

**Application Guidelines**  
**for October Admission in 2023 and April Admission in 2024**

**Doctoral Program in Medicine**  
**Graduate School of Medicine**  
**Fukushima Medical University**

Application Information for International Students

Fukushima Medical University conducts strict evaluations for the admission of international students in accordance with the "Foreign Exchange and Foreign Trade Act" and the "Fukushima Medical University Public Corporation Security Export Control Regulations". These assessments take into account aspects such as the export of goods, the provision of technology, and the exchange of human resources. Please be aware that if you fall under the regulated items, there may be restrictions on the research activities you wish to conduct or you may not be able to receive education. In addition, we check the financial situation of international students before accepting them, so please contact the supervisor of the field you wish to study at least 90 days before the application deadline and follow their instructions.

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(This is a translation of the original Japanese version. The Japanese version is authoritative and always takes precedence over this version.)

**1. Major, Division and Enrollment Capacity**

The applicants for the PhD program of the Graduate School of Medicine are required to choose one of courses below, according to their research purpose, and to choose one of the divisions of research below to specialize in.

Major & Course	Enrollment Capacity		Division (*1)
	October Admission in 2023	April Admission in 2024	
Graduate School of Medicine (*2) Course for Researchers Course for Medical Practitioner Researchers	Examination for General Applicants: Several	Examination for General Applicants: 60 <div style="border: 1px solid black; border-radius: 15px; padding: 5px; width: fit-content; margin: 10px auto;">             General Applicants includes Working Professionals (*3)           </div> Examination for International Students (*4): Several	Detailed information on the features of each course and research subjects of each division can be found on the Appended Table2 and following of this guidebook.
		<b>【</b> Examination for International Students (*4): Several	

- Notes: 1. The divisions in the appended table2 is as of April in 2023. On applying for the entrance examination for the October admission in 2023 and the April admission in 2024, confirm the latest information about the divisions available on the web site of Fukushima Medical University.
2. It is possible to conduct research at the graduate school while working for Fukushima

Medical University Hospital as a doctor-in-training.

3. Working professionals are defined as professionals who are currently employed at public agencies, research institutes, hospitals, or private companies and who will maintain their employment status after enrollment.
4. International students are defined as students who have entered Japan for the purpose of enrolling in graduate schools at universities and who hold or are expected to hold the resident status of “college student” as stipulated under the Immigration Control and Refugee Recognition Act.

### **Course for Researchers**

This course is mainly for graduates of a School of Medicine, and holders of a Master’s degree from the Master’s program in Medical Science or Disaster & Radiation Medical Sciences at Fukushima Medical University and those who have a Master’s degree in a field other than medicine, and graduates researchers who will contribute to the development of the field of medicine.

### **Course for Medical Practitioner Researchers**

This course is mainly for residents who have completed clinical resident training in the School of Medicine at Fukushima Medical University or other university after graduating from the School of Medicine at Fukushima Medical University or other university. This course produces specialized practitioners with research ability who will contribute to the development of clinical medicine.

In accordance with the "Cancer Professional" training plan, we are currently preparing to launch the "Oncology Specialist Training Course". Once the course is finalized, we will announce the details on our university website.

## **2. Qualifications for Application**

Applicants who wish to enroll in April 2024 must have one of the following qualifications.

There may be cases where foreign applicants, who have received school education in Japan, are qualified for application even if they don’t meet the conditions below. For further information concerning your eligibility, please contact Student Affairs Division, Entrance Examination Section.

- (1) Those who have completed or expect to complete a 6-year program in medicine, dentistry, veterinary medical sciences or pharmacy, at a university by March 2024. For those who will enroll in October 2023 the term just mentioned will be by September 2023.
- (2) Those who have completed or expect to complete, by March 2024, 18 years of school education ending with the program in the field of medicine or related area in a country other than Japan. For those who will enroll in October 2023 the term just mentioned will be by September 2023.

Note: The above qualification includes those have received less than 18 years of school education but have spent an equivalent or longer period conducting research in a university, research institute, research organization or other facility, and whose research has been evaluated by the Graduate School of

Fukushima Medical University as showing a scholastic ability equivalent or superior to a university graduate in medicine or related field.

- (3) Those who are approved by the Minister of Education, Culture, Sports, Science and Technology as following:
- (i) Those who have graduated or expect to graduate from the National Defense Medical College pursuant to the Act for the Establishment of the Ministry of Defense (Act No. 164 of 1954) by March 2024. For those who will enroll in October 2023, the term just mentioned will be by September 2023.
  - (ii) Those who have completed a master’s program or a professional graduate school program pursuant to article 99, paragraph 2 of the School Education Act (Act No. 26 of 1947) or can receive master’s credentials.
  - (iii) Those who have been enrolled for two years or more in a doctoral course that does not distinguish between a master’s and doctoral period, have earned 30 credits or more and have received necessary research guidance (including those who fall under Article 6-1 of the Degree Regulations (Ordinance of the Ministry of Education No.9 of 1953) prior to the revisions enacted under Ordinance of the Ministry of Education No.29 of 1974, and who have been recognized by the Graduate School of Fukushima Medical University as having a scholastic ability equivalent or superior to a university graduate in medicine or related field.
  - (iv) Those who have graduated from a university (in other than courses in medicine or related field) or who have completed 16 years of school education and subsequently spent at least two years conducting research in a university, research institute, research organization or other facility, and whose research has been evaluated by the Graduate School of Fukushima Medical University as showing a scholastic ability equivalent or superior to a university graduate in medicine or related field.
- (4) Those who have been recognized by the Graduate School of Fukushima Medical University in its individual qualification screening process as having a scholastic ability equivalent or superior to a university graduate in medicine or related field and who are 24 years old or older, or will be 24 years old by the end of the academic year.

The above qualifications are independent of whether or not the applicant has a medical license.

### 3. Preliminary Screening for Qualification

Applicants included in the Note in (2), (iii) and (iv) in (3), or (4) in Qualifications for Application must submit in person or send the required documents (specified in the Section (2) below) and undergo a screening for qualification in advance.

(1) Application Period For Preliminary Screening

October Admission	May 19(Fri), 2023, 9:00 A.M. – 5:00 P.M.
April Admission	November 2 (Thu), 2023, 9:00 A.M. – 5:00 P.M.

In the case of mailing, the documents must be sent by registered mail, and “Application for Preliminary Screening for Qualification” must be written in red ink on the front of the envelope. They must reach the office no later than the appointed day above.

(2) Application Materials

All documents must be in Japanese or English.

Materials	Notes
Application Form for Preliminary Screening	Prescribed form In the case of a foreign student, submit an educational background from elementary school entrance to high school (or its equivalent school) graduation. (Form is optional.)
Statement of Application Purpose	Prescribed form or form equivalent to prescribed one
Academic Transcript	Certificate issued and sealed by the educational institute last attended
Graduation Certificate	Certificate of completion or expectation to complete the degree, issued and sealed by the educational institute last attended
Employer’s Permission to Take Examination	Only for working professionals Prescribed form completed by the applicant’s superior or the director of the institute or organization where the applicant is currently employed
Statement of Research Activities and Achievements	Prescribed form or form equivalent to prescribed one A statement clearly providing the details of the contents and results of the research conducted by applicant

The applicants may be required to submit documents or certificates other than those listed above when necessary for screening.

(3) Screening Procedure

The School will examine the documents submitted by applicants for preliminary qualification screening. In the process of preliminary screening, it is possible that applicants may be requested to have interviews (oral examination) when necessary for screening.

(4) Notification of Results

Applicants will be notified of the results of the Preliminary Screening for Qualification before the application period.

**4. Period for Reception of Application**

October Admission	May 22 (Mon) – May 31 (Wed), 2023, 9:00 A.M. – 5:00 P.M. (Except Saturday & Sunday)
April Admission	November 6 (Mon) – November 15 (Wed), 2023, 9:00 A.M. – 5:00 P.M. (Except Saturday, Sunday & Holiday)

In the case of mailing, the documents must be sent by registered mail, and “Application for the Doctor’s Program of the Graduate School” must be written in red ink on the front of the envelope. They must reach the office no later than the appointed day above.

**5. Application Procedures**

Before applying, the applicants are required to contact a prospective academic supervisor and sufficiently understand the contents of the education and research curriculum.

The applicants who have undergone Preliminary Screening for Qualification do not have to submit the application materials they have already submitted.

(1) Application Materials Common for All Applicants

Application Materials	Notes
Application Form	Prescribed form Complete the Curriculum Vitae which includes the applicant's careers since graduating from high school, on the back side of Application Form.
Photo Identification Card /Examination Admission Card	Prescribed form Paste a photograph in the space provided on the card. The photograph should have been taken within three months prior to application and should be 4cm long by 3cm wide, clearly displaying a frontal, hatless view of the upper part of the body.
Statement of Application Purpose	Prescribed form or form equivalent to prescribed one
Academic Transcript	Transcript issued and sealed by the educational institute last attended Applicant who has completed the master's program of a graduate school must submit transcript issued by the graduate school as well as one issued by the undergraduate university attended. Not required for those who have completed or expect to complete the School of Medicine or the Master's Program of the Graduate School of Medicine, Fukushima Medical University
Certificate of (Expected) Graduation / Completion	Certificate of completion or expectation to complete the degree, issued and sealed by the educational institute last attended Not required for those who have completed or expect to complete the School of Medicine or the Master's Program of the Graduate School of Medicine, Fukushima Medical University
Application Fee	Transfer 30,000 yen to the designated account at the Japan Post Bank or post office and paste the Certificate of Payment stamped with the receipt date in the specified space on the Application Form. Post Office transfer fee is to be paid by the applicant.
Envelope for Delivery of Examination Admission Card	Affix a stamp/stamps for 344 yen, and write full name, address and postal code on a standard envelope for delivery of Examination Admission Card.

(2) Application Materials for Working Professionals

Working Professionals who have not been required to take Preliminary Screening for Qualification must submit the following application materials in addition to those listed in (1) above.

Application Materials	Notes
Statement of Application Purpose	Prescribed form or form equivalent to prescribed one
Employer's	Prescribed form completed by the applicant's superior or the director of

Permission to Take Examination	the institute or organization where the applicant is currently employed
Statement of Research Activities and Achievements	Prescribed form or form equivalent to prescribed one A statement clearly providing the details of the contents and results of the research conducted by applicant

### (3) Application Materials for International Students

International students must submit the following application materials in addition to those listed in (1) above.

Application Materials	Notes
Certificate of Health	Prescribed form
Certificate of Foreign Resident (Alien) Registration	Issued by the local government office
Letter of Recommendation	Any format A letter of recommendation from the president of the university where the applicant graduated or from the applicant's faculty supervisor

Note: Applicants may be required to submit documents or certificates other than those listed above when necessary for screening.

## 6. Selection Procedure

The applicants will be selected on the basis of comprehensive evaluation of the results of Written examination and interview and the information given in the submitted application materials.

- Examination Subjects for International Students:
  - (i) Written Examination (English)
  - (ii) Interview
  - (iii) Medical Checkup

## 7. Schedule of Examination for All Applicants

	Date	Subjects & Time
October Admission	June 10 (Sat), 2023	Written Examination: 9:00 – 10:00 Oral Examination: 10:30–
April Admission	December 9 (Sat), 2023	

Detailed information of examination place and appointed time for assembling will be provided with Examination Admission Card sent to applicants.



## 8. Announcement of Successful Applicants

October Admission	July 20 (Thu), 2023
April Admission	January 18 (Thu), 2024

The examinee numbers of successful applicants will be posted on the Building No.6 south outdoor bulletin board at 10:00 AM. Official notification of result will also be issued and mailed with admission documents and instructions for its procedure to successful applicants.

## 9. Admission Procedure

Successful applicants must send by mail the required documents and certificates to the office indicated in (2) below or submit them in person to the office.

### (1) Period of Admission Procedure

October Admission	July 20 (Thu) – August 2 (Wed), 2023, 9:00 A.M. – 5:00 P.M. (Except Saturday & Sunday)
April Admission	January 18 (Thu) – January 31 (Wed), 2024, 9:00 A.M. – 5:00 P.M. (Except Saturday & Sunday )

- (i) In the case of mailing, the required documents and certificate of admission must be sent to the office indicated below by registered express mail and must reach there during the above period.
- (ii) If the applicant has not completed the admission procedure within the specified period, she or he will be considered to have declined admission.

### (2) Office for Admission Procedure

Educational Affairs Section  
Student Affairs Division  
School of Medicine  
Fukushima Medical University  
1 Hikarigaoka, Fukushima-shi, Fukushima 960-1295, Japan  
Tel: +81-24-547-1095 (direct line)

### (3) Materials Required for Admission

- (i) Written Pledge
- (ii) Letter of Identity Guarantee
- (iii) Certificate of Residence
- (iv) Application for the Specialized Subjects
- (v) Student Record
- (vi) Photograph (two copies)
- (vii) Application for Automatic Account Transfer of Tuition Fee
- (viii) Documents related to System for an Extended Period of Study
- (ix) Pledge for Research
- (x) Acceptance Certificate of Enrollment Fee Payment

### (4) Admission Fee and Tuition

- (i) Admission Fee: 282,000 yen (Admission Fee must be paid at time of admission procedure.)
- (ii) Annual Tuition: 535,800 yen (Annual Tuition must be paid after enrollment. The payment must be by bank account transfer and will be due in half-yearly installments by the end of April and October.)

Note: The amount of Admission Fee and Annual Tuition are subject to change. If the tuition is revised after enrollment, the revised amount will be applied from the time of the revision.

#### **10. Other Information**

- (1) Applicants must assemble in the examination room no later than an appointed time and follow the instructions given there.
- (2) Application materials submitted on applying and application fee once paid will not be returned, under any circumstances.
- (3) Admission can be canceled even after matriculation if any of application materials are falsified or fabricated.
- (4) Personal information provided in application documents and certificates are used only for admission selection procedure, admission procedure, study guidance after enrollment, and liaison work. The personal information is not used for any other purpose.
- (5) For Further Information and Inquiries

Entrance Examination Section

Student Affairs Division

Fukushima Medical University

1 Hikarigaoka, Fukushima-shi

Fukushima 960-1295 JAPAN

Tel +81-24-547-1093 Fax: +81-24-547-1989

# Admission Guide

## 1. Aim and Mission

The aim of the Fukushima Medical University Graduate School PhD Program is to teach and research both theory and practice of science, to investigate thoroughly its principle, to provide new insights into scientific achievement, to contribute to the development of culture, and to foster talented men and women who will be the leaders in medical research.

Since 2004 four divisions of research, namely, Community Medicine and Aging Science, Functional and Regulatory Medical Sciences, Neurology, and Molecular Pathogenesis had been organized for education and research. In 2009 these divisions were integrated and reorganized as Graduate School of Medicine, PhD program.

In the Graduate School of Medicine, PhD program, a course of study allows students to study various medical fields widely as well as investigate in depth a specific field, so that the disposition and desire of the students can be maximally met and through the practice of advanced medicine in new fields the talent of students can be nurtured for the benefit of regional medicine.

## 2. Standard Duration of Study

Four Years

## 3. Course Structure and Outline

Refer to the Appended Table 1.

## 4. Division of Research and Research Topic

Refer to the Appended Table 2 for each division of research, its academic advisors and their research topics. (The contents in the Appended Table 2 is as of April in 2023. On applying for the entrance examination of the April admission in 2024, confirm the latest information available on the web site of Fukushima Medical University.)

## 5. Degree Conferment

In order to receive a degree of PhD, students are required to enroll in the program for four years or longer, complete the prescribed course of subjects, submit a doctoral dissertation based on their original research, and successfully pass a review of the dissertation and the final examination.

For the students who have achieved distinguished research results, however, the required years for completion can be three years or longer.

## 6. Scholarship Fund

Fukushima Medical University doesn't have its own scholarship.

If any organization provides information about scholarship, we will inform students each time. Some scholarship can be found at following URL.

Scholarships for Study in Japan (Japan Student Services Organization):

[https://www.jasso.go.jp/ryugaku/study\\_j/scholarships/index.html](https://www.jasso.go.jp/ryugaku/study_j/scholarships/index.html)

### **7. Clinical Training and Scholastic Requirements**

International students must get permission under the provisions of Article 3, Paragraph 1 of the Law concerning the Exceptional Cases of the Medical Practitioners' Act, Article 17, on the Advanced Clinical Training of Foreign Medical Practitioners, in order to practice medicine.

### **8. Tuition Exemption System**

Graduate students who, for financial reasons, have severe difficulties in paying their tuition fees and have excellent academic records may be eligible for tuition exemption.

### **9. System for an Extended Period of Study**

Students who, because of regular employment or for other reasons, are unable to complete the course work in the prescribed time, may apply for an extension, which the system will allow.

## **Requirements for Graduation and Course Requirements**

In order to receive a PhD degree, graduate students are required to enroll in the program for four years or longer, complete the specified course of subjects, submit a doctoral dissertation based on their original research, and successfully pass the review of the dissertation and the final examination.

Among General Basic Subjects, students in the Course for Researchers and students in the Course for Medical Practitioner Researchers are required to take “Outline of Medical Research” and “Integrated Medical Humanities, Sciences and Technology” respectively and must take one or more other general subjects, to earn two or more credits. The students must also acquire twelve credits of Specialized Subjects, ten credits of Subjects for Further Research (if four credits of General Basic Subjects have been taken, eight credits are sufficient) and four credits of Special Research.

# Course Models

The graduates, no matter which course model they follow, are expected to be distinguished specialists or researchers actively involved in universities, and research and medical institutions.

Course Model (1): Students who aim to be a researcher in the field of Basic Medicine

	1st Year		2nd Year		3rd Year		4th Year		Total Number of Credits
	Subject	Credit	Subject	Credit	Subject	Credit	Subject	Credit	
General Basic Subjects	Outline of Medical Research	1							1
	Introduction to Research in Medical Science	1							1
Specialized Subjects	Doctorate Coursework		Doctorate Coursework		Doctorate Coursework		Doctorate Coursework	4	4
	Doctorate Advanced Research & Practicum		Doctorate Advanced Research & Practicum		Doctorate Advanced Research & Practicum		Doctorate Advanced Research & Practicum	8	8
Subjects for Further Research	Doctorate Seminar & Practicum	4	Doctorate Seminar & Practicum	2	Doctorate Seminar & Practicum	2	Doctorate Seminar & Practicum	2	10
					Graduate School Seminar	2			
Special Research	Research Guidance		Research Guidance		Research Guidance		Research Guidance	4	4

Course Model (2): Students who emphasize clinical research and aim to be a specialist or certified specialist

	1st Year		2nd Year		3rd Year		4th Year		Total Number of Credits
	Subject	Credit	Subject	Credit	Subject	Credit	Subject	Credit	
General Basic Subjects	Integrated Medical Humanities, Sciences & Technology	1							1
	Seminar & Practicum in Integrated Medical Humanities, Sciences & Technology	1							1
Specialized Subjects	Doctorate Coursework		Doctorate Coursework		Doctorate Coursework		Doctorate Coursework	4	4
	Doctorate Advanced Research & Practicum		Doctorate Advanced Research & Practicum		Doctorate Advanced Research & Practicum		Doctorate Advanced Research & Practicum	8	8
Subjects for Further Research	Doctorate Seminar & Practicum	4	Doctorate Seminar & Practicum	2	Doctorate Seminar & Practicum	2	Doctorate Seminar & Practicum	2	10
					Graduate School Seminar	2			
Special Research	Research Guidance		Research Guidance		Research Guidance		Research Guidance	4	4

Course Model (3): Students who aim to be a certified medical researcher

	1st Year		2nd Year		3rd Year		4th Year		Total Number of Credits
	Subject	Credit	Subject	Credit	Subject	Credit	Subject	Credit	
General Basic Subjects	Integrated Medical Humanities, Sciences & Technology	1							1
	Outline of Medical Research	1							1
Specialized Subjects	Doctorate Coursework		Doctorate Coursework		Doctorate Coursework		Doctorate Coursework	4	4
	Doctorate Advanced Research & Practicum		Doctorate Advanced Research & Practicum		Doctorate Advanced Research & Practicum		Doctorate Advanced Research & Practicum	8	8
Subjects for Further Research	Doctorate Seminar & Practicum	4	Doctorate Seminar & Practicum	2	Doctorate Seminar & Practicum	2	Doctorate Seminar & Practicum	2	10
					Graduate School Seminar	2			2
Special Research	Research Guidance		Research Guidance		Research Guidance		Research Guidance	4	4

Table 1

Category	Subject	Outline	Credit	Classification
General Basic Subjects	Outline of Medical Research	<u>Required subjects in the Advanced Medical Researcher Course</u> A total of eight omnibus-style lectures will be given on basic procedures from research ethics and experimental planning to research proceedings and presentations, which are indispensable for conducting research.	1	Required
	Integrated Medical Humanities, Sciences & Technology	<u>Required subjects in the specialist researcher course</u> To address a variety of human issues throughout life, students in this course will learn about the relationship between community, economics, law and humans and medicine through omnibus-style lectures, by regarding human beings not only as physical beings but also as beings that include psychosocial factors.	1	Required
	Introduction to Research in Medical Science	This course is mainly aimed at students of the Advanced Medical Researcher Course. In the first half, students will take the basics of medical research by e-learning, and in the second half, they will learn and practice cutting-edge research principles and methods.	1	Elective Required
	Seminar & Practicum in Integrated Medical Humanities, Sciences & Technology	(1) Students understand the basics of "Integrated Medical Humanities, Sciences & Technology" necessary for conducting medical research (especially clinical research). (2) Students will understand the basics of research methods such as structuring and modeling questions, converting measurement concepts into variables, developing variable measurement methods, evaluating measurement methods, and improving the quality of comparisons.	1	Elective Required
Specialized Subjects	Doctorate Coursework	Students will take in-depth lectures on the main areas of their dissertations.	4	Required
	Doctorate Advanced Research & Practicum	This is an exercise related to the field of specialization, and students will understand the advanced theory of medicine through this exercise and practice lectures to acquire the contents of the specialized field. At the same time, students will learn the specific research methods necessary for dissertation writing through this exercise.	8	Required
Subjects for Further Research	Doctorate Seminar & Practicum	Students will learn about the content required for dissertation writing and future medical care and research in their specialized fields, from fields other than their specialized fields.	10	Required
	Graduate School Seminar	This seminar is held to gain a wide range of cutting-edge knowledge in various fields, and aims to deepen understanding and interest in medicine in general.	2	Required
Special Research	Research Guidance	As a culmination of learning and research at the graduate school, students will be instructed to conduct research in their field of specialization, gain new knowledge, and compile it as a dissertation. As a result of this subject, the dissertation will be completed.	4	Required



Table2

Division of Research	Department	Position	Name	Research Topics
Developmental Neurobiology	Department of Neuroanatomy and Embryology	Professor	YAGINUMA Hiroyuki	1) Programmed cell death unique to the cervical spinal cord of the vertebrate during early developmental stages 2) Mechanisms of layer formation by cell migration in brain development 3) Regulatory mechanisms for neurotrophic factor receptor expression 4) Analysis for the expression pattern of developmental regulatory molecules in the CNS 5) Roles of intracellular protein trafficking in axonal tract formation 6) Study of developmental process and function in cerebellar compartmentalization 7) Study of brain function with optogenetic technique
Functional Histology	Department of Anatomy and Histology	Professor	WAGURI Satoshi	1 Autophagy-lysosomal degradation system in cells, tissues, and diseases 2 Intracellular membrane trafficking in cells, tissues, and diseases 3 Cell proliferation regulated by intracellular degradation systems
Biomolecular function	Department of Cellular and Integrative	Professor	HAZAMA Akihiro	Function of Ion Channels and Transporters
Neurophysiology	Department of Systems Neuroscience	Professor	EIFUKU Satoshi	1) Neurophysiological, cognitive psychological and functional neuroimaging studies on the neural bases for social recognition (face recognition, recognition of the personal relationship etc.) 2) Neurophysiological mechanisms of sleep and wakefulness
Neurophysiology	Department of Neurophysiology	Associate Professor	JODO Eiichi	1) Neurophysiological studies on the pathogenesis of psychiatric disorders with animal models of disease (especially focused on schizophrenia) 2) Pathophysiological studies of psychiatric disorders in human patients
Molecular Biomarker Regulation	Department of Biochemistry	Professor	NISHITA Michiru	1. Mechanism underlying the acquisition of invasive and metastatic properties by cancer cells 2. Mechanism of Wnt signaling that drives cancer progression
Molecular Immunology	Department of Immunology	Professor	SEKINE Hideharu	1.Activation mechanism of complement factor MASP-3. 2.Role of MASP-1 and MASP-3 in the development of lupus nephritis. 3.Development of novel therapeutic agents targeting the alternative complement pathway.

Division of Research	Department	Position	Name	Research Topics
Molecular Pharmacology	Department of Pharmacology	Professor	SHIMOMURA Kenju	<ol style="list-style-type: none"> <li>1. Obesity and metabolism regulation through central nervous system.</li> <li>2. Basic and clinical study on drug-food interaction.</li> <li>3. Renoprotective effect of SGLT2 inhibitor on diabetic nephropathy.</li> <li>4. Research for mechanism and therapy of neonatal diabetes and DEND syndrome.</li> </ol>
Infectious Diseases	Department of Microbiology	Professor	SUZUTANI Tatsuo	<ol style="list-style-type: none"> <li>1 Study of the molecular pathogenesis of herpes virus infections with an emphasis on cytomegalovirus infections.</li> <li>2 Study of the effects of microbial flora on health and disease.</li> <li>3 Development of functional foods possessing antimicrobial, antioxidant or immune-stimulating functions.</li> </ol>
Molecular and cellular pathology	Department of Basic Pathology	Professor	CHIBA Hideki	<ol style="list-style-type: none"> <li>1.Regulation of pleiotropic cellular function by the cell adhesion – nuclear receptor signaling pathway</li> <li>2.A novel molecular basis for regulating the nuclear activity promotes cancer progression</li> <li>3.Identification of a diagnostic marker for cancer focusing focusing on cell-cell adhesion molecules</li> <li>4.Development of a novel cancer treatment targeted to abnormal cell adhesion signal</li> <li>5.Tissue repair using a niche signal for stem cells</li> <li>6.Functional specificity and redundancy of tight-junction molecules</li> <li>7.Identification of a novel diagnostic marker and therapeutic target for nephrotic syndrome</li> <li>8.Regulation of blood-brain barrier by neurovascular units and brain diseases</li> <li>9.Supersensitive live imaging of biological barrier using frog gastrula epidermal cells</li> <li>10.Identification of an universal enhancer for driving epithelial differentiation from stem cells</li> </ol>
Hygiene and Preventive Medicine	Department of Hygiene and Preventive Medicine	Professor	FUKUSHIMA Tetsuhito	<ol style="list-style-type: none"> <li>1 Preventive medicine against lifestyle related diseases</li> <li>2 Clinical epidemiology in hospitals</li> <li>3 Health (medical) economics, community health planning, health policy research</li> <li>4 Occupational medicine research on laborers' safety and health</li> <li>5 Health education, behavioral sciences</li> <li>6 QOL of elderly people with dementia</li> <li>7 Epidemiology and preventive medicine research on cardiovascular diseases and diabetes</li> <li>8 Dietetic studies for lifestyle-related disease prevention</li> <li>9 Research on search of the biomarkers of latent sleep disorders</li> <li>10 Research on the mechanism and prevention of heatstroke and hypothermia</li> </ol>

Division of Research	Department	Position	Name	Research Topics
Clinical epidemiology	Department of Clinical Epidemiology	Associate Professor	KURITA Noriaki	<p>We train graduate students to become the next generation leaders who can disseminate high quality clinical research to the world. Indeed, our graduate students have successfully had their high-impact research findings featured in newspapers and other media (e.g., <a href="https://bit.ly/41tO2mp">https://bit.ly/41tO2mp</a>).</p> <p>In this way, graduate students and we will conduct research on local community members to help extend healthy longevity, as well as patient-based research in hospitals.</p> <p>Through this we will create evidence on treatment and prevention and evidence on the diagnostic utility. If needed, we will supervise graduate students in cooperation with other departments that endorse the development of human resources within this department (e.g., CiRC2LE [<a href="http://fuji-future.jp">fuji-future.jp</a>], Shirakawa STAR [<a href="http://shirakawa-ac.jp">shirakawa-ac.jp</a>], etc.).</p> <p>For more information, please refer to the following websites: DiRECT (<a href="https://direct.fmu.ac.jp/">https://direct.fmu.ac.jp/</a>) and Department of Clinical Epidemiology (<a href="https://noriaki-kurita.jp/">https://noriaki-kurita.jp/</a>).</p>
Public Health and Epidemiology	Department of Public Health	Professor	YASUMURA Seiji	<ul style="list-style-type: none"> <li>• Clinical Epidemiology using patient data.</li> <li>• Epidemiology and Prevention of lifestyle-related diseases</li> <li>• Epidemiology and Prevention of falls/fractures or “Tojikomori (Homebound)” among community older adults</li> <li>• Research concerning Great East Japan Earthquake</li> <li>• An association of psychosocial factors with physical and mental health in older adults</li> <li>• Research on physical activity levels in community-dwelling older adults</li> <li>• Research on health communication and health literacy</li> </ul>
Radiation life sciences	Department of Radiation and Biology	Professor	SAKAI Akira	<ol style="list-style-type: none"> <li>1. Establishment of biodosimetry method for chronic low-dose ionizing radiation exposure.</li> <li>2. Elucidation of the mechanism of occurrence of chromosomal translocation.</li> <li>3. Elucidation of abnormal B cell as a tumor origin in multiple myeloma using induced pluripotent stem (iPS) cell derived from normal B cell (BiPSC).</li> </ol>
	Department of Epidemiology	Professor	OHIRA Tetsuya	
Environmental Health	Department of Radiation Physics and Chemistry	Professor	ISHIKAWA Tetsuo	<ol style="list-style-type: none"> <li>1. Internal and external exposure due to natural radiation</li> <li>2. Environmental dynamics of radioactive materials released from the Fukushima accident and their effects on dose to humans</li> </ol>

Division of Research	Department	Position	Name	Research Topics
Health risk communication	Risk Assessment	Professor	TAMAKI Tomoaki	<ul style="list-style-type: none"> <li>• Qualitative analysis of risk perception relating to health and radiation and analysis of factors which influence risk perception</li> <li>• Research on the effective method of risk communication</li> </ul>
Cardiology	Department of Cardiovascular Medicine	Professor	TAKEISHI Yasuchika	<ol style="list-style-type: none"> <li>1 Pathophysiology of heart failure and development of new therapeutic strategies</li> <li>2 Molecular mechanisms of age-related cardiac disease</li> <li>3 Pathophysiology of ischemic heart disease and new treatment strategies</li> <li>4 Pathophysiology of lifestyle-related cardiovascular disease and new treatment strategies</li> <li>5 Pathophysiology of sleep-disordered breathing-induced cardiac dysfunction and its therapeutic strategies</li> <li>6 Advanced diagnostic imaging of cardiovascular disease</li> <li>7 Role of DNA damage in the pathogenesis of cardiovascular disease</li> <li>8 Clonal hematopoiesis and cardiovascular disease</li> <li>9 Cardio-Oncology</li> <li>10 Molecular mechanisms of maintenance of homeostasis in cardiomyocytes</li> <li>11 Molecular mechanisms of pulmonary hypertension</li> <li>12 Development of more effective and safer methods for catheter ablation</li> <li>13 Establishment of management of cardiac disease by implantable devices</li> <li>14 Establishment of treatment and management of structural heart disease</li> </ol>
Cardiovascular Biology and Medicine	Department of Cardiovascular Medicine	Professor	ISHIDA Takahumi	<ul style="list-style-type: none"> <li>• Role of DNA damage in the pathogenesis of cardiovascular disease</li> <li>• Role of DNA damage in the pathogenesis of life style diseases</li> <li>• Molecular mechanisms of cardiovascular toxicity of anticancer therapies</li> <li>• Molecular mechanisms of cardiovascular aging</li> </ul>
Hematology	Department of Hematology	Professor	IKEZOE Takayuki	<ol style="list-style-type: none"> <li>1 Identification of novel tumor markers in hematological malignancies</li> <li>2 Elucidation of pathogenesis of transplant-associated complications and development of novel treatment strategy</li> <li>3 Elucidation of drug-resistant mechanisms in hematological malignancies</li> <li>4 Identification of novel functions of thrombomodulin</li> </ol>

Division of Research	Department	Position	Name	Research Topics
Gastroenterology	Department of Gastroenterology	Professor	OHIRA Hiromasa	<ol style="list-style-type: none"> <li>1. Analysis of pathological and host immune mechanism of autoimmune hepatic diseases</li> <li>2. New therapeutic strategy and pathological analysis of gastrointestinal cancer</li> <li>3. New therapeutic strategy and pathological analysis of chronic pancreatitis</li> <li>4. New endoscopic therapy of gastrointestinal cancer</li> <li>5. Analysis of pathological mechanism and new therapeutic strategy of inflammatory bowel diseases</li> </ol>
Rheumatology	Department of Rheumatology	Professor	MIGITA Kiyoshi	<ol style="list-style-type: none"> <li>1 Study on the pathogenesis of systemic lupus erythematosus and relation with disease-specific autoantibodies</li> <li>2 Association of complement on the pathophysiology of collagen vascular diseases and related disorders</li> <li>3 Study on the pathogenic mechanism of immune checkpoint molecules in rheumatoid arthritis: possibility as biomarkers</li> <li>4 Investigation of the pathogenic mechanism of IgG4 in the involvement of IgG4-related diseases</li> <li>5 Study on the pathogenesis and mechanism of autoinflammatory diseases</li> </ol>
	Department of Diabetes, Endocrinology and Metabolism	Professor	KAZAMA Junichiro	
Metabolic and Homeostatic Regulatory Medicine	Department of Nephrology, Hypertension, Diabetology, Endocrinology and Metabolism	Professor	SHIMABUKURO Mitsuki	<ol style="list-style-type: none"> <li>1. Molecular mechanisms of type 1 and type 2 diabetes mellitus</li> <li>2. Molecular mechanisms of diabetic micro- and macro-vascular complications</li> <li>3. A comprehensive approach study to diabetic patient care on complications and long-term prognosis</li> <li>4. Construction of concept for ectopic fat deposition and sarcopenia connections</li> <li>5. Metabolic and cardio-vascular complications and prognosis in endocrine disorders</li> <li>6. Disaster, stress and life-style related disease</li> <li>7. Eating behavior and life-style related disease</li> <li>8. Gut microbes and life-style related disease</li> </ol>
Clinical Neurology and Neurophysiology	Department of Neurology		KANAI Kazuaki	<ol style="list-style-type: none"> <li>1 .Tactics for neurological patients: how to see neurological patients using clinical neurological examination</li> <li>2 .Pathological mechanisms underlying neuro-immunological and cerebrovascular disorders</li> <li>3 .Physiological analyses of ion channels in neurological disorders</li> <li>4 . Neuroplasticity induction treatments by transcranial magnetic stimulation (TMS) for various neurological disorders</li> <li>5 Neurophysiological approach to peripheral neuropathy and neuro-muscular disorders</li> </ol>

Division of Research	Department	Position	Name	Research Topics
Pulmonary Pathophysiology	Department of Pulmonary Medicine	Professor	SHIBATA Yoko	<ul style="list-style-type: none"> <li>1 Analysis of gene-environment in the development of respiratory diseases</li> <li>2 Development of biomarkers that relate to pathogenesis of the respiratory diseases</li> <li>3 Lung structure-function relationship in the respiratory system</li> <li>4 Development of non-invasive diagnostic methods for respiratory diseases</li> <li>5 Development of new diagnostic methods for respiratory diseases using bronchoscopy</li> <li>6 Development of new treatment for respiratory disease using bronchoscopy</li> <li>7 Theory construction and practice of new therapeutic strategies for respiratory diseases</li> <li>8 Studies of pathogenesis in the respiratory diseases using the new imaging systems</li> <li>9 Epidemiological studies of the COVID-19</li> </ul>
Surgical Oncology for Thoracic Malignancy	Department of Chest Surgery	Professor	SUZUKI Hiroyuki	<ul style="list-style-type: none"> <li>1. Basic and Translational Research for Carcinogenesis and Anti-Cancer treatment</li> <li>2. Basic and Translational Research for Mediastinal tumor</li> <li>3. Tumor Immunology and Immunotherapy</li> <li>4. Development of Novel Imaging Analysis for Cancer (including Artificial Intelligencetechnology)</li> <li>5. Biomarker Study for Anti-Cancer treatment</li> </ul>
Gastrointestinal Surgery	Department of Organ Regulatory Surgery	Professor	KOHNO Koji	<ul style="list-style-type: none"> <li>1.Basic and Clinical Research for carcinogenesis and cancer progression in gastrointestinal tract cancer.</li> <li>2.Scientific evaluation of less invasive surgery for gastrointestinal tract cancer.</li> <li>3.Development of cancer immunotherapy for gastrointestinal tract cancer.</li> </ul>
Surgical Oncology and Regenerative Surgery	Department of Hepato-Biliary-Pancreatic and Transplant Surgery	Professor	MARUBASHI Shigeru	<ul style="list-style-type: none"> <li>1.Basic research on gastrointestinal cancers (mainly hepatobiliary and pancreatic cancers) including cancer stem cells, non-coding RNA, ctDNA/cfDNA, elucidation of cancer metastasis mechanisms, microbiota analysis, etc.</li> <li>2.Regenerative medicine, including elucidation of mechanisms of liver regeneration, liver regeneration using Stem cells, creation of islet cell sheets, creation of hepatocyte sheets, etc.</li> <li>3.Organ transplantation and immune tolerance.</li> <li>4.Development of multidisciplinary treatment for hepatobiliary and pancreatic cancers using preoperative radiation and chemotherapy.</li> <li>5.Development of AI-supported intraoperative navigation system based on 3D images.</li> <li>6.Elucidation of diagnostic and prognostic methods for hepatobiliary and pancreatic cancer by gene expression analysis and genome sequencing.</li> </ul>

Division of Research	Department	Position	Name	Research Topics
Surgical oncology	Department of Organ Regulatory Surgery	Professor	OHTAKE Tohru	<ol style="list-style-type: none"> <li>1. Development of the appropriate breast-conservative surgery in consideration of an optimal excision by the latest image diagnosis system</li> <li>2. Development of the optimal intrinsic subtype marker for breast cancer by comprehensive gene expression analysis and clinical application</li> <li>3. Development of the optimal predictive marker for breast cancer drug therapy by comprehensive gene expression analysis and clinical application</li> <li>4. Clinical significance and functional analysis of novel tumor markers in breast cancer</li> </ol>
Reconstruction of Cardiovascular System	Department of Cardiovascular Surgery	Professor	YOKOYAMA Hitoshi	<ol style="list-style-type: none"> <li>1 Improvement of off-pump cardiac surgery</li> <li>2 Development and evaluation of angiogenetic therapy</li> <li>3 Aortic repair using stent graft</li> </ol>
Neurosurgery	Department of Neurosurgery	Professor	FUJII Masazumi	<ol style="list-style-type: none"> <li>1. Researches on development of therapeutic guidelines and new therapeutic methods for neurofibromatosis type 2</li> <li>2. Development of a next generation image-guided neurosurgery</li> <li>3. Development of new biomarkers for brain tumors</li> <li>4. Researches on plasticity of human brain function and networks.</li> </ol>
Plastic Surgery	Department of Plastic and Reconstructive	Professor	OYAMA Akihiko	Molecular biological research in Wound healij
Obstetrics and Gynecology	Department of Obstetrics and Gynecology	Professor	FUJIMORI Keiya	<ol style="list-style-type: none"> <li>1 Mechanism and prevention for preterm labor</li> <li>2 Physiological study for non-reassuring fetal status</li> <li>3 Basic research for metastatic mechanism, chemotherapy and gene therapy in gynecologic cancer.</li> <li>4 Therapeutic basic study for In Vivo Fertilization - Embryo Transfer and Intracytoplasmic Sperm Injection</li> <li>5 Effect of metformin on endocrine milieus, endometrial expression of androgen-regulated molecules and endometrial receptivity in patients with polycystic ovary syndrome</li> </ol>
Pediatric Health	Department of Pediatrics	Professor	HOSOYA Mitsuaki	<ol style="list-style-type: none"> <li>1 Influence of chemical materials on the growth and development in childhood.</li> <li>2 Inflammatory diseases and organ failure.</li> </ol>
Pediatrics	Department of Pediatrics	Professor	HOSOYA Mitsuaki	<ol style="list-style-type: none"> <li>1 Diagnosis,pathophysiology and treatment of infection related diseases.</li> <li>2 Attachment failure between mother and child and psychomotor development disorder</li> </ol>
Ophthalmology and Visual Science	Department of Ophthalmology	Professor	SEKIRYU Tetsuju	Investigation and New Treatment for Vitreoretinal disease
Dermatology	Department of Dermatology	Professor	YAMAMOTO Toshiyuki	Research on the pathogenesis of fibrosis and scleroderma

Division of Research	Department	Position	Name	Research Topics
Urology	Department of Urology	Professor	KOJIMA Yoshiyuki	<ol style="list-style-type: none"> <li>1 Growth mechanism of benign prostatic hyperplasia (immune reaction and intestinal flora)</li> <li>2 The effect of chronic ischemia on lower urinary tract function.</li> <li>3 The mechanism of vesical adaptation response to diuresis.</li> <li>4 New generation AR target drug resistance of prostate cancer</li> <li>5 New development in molecular targeted agents of drug-resistant renal cell carcinoma</li> <li>6 The possibility of hypospermato genesis in patients with azoospermia due to human cytomegalovirus infection</li> <li>7 Robot assisted surgery (development of surgical technique to prevent urinary incontinence after radical prostatectomy)</li> <li>8 Lower urinary tract function before and after surgery in female pelvic organ prolapse patients</li> </ol>
Otolaryngology	Department of Otolaryngology	Professor	MURONO Shigeyuki	<ol style="list-style-type: none"> <li>1.Carcinogenesis, mechanism of metastasis and novel therapeutic modality in virus-associated head and neck cancer</li> <li>2.Immune reaction in sentinel node of head and neck cancer</li> <li>3.Novel diagnostic modality by molecular biological approach using tiny samples of head and neck cancer</li> <li>4.Mucosal immune response in fungal sinusitis</li> <li>5 Pathogenesis of Sjogren's syndrome based on infiltrating cells into minor salivary gland</li> <li>6 Diagnosis and pathogenesis of dysphagia</li> </ol>
Radiology and Nuclear Medicine	Department of Radiology and Nuclear Medicine	Professor	ITO Hiroshi	<ol style="list-style-type: none"> <li>1. Neuroradiology and Nuclear Neuroimaging</li> <li>2. Interventional Radiology</li> <li>3.Cerebral circulation and metabolism</li> <li>4. Diagnostic radiology using PET/MRI</li> <li>5. Nuclear Medicine Imaging</li> <li>6.Cardiovascular imaging and Nuclear Cardiology</li> </ol>
Anesthesiology	Department of anesthesiology	Professor	INOUE Satoki	<ol style="list-style-type: none"> <li>1.The effects of social isolation on cerebral ischemia</li> <li>2.Social isolation-induced preconditioning</li> <li>3.The effect of prehabilitation on cerebral ischemic damage during social isolation</li> <li>4.Epidemiological investigation about anesthesia-related outcomes</li> <li>5.The effects of remimazolam on postoperative delirium</li> <li>6.Pharmacokinetics of anesthetic agents</li> <li>7.Anesthesia and immunity</li> </ol>



Division of Research	Department	Position	Name	Research Topics
Division of perioperative medicine and bioregulation	Department of anesthesiology	Professor	KUROSAWA Shin	1 Analysis of the mechanisms of T cell apoptosis induced by volatile anesthetics. 2 Investigation of immunosuppression caused by general anesthetics. 3 The effects of low-dose glucocorticoid on immune cells and immune function. 4 The effects and mechanisms of general anesthetics on anticancer chemotherapeutic agents-induced immunosuppression. 5 Immunological analyses of the effects on single low-dose glucocorticoid administration on the improvement of prognosis after cancer surgery.
Emergency and Critical Care Medicine	Department of Emergency and Critical Care Medicine	Professor	ISEKI Ken	1 The role of Glia 2 Cell biology and Pathophysiology of the diacylglycerol kinase 3 Animal model of stress response 4 Animal model for toxicological studies 5 Animal model for infectious disease 6 The epidemiological study in Acute Medicine 7 The simulation study of cardiopulmonary resuscitation 8 The study of intensive care apparatus
pathology	Department of Diagnostic Pathology	Professor	HASHIMOTO Yuko	Comprehensive diagnostic method for malignant lymphoma using pathology, immunology & molecular biology ○ Research on factors related to onset and prognosis of lymphoma in particular ○ Molecular-based method using formalin fixed paraffin embedded (FFPE) samples Quality control of companion diagnosis for molecular target therapy
	Department of Laboratory Medicine	Professor	SHIMURA Hiroki	1) Clinical research for sonographic diagnosis of thyroid diseases 2) Epidemiological study of thyroid diseases in children and adolescents 3) Development of novel clinical tests for thyroid diseases 4) Research on clinical microbiological examination
Infection Control and Laboratory Medicine	Department of Infection Control and Laboratory Medicine	Professor	KANEMITSU Keiji	1 Development of novel molecular diagnostic method for infectious diseases 2 Epidemiologic study of healthcare associated infection 3 Development of novel sterilization method 4 Development of detection method for autoantibodies using proteomics 5 Study of interferences in immunoassays 6 Study of various problems in ELISA

Division of Research	Department	Position	Name	Research Topics
Transplantation Immunology	Department of Blood Transfusion and Transplantation Immunology	Professor	IKEDA Kazuhiko	<ul style="list-style-type: none"> <li>○ Assessment and regulation of allogeneic immune response</li> <li>○ Hematopoietic stem cell biology</li> <li>○ Reconstitution of hematopoiesis after transplantation of normal and neoplastic stem cells</li> <li>○ Development of laboratory/genetic tests for transplantation</li> <li>○ Development and use of cellular therapy</li> </ul>
	Department of Blood Transfusion and Transplantation Immunology	Professor	Nollet Kenneth Eric	<ol style="list-style-type: none"> <li>1 International Medical Communication and Education</li> <li>2 Emergency Preparedness and Disaster Response</li> <li>3 Global Transfusion Standards and Ethics</li> </ol>
Department of Radiation Health Management	Radiation Health Risks Prevention	Professor	TUBOKURA Masaharu	<ul style="list-style-type: none"> <li>• Radiation dose assessment for residents following a nuclear accident</li> <li>• Radiation protection measures following a nuclear accident</li> <li>• Health effects on residents following evacuation immediately after a nuclear accident</li> <li>• Research on stable iodine tablets to reduce exposure to radioiodine</li> <li>• Secondary health effects following a radiation disaster</li> <li>• Communication, radiation anxiety, and radiation education after the nuclear power plant accident</li> </ul>
Department of Thyroid and Endocrinology	Department of Thyroid and Endocrinology	Professor	FURUYA Fumihiko	<ol style="list-style-type: none"> <li>① Investigation of the effects of thyroid hormones on the infiltration and fibrosis of inflammatory cells into injured organs</li> <li>② Epigenomic analysis of thyroid cancer and identification of specific abnormalities</li> <li>③ Identification of novel biomarkers related to prognosis and drug sensitivity based on epigenomic analysis of thyroid cancer</li> </ol>
Radiation Oncology	Department of Radiation Oncology	Professor	SUZUKI Yoshiyuki	Radiation-induced anti-tumor immunity and its modification
Medical Oncology Course	Department of Medical Oncology	Professor	SAJI Shigehira	<ol style="list-style-type: none"> <li>1. Research about response predictive factor in cancer drug treatment.</li> <li>2. Research of cancer morbidity in Fukushima.</li> <li>3. Research for reducing immune related adverse events.</li> </ol>

Division of Research	Department	Position	Name	Research Topics
Radiation disaster medicine	Department of Radiation Disaster Medicine	Professor	HASEGAWA Arifumi	<ol style="list-style-type: none"> <li>1. Study on business continuity and evacuation of medical institutions in the event of a nuclear disaster.</li> <li>2. Radiation risk communication according to the social background of the target audience</li> <li>3. Factors affecting the awareness of nuclear disaster response in various occupational groups</li> <li>4. Study on mental stress factors of participants in nuclear disaster response education and training using physiological indicator variation.</li> <li>5. Comprehensive study on dosimetry of residents in TEPCO's Fukushima Daiichi Nuclear Power Plant accident</li> <li>6. Proposal of radiation control guidelines for medical institutions accepting contaminated patients in the event of a nuclear disaster</li> <li>7. Survey on the actual situation of medical intervention and examination of response protocols for the development of a response system in the event of internal contamination.</li> </ol>
Biomedical Statistics	Integrated Center for Science and Humanities	Professor	Nakamura Nobuhiro	<p>Gauge theory and topology of 4-dimensional manifolds</p> <p>Geometry of statistical manifolds and its applications</p>
Medical Nanochemistry	Integrated Center for Science and Humanities	Professor	TANABE Makoto	Development of Medical Nanomaterials
Molecular Biology	Integrated Center for Science and Humanities	Professor	MATSUOKA Arika	<ol style="list-style-type: none"> <li>1. Molecular mechanism of autoxidation for human hemoglobin</li> <li>2. Crystallographic analysis of hemoprotein</li> <li>3. Analysis of genome rearrangement in ciliates</li> </ol>
Solid State Physics	Integrated Center for Science and Humanities	Professor	HIRAKI Ko-ichi	Microscopic study of the electronic dynamics in the organic materials by nuclear magnetic resonance techniques

Division of Research	Department	Position	Name	Research Topics
Cell Signaling	Department of Biomolecular Science	Associate Professor	HOMMA Miwako	<p>Focusing on proliferation associated protein kinase CK2, we have observed the intracellular migration of CK2 to the nucleus, during the progression of normal cell cycle for proliferation in vivo. However, when we analyzed breast cancer specimens, we found for the first time that extremely clear nucleolar accumulation of CK2 molecule was observed in association with cancer recurrence (poor prognosis) of invasive breast cancer. Statistical analysis of the CK2-staining evaluation by using surgical specimens revealed that it is the only independent variable that determines clinical outcome, and we therefore have filed a patent application in 2019 and a PCT application in 2020 as a novel marker for cancer prognosis. In addition, we are analyzing the molecular and biochemical properties of the nuclear accumulation of CK2 in human solid tumors.</p> <p>We are currently conducting research to elucidate the mechanisms involved in cancer progression. As we have shown that CK2 is involved in epigenetic transcriptional regulation by molecular biological methods, integrative bioinformatics tools such as RNA-seq, ChIP-seq, phosphor-proteomic and single-cell RNA analysis are also being conducted. In order to elucidate how CK2 molecules are involved in the process for specific gene expression to translation, we comply with research ethics guidelines while pursuing research and education for graduate students.</p>
Molecular Neurobiology	Department of Molecular Genetics	Professor	KOBAYASHI Kazuto	<ol style="list-style-type: none"> <li>1. Neural mechanism underlying behavioral control through cortico-basal ganglia-thalamic network.</li> <li>2. Neural circuit mechanism underlying learning and motivational behavior</li> <li>3. Neural circuit mechanism that mediates functional recovery from brain injury.</li> <li>4. Development of animal models for neurological and neuropsychiatric diseases.</li> </ol>
Epigenome Regulation	Radioisotope Center (RI)	Associate Professor	SEKIMATA Masayuki	<ol style="list-style-type: none"> <li>1 Molecular mechanism of epigenetics for cell function</li> <li>2 Regulation of gene expression by higher-order chromatin structure</li> <li>3 Role of long noncoding RNA on inflammation diseases</li> <li>4 Molecular mechanism for the formation of immune memory cell</li> </ol>
Experimental animal model for human disease	Laboratory Animal Center	Professor	SEKIGUCHI Miho	Study design and methods for in vivo studies using laboratory animal models for human diseases

Division of Research	Department	Position	Name	Research Topics
Gastrointestinal endoscopy	Department of Endoscopy	Associate Professor	HIKICHI Takuto	<ol style="list-style-type: none"> <li>1. Improvement and development of endoscopic diagnostic and treatment methods for early gastrointestinal cancer.</li> <li>2. Development of new screening system for gastric cancer eradication in Fukushima Prefecture.</li> <li>3. Improvement and development of diagnostic and treatment methods utilizing endoscopic ultrasonography (EUS) and EUS-guided injection for gastrointestinal tumors and pancreatic tumors.</li> <li>4. Elucidation of the pathogenesis of gastrointestinal varices and development of endoscopic treatment for them.</li> <li>5. Development of new endoscopic treatment with the combination of laparoscopic surgery for gastrointestinal cancer and submucosal tumor.</li> <li>6. Clarification of the carcinogenic mechanism of gastric cancer.</li> <li>7. Clarification of the influence on the gastric peristalsis after endoscopic treatment or in various diseases.</li> </ol>
Pediatric Surgery	Pediatric Surgery	Professor	TANAKA Hideaki	<ul style="list-style-type: none"> <li>• Stem cell therapy for pediatric intestinal diseases</li> <li>• Development of the intraoperative navigation system for pediatric solid abdominal and thoracic malignant neoplasms</li> </ul>
International Community Health	Integrated Center for Science and Humanities	Professor	GOTO Aya	<p>Among six building blocks of the health system (service delivery, workforce, information, medical products, financing, leadership, and governance), we focus on the first three blocks. Our work “imports” and “exports” model health programs between Asian and Western regions by applying both quantitative and qualitative research methods in order to respond to complexities of community health.</p> <p>※  <a href="http://www.fmu.ac.jp/univ/en/nursing/program/ebm.html">http://www.fmu.ac.jp/univ/en/nursing/program/ebm.html</a></p>
		Professor	YOKOYAMA Hirovuki	
Development and Environmental Medicine		Professor	NISHIGORI Hidekazu	<p>Prenatal drug supplement use and development of offspring  Parents perinatal mental health and development of offspring</p>
Disease Biochemistry	Department of Clinical Laboratory Sciences, School of Health Sciences	Professor	KITAZUME Shinobu	<ul style="list-style-type: none"> <li>●Basic research using a novel mouse model of Alzheimer's disease</li> <li>●Basic research on diagnosis and treatment of brain tumors</li> <li>●Research for practical application of platelet activation markers (Sakaemachi Campus)</li> </ul>

Division of Research	Department	Position	Name	Research Topics
	Advanced Critical Research Center	Professor	ORIUCHI Noboru	<ol style="list-style-type: none"> <li>1. Development of targeted radionuclide therapy</li> <li>2. Dosimetry-based efficacy and safety assessment for <math>\alpha</math> and <math>\beta</math> particle therapy</li> <li>3. Development of theranostics using PET/CT and PET/MRI for targeted radionuclide therapy</li> <li>4. Quantitative analysis of PET/MRI</li> </ol>
Kampo Medicine	Kampo Medicine	Professor	SUZUKI Masao	<p>Research on the Efficacy of Kampo Medicine (Acupuncture and Moxibustion, Kampo Medicines).</p> <ul style="list-style-type: none"> <li>• Efficacy of Kampo Medicine for Multimorbidity in the Elderly.</li> <li>• Changes in quality of life in Kampo medicine.</li> <li>• The usefulness of acupuncture and moxibustion medicine for palliative care.</li> <li>• The usefulness of acupuncture and moxibustion medicine in preventing nursing care.</li> <li>• The usefulness of acupuncture and moxibustion medicine for chronic obstructive pulmonary disease.</li> </ul>
Pathophysiology of Hematopoietic Malignancies	Department of Hematology	Professor	OHTA Masatsugu TSUNODA Saburo	<ul style="list-style-type: none"> <li>• Qualitative Analysis of Femoral Marrow MRI in Hematological Disorders</li> <li>• Development of Therapeutic Strategies for Relapsed and Refractory Malignant Lymphomas</li> <li>• Epidemiological Characterization of Hematological Malignancies in Aizu Area</li> </ul>
Dementia Research	Department of Neuropsychiatry	Professor	KAWAKATSU Shinobu	<ol style="list-style-type: none"> <li>1 Neuropsychology and brain imaging in elderly demented patients with tauopathy and frontotemporal lobar degeneration</li> <li>2 Clinicopathological and genetic study in early onset Alzheimer's disease and frontotemporal lobar degeneration</li> <li>3. Near-Infrared spectroscopy study of depression and apathy in demented patients</li> <li>4. Early detection and predicting prognosis for delirium in elderly patients using 2 channel portable electroencephalography.</li> </ol>
Coloproctology	Department of Coloproctology	Professor	TOGASHI Kazutomo	<ol style="list-style-type: none"> <li>1. Development of computer-aided diagnosis system for colonoscopy using AI (collaboration with the University of Aizu)</li> <li>2. Elucidation of serrated pathway in evolution of colorectal cancer (International Collaborated Study)</li> <li>3. Clinical outcomes of colorectal ESD</li> <li>4. Investigation of recurrence-free survival after treatment of T1 stage colorectal cancer (Multicenter Collaborated Study)</li> <li>5. Computer-aided diagnosis of advanced-stage colorectal cancer using AI (collaboration with the University of Aizu)</li> <li>6. Localization of small bowel capsule endoscope using AI (collaboration with the University of Aizu)</li> </ol>

Division of Research	Department	Position	Name	Research Topics
Therapeutics of the gastroenterological surgery	Department of Surgery	Professor	SAITO Takuro	<ol style="list-style-type: none"> <li>1. Development of therapeutics of cancer of the upper gastrointestinal tract and hepatobiliary pancreatic surgery.</li> <li>2. Development of therapeutics of inguinal hernia.</li> <li>3. Development of educational strategy of surgical techniques.</li> <li>4. Patient safety in the field of the gastroenterological surgery</li> </ol>
	Department of Orthopaedic and Spinal Surgery	Professor	SHIRADO Osamu	<ol style="list-style-type: none"> <li>1. Comprehensive study on adult spinal deformity in terms of diagnosis, treatment, and prevention</li> <li>2. Telerehabilitation using information and communication technology (ICT)</li> <li>3. Brace treatment for adolescent idiopathic scoliosis (AIS)</li> <li>4. Kinesiological study on the patients with various spinal disorders</li> <li>5. Development of a novel therapeutic exercise program for the patients with chronic low-back pain</li> </ol>
Upper respiratory tract surgical medicine	Department of Otorhinolaryngology	Professor	OGAWA Hiroshi	<ol style="list-style-type: none"> <li>1. Clinical research about the surgery of hearing improvement</li> <li>2. Clinical research on anatomical structure of nasal cavity</li> <li>3. Basic and clinical research on middle ear and inner ear</li> <li>4. Basic and clinical research on allergic rhinitis</li> </ol>
Gastrointestinal Diagnostic Imaging	Department of Clinical medicine department	Professor	UTANO Kenichi	Diagnostic performance of CT colonography for the colorectal neoplasms