

Graduate School of Medicine (Doctoral Course)

Admission Requirement for International Students

October 2024 Admission

April 2025 Admission



Hamamatsu University  
School of Medicine

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## Hamamatsu University School of Medicine Graduate School of Medicine (Doctoral Course) Admission Policy

The Graduate School of Medicine (Doctoral Degree Program) aims to nurture basic medical researchers who conduct original and advanced research with international leadership and high ethical standards, or highly specialized medical professionals with a scientific thinking and research mindset. To achieve our aim, we seek individuals who are relevant to the following.

●The ideal student:

1. having an interest in the latest medical science, medical care and advanced technology, and a lifelong desire to learn and cultivate them
2. possessing the ability to carry out tasks responsibly in cooperation with others based on high ethical standards
3. pursuing questions and issues in the medical science and medical care, and seek to resolve them with deep insight and multifaceted perspectives
4. having an international perspective and a desire to disseminate research results to the world
5. having a willingness to give back and disseminate the research results to the local community broadly

●Basic Selection Policy

In order to select the desired types of student as outlined above, selection will be conducted in line with expected periods of enrollment through examinations for enrollment in April and examinations for international students to be held in October.

Examinations take into account both the academic ability and quality of the applicants and consist of written examinations in English and specialization-relevant English, an oral examination in the desired field of specialization, as well as a review of applicant results transcripts and an application essay.

### 1 Number of Applicants to be Admitted

Course	October 2024 Admission	April 2025 Admission
Specialization in Medicine	Limited	

### 2 Eligibility for Application

- (1) Individuals that have graduated from university courses in medicine or dentistry, or six-year courses in veterinary medicine or pharmacology, or individuals that are scheduled to graduate from such a course by September 2024 (for applicants intending to enroll in October 2024) or March 2025 (for applicants intending to enroll in April 2025).
- (2) Individuals outside of Japan that have completed eighteen (18) years of education (where the final courses undertaken were in medicine, dentistry, pharmacology, or veterinary medicine) or individuals that are scheduled to complete such a course of education by September 2024 (for applicants intending to enroll in October 2024) or March 2025 (for applicants intending to enroll in April 2025).
- (3) Individuals that have completed, within Japan, eighteen (18) years of correspondence education offered by a school in a country outside of Japan (where the final courses undertaken were in medicine, dentistry, pharmacology, or veterinary medicine) or individuals that are scheduled to complete such a course of education by September 2024 (for applicants intending to enroll in October 2024) or March 2025 (for applicants intending to enroll in April 2025).
- (4) Individuals that have, within Japan, completed a course at a university outside of Japan (limited to cases where the individual has completed eighteen (18) years for education in the applicable non-Japanese country), which is defined as an educational facility under the education system of that country, and have completed other courses as defined by the Minister of Education, Culture, Sports, Science and Technology.

- (5) Individuals that have completed a master's course or individuals that are eligible to be awarded a master's degree who have also studied for two or more years in a doctoral course that does not have a two-year first period / three-year second period structure, have completed thirty (30) or more units, and have undergone the necessary research supervision (including individuals whose situation falls under Article 6(1) of the degree regulations (1953 Public Notice of the Ministry of Education no. 9), which was in place before the ministerial ordinance that partially amended the degree regulations (1974 Public Notice of the Ministry of Education no. 29) and are deemed to possess at least the equivalent academic ability as someone who has graduated from a graduate school or non-degree course for graduates at a university that offers courses in medicine, dentistry, pharmacology, or veterinary medicine.
- (6) Individuals who, after graduating from a university (excluding courses in medicine, dentistry, pharmacology, and veterinary medicine) or after completing sixteen (16) years of education in a country outside of Japan, have engaged in research at a university, research facility, or similar institution for two years or more and, as a result of such research have, in the context of graduate school courses or non-degree courses for graduates, been deemed to possess equivalent or higher academic ability to individuals who have graduated from university courses in medicine, dentistry, pharmacology, or veterinary medicine.
- (7) Individuals who have attended a university (limited to courses in medicine, dentistry, pharmacology, or veterinary medicine) for four years or more and that this graduate school deems that superior results have been achieved in certain subjects.
- (8) Individuals who have completed sixteen (16) years of education in a country other than Japan (limited to courses in medicine, dentistry, pharmacology, or veterinary medicine) or individuals that have completed, within Japan, sixteen (16) years of correspondence education offered by a school in a country outside of Japan (limited to courses in medicine, dentistry, pharmacology, or veterinary medicine) and have superior results in specific units as defined by this graduate school.
- (9) Individuals who, through an individual examination of admission qualifications, have been deemed by this graduate school to have equivalent or higher academic ability than a university graduate and are of at least twenty-four years of age on September 30, 2024 for October 2024 enrollments and March 31, 2025 for April 2025 enrollments.

### 3 Important Notes before You Apply

Please refer to the list/table of research laboratories (research groups), research areas, research projects and faculty members on the "Major Research Areas" (Page 12) and select your preferred laboratory (research group) in the Program you are applying for.

The applicant must make a pre-application inquiry regarding research projects to research laboratory/ies to which they wish to belong in order to receive supervision for their doctoral thesis, before submitting application documents.

If applicants decide to apply to the University based on the information gained through this pre-application inquiry, they must submit all application documents to the appropriate address as specified hereinafter in "5(3) Address for submitting application documents and references" (Page 4) by the prescribed deadline.

(Please Note: even if you have already submitted documents to your preferred laboratory/advisor in the course of your pre-application inquiry, those documents may not be deemed to be the formal application documents, and thus may not be accepted as your application.)

### 4 Individual Review of Admission Eligibility

Since Individuals are required an individual review of admission eligibility before applying. **It is necessary to submit the required documents by deadline.**

#### (1) Submission Deadline

**April 19, 2024 (Friday)** (must arrive)

(2) Documents for Submission

	Document	Comments
1	Application for the examination indicating the eligibility	University specified format.
2	Results Transcript	Please submit documents that have been created by the authorities at your university (undergraduate school). Applicants who have completed (or are scheduled to complete) a master's level course should submit a document prepared by the head of the relevant graduate school . If your university (graduate school) has GPA(grade point average), please submit a transcript showing GPA.
3	Graduation certificate (including prospective graduation/completion)	Please submit the document prepared by the authorities of your university (undergraduate school). (Applicants who have terminated graduate level studies without completion should also submit proof of withdrawal). Applicants who have completed (or are scheduled to complete) a master's level course should submit a document prepared by the head of the relevant graduate school.
4	Study Career Certificate	University specified format. * For applicants applying under eligibility criterion (6) and (9)

(3) Address for Submission

“5(3) Address for submitting application documents and references” (Page 4)

- i Please submit by e-mail.

**5 Application Procedures**

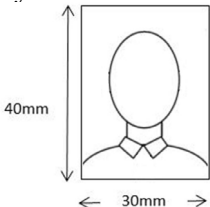
(1) Acceptance Period for Application Documents

Application documents must arrive between **May 20 (Monday) and May 29 (Wednesday), 2024.**

NOTE:

- 1 Please contact your prospective supervisor (refer to Page 12 “Major Research Areas”) in advance and discuss your research plans with them before making your application.
- 2 Please contact by e-mail to "5(3) Address for submitting application documents and references " before shipment.
- 3 The original documents submitted in Section “4 Individual Review of Admission Eligibility” must also be sent by airmail together with the application documents.
- 4 Those that arrived after the filing deadline cannot be accepted.

(2) Application Documents

	Document	Comments
1	Admission application Form	University specified format.
2	Photo	Prepare a photograph (size: 40 mm height x 30 mm width)taken within 3 months of the application, showing your upper body from the front without a hat.  Photo dimensions
3	Research Plan	University specified format. Must be written in English, and should not exceed 1,000 words.

4	List of Publications or Document Showing Other Strength.	Submit a list of publications along with up to three reprints/offprints of your major publications, if available. Excellent academic records; and/or Excellent achievements in a special project in an academic fields.
5	Letter of Recommendation.	University specified format. Must be written by your current or former academic supervisor or a professor who knows you well. It is also possible to submitted directly to address for submitting application documents by recommender.
6	Examination Fee	The fee is ¥30,000 Please refer to Page 17" Application Fee Payment Instructions (Payment from Abroad)". Please enclose the certificate kinds concerned with examination fee payment (It's possible to copy.) with an application documents.
7	Copy of Residence Card (or similar)	Submit one of the following: • Copy of residence card or passport. Family register from your home country, or official document that corresponds to such.
8	Documents that can prove English proficiency objectively	Submit a copy of the TOEFL-iBT, TOEIC Listening & Reading / Speaking & Writing Test (Only TOEIC Listening & Reading Test is also acceptable), IELTS or Cambridge English Examination score taken within the last two years. (If your first language is English, there is no need to submit) ※If you need to submit a score and can't submit the score of the english proficiency test score, please describe the reason why you can't submit the score on the attached sheet. (Statement of Reasons) If you don't submit a score, we will assess your English proficiency by interview only.
9	Scholarship Application Form	University specified format. Submit it if you wish to scholarship.

NOTE:

- 1 Incomplete applications may not be processed.
- 2 Application documents etc will not be returned.

(3) Address for submitting application documents and references

Hamamatsu University School of Medicine, Admissions Division  
Address : 1-20-1 Handayama, Chuo-ku, Hamamatsu, 431-3192, Japan  
TEL: +81-53-435-2205  
E-mail:nyushi@hama-med.ac.jp

## 6 Selection Method

The selection process for successful applicants consists of a document screening and an interview(as a rule, the interview will be conducted through Internet, for example with Zoom.).The interview examination will be scheduled between **June 24 (Monday) and June 28 (Friday), 2024**, and each applicant will be notified via email.

Applicants are required to secure high-speed internet access at the time of the interview examination.

## 7 Announcement of Results

Admission results will be sent by E-mail to the address indicated on your Application Form after July 19(Friday), 2024. Unsuccessful applicants will also be informed at this time.

## 8 Enrollment Procedures

### (1) For October 2024 Admission

Successful applicants are to complete enrollment procedures according to the following steps.

Please note that the documents required for enrollment will be sent to all successful applicants.

- i Enrollment documents must be delivered to the university between July 22(Monday) and July 29(Monday), 2024.
- ii The return of submitted documents or refund of enrollment fees will not be permitted under any circumstances after completion of enrollment procedures.
- iii Completed enrollments will be canceled in the event that the student is unable to graduate or complete their scheduled course of study by the required date.

### (2) For April 2025 Admission

The documents required for enrollment will be mailed to successful applicants in the second half of November 2024.

## 9 Payment

### (1) Amount

Enrollment Fee	JPY 282,000 (based on 2023 figures)
Tuition Fees—First Semester	JPY 267,900 (based on 2023 figures)
(Full Year)	JPY 535,800 (based on 2023 figures)

Tuition fees to be paid after completion of enrollment.

In the event of revision of payment, post-revision amounts will apply.

### (2) Exemptions from Payment

#### i Enrollment Fee Exemptions

Upon application, enrollment fee exemptions may be granted in any of the following cases.

- (a) Where it is deemed that payment is problematic due to economic hardship and the student has a superior academic record( Half of the enrollment fee will be waived).
- (b) Where the person who is, in the main part, responsible for the payment of educational costs passes away within one year prior to enrollment.
- (c) Where the applicant, or the person responsible for payment of educational costs, is the victim of a disaster.
- (d) Where the president of the university deems that an event has occurred that is similar to (b) or (c), above.

#### ii Deferment of Payment of Enrollment Fee

Upon application, permission to defer payment of enrollment fee may be granted in any of the following cases.

- (a) Where it is deemed that payment of the enrollment fee by the deadline is problematic due to economic hardship, and the student has a superior academic record.
- (b) Where the person who is, in the main part, responsible for the payment of educational costs passes away within one year prior to enrollment and it is deemed that payment of the enrollment fee by the deadline is problematic.
- (c) Where the applicant, or the person responsible for payment of educational costs is the victim of a disaster and it is deemed that payment of the enrollment fee by the deadline is problematic.
- (d) In other circumstances where it is deemed that payment of the enrollment fee must be deferred.

#### iii Exemption from Payment of Tuition Fees

There is a system of tuition exemption for those who are deemed as honors students and having difficulty in tuition payment due to financial situation after careful consideration.

The system used to be full or half tuition exemption, however, due to the revision of national system, it changed to a half or part exemption from 2020.

## **10 Privacy Policy**

All personal information gathered during application submission, as well as all examination results, will be used for the sole purpose of applicant selection and reviewing of the selection procedures. Further, all personal information collected by this institution will be managed appropriately and in line with all relevant ordinances and other regulations.

## **11 Scholarship and other support**

### 1) Scholarship

We offer a monthly scholarship of 100,000yen (figures for FY2023) to privately financed international students with excellent academic and character records. The selection will be made based on the results of the entrance examination, and the scholarship will be awarded to those with outstanding result, for a maximum of four years (the standard period of study). During their study, annual evaluations will be carried out based on the recipient's academic performance and adherence to the university regulations and behavioral norms, the scholarship may be suspended or cancelled if any of the reasons for suspension or cancellation are applied.

### 2) Dormitory

International students are eligible to apply for the international residence hall. The maximum possible period of residence is up to two years in principle.



## **Graduate School of Medical Research (Doctoral Course) Overview**

### **1 Objectives**

The Graduate School of Medicine (Doctoral Course) adopts as its objective the cultivation of both researchers who can undertake basic medical research as well as clinical researchers, both of whom can exhibit leadership on the international stage. In other words, through a broad base of courses in specialist fields, centered around the field of advanced optical medicine, we equip students who aim to become basic researchers with high-level specialist knowledge and skills, and cultivate in them the ability to conduct creative and cutting-edge research. Further, we aim to equip students who wish to become clinical researchers with a research mindset to propel clinical research to new levels, and the practical skills desired in real life clinical situations.

### **2 Educational Aims**

1. Cultivate ethical honest human qualities as a researcher.
2. Develop an international perspective, and a rich and refined intellect.
3. Develop problem discovery abilities.
4. Develop problem solving abilities based on a high level of specialist knowledge and skills in the fields of medical science and treatment.
5. Develop the ability to produce academic publications.
6. Cultivate a lifelong stance toward independent academic inquiry.

### **3 Structure**

- (1) Graduate Course, Course, Specialization, and Length of Course
  - i This graduate course is defined as a doctoral course in the Graduate School of Medicine.
  - ii The specialization is defined as medicine.
  - iii The standard length of the doctoral course is four (4) years.

### **4 Overview of Research Fields**

- (1) Advanced Photo Medicine
  - i Overview of Research Field

Light interacts with cells and tissues, allowing us access to a range of information. Accordingly, optical research methods are extremely diverse and are valid in a wide range of areas of medicine. In this field of research, measurement and imaging methods that use light are utilized to their fullest extent, pressing medical challenges are addressed through the operation of light on organisms, and the development of fundamental medical science is embarked upon. At the same time, research that can be of practical use in diagnosis, treatment, and prevention in clinical situations is conducted.

#### ii Topics

##### (a) Photopharmacology

Development of probes and equipment for treatment and diagnosis that utilize optical technology, in particular the analysis of internal conditions through diagnostic methods that utilize high energy optics, such as X rays and gamma rays. Specifically, this includes activities that utilize radioactive isotopes for the following: imaging of the biological characteristics of cancer and development of methods for cancer diagnosis; imaging of nervous system activity and molecular movement using optical systems (e.g., PET); analysis of genome distribution and protein expression within organisms using optical systems; quantitative analysis of organism function using radioactive probes; development of new MRI contrast agents; development of new imaging methods that utilize high energy optics; research into drug discovery and pharmacokinetic efficacy utilizing optical systems; analysis of the onset and recovery processes of cerebral infarctions using optical systems; and utilization of optical information for the optimization of pharmacotherapy. Additionally, research into the efficacy and safety of medicines through the creation of new disease models that utilize optics is also being conducted.

## (b) Phototherapy Environments

research into the effect of light on organisms and the application of the results of such analysis to treatment methods. Specifically, this includes analysis of ultraviolet ray induced DNA damage and the relationship between gene expression systems in hereditary optic hyperesthesia, light induced skin aging, light induced immunoreaction, research into the prevention of skin cancer caused by ultraviolet rays, use of optics in the development of instant diagnosis (minimally invasive) methods for oral diseases, research for the adaptive expansion of PDT (photochemotherapy) in advanced cancers, development of new PDT methods, and research into clinical applications, research into macular degeneration and retinal photolesions, research into the eye, which is a light receptor, genetic analysis of eye diseases, and new treatment methods that utilize light.

## (c) Optical Functioning Imaging

Research into circulatory dynamics and circulatory disorders of the heart, blood, lymph, and immune system, utilizing optical methods. Specifically, this includes imaging analysis of dynamic changes in blood coagulation factors, as well as thrombogenesis and lysis, analysis of intracellular signal transmission mechanisms, using fluorometric methods, imaging analysis of the intracellular signaling molecules of the myocardial cells and vascular endothelial cells, research utilizing fluorescence hybridization genetic analysis, into the mechanisms through which cancer develops in leukemia and malignant lymphoma, analysis of intracellular information transmission systems in autoimmune diseases using fluorometric methods, blood vessel modeling and imaging analysis of hemodynamics, and the utilization of optics for development of methods for the continuous measurement of all substances in the blood.

With a focus on imaging methods for nerve cells and higher-order neural mechanisms, as well as fluorescent molecule labeling through genetic engineering, research projects that combine methods from molecular biology and electrophysiology are being conducted. Specifically, this includes analysis of neural stem cell activity and cerebral disorders, analysis of the contagion dynamics of neurotropic viruses, analysis of protein molecule kinetics and signal transmission mechanisms of nerve cells, analysis of nerve cell death mechanisms and imaging analysis regarding neuroprotection, analysis through imaging of higher-order nerve adjustment mechanism related cell activity, research into development and plasticity control of neural circuit functioning through active Cl-homeostasis adjustment, research into cerebral function development disorders and cerebral nerve diseases caused by failure of Cl-homeostasis regulatory functions, analysis of the role of inhibitory neurotransmission in the formation of cerebral cortex neural circuits, functional neuroimaging using PET, and elucidation of the state of brain diseases using PET.

Research using mass spectrographic microscopes is also being conducted. This includes imaging of metabolomes and proteomes in cancers, blood vessels, the brain, fats, and internal organs through the MALDI method, that is, through the matrix assisted laser desorption/ionization method.

## (2) Integrated Functional Medicine

### i Overview of Research Field

The coordinated activity of organisms requires movement that integrates higher-order regulatory functions, such as the nervous system and sense organs. In recent years, advances in molecular biology methods and genetic analysis have enabled clarification of the causes of diseases of the nervous system and sense organs - an area that has been slower to develop compared to other fields. As such, this is a field with rich potential for development.

(1) fundamental analysis of the normal functioning of the nervous system and sense organs and (2) causal analysis of disease groups arising from failure of the normal functioning of the nervous system and sense organs, with the aim of developing effective treatment methods.

At present, the analysis methodologies in these fields are wide-ranging, and through the gathering of researchers who are fluent in diverse methodologies, we are in a position to pursue research in an effective and interdisciplinary manner.

## ii Topics

### (a) Brain Function Analysis

The brain is the locus of our mind and the key area that supports human activity. Accordingly, while research in this area is of extreme importance, it also comes with difficulties unique to this field and that are due to complications in conducting such research. We work to overcome such challenges, conducting activities such as fundamental biological research and pathologic analysis of psychiatric disorders (in particular, schizophrenia), understanding the relationship between the number of neural stem cells and cerebral disorders through the use of optical imaging, gene therapy of cerebral tumors through the use of neural stem cells, cloning and analysis of elements that influence the differentiation of neural stem cells, and the morphological analysis of brain disease.

### (b) Sensorimotor Control

The peculiar characteristics of the sense organs and motor system require a specialized research approach for each area. To conduct activities such as PDT for head and neck tumors (in particular, cancer of the laryngopharynx), elucidation of auditory disturbance mechanisms through the use of photosensitized reactions in the examination of inner ear disorders, basic research into peripheral nerve regeneration and cartilage regeneration, analysis of mouse osteoclast mechanisms using VEC-DIC microscopy, basic research for the application of photodynamic therapy for rheumatoid arthritis, and research into the development of emergency devices equipped with three-dimensional visual capabilities (life support robots in bio-hazardous environments).

## (3) Frontier Medicine

### i Overview of Research Field

Through repeated cycles of cell differentiation, organisms transform from one zygote to multicellular organisms and as all areas of the organism interact with one another, organs are formed. Tissue-specific stem cells exist in the tissue of all organs, and while maintaining such stem cells, a high number of differentiated cells peculiar to the organ are created, forming multicellular tissue. Further, every differentiated cell has its own life span, with old cells continuously making way for the new. Even so, as an organism ages, failures can be observed in organ homeostasis and cell order.

In this field, in addition to elucidating (at the molecular, cell, organ cultivation, and individual levels) the control mechanisms for the multiplication and differentiation of cells (which are the building blocks of life) and the formation mechanisms of cell communities of all organs that are composed of multiple types of cells, we also pursue the practical application of research results for the treatment of diseases in humans.

## ii Topics

### (a) Molecular Neoplasia

Cancer is a hereditary disease that presents in a wide variety of ways. Further, cancer displays characteristics that deviate from normal cell communities. On the other hand, susceptibility to cancer is dependent on the interrelation between hereditary and environmental factors. Precancerous lesions develop as a result of genome failures in the individual, which transform due to the instability acquired by the tumor genome, become invasive, cause the failure of the homeostasis of the individual, and finally, its death. At all stages of cell differentiation, tumors develop based on the unique background of the organ concerned. The elucidation, at all stages of tumor development, of what types of precancerous and cancerous tumors emerge when the mechanisms of normal cells fail. By utilizing the genetic susceptibility markers for cancer discovered in such research, we develop prevention methods and targeted treatments that destroy cancerous cells while leaving normal cells unaffected.

### (b) Tissue Regeneration

Tissue is made up of stem cells with particular fates and tissue-specific cells formed by the multiplication and differentiation of such stem cells; all tissues within organisms are made up of unique cells that have a three-dimensional structure. We identify all tissue stem cells, and elucidate the factors involved in the

multiplication and differentiation of such cells. Further, we are conducting research into the development of methods to enable cell transplants of stem cells that have been removed and frozen back into the person they were taken from in the event of tissue loss due to disease. Furthermore, also conducting research aimed at addressing the various challenges, for example organ rejection, in the field of organ transplantation, which is currently receiving much attention.

(c) Organ Pathology

Organs differ in both their component cells and functions. We research organ function from the perspectives of biochemistry, physiology, and molecular biology. Due to the fact that the state of homeostasis failure in organs is an illness, we investigate the mechanisms through which homeostasis failure occurs and promising methods to prevent such failure from occurring. Simply put, we are engaged in research in pursuit of an understanding of disease onset mechanisms, accurate diagnostic methods, and medical treatments.

(4) Infectious Disease Control & Preventive Medicine

i Overview of Specialization

Biological defenses are systems for protecting the organism and maintaining homeostasis in the face of not only external threats but also abnormal events that may occur within the body. This system has developed in a complex manner in accordance with the principle of “the survival of the fittest.” Threats of the former type include infection, trauma, and burns. The latter includes neoplasia, and disturbances in blood flow, for example. This field works toward (1) not only defense mechanisms for the aforementioned, but also the elucidation of (2) their pathophysiology and, furthermore, (3) the conditions of diseases caused by failure of defense mechanisms, through the utilization of the methods of molecular biology, biochemistry, cell biology, and developmental engineering in the pursuit of the development of methods of diagnosis, treatment, and prevention. Furthermore, (4) research into primary prevention and tailor-made treatments based on individual genetic information, and (5) epidemiological research into risk factors for lifestyle related illnesses and preventive medicine research for health promotion in local communities are also being conducted.

ii Topics

(a) Infectious Disease and Immunology

The analysis of immune system and infection defense mechanisms against intracellular parasites (tubercle bacillus, *Listeria monocytogenes*, *Legionella pneumophila*, and chlamydia, etc.), the development of DNA vaccines to prevent infection from intracellular parasites based on such analysis, the development of rapid diagnosis methods for bacteria, and the development of new fast-acting sterilization methods.

With regard to viruses (HCV, HBV, etc.) that persistently infect the organism or host cell and, over the long term, cause, for example, inflammation, metabolic disorder, and oncogenesis, we are particularly interested in elucidating the interactions with host factors, virus life-cycles, and the molecular mechanisms of pathogenic expression. Additionally, we are involved in research into treatment strategies for viral infectious diseases.

Research into antimalarial agent screening and malaria treatment methods is being undertaken. Furthermore, the analysis of the pathophysiology, diagnosis, and treatment of autoimmune diseases, the mechanisms of autoimmune phenomena, and autoantigens, and the analysis of mechanisms of tissue/organ-specific immunological responses in the context of transplant immunity tolerance induction.

(b) Preventive Medicine

With a foundation in contributing objective evidence-based health care, various research programs relating to public health and epidemiology, as well as clinical laboratory medicine.

Study subjects include lifestyle related illnesses, the elderly, maternal and child health, mental health, suicide and accidents, and industrial health. One example project is a cohort study that investigates the effects of lifestyle and socioeconomic factors. The fields of health crisis management, health administration, medical hydrology, and regional medical systems.

Additionally, focusing on genes, proteins, cells, tissue, and internal organs, we work to elucidate pathological mechanisms, such as malignant tumors, lifestyle related diseases, and infectious diseases, and to

develop diagnostic and treatment methods for such. As the onset of illness can be thought of as related to a complex interrelation of genetic and environmental factors, we conduct research into the genetic, environmental, and epigenetic backgrounds of illness. Based on such research activities, we are also conducting research into the practical implementation of fundamental preventive medicine.

(c) Information for Crisis Management Medicine

The analysis of biological defense mechanisms in reaction to stress and the discovery of methods for the monitoring of such, suppression of biological reactions due to over-response, analysis of variations in defense mechanisms due to genetic polymorphism and the clinical application of such knowledge, setting of clinical guidelines based on EBM for acute phases of diseases, collection and analysis of regional data regarding emergency treatment of trauma, development of new educational tools that are adaptable to individual ability levels, development of new diagnostic tools to enable the analysis of diseases in the acute phase, and analysis of medical errors.

Conducting development projects, such as development of hypersensitive equipment for analyzing medicinal toxicants in human samples, in other words, the development of new methods for extracting all substances from human samples, analytical research based on mass spectrometry analysis of biomolecules, and development of high volume gas chromatography.

## 5 Course Registration

Please conduct your course registration having taken into account the course registration method and completion requirements in the subject listings and after adequate consultation with your supervisor. The fundamental selection structure is as follows, but please note that other structures are possible.

(1) Researcher Course

- i Register for “Advanced Foundations of Medical Science” (2 Units).
- ii Select 4 subjects (8 Units) marked with an asterisk (\*) from the common subject or specialist subject list.
- iii Select “Seminar” subjects A and B (1 subject each).
- iv Register for “Practical Training.”

\*It is recommended that you enroll for the seminars instructed by your supervisor and secondary supervisor.

(2) Clinical Researcher Course

- i Select 2 subjects (4 Units) from “Advanced Foundations of Medical Science” I, II, and III.
- ii Register for “Medical Ethics” and “Genetic Medicine and Regenerative Medicine” (4 Units).
- iii Select 1 subject from the common subject list.
- iv Select “Seminar” subjects A and B (1 subject each).
- v Register for “Practical Training.”

\*It is recommended that you enroll for the seminars taught by your supervisor and assistant supervisor.

Major Research Areas			
field of study	Department	Name	Main Research Content
A d v a n c e d P h o t o m e d i c i n e	Pharmacology	UMEMURA Kazuo	<ul style="list-style-type: none"> <li>○ Investigation of mechanisms of thrombosis</li> <li>○ Investigation of development of cerebral infarction</li> <li>○ Investigation of mechanisms of arteriosclerosis</li> <li>○ Pharmacological research using laser and imaging techniques</li> <li>○ Translational research from basic research to clinical use</li> </ul>
	Radiology	GOSHIMA Satoshi	<ul style="list-style-type: none"> <li>○ Advanced imaging analysis for hepatobiliary and pancreatic pathologies</li> <li>○ Hemodynamic analysis by MRI</li> <li>○ Imaging applicaion of multi-nuclli MRI</li> <li>○ Development of new biomarkers in dual-energy CT based texture analysis</li> <li>○ Development of artificial intelligence aided imaging diagnosis models</li> <li>○ Imaging application of near-infrared spectroscopy</li> <li>○ Research on molecular imaging by CT, MRI, and PET</li> </ul>
	Clinical Pharmacology & Therapeutics	INUI Naoki	<ul style="list-style-type: none"> <li>○ Pharmacogenomics and precision medicine</li> <li>○ Clinical pharmacology in cardiovascular and respiratory medicine and medical oncology</li> <li>○ Regulatory science for new drug development</li> <li>○ Intracellular signaling and functional regulation of vascular cells</li> <li>○ Pulmonary arterial hypertension and new treatment development</li> </ul>
	Department of Molecular Imaging (Preeminent Medical Photonics Education & Research Center)	MAGATA Yasuhiro	<ul style="list-style-type: none"> <li>○ Multimodal molecular imaging studies</li> <li>○ Development of novel PET/SPECT molecular imaging probes for patho-functional analysis</li> <li>○ Development of novel fluorescence molecular imaging probes</li> <li>○ Development of novel theranostic method using DDS system for cancer or inflammation lesion</li> </ul>
	Integrated Human Sciences (Chemistry)	KURONO Nobuhito	<ul style="list-style-type: none"> <li>○ Development of medical chips</li> <li>○ High sensitive monitoring of environment-related substances</li> <li>○ Development of microscale solid phase extraction devices</li> <li>○ Bioassay based on capillary electrophoresis</li> <li>○ Design of new stationary phases for HPLC</li> </ul>
	Hospital Pharmacy	KAWAKAMI Junichi	<ul style="list-style-type: none"> <li>○ Development of sensitive and fast analytical method of drugs in human biological specimens</li> <li>○ Pharmacokinetic analysis and its prediction in drug-drug interactions and adverse effects</li> <li>○ Clinical pharmacokinetics and pharmacology in infectious disease, cancer chemotherapy, and palliative care</li> <li>○ Pharmacoepidemiology and clinical pharmacology utilizing medical data analysis</li> </ul>
	Surgery 2 (Divisions of Gastroenterological & Vascular Surgery)	TAKEUCHI Hiroya	<ul style="list-style-type: none"> <li>○ Cancer metastasis: mechanisms and novel therapy</li> <li>○ Translational research regarding interaction between cancer cells and matrix</li> <li>○ Navigation surgery utilizing three-dimensional imaging</li> <li>○ Identification of mechanisms of bowel movement and development of novel drugs</li> <li>○ Pathogenesis of hereditary bowel diseases</li> <li>○ Aortic aneurysm: identification of pathogenesis and novel therapy development</li> <li>○ Lymphatic perfusion on physiological or pathological conditions</li> <li>○ Thrombosis: clarification of the pathogenesis and development of the prevention</li> <li>○ Tissue oxygen metabolism : investigation of pathogenesis and development of novel evaluation methods</li> <li>○ Lipid metabolisms in cancer tissue</li> </ul>
	Dermatology	HONDA Tetsuya	<ul style="list-style-type: none"> <li>○ Investigation on atopic dermatitis and skin barrier system</li> <li>○ Pathogenesis of alopecia areata and new therapies</li> <li>○ Immunological mechanism of psoriasis and its treatments</li> <li>○ Immunological monitoring of melanoma</li> <li>○ Pathogenesis of drug hypersensitivity</li> <li>○ Cellular biology of cutaneous lymphoma</li> <li>○ Mode of infection of HTLV-1 and dendritic cells</li> </ul>
	Ophthalmology	(vacancy)	<ul style="list-style-type: none"> <li>○ Molecular mechanisms of incurable ocular diseases</li> <li>○ The genetic diagnosis of incurable ocular diseases</li> <li>○ Clinical studies on therapies for retinitis pigmentosa</li> <li>○ Physiological study on amblyopia</li> <li>○ Eye movement study with imagings</li> <li>○ Study of strabismus treatment</li> <li>※ Research contents are subject to change.</li> </ul>
	Dentistry & Oral & Maxillofacial Surgery	MASUMOTO Kazuma	<ul style="list-style-type: none"> <li>○ Development of diagnosis and therapy of oral cancer using laser</li> <li>○ Molecularbiological research of oral cancer</li> <li>○ Oral and maxillofacial surgery using ICG fluorescent navigation system</li> <li>○ Development of the novel bone augmentation technique and bone substitute materials</li> </ul>
Neurophysiology	SHINMYO Yohei	<ul style="list-style-type: none"> <li>○ Molecular mechanisms of development and evolution of the brain</li> <li>○ Mechanisms and functions of folding in the cerebral cortex</li> <li>○ Brain dysfunction caused by disruption of the axon guidance molecule Draxin</li> <li>○ Neuronal and brain development promoted by Cl<sup>-</sup> homeostasis-regulating genes</li> <li>○ Cl<sup>-</sup> homeodynamics governing neural network functions</li> <li>○ Dysregulation of Cl<sup>-</sup> homeostasis underlying neurological, psychiatric and developmental disorders</li> <li>○ maternal stress, maternal undernutrition, genetically modified mice, GABA, taurine, astrocyte, neurogenesis, neuronal migration</li> <li>○ brain slice, cell culture, patch-clamp, optical imaging, 2 photon microscopy, EEG analysis, behavioral tests, photo-uncaging</li> <li>○ molecular biological techniques, single-cell RT-PCR, in utero electroporation, virus vector, RNAi, optogenetics, pharmacogenetics, DNA methylation</li> </ul>	

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A d v a n c e d  P h o t o m e d i c i n e	Medical Physiology	SUZUKI Yuko	<ul style="list-style-type: none"> <li>○ Real time imaging analyses of platelets activation, coagulation and fibrinolysis</li> <li>○ Imaging analyses of the antithrombotic roles and barrier function of vascular endothelial cells</li> <li>○ Investigations of physiological and structural vessel dynamics in living animals</li> <li>○ Investigations of structure-based function of lymphatic vessel in living animals</li> <li>○ Analyses of the role of the molecules of the fibrinolytic system in inflammation</li> </ul>
	Regenerative & Infectious Pathology	IWASHITA Toshihide	<ul style="list-style-type: none"> <li>○ Pathobiology of organ fibrosis</li> <li>○ Identification of mesenchymal stem cells and their application to medical treatment</li> <li>○ Biological analysis of neural crest stem cells</li> <li>○ Analysis of the infection mechanism into the nerve cells of the cytomegalovirus</li> <li>○ Relationship between cytomegalovirus and interstitial pneumonia</li> </ul>
	Internal Medicine 3 (Divisions of Cardiology, Hematology & Rheumatology)	MAEKAWA Yuichiro	<ul style="list-style-type: none"> <li>○ Roles of mitochondrial function in myocardial ischemia/reperfusion injury</li> <li>○ Pathophysiological changes in cardiac metabolism in failed myocardium</li> <li>○ Atherosclerosis: clarification of the pathogenesis</li> <li>○ Hypertrophic cardiomyopathy: identification of pathogenesis and development of novel therapy</li> <li>○ The molecular biological analysis of causal gene in leukemia</li> <li>○ The analysis of differentiation-inducing therapy and apoptosis in leukemia cells</li> <li>○ The analysis of multi-drug resistance in hematological malignancies</li> <li>○ Analysis of interferon-associated genes in Sjogren's syndrome</li> <li>○ Study of remission maintenance therapy in rheumatoid arthritis</li> <li>○ Study of malignancy development in autoimmune diseases</li> </ul>
	Department of Biofunctional Imaging (Preeminent Medical Photonics Education & Research Center)	OUCI Yasuomi	<ul style="list-style-type: none"> <li>○ Brain research with PET, MRI and NIRS technologies</li> <li>○ Functional and molecular imaging for brain disorders</li> <li>○ In vivo imaging of mind in humans</li> <li>○ Development of new in vivo imaging devices and methods</li> <li>○ Translational research from animals to humans</li> </ul>
	Cellular & Molecular Anatomy	SETOU Mitsutoshi	<ul style="list-style-type: none"> <li>○ Challenge to rejuvenescence through understanding the life of multicellular organisms</li> <li>○ Development and application of lighth-based quantum imaging techniques including mass microscopy</li> <li>○ Observation and manipulation of postgenome conditions such as posttranslational modifications, lipids, and metabolites</li> </ul>
	Department of Biomedical Photonics and Engineering (Preeminent Medical Photonics Education & ResearchCenter)	NAGASHIMA Yu	<ul style="list-style-type: none"> <li>○ Development and application of bioimaging techniques using vibrational spectroscopy</li> <li>○ Development and application of non-invasive BMI (brain-machine interface) technology</li> <li>○ Development and application of CPS (cyber physical system) for medical use</li> </ul>
	Department of Biomedical Instrumentation & Measurement (Preeminent Medical Photonics Education & ResearchCenter)	OKAWA Shinpei	<ul style="list-style-type: none"> <li>○ Development and application of photoacoustic imaging system</li> <li>○ Development and application of multimodal optical imaging system</li> <li>○ Research on measurement and application of optical and mechanical properties of biological tissues</li> <li>○ Research on signal and image processing techniques in biomedical optics</li> </ul>
	Department of Optical Neuroanatomy (Preeminent Medical Photonics Education & ResearchCenter)	YAMAGISHI Satoru	<ul style="list-style-type: none"> <li>○ Basic research and pathophysiological analysis on spinal cord injury</li> <li>○ Research on axon guidance molecules</li> <li>○ Research on autism-related genes</li> <li>○ Basic research and pathological analysis on cerebral infarction and brain injury</li> <li>○ Research on vascular and lymphatic systems in the central nervous system using optical imaging</li> </ul>
I n t e g r a t e d  F u n c t i o n a l  M e d i c i n e	Department of Organ & Tissue Anatomy	SATO Kohji	<ul style="list-style-type: none"> <li>○ Analysis of navigation system of nervous, vascular and lymphatic system during development</li> <li>○ Mechanisms of vascular diseases, atherosclerosis, aneurysm and lymphangiopathy, and their therapies.</li> <li>○ Analysis of neuronal homeostasis in adult brain</li> <li>○ Analysis of new neurosecretory factors on ischemic stroke</li> <li>○ The brain-gut connection - Analysis of the interdependence of the brain environment</li> <li>○ Development and modification of histological and morphological methods. Improvement for more effective educational methods in the anatomical science.</li> </ul>
	Integrated Human Sciences (Psychology)	TANAKA Satoshi	<ul style="list-style-type: none"> <li>○ Experimental studies of human mind and behavior</li> <li>○ Neural substrates of human perception, cognition, learning and motivation</li> <li>○ Neuropsychology and clinical neurophysiology of stroke and cerebrovascular diseases</li> <li>○ Neural plasticity after stroke and cerebrovascular diseases</li> <li>○ Developments of effective strategies for rehabilitation</li> <li>○ Evidence-based clinical communications</li> </ul>
	Psychiatry	YAMASUE Hidenori	<ul style="list-style-type: none"> <li>○ Multimodal neuroimaging studies to uncover the pathophysiology of psychiatric disorders including autistic social communicational deficits, eating disorder, mood disorder, and schizophrenia.</li> <li>○ Applications of objective and quantitative analyses of facial expression and voice production to assess psychiatric symptoms.</li> <li>○ Molecular neuroimaging studies to uncover neurobiological mechanisms of psychiatric symptoms.</li> <li>○ Development of neuroimaging indices and objective and quantitative behavioral indices to assess therapeutic effects on psychiatric symptoms.</li> <li>○ Independent clinical trials to develop novel treatments on currently untreatable psychiatric symptoms</li> <li>○ Analysis of psychiatric symptom-related phenotypes and drug response in animal models</li> </ul>
	Neurosurgery	KUROZUMI Kazuhiko	<ul style="list-style-type: none"> <li>○ Pathophysiology and treatment of brain tumors</li> <li>○ Molecular-targeted drug for brain tumors</li> <li>○ Cerebral blood flow and metabolism</li> <li>○ Functional neurosurgery</li> <li>○ Basic and clinical research on cerebrovascular disorders</li> <li>○ Gene &amp; cell therapy of brain tumors</li> <li>○ Regenerative medicine of the brain</li> <li>○ Rupture prevention of cerebral aneurysms</li> </ul>

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I n t e g r a t e d  F u n c t i o n a l  M e d i c i n e	Neurology	NAKAMURA Tomohiko	<ul style="list-style-type: none"> <li>○ Elucidation of the pathophysiology of cardiovascular autonomic dysfunction in neurodegenerative diseases</li> <li>○ Genetic analysis of neurometabolic disorders</li> <li>○ Genetic analysis and elucidation of pathophysiology of hereditary cerebellar disease</li> <li>○ Relationship between epilepsy and brain inflammation markers</li> <li>○ Relationship between stress and neurodegeneration</li> <li>○ Involvement of autonomic nervous system in neurodegeneration</li> </ul>
	Orthopedic Surgery	MATSUYAMA Yukihiko	<ul style="list-style-type: none"> <li>○ Spinal cord regeneration estimated by molecular biology</li> <li>○ Revolution of intraoperative spinal cord monitoring</li> <li>○ Basic and clinical research for limb lengthening</li> <li>○ Basic and clinical research for osteoporosis</li> <li>○ Basic and clinical research for regeneration of cartilage</li> <li>○ Basic and clinical research for rheumatoid arthritis</li> </ul>
	Otorhinolaryngology/ Head & Neck Surgery	MISAWA Kiyoshi	<ul style="list-style-type: none"> <li>○ Pathological analysis of the cochlea(Electronic microscope,Immuno-electronic microscope)</li> <li>○ Basic analysis of inner ear circulation and hearing loss</li> <li>○ Mass spectrometry of head and neck tumor</li> <li>○ Genetic analysis of head and neck carcinogenesis</li> <li>○ The speech recognition of hearing aid and cochlear implant</li> </ul>
	Anesthesiology & Critical Care Medicine	NAKAJIMA Yoshiki	<ul style="list-style-type: none"> <li>○ Studies for cerebral aneurysm(mechanism&amp;prevention)</li> <li>○ Pharmacokinetic of anesthetic drugs during cardiovascular surgery</li> <li>○ Studies for ischemia/reperfusion injury</li> <li>○ Studies for cardio pulmonary resuscitation</li> <li>○ Clinical studies for painless labor</li> <li>○ Microcirculation during septic shock</li> </ul>
	Plastic & Reconstructive Surgery	NAKAGAWA Masahiro	<ul style="list-style-type: none"> <li>○ Analysis of eyelid anatomy and levator muscle function</li> <li>○ Development of new medical device for microsurgery</li> <li>○ Research on the surgical treatment of lymphedema</li> <li>○ Research on new treatments for burns</li> <li>○ Study of skin tumors using light interference</li> <li>○ Evaluation of blood flow using regional saturation of oxygen pulsometer</li> </ul>
F r o n t i e r  M e d i c i n e	Molecular Biology	KITAGAWA Masatoshi	<ul style="list-style-type: none"> <li>○ Molecular basis of cell fate determination via cell cycle regulation</li> <li>○ Molecular mechanisms of ubiquitin-mediated proteolysis</li> <li>○ DNA replication and checkpoint as DNA damage responses</li> <li>○ Molecular mechanisms of X-chromosome inactivation</li> <li>○ Molecular mechanisms of inflammation and tissue fibrosis</li> <li>○ Regulation of gene expression by non-coding RNAs and conformational changes of chromatin</li> <li>○ Molecular mechanisms of tumorigenesis, cell differentiation and senescence via cancer-related genes</li> <li>○ Molecular basis of hepatocarcinogenesis via HBV</li> </ul>
	Tumor Pathology	SHINMURA Kazuya	<ul style="list-style-type: none"> <li>○ Gene, environment, and phenotype correlation of human solid tumors</li> <li>○ Study on the relationship among DNA repair capacity, DNA adduct level, and mutation in human tumors</li> <li>○ Study on the abnormality of regulation of centrosome and primary cilia in human tumors</li> <li>○ Artificial intelligence applications in human tumor pathology</li> <li>○ Genomic and chromosomal instability of human tumor and associated genes</li> <li>○ Oncotargets in terms of molecular pathology of human tumors</li> </ul>
	Radiation Oncology	NAKAMURA Katsumasa	<ul style="list-style-type: none"> <li>○ Analysis of treatment outcome of radiation therapy</li> <li>○ Development of treatment method of precise radiation therapy</li> <li>○ Patterns of care study for radiation therapy</li> <li>○ Study of adverse effects after radiation therapy</li> </ul>
	Clinical Oncology	(vacancy)	<ul style="list-style-type: none"> <li>○ Predictive and prognostic factors of effect and adverse events of chemotherapy</li> <li>○ Reverse translational research, predictive and prognostic markers</li> <li>○ Pharmacogenomics</li> <li>○ Pharmacoeconomics</li> <li>○ Palliative care</li> <li>○ Development of medical AI</li> <li>○ Big data analysis</li> <li>※ Research contents are subject to change.</li> </ul>
	Biochemistry	SAITSU Hiroto	<ul style="list-style-type: none"> <li>○ Genetic analysis of neurodevelopmental disorders by next generation sequencing</li> <li>○ Generation of cell and mouse model mimicking human mutations</li> <li>○ Elucidating pathomechanisms of human disorders</li> <li>○ Identification of somatic mutations involved in human disorders</li> <li>○ Investigating mechanisms of cell death regulation by Patched1</li> </ul>
	Obstetrics & Gynecology	ITOH Hiroaki	<ul style="list-style-type: none"> <li>○ New photodynamic therapy</li> <li>○ Developmental origins of health and disease (DOHaD)</li> <li>○ Fetal assessment by near-infrared spectroscopy</li> <li>○ Pathophysiology and treatment of amniotic fluid embolisms</li> <li>○ Treatment of refractory postpartum hemorrhage</li> <li>○ Vaginal flora and cervical intraepithelial neoplas</li> <li>○ Pathology of placenta and perinatal care</li> </ul>



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F r o n t i e r M e d i c i n e	Pediatrics	MIYAIRI Isao	<ul style="list-style-type: none"> <li>○ Genetic analyses in disorder of endocrine and metabolic disorders</li> <li>○ Genetic analyses in congenital malformation syndromes</li> <li>○ Clarification of underlying actors involved in the development of human imprinting disorders</li> <li>○ Genetic epidemiology on the impact of environmental chemicals on child health</li> <li>○ Assessment of diagnostic and therapeutic interventions in neonates</li> <li>○ Environmental influences on neonatal physiology and pathology</li> <li>○ Clarification of mechanisms involved in fetal and placental growth and development</li> <li>○ Assessment of genetic safety in assisted reproductive technology</li> <li>○ Epidemiological study of congenital heart diseases</li> <li>○ Clinical studies on progression of arteriosclerosis in the patients with Kawasaki disease</li> <li>○ Analysis of cardiac function in infants born to mothers with endocrine diseases</li> <li>○ Hormonal regulation of water and electrolytes in pediatric nephrology</li> <li>○ Clinical studies in pediatric neurology</li> <li>○ Genetic and epigenetic analysis in pediatric cancers</li> <li>○ Intervention research for the treatment and prevention of pediatric allergic diseases</li> <li>○ Clinical studies in pediatric oncology</li> <li>○ Pharmacological and genomic characteristics of pediatric leukemia cells</li> <li>○ Effects of physiological, endocrinological, and immunological factors on post-transplantation growth</li> <li>○ Developmental origins of health and disease (DOHAD)</li> <li>○ Pathogenesis of pediatric respiratory tract infection</li> <li>○ Control of antimicrobial resistance</li> </ul>
	Integrated Human Sciences (Biology)	MAEDA Tatsuya	<ul style="list-style-type: none"> <li>○ Mechanisms of TORC1/mTORC1 regulation</li> <li>○ Physiological functions of TORC1/mTORC1</li> <li>○ Sensing mechanisms of intracellular amino acids</li> </ul>
	Internal Medicine 1 (Divisions of Gastroenterology, Nephrology & Neurology)	SUGIMOTO Ken	<ul style="list-style-type: none"> <li>○ Pathophysiology of acute kidney injury</li> <li>○ Pathophysiology of disorders of intrarenal renin-angiotensin systems</li> <li>○ Gastrointestinal disease and <i>Helicobacter pylori</i> infection</li> <li>○ Mucosal immunology and inflammatory bowel disease</li> <li>○ The development of early diagnostic methods and multidisciplinary therapy in gastrointestinal cancer</li> </ul>
	Internal Medicine 2 (Divisions of Endocrinology & Metabolism, Respiratory & Hepatology)	SUDA Takafumi	<ul style="list-style-type: none"> <li>○ Functional analyses of nuclear hormone receptors</li> <li>○ Etiologies of resistance to thyroid hormone</li> <li>○ Signal transduction mechanism of hypothalamic and pituitary hormones</li> <li>○ Mechanisms of insulin resistance</li> <li>○ The local immune response in the lung</li> <li>○ Research for lung dendritic cells</li> <li>○ The mechanisms for hepatic injury and fibrogenesis</li> </ul>
	Surgery 1 (Divisions of Cardiovascular, Thoracic, General (Endoscopic) & Breast Surgery)	(vacancy)	<ul style="list-style-type: none"> <li>○ Mechanism of carcinogenesis</li> <li>○ Optical imaging for mammography</li> <li>○ Flow dynamics of cardiovascular disease</li> <li>○ Mechanism and prevention of ischemic spinal cord injury</li> <li>○ Development of novel video-assisted surgery</li> <li>※ Research contents are subject to change.</li> </ul>
	Urology	(vacancy)	<ul style="list-style-type: none"> <li>○ Basic and clinical studies on urological cancers</li> <li>○ Assessment of the biomarkers for early detection and development of the novel therapy in renal cell carcinoma</li> <li>○ Clinical study of mechanism regulating the rejection and acquisition of immune tolerance after renal transplantation</li> <li>○ Basic and clinical studies on the mechanism regulating the occurrence of urinary calculus</li> <li>○ Basic and clinical studies on lower urinary tract dysfunction</li> <li>※ Research contents are subject to change.</li> </ul>
	Surgery 1	FUNAI Kazuhito	<ul style="list-style-type: none"> <li>○ Lung cancer screening using urinary biomarkers</li> <li>○ Development of new respiratory surgical robotic surgery method</li> <li>○ Development of differential markers for lung squamous cell carcinoma and head and neck squamous cell carcinoma lung metastasis</li> <li>○ Elucidation of lipid profile related to postoperative recurrence of lung cancer</li> <li>○ Identification of differential markers between lung adenocarcinoma and lung squamous cell carcinoma</li> </ul>
P r e v e n t i o n t i v e M e d i c i n e	Microbiology & Immunology	SUZUKI Tetsuro	<ul style="list-style-type: none"> <li>○ Mechanisms of viral genome replication</li> <li>○ Mechanisms of viral particle formation</li> <li>○ Mechanisms of viral oncogenesis</li> <li>○ Mechanisms of metabolic disorders caused by viral infection</li> <li>○ Development of animal models of viral diseases and their application</li> </ul>
	Community Health & Preventive Medicine	OJIMA Toshiyuki	<ul style="list-style-type: none"> <li>○ Cohort studies on noncommunicable diseases (NCDs) and disability prevention</li> <li>○ Studies on social determinants of health and social capital</li> <li>○ Studies on health emergency management and disaster health</li> <li>○ Studies on maternal and child health</li> <li>○ Studies on public health administration and medical system</li> <li>○ Studies on nutrition and diet</li> <li>○ Studies on occupational health</li> <li>○ Studies on infectious diseases prevention and control</li> <li>○ Studies on spatial epidemiology</li> <li>○ Other epidemiological and public health studies</li> </ul>

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P r e v e n t i o n i v e s t i g a t i o n M e d i c i n e	Legal Medicine	HASEGAWA Koutaro	<ul style="list-style-type: none"> <li>○ Research of sensitive analytical procedures for toxic compounds and drugs by mass spectrometry.</li> <li>○ Developing of post column switching large volume injection for GC-MS.</li> <li>○ Investigation of relationship between cyanide compounds in Sugihiratake (<i>Pleurocybella porrigens</i>) and acute encephalitis.</li> <li>○ Simultaneous sensitive screening of toxic compounds and medicines by MALDI-TOF-MS.</li> <li>○ Developing sensitive analytical procedures especially for quantitation of cathinones and synthetic cannabinoids in human specimens by LC-MS-MS, GC-MS.</li> </ul>
	Emergency & Disaster Medicine	(vacancy)	<ul style="list-style-type: none"> <li>○ New device for the measurement of tissue oxygen saturation</li> <li>○ Use of the end-tidal carbon dioxide concentration measurement for the treatment</li> <li>○ Research of emergency and disaster medicine using drone and artificial intelligence</li> <li>○ Development of new cardiopulmonary resuscitation</li> <li>○ Disaster medical care education for citizens</li> </ul> <p>※ Research contents are subject to change.</p>

### APPLICATION FEE PAYMENT INSTRUCTIONS (Payment from Abroad)

If you want to transfer the examination fee from abroad, please refer to the following. Please enclose the certificate kinds concerned with examination fee payment (It's possible to copy.) with an application documents.

You will pay ¥ 30,000. Payment should be made in Japanese yen only, and the transfer fee required by the overseas financial institution should be paid individually. A remittance check is not acceptable.

\* It should be noted that the examination fee alone (without the handling and transfer fees) does not cover the necessary amount for you to take the examination.

<b>■ Bank name, SWIFT code, Branch name and Branch address</b>	
Bank Name:	SUMITOMO MITSUI BANKING CORPORATION
Swift Code:	SMBCJPT
Branch Name:	Hamamatsu
Branch Address:	325-6 Sunayama-cho, Chuo-ku, Hamamatsu, 430-0926, Japan
<b>■ Name, account number, address of payee, and Phone of Payee</b>	
Name of Payee:	National University Corp, Hamamatsu University School of Medicine Kenteiryoguti
Account Number:	6941602
Account Type:	Saving
Address of Payee	1-20-1 Handayama, Chuo-ku, Hamamatsu, 431-3192, Japan
Phone of Payee	+81-53-435-2205
In addition, fill out the following information if necessary.	
Purpose of Remittance:	Application Fee
Message to Payee, if any:	Your name