto	Collagenous pathology, Allergology
Seiya Mizuno	Animal science
Tomoaki Mizuno	Molecular genetics
Kazuya Morikawa	Bacteriology, Molecular biology
Keiichi Morikuni	Numerical computation, Numerical analysis, Numerical linear algebra
Masafumi Muratani	Genome biology, Molecular biology
Hiroshi Nagase	Drug development chemistry, Organic chemistry
Masayuki Noguchi	Human pathology
Ryosuke Ohniwa	Microbiology
Risa Okada	Anatomy and Embryology
Mitsuru Okuwaki	Genetics/chromosome dynamics, Virology, Cell biology, Molecular biology
Shoko Saito	General medical chemistry, Pathological medical chemistry
Mamiko Sakata-Yanagimoto	Leukemia, Myelodysplasia
Kazuko Shibuya	Immunology, Experimental pathology
Yasuhiro Shinkai	Environmental and hygienic pharmacy
Mitsuo Shoji	Quantum chemistry, Molecular dynamics, Quantum dynamics, QM/MM
Yasuyuki Suda	Cell biology, Applied microbiology
Hiroyuki Suzuki	Experimental pathology
Hiroto Tadano	Foundations of mathematics, Applied mathematics
Satoko Tahara	Immunology
Daisuke Takahashi	Computer Science, Software
Kaoru Takeuchi	Virology
Hiroto Tsuboi	Collagen disease, Clinical Immunology
Naoyuki Tsuchiya	Human genetics, Immunogenetics, Autoimmune rheumatic diseases
Fuminori Tsuruta	Molecular biology, Cell biology
Toshiharu Yamashita	Molecular biology

Faculty from Companies

Name	Specialism
Nobuo Hanai	Kyowa Hakko Kirin Co.,Ltd Professor, SIGMA
Masahiko Kushida	Sumitomo Chemical Co., Ltd., Professor, SIGMA
Takeshi Nagata	Mizuho Information & Research Institute,Inc. Information and Communication Research Division. Senior Manager, Professor, SIGMA
Motohiro Nonaka	National Institute of Advanced Industrial Science and Technology
Kazuya Onomichi	Ajinomoto Co., Inc., Professor, SIGMA
Taka-Aki Sato	Shimadzu Corporation, Professor, SIGMA
Yukihiro Yada	Kao Corporation, R&D Development Research-Sanitary Products Research, Professor, SIGMA

Faculty for Research Guidance from Overseas and Japanese Universities

Name	Specialism
Peter ten Dijke	Leiden University
Charles ffrench-Constant	University of Edinburgh
Bernd Fleischmann	University of Bonn
Carl-Henrik Heldin	Uppsala University
Michael Kann	University of Bordeaux
Arthur D. Lander	University of California Irvine
Lewis L.Lanier	University of California San Francisco
Tsai-Kun Li	National Taiwan University
Kimiko Makino	Tokyo University of Science
Aristidis Moustakas	Uppsala University
Kim. Seong-Jin	The Advanced Institutes of Convergence Technology of Seoul National University
Ding Shih-Torng	National Taiwan University
Joseph S. Takahashi	University of Texas Southwestern Medical Center
Hong-Gang Wang	Penn State College of Medicine
Xin-Hui Xing	Tsinghua University
Kyoko Yokomori	University of California Irvine

Teaching Faculty from Overseas Universities

Name	Specialism
Jeremy Bradshaw	University of Edinburgh
Han-Yi E. Chou	National Taiwan University
Lucio Cocco	University of Bologna
Thao Thi Phuong Dang	University of Science, Vietnam National University HCMC
Patrick Michael FULLER	Beth Israel Deaconess Medical Center, Harvard Medical School
George L. Gerton	University of Pennsylvania
Bela Gyurcsik	University of Szeged
Margarete Heck	University of Edinburgh
Shigeki Iwase	University of Michigan Medical School
Iordanis Kavathatzopoulos	Uppsala University
Tilo Kunath	University of Edinburgh
Hsinyu Lee	National Taiwan University
Vu Quoc Huy Nguyen	Hue University of Medicine and Pharmacy
Quynh Thi Nguyen	Institute of Tropical Biology VAST
Derrick Roy Robinson	University of Victor Segalen Bordeaux IV
Tang-Long Shen	National Taiwan University
Tuan Diep Tran	University of Medicine and Pharmacy HCMC
Pavel Uhrin	Medical University of Vienna

Supervisor Spotlight

Molecular and Cellular Biology

Tadashi Baba

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http://www.acroman.org/

Our laboratory is involved in the research fields of gametogenesis and fertilization. We are particularly interested in two processes: the recognition and fusion between male and female gametes, and the RNA metabolism in germ cells during differentiation. We also plan to develop our research findings to applied research in the medical and environmental fields. Current research projects include: 1) Posttranscriptional regulation of genes during gametogenesis; 2) Functional roles of proteins involved in fertilization, egg activation, and early embryonic development; 3) Authentication mechanism of mammalian sperm in the female reproductive tract; and 4) Development of reproductive and developmental technologies for future life.

Hematology

Shigeru Chiba

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http://www.md.tsukuba.ac.jp/hematology/index.html

The research aim of this group is to understand the molecular mechanisms underlying development of hematologic malignancies. Strategies we are taking include analyses of: 1) epigenetic regulation with a particular interest in DNA methylation, hyroxymethylation, and demethylation and its dysregulation in normal and leukemic blood cells; 2) mechanisms of how dysregulation of a small GTPase RHOA is involved in tumorigenesis of a particular subtype of malignant lymphoma; and 3) microenvironmental regulation contributing to the pathophysiology of bone marrow failure. These studies are conducted by the use of various techniques including biochemical, cell biological, and mouse genetic approaches.

Molecular Cell Biology

Tomoki Chiba

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Selective protein degradation is essential for not only the elimination of abnormal protein from the body, but also for the regulation of various cellular processes, such as cell cycle progression and signal transduction. Impairment of selective protein degradation results in many diseases such as cancer, neurodegenerative and metabolic diseases. Therefore, elucidation of the molecular mechanisms regulating selective protein degradation is important for understanding the pathophysiology and development of therapy. Our group is investigating the molecular mechanism and physiological roles of the Ubiquitin Proteasome system, to understand how the selective protein degradation is regulated and why it is important for the homeostasis of mammals.

Molecular Biology

Akiyoshi Fukamizu

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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, these are then catalyzed by modification enzymes and thereby gene expression is controlled. In my laboratory, we aim to understand the molecular mechanisms of life style-related and pregnancy-associated diseases or lifespan, how nutritional and stress conditions regulate epigenomic functions using genetic techniques with animal models such as mice and Caenorhabditis elegans (C. elegans).

Neurobiology of sleep

Hiromasa Funato

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http://sleepymouse.tsukuba.ac.jp/index.html

Sleep will heal our body and mind more surely than could any medicine. Surprisingly however, the mechanism of controlling sleep is still a mystery. We have conducted forward genetics research on sleep using mice to solve this mystery. Luckily, we have found intracellular signaling molecules that control sleep/wakefulness, and an ion channel involved in switching between non-REM sleep and REM sleep. Using these molecules as a clue, we are trying to clarify the molecular mechanism that controls sleep. We are also pursuing our research on depression, obesity and dementia that are closely related to sleep.

Brain maturation/ evolution

Yu Hayashi

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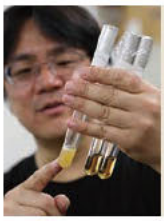
http://hayashi.wpi-iiis.tsukuba.ac.jp/index.html

Sleep in mammals is composed of two distinct states, REM sleep and non-REM sleep. Little is known about the individual roles of these two sleep states. We will address these questions through identification and manipulation of the neurons that function as the REM/non-REM sleep switch using mice. While REM and non-REM sleep are unique to certain vertebrate species, sleep itself is a widely conserved phenomenon. The nematode C. elegans, with its genetic accessibility and well-defined neural circuit, is a powerful means for neuroscience research. Therefore, our lab also aims to elucidate widely conserved molecular mechanisms underlying sleep using.



Biochemistry, Molecular Cell Biology

Kenji Irie

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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 the association of specific RNA-binding proteins to specific mRNA sequences usually found in the 5' or 3' untranslated regions. 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.

Molecular Genetics

Shunsuke Ishii

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Our lab is located within Riken' s Tsukuba campus. Using analysis of transcriptional regulators, we are studying about 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 somatic cells, which can lead to a development of new method of iPS cell generation.

International Medicine

Shigeyuki Kano

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The objectives of our research on "International Medicine" are to contribute to the improvement of medical treatment and the health of people all over the world by presenting the results of research in "International Health" and "Tropical medicine." In fact, the paradigm of tropical medicine has largely shifted from that of a medical science defined merely by climate and natural features to a fully mature medical science conscious of the importance of environmental and ecosystem preservation. Thus, the importance of tropical medicine has been increasingly acknowledged for its contribution to international health and medical care that has helped to resolve inequalities in health, society, and economy in different countries and regions. The overall goal of our research into international medicine is to bring about the successful treatment of diseases and the improvement of health, and ultimately to contribute to world peace.

Experimental Pathology

Mitsuyasu Kato

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http://www.md.tsukuba.ac.jp/epatho/

We study the molecular mechanisms of the cancer-related genes (TMEPAI, THG-1, and MafK), which we originally identified through the study of transforming growth factor- β in cancer development. Through our research, we are aiming to establish novel methods to treat and prevent cancers. At the same time, we are working towards a novel theory of carcinogenesis based on the analysis of the kinetics of cancer stem cells in early carcinogenic lesions through combined research with molecular biology, which includes the generation of genetically modified mice and also 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.

Molecular Virology

Atsushi Kawaguchi

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http://www.md.tsukuba.ac.jp/basic-med/infectionbiology/virology/

The 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 studied at the atomic, molecular, cellular, and body levels. Based on this information, we work on 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.

Developmental Biology

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Germ cells are specialized cells that can transmit genetic materials from one generation to the next in sexual reproduction. All of the other cells of the body are somatic cells. This separation of germ and somatic cells is one of the oldest problems in developmental biology. In many animal groups, a specialized portion of egg cytoplasm, or germ plasm, is inherited by the cell lineage which gives rise to germ cells. This cell lineage is called germline. The germline progenitors eventually migrate into the gonads, where they differentiate to form eggs and sperm. Our laboratory aims to identify the germline-forming factors in germ plasm, and to find the molecular mechanisms regulating germline segregation.

Environmental Biology

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Our laboratory investigates the mechanism by which environmental electrophiles such as polycyclic aromatic hydrocarbon quinones and methylmercury affect living systems by interacting with sensor proteins, which play a role in redox signal transduction pathways through covalent modification. The observations obtained by our group regarding environmental electrophiles have lent new insight into the mechanism of concentration-dependent activation and disruption of the cellular signal transduction pathways (electrophilic signaling), such as cell survival, cell proliferation, and cell damage. We are also studying the inactivation of environmental electrophiles and negative regulation of the electrophilic signal transduction pathway by hydrogen sulfide anion produced by cystathionine beta-synthase (CBS) and/or cystathionine gamma-lyase (CSE) in the body.

Systems Sleep Biology

Michael Lazarus

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http://www.wpiiislazaruslab.org

The investigative focus of our laboratory is the cellular and synaptic basis by which the brain regulates sleep and wakeful consciousness. Our experiments seek to link the activity of defined sets of neurons with neurobehavioral and electroencephalographic outcomes in behaving animals by using innovative genetically or chemically engineered systems (optogenetics, chemogenetics or optopharmacology) in conjunction with recording of the electrical activity produced by the brain or in-vivo imaging (-fiber-optic endomicroscopy).

RNAi, Sleep, Fear

Qinghua Liu

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The Liu Lab combines classical biochemistry and genetic screening to identify novel factors in the RNA interference and microRNAs pathways and to characterize their precise roles. We have recently ventured into sleep and fear research, and hope to decode these fundamental mysteries by combining forward genetic screening, classical biochemistry, and chemical biology. We believe that these groundbreaking discoveries will drive the development of novel medicines for sleep disorders and fear-related mental disorders.

Media Informatics

Shoji Makino

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In our lab we are studying media information technologies with the goal of utilizing brain and biomedical signals to control machines and computers. To this end are investigating how to separate, enhance, and understand brain EEG signals and biomedical signals. We are also investigating how to separate, enhance, understand, and synthesize speech and music signals, with the aim of to realizing high quality communication between human and computers.

Biomolecular Medical Science

Keiji Miyata

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Translational Science (TS) is a branch of medical research that attempts to more directly connect basic research in the preclinical stage to patient care, and is especially important in drug discovery. These days TS receives considerable attention as "final result" (so called "exit") research. One of the most powerful tools for promoting TS research is bioimaging such as PET, MRI, CT etc. In general, bioimaging tools have the following 4 characteristics: 1) they can use the same experimental protocol for animals and humans; 2) can do longitudinal studies using the same subjects; 3) can provide visual and quantitative data of the living body; and 4) are a noninvasive technology, and as such are indispensable to drug discovery.

Bacterial Ecology

Nobuhiko Nomura

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Microbes are found in nearly every environment on Earth due to their superior ability to adapt and multiply. It is becoming apparent that their social interactions are a crucial component to their ability to adapt and thrive. Our lab studies the social interactions of bacteria, how they gather to form complex communities, called biofilms, and how the inter-community interactions are influenced by environmental conditions. We combine microbiology with cutting-edge imaging techniques, plant physiology, soft-matter physics, and microfluidic technology to explore and analyze the complex social interactions in a collaborative environment.

Regenerative Medicine and Stem Cell Biology

Osamu Ohneda

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Our research group is focusing on developing useful therapy for cancers and intractable diseases by 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. In particular our research aims to: 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.

Brain Regeneration

Masanori Sakaguchi

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Our group strives to realize regenerative medicine for the central nervous system. For this purpose, it is crucial to know exactly how adult-born neurons are integrated into the existing brain circuits. We provided evidence that the neurons are incorporated into memory circuits after new learning. Further, we obtained preliminary results suggesting that sleep plays a crucial role for this incorporation process. Currently, we are trying to show a clear correlation between the incorporation of adult-born neurons into memory circuits through sleep by using cutting-edge techniques, including optogenetics. Our lab members are very international and hardworking and you will enjoy making scientific discoveries from your own experiments. Please visit our lab website for more details. I welcome motivated and self-driven students anytime for lab visitations.

Molecular Behaviroal Physiology

Takeshi Sakurai

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We are interested in biologically active substances, and neural circuits which play roles in modulating and regulating the function that supports our daily life, such as feeding, emotion, and sleep/wakefulness states. We try to identify novel biologically active substances and define their biological functions and physiological roles by means of virus-mediatate tracings, optogentics and analyzing genetically-modified mice.

Immunology

Akira Shibuya

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The immune system is crucial to human survival. In the absence of a properly functioning 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 were the first to identify several novel immunoreceptors, which are involved in the development of allergy, cancer, infectious diseases, and autoimmune diseases. Our goal is to develop therapies targeting certain novel molecules that we have identified relating to these intractable diseases.

Numerical Analysis

Tetsuya Sakurai

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In our lab we are developing high-performance computing algorithms and software for computer simulations such as molecular function design, nano-device simulation, vibration analysis, etc. Supercomputers are prevalent in many fields and playing an important role in the advancement of science, technology, and industry so we are also developing algorithms for analyzing large-scale data and image data using the K-computer at AICS and GPU/ MIC cluster machines at the University of Tsukuba.

Endocrinology and Metabolism

Hitoshi Shimano

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The increasing prevalence of obesity and metabolic syndrome heightens the need for new approaches for both the management and prevention of lifestyle-related diseases such as diabetes, dyslipidemia, NAFLD, and atherosclerosis. In our research, we aim to understand the molecular mechanisms of energy metabolism using the latest technology, such as molecular and cellular biology, genetically modified animals, and 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.

Internal Medicine

Takayuki Sumida

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We offer expert medical care for patients with various autoimmune diseases including rheumatoid arthritis and lupus. At the same time, we are committed to develop 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.

Anatomy and Embryology

Satoru Takahashi

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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) The elucidation of the molecular mechanism of pancreatic beta cell development and differentiation for its possible future application to the replacement of dampened β-cells in diabetes; 2) The functional analysis of large Maf transcription factor family, MafB and c-Maf in macrophage development and functions to find molecular mechanisms related to atherosclerosis – an autoimmune disease caused by macrophages; 3) The elucidation of the biological roles of carbohydrates and glycoproteins by analyzing phenotypes of glycosyltransferase conditional knockout mice.

Biochemistry and Molecular Cell Biology

Keiji Tanaka

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Protein degradation plays an important role in the control of a diverse array of basic cellular activities by rapidly and unidirectionally catalyzing biological reactions. Over the past 25 years, we have focused on elucidating the structure and molecular/physiological functions of a proteasome that is a 2.5-MDa ATP-dependent multicatalytic protease complex. This proteasome, in collaboration with the ubiquitin system selectively degrades short-lived regulatory proteins as well as abnormal proteins that must be eliminated from the cells. It is now clear that the ubiquitin/proteasome system controls various biologically important processes, such as cell-cycle control, immune responses, metabolic regulation and developmental programs and moreover, that dysfunction of the proteasome system causes incidences of intractable diseases such as cancers, infectious diseases, and neurodegenerative diseases. In our laboratory, four teams are studying to elucidate the molecular mechanism of the ubiquitin-proteasome system.

Sleep Science

Yoshihiro Urade

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PGD2 plays an important role in sleep regulation and allergic reactions such as bronchial asthma, and is also involved in various inflammatory responses. We aim to elucidate the role of PGD2 in sleep regulation and inflammatory response by the structural analysis of two types of PGD synthase (LPGDS – the sleep-related lipocalin-type PGDS and H-PGDS – the allergic mediator-producing hematopoietic PGDS) and function analysis using genetically engineered mice. We have also applied our research measuring sleep regulation in mice to develop a simple EEG device for people to monitor their sleep at home. We are also investigating the role of PGD2 in tissue development and repair in order to develop new therapies for patients with Duchenne muscular dystrophy or multiple sclerosis for which there are currently no effective treatments. This is opening up a new frontier of therapies geared to delay disease progression concurrent with the development of new medical treatments

Cortical Networks in Sleep

Kaspar Vogt

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Deep, slow-wave sleep is essential for survival, but we still do not know why. We are measuring the activity patterns of the many different cortical neurons during slow-wave sleep. We are also precisely perturbing network activity during waking and sleep. This helps us to better understand why sleep is so essential for the brain. We are using in-vivo two-photon functional imaging and chemo- and optogenetics to measure neural signals and to precisely control neural activity.

Evolutionary Developmental Biology

Hiroshi Wada

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The research aim of this group is to understand the genetics and molecular basis of the evolution of animal body plans through comparative developmental biology and comparative genomics. We are especially interested in the evolution of novel structures appearing in evolution, such as separated shell plates of bivalves, the larval skeletons of some echinoderms, and the notochord of chordates.

Vascular Matrix Biology

Hiromi Yanagisawa

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Our lab is interested in identifying the developmental stage-specific and disease-specific extracellular microenvironment. We study how each extracellular component interacts with cells, focusing on extracellular matrix (ECM) proteins and vascular cells. We use mouse as a model system and study development and disease mechanisms of cardiovascular, renal, reproductive and skin tissues with altered ECM proteins. Our new projects include identification of ECM proteins involved in brain architecture and patterning of brain vessels, as well as the molecular mechanism of adult stem cell maintenance in the heart and the skin.

Neuroscience of Sleep and Wakefulness

Masashi Yanagisawa

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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 and over 10 years of orexin research has convinced us that we have to take bold new approaches to gain fundamental insights on 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 are also carrying out a large-scale forward genetic screen in mice, looking for new genes directly responsible for sleep/wake regulation.

HBP Graduation Celebration Party

Application and Entrance Exam

Timetable for Application and Entrance Exam

	Summer	Winter*
Application Period	June	October
Screening of applications	July	November
Examination	August	December
Announcement of results	September	December

*The Winter Enterance Examinianation may be cancelled depending on the student intake at the Summer Enterance Examination period.

Examination Components:

Written (Language: English),
Individual Interview (Language: Japanese or English),
Group Debate (Language: Japanese or English)

Venue

Venue: Tsukuba (Japan), Bonn (Germany), Shanghai (China), Ho Chi Minh City (Vietnam), Dallas (USA), Taipei (Taiwan), Jakarta (Indonesia).

*Overseas examination sites will be confirmed after the announcement of the first screening results.

Currently HBP students are enrolled from the following countries (in alphabetical order):

China, Hungary, India, Japan, Korea, Morocco, Netherlands, Philippines, Sri Lanka, Taiwan, Tunisia, Turkey, USA, Vietnam

Student Support System

The HBP Administration and Student Support Committee Office, where you will always find a warm and friendly welcome, is set up solely to take care of HBP students.

Financial support

(Estimated) Stipend in the amount of 70,000 yen per month.
Support for Overseas Activities
(Estimated) Tuition Fee Exemption: 0 yen per year (for 5 years)

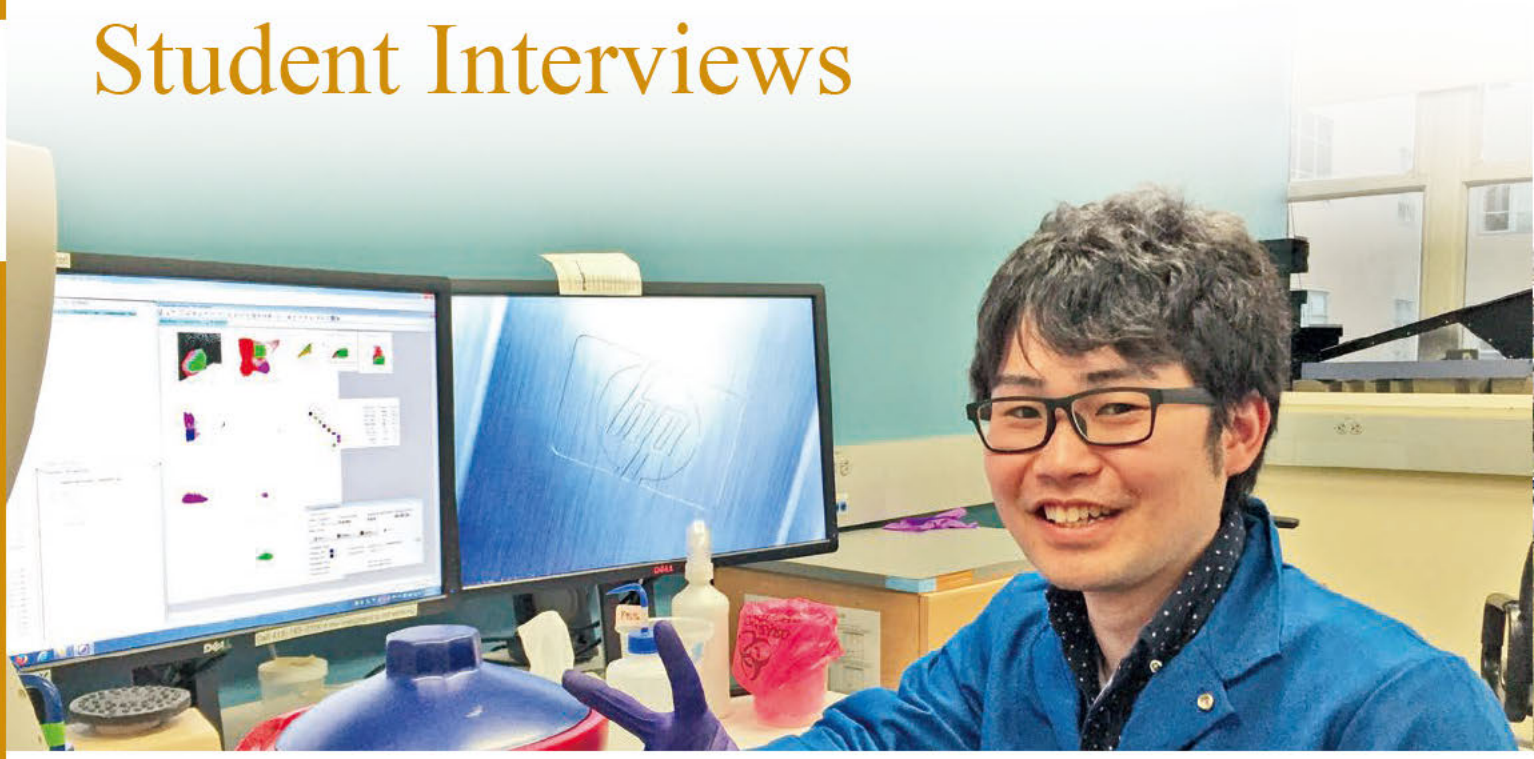
Housing support

Preferential accommodation to the on-campus dormitory.
Monthly Rent: about 30,000 yen per month (at one' s own expense)
The secure dormitory consists of a private room with own entrance, kitchen and a bathroom, and is furnished with a single bed and a desk.

Student's voice

Because we receive financial support to cover our needs, we can devote ourselves to our study. We can also get financial support to go abroad so we can choose the place best suited for our individual research goals. We also have guaranteed housing in the halls of residence, which are really nice. For me the opportunities to study abroad, such as the Internship in Overseas Companies are particularly attractive. I can experience so many things in this special program thanks to receiving this financial support.

Student Interviews



Mr. Kouta Niizuma

Research theme : Immunology
Graduated school : Biological Sciences, University of Tsukub

Why did you join the HBP?

I would like to find myself in an environment where I am focused to make diligent effort. While I was an undergraduate student, I did not have any special achievement I can be proud of because I just spent my time in classes, club activities and a part time job without any aim. I was worried not to have any accomplishments and achievements, but when I started my research which no one has discovered, I was very attracted.
It opened the door to the advancement of world research. I decided myself to have two goals; to accomplish my own research, and aim to become a world class researcher
I decided to enter in HBP to accomplish these two goals. We all communicate in English and international students, all around the world, joined the program with high ambition with dreams. I believe HBP provides excellent environment to help me motivated to accomplish my goals.

What is the most beneficial aspect of the HBP course on your career planning?

During my first and second year in HBP, courses are given from various disciplines, including biological sciences, medicine, computational sciences and material sciences, to understand what is "Human Biology". While I did not master all of them, I learned that it was important to acquire an ability to communicate with the researchers from different fields. For this reason, I kept asking myself questioning, "What is the big question", "What is interesting in a given field", "Is there any similarities with my field of study", which has led me to strengthen my thoughts.
In the overseas laboratory rotation courses at Stanford University and at University of California, San Francisco, post-doctoral associates trained me for laboratory skills as well as professional skills. Being in the setting where renowned scientists come together from different countries to purse independent research, I realized my own weaknesses that I should put more effort to reach my goal. It also made me realized that I could think creatively and independently from others. These opportunities and experiences made me to decide to pursue my career as a scientist.

What is your research theme?

I have been studying the role of "Immunoreceptor" at Prof. Akira Shibuya's laboratory.
Immune system is the host defense system that eliminates invading pathogen in order to maintain our health. Over a trillion of various immune cells are tightly regulated by complicated molecular mechanisms. Immunoreceptors are localized on the cell and transmit activating or inhibitory signal into the cell like an accelerator or a brake. I examine the role of a novel immunoreceptor identified by our laboratory and how this receptor transmits signals.

Life in Tsukuba

Around the campus, there are lots of bars and restaurants, especially noodles shops called ra-men in Japanese. After the busy days, like preparing for presentation, I walk the campus around to grab delicious foods.
On weekends, I often visit the gymnasium to play badminton and take a trip with graduate students. It is fun spending time with overseas students, as I am always able to get different perspectives from them.

A great trip with HBP friends

Ms. Chia-Jung TSAI

Research theme : Brain maturation/ evolution
Graduated school : National Taiwan University

Why did you join the HBP?

Studying abroad had always been my dream, so I went to Sweden for one-year exchange study to explore a different culture as well as scientific subjects couple years ago. However, I realized that it was not enough for me in exploring foreign science field, so I made up my mind to apply for HBP. HBP provides not only diverse courses to help us lay a solid foundation for science, but also opportunities of attending overseas conferences and laboratory rotations to expand our horizons. My understanding of this program and my aspiration to become a highly qualified researcher at an international level have led me to join HBP.

What aspects of your course have you found the most interesting?

Courses such as the Appropriate Technology and the Entrepreneurship Training are both very unique in HBP. It was very honoured to join the field trip to the restriction area near Daiichi Nuclear Power Plant in Fukushima and have a chance of talking to local people in the Appropriate Technology course. It was also very exciting to visit the R&D centre of Toshiba and to uncover the media industry inside the Fuji Television when I took the Entrepreneurship Training course.

What is your research theme and the goal after graduation?

Until now, the biological function of sleep is still a mystery. I am particularly interested in the function of REM (rapid eye movement) sleep, which is the stage when most of dreams occur. Currently, I am studying the correlation between the brain circulatory system and sleep, and soon will focus on the relationship between stroke rehabilitation and REM sleep. I expect myself to combine what I learn in both academics and business fields to contribute to developing human clinical therapeutics in the future.

Life in Tsukuba

I really enjoy working in our laboratory with my lab mates and Dr. Yu Hayashi every day. Our laboratory is a flexible and comfortable academic environment to study the secret of REM sleep. Every week, I attend two self-organized journal clubs, which are "ImmunoLunch" and "Café de HBP". I am satisfied to have such a knowledgeable time and discussing with our friends about science.

"ImmunoLunch" with Ms. Yu-Hsien LIN

Alumni Interviews

Dr. Misuzu Hashimoto

Current affiliation : Assistant Professor, Gifu University (Japanese National University)

English score : TOEIC 760(1st year)→840(2nd year)→865(3rd year)→910(5th year)

What is your research?

Our body is composed of various molecules (such as DNA and proteins) and the biological function of these molecules are established through various modifications. One of the important modifications is methylation. In my research, I investigated how 'protein methylation' is involved in brain development. I showed that many of the proteins methylated in the brain and these modifications are essential for normal brain development and motor coordination. Identification of the protein targets for methylation will be critical for understanding proper brain formation.

How was your 5 years in the HBP?

The most memorable thing I spent in five years is to have my research paper accepted in the prestigious journal, the Journal of Biological Chemistry, as a first author paper. My supervisor, Prof. Fukamizu, respects independent thinking so I organized my research by myself. At that time, I thought I did all the work to publish this paper. However, I realized that my accomplishments owe much to the support from our lab members. They provided me with knowledge and skills for all those years I spent in the lab. When I received a notification that my paper was accepted while I was studying abroad in Edinburgh, I celebrated. Writing a thesis was extremely time consuming but knowledge and communication skills that I learned in HBP helped me to make this experience enjoyable.

Message to the next generation.

I spent seven months in the USA and Scotland for international lab rotation. I also participated in internship in the USA for a month. I had high expectations for these courses in the HBP since my plan was to work as a researcher in overseas setting. Ironically, what I learned from the above experiences is that "research in Japan is fantastic". While part of the reason I felt in such a way could be due to a high standard of research in Japan, I was attracted by the Japanese research style, where they purse for an answer if there is any chance of success. In the future, I intend to strengthen my communication skills that I learned from HBP and establish a collaborative, world-class research program in Japan.

Here is my message for HBP fellows: Whatever you do, work hard and best as you can. By doing so, you will be able to capture the opportunity when such the chances comes.

Dr. Fukamizu Laboratory

Dr. Lin Jianhuang

Current affiliation : Researcher, Karolinska Institute

What is your research?

During the development of cancer, many cellular pathways function abnormally which are either over activated or suppressed. Those abnormal pathways usually play dominant roles on the cancer formation, therefore various anti-cancer drugs were designed by targeting those pathways. However, the molecular mechanisms underlying those pathways have not been fully understood, which restricts the anti-cancer drug discovery. My topic is to reveal the molecular mechanism of signal transduction pathways related to cancer.

How was your 5 years in the HBP?

I am absolutely satisfied with the whole life in HBP. Looking back to the time spent in HBP, it was a 'worked hard, played hard' life with so much nice memory. The most unforgettable thing for me is that we organized the initiation seminar for the new HBP students in 2013. At that time we were about to finalize choosing the lab and some of us decided to choose to work in the laboratory off campus. It was such a good experience that we shared ideas at the beginning, worked hard in the middle, and had lots of fun at the end. The seminar bound us together again before we went to different labs.

Message to the next generation.

The HBP program offers lots of chances for students to do not only research but also business and entrepreneurship, allowing students to contribute to the society in different ways. Students could get to know what the advantages are and present their value to the society in the way they are good at. As the saying goes 'A good beginning is half the battle won'. Choosing the right field which you are good at is important for career development. This is basically how I chose my career. After considering opportunities provided by the program, I realized that starting my career as a researcher is better for me. However, this does not mean that I have to say goodbye to business and entrepreneur. I am still hoping that in future I can contribute to the society by being not just in research but also being a businessman or entrepreneur. Therefore, my goal in the future is to combine my research skills in the industry setting to solve the needs of the society.

Graduation ceremony with his supervisor, Dr. Mitsuru Okuwaki

Mr. Takuya Kikuchi

Current affiliation : Researcher, Kao Corporation

English score : TOEIC 760(1st year)→815(3rd year)→880(5th year)

What is your research?

I performed functional analysis of transcriptional factor CREB3L3 in the intestine. CREB3L3 is highly and specifically expressed in the liver and intestine. While the function in the liver is known to regulate triglyceride metabolism, the function of CREB3L3 in the intestine remained unclear. I found that intestinal CREB3L3 decreases expression of NPC1L1, intestinal cholesterol transporter, which leads to prevention of high-cholesterol-diet-induced hypercholesterolemia, fatty liver and cholelithiasis.

How was your 5 years in the HBP?

I studied abroad at Vanderbilt University for one year and engaged in the basic research with the HBP travel fund. While I researched about the effects of complement system on energy metabolism, I could have great experience not only for learning the research skills, but also for understanding the culture of overseas labs and the research approach. The lab members always take a lot of discussions regardless of ages and positions. Their cordial instructions and the great research theme helped me advance my research. As a result, I gained the young research award at Diabetes Society called European Congress of Endocrinology, the biggest meeting in Europe. Moreover, during staying the USA, I volunteered for providing foods and playing the music at Alive Hospice Residence Nashville in one year and the hospice of Vanderbilt University in half of the year. These memorable experience leads to be familiar with clinical practice and work with a variety of local people. I am grateful so much of HBP for giving me the unforgettable days where I did make true friends and learn a lot from various activities in USA.

Message to the next generation.

I chose my career to work in the R&D department of the global personal care company. Throughout HBP curriculum, I gained much knowledge of the basic research which I learned from the lectures given by UT and companies. One of recommendable subjects, Appropriate Technology, allows me to strive for solving the current problems in the developing countries and areas suffered by natural disaster at which we use the local technology with innovative ideas. These experiences cultivated me to gain problem-solving capabilities which can be applied to the research fields. I chose my career to contribute to our society throughout what I learned in HBP Finally, HBP provides the well-organized environment where student can challenge themselves to various possibilities. In this program, imagine your future and make the greatest efforts possible to make your dreams come true!!

A presentation at international conference

Career Paths of Graduates

Company	●Kao Corporation, Japan
Assistant professor	●Gifu University, Japan
Postdoctoral researcher	●Karolinska Institute, Sweden ●Stanford University, USA ●University of Michigan, USA ●Vanderbilt University, USA

Tsukuba Science City

Tsukuba is home to approximately 220,000 people, including over 7,000 non-Japanese residents. Located at the base of Mount Tsukuba, approximately 60km from central Tokyo, Tsukuba can be reached in only 45 minutes from Akihabara. The Tsukuba development act was enacted by the central government in 1970 to develop Tsukuba as Japan's premier science and technology research center. The city is based on other planned cities, and has wide streets, abundant greenery, and an international feel. The city is home to over 300 public and private research institutes, including 31 national centers, two universities, and over 20,000 researchers, making it one of the largest centers of research globally. Although Tsukuba has a modern, international feel, there are an abundance of opportunities to experience and interact with Japanese culture throughout the year. Mount Tsukuba is a wonderful place for hiking and home to several onsen hot spring baths and the beautiful Mt. Tsukuba Shrine. Annual events include Matsuri Tsukuba—the city festival every August, Tsukuba marathon, and the "Tsukuba Challenge" - a robotics competition in which robots must navigate an obstacle course in the city center. Tsukuba aims to be one of the world's most environmentally friendly cities in the world, and has the goal of a 50% reduction in CO2 emissions by 2030. The city has a comprehensive plan based on education, the development of low-carbon transportation, the development and utilization of renewable energy resources, the promotion of local produce, and over 48km of cycle paths connecting residential areas with parks, shopping facilities, and cultural centers. It's a great place to live and study.

Tsukuba's global Network
University of Tsukuba Overseas Offices

Information

HBP Homepage
http://hbp.tsukuba.ac.jp/en/

HBP Facebook
https://www.facebook.com/Tsukuba.HumanBiology/

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https://www.youtube.com/user/hbptsukuba

University of Tsukuba Homepage
http://www.tsukuba.ac.jp/en/

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Special Thanks: Ms. Karina Ramirez (2nd-year student, Ph.D. Program in Human Biology)