

**Application Guidelines**  
**for October Admission, 2017 and April Admission, 2018**

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

(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 2017	April Admission in 2018	
Graduate School of Medicine (*2)	Examination for General Applicants: Several	Examination for General Applicants: 37	Detailed information on the features of each course and research subjects of each division can be found on page 14 and following of this guidebook.
<div style="border: 1px solid black; border-radius: 15px; padding: 5px; display: inline-block;">           Course for Researchers         </div> <div style="border: 1px solid black; border-radius: 15px; padding: 5px; display: inline-block;">           Course for Medical Practitioner Researchers         </div>	<div style="border: 1px solid black; border-radius: 15px; padding: 5px; display: inline-block; text-align: center;">             General Applicants includes Working Professionals (*3)           </div> Examination for International Students (*4): Several	<b>【</b> Examination for International Students (*4): Several	

- Notes: 1. The divisions in the above table is as of April in 2017. On applying for the entrance examination of the April admission in 2018, 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 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.

This course also includes the “Oncologist Training Course” based on the “Cancer Professional Training Plan” (See page11).

## **2. Qualifications for Application**

Applicants 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 2018. For those who will enroll in October 2017 the term just mentioned will be by September 2017.
- (2) Those who have completed or expect to complete, by March 2018, 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 2017 the term just mentioned will be by September 2017.

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 2018. For those who will enroll in October 2017, the term just mentioned will be by September 2017.
  - (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	July 10 (Monday) – July 14(Friday), 2017, 9:00 A.M. – 5:00 P.M.
April Admission	October 27 (Friday)– November 2 (Thursday), 2017, 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
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	July 18 (Tuesday) – July 26 (Wednesday), 2017, 9:00 A.M. – 5:00 P.M. (Except Saturday & Sunday)
April Admission	November 13 (Monday) – November 22 (Thursday), 2017, 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 362 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 Permission to Take Examination	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

(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 essay and oral examination and the information given in the submitted application materials.

(1) Examination Subjects for general applicants and working professionals:

- (i) Essay Examination
- (ii) Oral Examination (Interview)

(2) Examination Subjects for International Students:

- (i) Essay Examination
- (ii) Oral Examination (Interview)
- (iii) Medical Checkup

Note: International students are permitted to write the essay in English.

**7. Schedule of Examination for All Applicants**

	Date	Subjects & Time
October Admission	August 5 (Sat), 2017	Essay Examination: 9:00 – 10:00 Oral Examination: 10:30–
April Admission	December 9 (Sat), 2017	

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	September 21 (Thu), 2017
April Admission	January 18 (Thu), 2018

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	September 21 (Thu) – September 29 (Fri), 2017, 9:00 A.M. – 5:00 P.M. (Except Saturday & Sunday)
April Admission	January 18 (Thu) – January 26 (Fri), 2018, 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 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

(4) Admission Fee and Tuition

- (i) Admission Fee: 282,000 yen (Admission Fee must be paid at time of admission procedure.)
- (ii) Annual Tuition: 535,000 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 newly established 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 2016. On applying for the entrance examination of the April admission in 2017, 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

Scholarship from the Japan Student Services Organization is available. If students are unable to receive the scholarship from this organization, they may be eligible for the scholarship provided by Fukushima Medical University.

### **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.

Table 1

<b>Requirements for Graduation and Course Requirements</b>
<p>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.</p> <p>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.</p>

### **Cancer Professional Training Plan**

This is a comprehensive educational program conducted through the cooperation of the university and communities to foster cancer specialists. The Course for Medical Practitioner Researchers at Fukushima Medical University Graduate School includes the Oncologist Training Course based on the Cancer Professional Training Plan.

The Oncologist Training Course consists of three sub-courses leading to certification of clinical oncologist: Radiation Oncologist, Medical Oncologist, and Surgical Oncologist. Students are required to take Doctorate Coursework (Clinical Oncology: Internet School) and Doctorate Advanced Research & Practicum which includes chemotherapy, surgical treatment, radiation therapy and palliative medicine.

### **Course for Radiation Oncologist**

This is a course for board certified radiation oncologists of the Japanese Society for Therapeutic Radiology and Oncology and board certified radiologists of the Japan Radiological Society. The training will be done at Fukushima Medical University Hospital according to the curriculum to prepare specialists.

### **Course for Medical Oncologist**

This is a course for board certified medical oncologists of the Japanese Society of Medical Oncology (JSMO). The training will be done at Fukushima Medical University Hospital according to the curriculum of JSMO.

### **Course for Surgical Oncologist**

This is a course for board certified breast specialists of the Japanese Breast Cancer Society. The training will be done at Fukushima Medical University Hospital according to the curriculum to prepare specialists.

# 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	1	Graduate School Seminar	1					2
Special Research	Research Guidance	1	Research Guidance	1	Research Guidance	1	Research Guidance	1	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
	Outline of Medical Research Seminar & Practicum in Integrated Medical Humanities, Sciences & Technology	1							1
		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	3	Doctorate Seminar & Practicum	2	Doctorate Seminar & Practicum	2	Doctorate Seminar & Practicum	2	9
	Graduate School Seminar	1	Graduate School Seminar	1					2
Special Research	Research Guidance	1	Research Guidance	1	Research Guidance	1	Research Guidance	1	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
	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	3	Doctorate Seminar & Practicum	2	Doctorate Seminar & Practicum	2	Doctorate Seminar & Practicum	2	9
	Graduate School Seminar	1	Graduate School Seminar	1					2
Special Research	Research Guidance	1	Research Guidance	1	Research Guidance	1	Research Guidance	1	4

Course Model (4): Students who take the oncologist training course and aim to be a oncology 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 and Technology	1							1
	Outline of Medical Research	1							1
	Seminar & Practicum in Integrated Medical Humanities, Sciences & Technology	1							1
Specialized Subjects	Doctorate Coursework (Clinical Oncology)		Doctorate Coursework (Clinical Oncology)		Doctorate Coursework (Clinical Oncology)		Doctorate Coursework (Clinical Oncology)	4	4
	Doctorate Advanced Presearch & Practicum (Clinical Oncology) is taught by using "internet school."								
	Doctorate Advanced Research & Practicum (Clinical Oncology)		Doctorate Advanced Research & Practicum (Clinical Oncology)		Doctorate Advanced Research & Practicum (Clinical Oncology)		Doctorate Advanced Research & Practicum (Clinical Oncology)	8	8
	Doctorate Advanced Research & Practicum requires practice of chemotherapy, surgical treatment, radiation therapy and palliative medicine.								
Subjects for Further Research	Doctorate Seminar & Practicum	3	Doctorate Seminar & Practicum	2	Doctorate Seminar & Practicum	2	Doctorate Seminar & Practicum	2	9
	Graduate School Seminar	1	Graduate School Seminar	1					2
Special Research	Research Guidance	1	Research Guidance	1	Research Guidance	1	Research Guidance	1	4

Division of Research				Reseach Topics
Developmental Neurobiology	Department of Neuroanatomy and Embryology	Professor	Hiroyuki Yaginuma	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	Satoshi Waguri	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 Physiology	Professor	Akihiro Hazama	Function of Ion Channels and Transporters
Neurophysiology	Department of Systems Neuroscience	Professor	Satoshi Eifuku	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	Eiichi Jodo	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	Yasuhiro Hashimoto	1.Diagnostic markers for dementia 2.Cancer glycan markers 3.Regulation of glycan expression
Molecular Immunology	Department of Immunology	Professor	Hideharu Sekine	1. Roles for complement factors MASP-1/3 in the development of lupus nephritis. 2. Development of a novel drug target for diseases caused by the alternative complement pathway activation. 3. Roles for IFN- $\gamma$ in the development of autoantibody producing B cells in systemic lupus erythematosus.

Division of Research				Research Topics
Molecular Pharmacology	Department of Pharmacology	Professor	Kenju Shimomura	1 Electrophysiological studies on KATP channels on brain function and insulin secretion. 2 Investigation of food intake regulation mechanism in brain. 3 Basic and clinical study on pharma-food interaction
Clinical Microbiology	Department of Microbiology	Professor	Tatsuo Suzutani	1 Study of the molecular pathogenesis of herpes virus infections with an emphasis on cytomegalovirus infections. 2 Study of the effects of microbial flora on health and disease. 3 Development of functional foods possessing antimicrobial, antioxidant or immune-stimulating functions.
Molecular and cellular pathology	Department of Basic Pathology	Professor	Hideki Chiba	1. Cell adhesion signaling in epithelial differentiation of embryonal stem cells 2. Abberant cell adhesion signaling in promoting malignant phenotypes of cancer 3. Regulation of the behavior of intestinal stem cells by the cell adhesion signal 4. Generation of a novel direct reprogramming method 5. Expression and function of JAM family proteins in mesenchymal stem cells 6. Development of targeted therapy for refractory cancers 7. The functional significance of tight-junction formation in podocytes of nephrotic syndrome — Identification of a novel diagnostic marker and therapeutic target 8. Development of a novel treatment against hepatitis C 9. Disruption of blood-brain barrier in schizophrenia and its molecular mechanism
Hygiene and Preventive Medicine	Department of Hygiene and Preventive Medicine	Professor	Tetsuhito Fukushima	1 Preventive medicine against lifestyle related diseases 2 Clinical epidemiology in hospitals 3 Health (medical) economics, community health planning, health policy research 4 Industrial medicine for safety and health of workers 5 Health education, behavioral sciences 6 Biological effects by environmental chemicals and preventive medicine
Clinical epidemiology	Department of Orthopaedic Surgery	Professor	Tetsuhito Fukushima	Through the innovations of research and education, evidences for improvement of healthy life of Fukushima population are created. In addition, we encourage and educate the next generation leaders who provide higher level of clinical researches.

Division of Research				Research Topics
Public Health and Epidemiology	Department of Public Health	Professor	Seiji Yasumura	We instruct epidemiological research on various topics using patients and community data: lifestyle related diseases; falls, home-bound and long-term care among elderly; end-of-life care, mental health, suicide and disaster management.
Social medicine (forensic medicine)	Department of Legal Medicine	Professor	Naohito Kuroda	<ol style="list-style-type: none"> <li>1. Histopathological studies on conducting system of the heart in juvenile sudden deaths</li> <li>2. Histopathological studies on developing mechanism of rotational brain injuries</li> <li>3. Development of postmortem examination techniques specific to corpses polluted by radioactive substances</li> <li>4. Radiological studies on postmortem effects on computed tomography of cadavers</li> <li>5. Histological and epidemiological studies on thyroid latent carcinomas in medico-legal autopsy cases</li> <li>6. Experimental studies on pathophysiology of unexplained intoxications by animal models (mice)</li> </ol>
Radiation life sciences	Department of Radiation and Biology	Professor	Akira Sakai	<ol style="list-style-type: none"> <li>1. Establishment of biodosimetry method for chronic low-dose ionizing radiation exposure.</li> <li>2. Analysis of dicentric chromosomes and translocated chromosomes in lymphocytes using FISH before and after a CT scan.</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	Tetsuya Ohira	
Environmental Health	Department of Radiation Physics and Chemistry	Professor	Tetsuo Ishikawa	<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> <li>3. Mechanisms of internal exposure due to radon and thoron</li> </ol>
Department of Health Risk Communication	Risk Assessment	Professor	Hitoshi Ohto	<ol style="list-style-type: none"> <li>1 Evaluation of multiple risks and cost-effectiveness analysis of countermeasures</li> <li>2 Evaluation of effects of countermeasures on anxiety reduction and improvement of subjective well-being</li> <li>3 An analysis of associations of risk information with risk perception, risk acceptance, and trust</li> </ol>



Division of Research				Research Topics
Cardiology	Department of Cardiovascular Medicine	Professor	Yasuchika Takeishi	<ol style="list-style-type: none"> <li>1. Development of a new strategy for treatment of heart failure</li> <li>2. Molecular mechanisms of aging and cardiovascular function</li> <li>3. Cardiovascular biology</li> <li>4. Oxidative stress and regulation of coronary flow</li> <li>5. Cardiovascular function of metabolic syndrome</li> <li>6. Sleep disordered breathing and cardiovascular diseases</li> <li>7. Cardiovascular imaging</li> <li>8. Cardiomyocyte generation from iPS cells of familial cardiomyopathy</li> <li>9. Bone marrow cell transplantation for cardiac amyloidosis</li> <li>10. Genetic analysis of hematological disorders</li> </ol>
	Department of Cardiovascular Medicine	Professor	Takahumi Ishida	
Hematology	Department of Hematology	Professor	Takayuki Ikezoe	<ol style="list-style-type: none"> <li>1. Identification of novel prognostic markers in hematological malignancies</li> <li>2. Investigation of molecular pathogenesis in myeloproliferative neoplasms</li> <li>3. Investigation of the pathogenesis of transplant-associated complications</li> <li>4. Investigation of molecular mechanisms by which leukemia cells acquire drug-resistance</li> </ol>
Gastroenterology	Department of Gastroenterology	Professor	Hiromasa Ohira	<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	Kiyoshi Migita	<p>Pathogenesis of systemic lupus erythematosus and other rheumatic diseases: roles of autoantibodies and complement.</p> <p>Pathogenesis of rheumatoid arthritis: role of osteopontin.</p> <p>Pathogenesis of IgG4 related disease.</p> <p>Genetic and immunological features of autoinflammatory disease.</p>

Division of Research				Research Topics
	Department of Diabetes, Endocrinology and Metabolism	Professor	Junichiro Kazama	
Metabolic and Homeostatic Regulatory Medicine	Department of Nephrology, Hypertension, Diabetology, Endocrinology and Metabolism	Professor	Mitsuki Shimabukuro	
Clinical Neurology and Neurophysiology	Department of Neurology	Professor	Yoshikazu Ugawa	<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: epilepsy, periodic paralysis and so on</li> <li>4 .Physiological analyses of brain neuroplasticity in several neurological disorders using transcranial magnetic stimulation (TMS)</li> <li>5 .Neuroplasticity induction treatments by transcranial magnetic stimulation (TMS) for various neurological disorders</li> <li>6 Neurophysiological approach to peripheral neuropathy and neuro-muscular disorders</li> </ol>
Pulmonary Pathophysiology	Department of Pulmonary Medicine			<ol style="list-style-type: none"> <li>1 Analysis of gene-environment interaction in the development of pulmonary diseases</li> <li>2 Exploration of biomarker predicting etiology and pathogenesis regarding as pulmonary diseases</li> <li>3 Structure-function relationship in pulmonary diseases</li> <li>4 Development of non-invasive method for the diagnosis of pulmonary diseases (e.g. pulmonary sound, expired gas, exhaled breath condensate, induced sputum, etc.)</li> <li>5 Exploitation of novel diagnostic methods of pulmonary diseases using bronchoscopy</li> <li>6 Development of novel therapeutics of pulmonary diseases using bronchoscopy (e.g. endobronchial intervention)</li> <li>7 Establishment of new treatment strategies for patients with pulmonary diseases</li> </ol>
Oncology for Thoracic Malignancy	Department of Chest Surgery	Professor	Hiroyuki Suzuki	<ol style="list-style-type: none"> <li>1. Basic study for carcinogenesis</li> <li>2. Basic and clinical study for thoracic malignancy</li> <li>3. Tumor Immunology</li> <li>4. Novel imaging analysis for malignancy</li> </ol>
	Department of Organ Regulatory Surgery	Professor	Koji Kohno	

Division of Research				Research Topics
Surgical Oncology and Regenerative Surgery	Department of Hepato-Biliary-Pancreatic and Transplant Surgery	Professor	Shigeru Marubashi	<ul style="list-style-type: none"> <li>1 Basic research for cancer and oncology in Gastroenterology</li> <li>2 Regenerative surgery. Liver regeneration and islet composite sheet.</li> <li>3 Organ transplantation and Tolerance</li> <li>4 Multidisciplinary treatment for advanced GE malignancies.</li> <li>5 Intraoperative navigation system using AI and 3D images.</li> <li>6 Diagnosis and prediction of prognosis using Omics technology.</li> </ul>
Surgical oncology	Department of Organ Regulatory Surgery	Professor	Tohru Ohtake	<ul 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> </ul>
Reconstruction of Cardiovascular System	Department of Cardiovascular Surgery	Professor	Hitoshi Yokoyama	<ul 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> </ul>
Neurosurgery	Department of Neurosurgery	Professor	Kiyoshi Saito	<ul style="list-style-type: none"> <li>1. Intraoperative functional monitoring of nervous system using evoked potentials</li> <li>2. Analysis of genes expressed in brain tumors</li> <li>3. Analysis of cerebrospinal fluid biomarkers</li> <li>4. Creation of neurosurgical tools and techniques</li> <li>5. Development of intraoperative fluorescence angiography</li> <li>6. Development of new generation of intraoperative navigation system</li> </ul>
Restorative medicine of neuro-musculoskeletal system	Department of Orthopaedic Surgery	Professor	Shinichi Konno	Study of mechanisms of pain associated with orthopedic disorders
Functional and disability	Department of Orthopaedic Surgery	Professor	Shinichi Konno	The change of circulatory dynamics with the aging and the occurrence mechanism of limbs and truncal dys-function
Plastic and Reconstructive Surgery	Department of Plastic and Reconstructive Surgery			Research for the ideal microsurgical neurovascular anastomosis by evaluation of the functional improvement

Division of Research				Research Topics
Obstetrics and Gynecology	Department of Obstetrics and Gynecology	Professor	Keiya Fujimori	1 Mechanism and prevention for preterm labor 2 Physiological study for non-reassuring fetal status 3 Basic research for metastatic mechanism, chemotherapy and gene therapy in gynecologic cancer. 4 Therapeutic basic study for In Vivo Fertilization - Embryo Transfer and Intracytoplasmic Sperm Injection 5 Effect of metformin on endocrine milieu, endometrial expression of androgen-regulated molecules and endometrial receptivity in patients with polycystic ovary syndrome
Pediatric Health	Department of Pediatrics	Professor	Mitsuaki Hosoya	Early diagnosis of and treatment for pediatric infectious diseases Inflammatory diseases and organ failure
Pediatrics	Department of Pediatrics	Professor	Mitsuaki Hosoya	Influence of chemical compounds on the growth and the development of children Attachment failure between mother and child and psychomotor development disorder
Ophthalmology and Visual Science	Department of Ophthalmology	Professor	Tetsuju Sekiryu	Investigation and New Treatment for Vitreoretinal disease
Dermatology	Department of Dermatology	Professor	Toshiyuki Yamamoto	Research on the pathogenesis of fibrosis and scleroderma
Urology	Department of Urology	Professor	Yoshiyuki Kojima	1. Chronic ischemia related bladder dysfunction 2. Renal cell carcinoma : molecular targeted therapy and cytokine 3. The effect of aging on nitric oxide and noradrenaline release in prostate 4. Mechanism of prostatic hypertrophy 5. Pharmacogenomics and personalized medicine 6. Robot assisted surgery
Otolaryngology	Department of Otolaryngology	Professor	Shigeyuki Murono	1 Carcinogenesis, metastasis, and novel therapy in head and neck cancer associated with virus including EBV and HPV 2 Immunological reaction in the sentinel lymph nodes of head and neck cancer 3 Hearing impairment caused by cytomegalovirus 4 Surgical technique and functional preservation for head and neck cancer 5 Histopathology of the temporal bone in various diseases 6 Pathophysiology and surgical technique to improve function in dysphagia and voice disorder

Division of Research				Research Topics
Neuropsychiatry	Department of Neuropsychiatry	Professor	Hirooki Yabe	<ol style="list-style-type: none"> <li>1. Cognitive Physiological Study of Neuropsychiatric Diseases (Event-Related Brain Potential (ERP) research, Near-infrared Spectroscopy (NIRS) research, Transcranial Magnetic Stimulation (TMS) research, and Experimental Psychology research, etc.)</li> <li>2. Psychopharmacological Study of Neuropsychiatric Diseases (Monoamine research and Pharmaco-Electroencephalography (Pharmacoo-EEG) research, etc.)</li> <li>3. Histopathological research of Neuropsychiatric Diseases (Postmortem Brain research and DNA research, etc.)</li> <li>4. Psychosocial research of Neuropsychiatric Diseases (Clinical Psychology research and Mental Health research, etc.)</li> </ol>
Radiology and Nuclear Medicine	Department of Radiology and Nuclear Medicine	Professor	Hiroshi Ito	<ol style="list-style-type: none"> <li>1. Neuroradiology using CT and MRI</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> </ol>
Anesthesiology	Department of anesthesiology	Professor	Masahiro Murakawa	<ol style="list-style-type: none"> <li>1. General anesthesia and release of neurotransmitters</li> <li>2. Neurologic mechanisms of the local anesthetic poisoning</li> <li>3. Pharmacokinetics and pharmacodynamics of general anesthetics</li> <li>4. Precision management of vital sign monitor</li> </ol>
Division of perioperative medicine and bioregulation	Department of anesthesiology	Professor	Shin Kurosawa	<ol style="list-style-type: none"> <li>1 Analysis of the mechanisms of T cell apoptosis induced by volatile anesthetics.</li> <li>2 Investigation of immunosuppression caused by general anesthetics.</li> <li>3 Surveillance of clinical biomarkers in patients with infectious systemic inflammatory response syndrome or sepsis.</li> </ol>
Emergency and Critical Care Medicine	Department of Emergency and Critical Care Medicine	Professor	Ken Iseki	<ol style="list-style-type: none"> <li>1 The role of Glia</li> <li>2 Cell biology and Pathophysiology of The Diacylglycerol kinase</li> <li>3 Animal model of stress response</li> <li>4 Animal model for toxicological studies</li> <li>5 Epidemiological study in Acute Medicine</li> </ol>
Hematological Oncology	Department of Diagnostic Pathology	Professor	Yuko Hashimoto	
	Department of Laboratory Medicine	Professor	Hiroki Shimura	<ol style="list-style-type: none"> <li>1) Clinical research for sonographic diagnosis of thyroid diseases</li> <li>2) Epidemiological study of thyroid diseases in children and adolescents</li> <li>3) Development of novel clinical tests for thyroid diseases</li> <li>4) Development of novel strategies for redifferentiation of thyroid cancer cells</li> <li>5) Identification of thyroid cancer biomarkers</li> </ol>

Division of Research				Research Topics
Infection Control and Laboratory Medicine	Department of Infection Control and Laboratory Medicine	Professor	Keiji Kanemitsu	<ul style="list-style-type: none"> <li>1 Development of novel molecular diagnostic method for infectious diseases</li> <li>2 Epidemiologic study of healthcare associated infection</li> <li>3 Development of novel sterilization method</li> <li>4 Development of detection method for autoantibodies using proteomics</li> <li>5 Study of interferences in immunoassays</li> <li>6 Study of various problems in ELISA</li> </ul>
Transplantation Immunology	Department of Blood Transfusion and Transplantation Immunology			Evaluation and regulation for Alloimmunization
	Department of Blood Transfusion and Transplantation Immunology	Professor	Nollet Kenneth Eric	<ul style="list-style-type: none"> <li>1 International Medical Communication</li> <li>2 Emergency Preparedness and Disaster Response</li> <li>3 Global Transfusion Standards and Ethics</li> </ul>
Community and Family Medicine	Department of Community and Family Medicine	Professor	Ryuki Kassai	<ul style="list-style-type: none"> <li>1. Essential clinical competencies</li> <li>2. Expertise to address wide varieties of health problems</li> <li>3. Core competencies to define family doctors</li> <li>4. Education and research in family medicine</li> <li>5. Health economics, health policy, and health management</li> </ul>
	Department of Radiation Health Management	Professor	Akira Otsuru	<ul style="list-style-type: none"> <li>1) Nuclear disaster and community health care</li> <li>2) Epidemiological and psychosocial studies regarding thyroid cancer screening using ultrasound</li> <li>3) Pathological and immunohistochemical studies of the pathophysiology of thyroid cancer in children</li> <li>4) External and internal exposure dose in daily life and risk perception of radiation exposure</li> </ul>
	Department of Radiation Health Management	Associate Professor	Sanae Midorikawa	
	Department of Thyroid and Endocrinology	Professor	Shinichi Suzuki	
Radiation Oncology	Department of Radiation Oncology	Professor	Yoshiyuki Suzuki	Radiation-induced anti-tumor immunity and its modification

Division of Research				Research Topics
Oncology Specialist Course	Clinical Oncology Center ( Department of Medical Oncology )	Professor	Shigehira Saji	The knowledge and skills of chemotherapy for solid tumors, especially GI, respiratory, breast and blood cancers, are the main subjects in this course. Clinical research and training for getting board certification of Japan society of medical oncology could be the one of preferable goal after completion of this course.
Medical Oncology Course	Department of Medical Oncology	Professor	Shigehira Saji	<ul style="list-style-type: none"> <li>• Research exploring biological mechanism and predictive factor of cancer drug response and resistance</li> <li>• Analysis of trend of cancer incidence in Fukushima by using cancer registration program</li> </ul>
Physical Medicine and Rehabilitation	Department of Rehabilitation Medicine	Professor	Naoyuki Oi	<ol style="list-style-type: none"> <li>1. Orthopedic rehabilitation for aged person</li> <li>2. Sports activities for the disabled</li> <li>3. 3D-motion analysis of daily activities</li> <li>4. FDG-PET imaging of muscular activity</li> <li>5. Motion analysis of sports activities</li> </ol>
	Department of Natural Science (Mathematics and Statistics)	Professor	Tatsuya Okada	
Bioanalytical Chemistry	Department of Natural Science (Chemistry)	Professor	Kiyohito Shimura	<ol style="list-style-type: none"> <li>1. Research and development of affinity probe capillary electrophoresis (APCE) for rapid and sensitive analysis of protein isoforms.</li> <li>2. Research and development of new principles for the analyses of proteins and other biomolecules.</li> </ol>
Molecular Biology	Department of Natural Science (Bology)	Professor	Ariki Matsuoka	<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>
Cell Signaling	Department of Biomolecular Science	Professor	Yoshimi Homma	<ol style="list-style-type: none"> <li>1. Research on signaling mechanism of cell growth and differentiation.</li> <li>2. Study on molecular mechanisms of mitochondria regulation.</li> <li>3. Epigenetic regulation for development of immune system.</li> <li>4. Development of novel bioactive compounds</li> </ol>
Cell Science	Department of Cell Science	Professor	Ikuo Wada	<ol style="list-style-type: none"> <li>1 Cellular mechanisms for quality control of proteins</li> <li>2 Membrane fusion machinery for phagocytosis</li> <li>3 Dynamic regulation of membrane traffic</li> <li>4 Development of biomedical tools for regenerative medicine</li> </ol>
Molecular Neurobiology	Department of Molecular Genetics	Professor	Kazuto Kobayashi	

Division of Research				Research Topics
Experimental animal model for human disease	Laboratory Animal Center	Professor	Miho Sekiguchi	Study design and methods for in vivo studies using laboratory animal models for human diseases
Oral histology	Dentistry and Oral Surgery	Associate Professor	Hiroshi Hasegawa	1 Basic and clinical study of intra-arterial chemotherapy for oral cancer 2 Maxillofacial growth in cleft lip and palate patients 3 Improvement of mastication by dental implants
Gastrointestinal endoscopy	Department of Endoscopy	Associate Professor	Takuto Hikichi	1. Improvement and development of endoscopic diagnostic and treatment methods for early gastrointestinal cancer. 2. Development of new screening system for gastric cancer eradication in Fukushima Prefecture. 3. Improvement and development of diagnostic and treatment methods utilizing endoscopic ultrasonography (EUS) and EUS-guided injection for gastrointestinal tumors and pancreatic tumors. 4. Elucidation of the pathogenesis of gastrointestinal varices and development of endoscopic treatment for them. 5. Development of new endoscopic treatment with the combination of laparoscopic surgery for gastrointestinal cancer and submucosal tumor. 6. Clarification of the carcinogenic mechanism of gastric cancer. 7. Clarification of the influence on the gastric peristalsis after endoscopic treatment or in various diseases.
	Center for Medical Education and Career Development	Professor	Yayoi Kameoka	
International Community Health	Integrated Center for Science and Humanities	Professor	Aya Goto	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. ※ <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>
		Professor	Hiroyuki Yokoyama	
	Advanced Critical Research Center	Professor	Noboru Oriuchi	1. Development of targeted radionuclide therapy 2. Dosimetry-based efficacy and safety assessment for $\alpha$ and $\beta$ particle therapy 3. Development of theranostics using PET/CT and PET/MRI for targeted radionuclide therapy 4. Quantitative analysis of PET/MRI



Division of Research				Research Topics
Tumors of Hematopoietic and Lymphoid Tissues	Department of Hematology	Professor	Masatsugu Ohta	<ol style="list-style-type: none"> <li>1. Impact of MRI or PET-CT in the predictive of treatment outcome in hematological malignancy</li> <li>2. Biological and clinical characterization of Myelodysplastic Syndrome (MDS) in Aizu area, Fukushima</li> <li>3. Clinical characteristics of lymphomas in Aizu area -incidence, therapeutic outcome and prognosis-</li> </ol>
Coloproctology	Coloproctology	Professor	Kazutomo Togashi	<ol style="list-style-type: none"> <li>1. Development of computer-aid diagnostic system using artificial intelligence (collaboration with Aizu University)</li> <li>2. Serrated pathway in the evolution of colorectal cancer</li> <li>3. Mechanism of less frequent delayed hemorrhage after cold snare polypectomy</li> <li>4. Inhibitory effect of lidocaine for intestinal spasm during colonoscopy</li> <li>5. Validation study of pocket creation method in colorectal ESD</li> <li>6. Clinical application of image-enhanced colonoscopy: Blue Laser Imaging</li> <li>7. Colorectal diseases and colon length measured by CT colonography</li> <li>8. Prognostic factors of chemotherapy with oxaliplatin for unresectable colorectal cancers</li> <li>9. Preoperative N staging of rectal cancer by MRI with intraluminal jelly injection</li> <li>10. Development of complete laparoscopic surgery for rectal cancer</li> </ol>
	Department of Orthopaedic and Spinal Surgery	Professor	Osamu Shirado	<ol style="list-style-type: none"> <li>1. Biomechanical study for developing a novel spinal instrumentation</li> <li>2. Comprehensive study on adult spinal deformity in terms of diagnosis, treatment, and prevention</li> <li>3. Development of a novel therapeutic exercise program for the patients with chronic low-back pain</li> <li>4. Pathophysiological study on natural absorption mechanism in lumbar disc herniation</li> <li>5. Kinesiological study on the patients with various spinal disorders</li> </ol>
Pediatric Oncology	Department of Diagnostic Pathology	Professor	Hiroshi Hojo	