

Academic Year 2023-2024

Kyoto Prefectural University of Medicine
Graduate School of Medical Science

Integrated Medical Science PhD Program

Application Guidelines for Students

**Kyoto Prefectural University of Medicine,
Graduate School of Medical Science**

<https://www.kpu-m.ac.jp/>

465 Kajii-cho, Kawaramachi-Hirokoji, Kamigyo-ku, Kyoto, Japan 602-8566

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Academic Year 2023-2024
Kyoto Prefectural University of Medicine
Graduate School of Medical Science
Integrated Medical Science PhD Program

Entrance Exam Schedule

Early-term Exam

- Admissions capacity: 60 (including non-students*)
- Application period: August 1 (Mon) – August 19 (Fri), 2022
- Entrance exam date: September 13 (Tue), 2022
- Results notification: October 14 (Fri), 2022

Late-term Exam

- Admissions capacity: 10 (including non-students*)
- Application period: November 28 (Mon) – December 9 (Fri), 2022
- Entrance exam date: January 17 (Tue), 2023
- Results notification: February 8 (Wed), 2023

* *Non-students* refer to those employed full-time (or contracted to work) by a corporation, research institute, hospital, or government office at the time of enrollment in the Graduate School of Medical Science, Kyoto Prefectural University of Medicine.

Academic Year 2023-2024
Kyoto Prefectural University of Medicine
Graduate School of Medical Science
Integrated Medical Science PhD Program

Application Guidelines for Students

1 Admissions Capacity

70 (Early-term exam: 60 students, Late-term exam: 10 students)

2 Program

Integrated Medical Science, PhD

3 Course, Field and Subjects

(1) Table 1: General Course

Course	Field	Main Subjects
General Course	Community Health and Social Medicine	Molecular-Targeting Prevention Epidemiology for Community Health and Medicine Forensic Medicine Emergency Medicine Medical Education & Primary Care Community Medicine Lifelong Health and Medicine Innovative Administration for Community-based Healthcare Department for Medical Innovation and Translational Medical Science Biostatistics Biomedical Ethics Mathematics and Statistics in Medical Sciences
	Human Growth and Development	Pediatrics Pediatric Surgery Obstetrics and Gynecology Communication, Education and Language
	Emerging and Genomic Medicine	Genomic Medical Sciences Biochemistry and Molecular Biology Department of Drug Discovery Medicine Infection Control & Molecular Laboratory Molecular Diagnostics and Therapeutics Inflammation and Immunology Endocrinology and Metabolism Molecular Cardiology and Vascular Regenerative Medicine Molecular Nephrology and Hypertension Respiratory Molecular Medicine Molecular Gastroenterology and Hepatology Molecular Hematology and Oncology Molecular Neurology and Gerontology Dermatology Plastic and Reconstructive Surgery

Course	Field	Main Subjects
General Course	Biological Data and Functional Morphology	Anatomy and Neurobiology Anatomy and Developmental Biology Molecular Cell Physiology Physiology and Systems Bioscience Fundamental physics and life science Developmental Neurobiology Basic Geriatrics
	Pathological Analysis and Regulatory Medicine	Surgical Pathology Pathology and Cell Regulation Pathology and Applied Neurobiology Infectious Diseases Immunology Molecular Pharmacology Psychiatry Radiology Medical Chemistry
	Functional Control and Regenerative Medicine	Digestive Surgery Transplantation and Regenerative Surgery Endocrine Surgery Cardiovascular Surgery General Thoracic Surgery Neurosurgery Orthopaedics Rehabilitation Medicine Ophthalmology Otolaryngology-Head and Neck Surgery Urology Anesthesiology Palliative Medicine Dental Medicine Cellular Regenerative Medicine

(2) Table 2: Professional Training Course in Cancer Medicine

Course	Major Subjects
Professional Training Course in Cancer Medicine	Pediatrics Obstetrics and Gynecology Respiratory Molecular Medicine Dermatology Molecular Gastroenterology and Hepatology Digestive Surgery Endocrine Surgery General Thoracic Surgery Neurosurgery Orthopaedics Otolaryngology-Head and Neck Surgery Urology

(3) Training Course in Forensic Generalist, Forensic Specialist

Course	Major Subjects
Training Course in Forensic Generalist, Forensic Specialist	Forensic Medicine

Notes

When applying, students must consult with the academic advisor (professor) from whom they wish to receive research guidance regarding their research topic, and discuss submission of their application with their advisor.

Applicants with unsatisfactory test scores will not be admitted, even if the number of applicants is below admissions capacity.

4 Eligible Applicants

- 1) Those who have graduated (or are expected to graduate by March 2023) from a school of medicine, faculty of dentistry, or 6-year university program in pharmacology or veterinary medicine.
- 2) Those who have completed (or are expected to complete by March 2023) the Master's program at Kyoto Prefectural University of Medicine, Graduate School of Medical Science.
- 3) Those who have completed (or are expected to complete by March 2023) 18 years of school education in a foreign country with a final course of study in medicine, dentistry, pharmacology, or veterinary medicine.
- 4) Those who have completed 18 years of formal school education provided by a foreign institute by taking distance/online programs while residing in Japan.
- 5) Those who have completed a undergraduate programs provided by a foreign institutes which is designated by the Ministry of Education, Culture, Sports, Science and Technology in Japan (hereafter "the MEXT") (limited to programs which is equivalent to the 18 years of formal school education in Japan).
- 6) Those who have been awarded a degree equivalent to bachelor's degree by completing a 5 years or longer program at a foreign university/other foreign educational institution which have been accredited by the respective foreign government or a person who has obtained certification by the appropriate foreign governmental agency, or which has been designated by the MEXT as the equivalent thereof. (This includes those who have completed the distance/online program offered by the appropriate school by taking courses while residing in Japan as well as one of those foreign educational programs at an appropriate educational institution positioned in the school education system of the said country and designated by said authorization described in the preceding item)
- 7) Those who have been designated by the MEXT (Notification No. 39, Ministry of Education, 1955).
- 8) Those who entered a graduate school pursuant to the provisions of Article 102-2 of the School Education Act, and who are acknowledged by Kyoto Prefectural University of Medicine Graduate School to possess academic ability sufficient for education at a graduate school level.
- 9) Those who demonstrated academic performance equivalent or superior to Eligibility Requirement "1)" on the individual eligibility screening given by the Graduate School of Medicine, Kyoto University and who will be at least 24 years of the age by March 31, 2023 (JST).

5 Application Period

Early-term Exam: **August 1 (Mon) – August 19 (Fri), 2022**

Late-term Exam: **November 28 (Mon) – December 9 (Fri), 2022**

Applications are accepted Monday through Friday from 9:00 am to 5:00 pm (closed Saturday and Sunday).

6 Where to Submit Application

465 Kajii-cho, Kawaramachi-Hirokoji, Kamigyo-ku, Kyoto, Japan 602-8566

Kyoto Prefectural University of Medicine, Student Affairs Office (Graduate School Division)

e-mail: gkyoumu@koto.kpu-m.ac.jp

7 Application Procedure

Applicants must submit all required application materials to the Kyoto Prefectural University of Medicine, Student Affairs Office (Graduate School Division).

If mailing the application, all documents must be enclosed in the envelope designated by the Kyoto Prefectural University of Medicine Graduate School and sent by simplified registration mail. **All documents must be received on or before the deadline.** However, late applications received after the deadline may be considered if sent by simplified registration express mail and postmarked on or before August 17 (Wed), 2022 for the early-term exam and December 7 (Wed), 2022 for the late-term exam.

Prior to submitting an application, students must consult with the academic advisor (professor) for their desired research area regarding their academic plans (research and education). Please refer to the Kyoto Prefectural University of Medicine website [<https://www.kpu-m.ac.jp/>] for more information on research topics.

Required Application Materials (*forms specific to Kyoto Prefectural University of Medicine)

1	*	Application form	All required fields must be completed.
2		University transcript	An official transcript, certified and sealed by the university dean or department head (not required for expected graduates of Kyoto Prefectural University of Medicine). Those who have completed (or are expected to complete) the Master's program must also submit a graduate school transcript (not required for expected graduates of the Master's program at the Graduate School of Medical Science).
3		Certificate of graduation (or anticipated graduation)	Not required for expected graduates of Kyoto Prefectural University of Medicine
4		Proof of awarded degree (or anticipated degree) certification and final transcript	Applicable applicants only.
5		Photographs	Two photos must be included with the application. Photos must meet the following specifications: <ul style="list-style-type: none">• Taken within 3 months of application date• 5 cm (height) by 4 cm (width)• Showing head and upper body• Taken in full-face view, directly facing the camera, without any hats Write your name behind each photo and paste onto the specified area on the application form.

6	*	Application fee	30,000 yen Remit using the university-designated deposit form and submit proof of payment (slip C). Not applicable for graduate students who will complete the Master's program at the Graduate School of Medical Science in March 2023.
7	*	Self-addressed stamped envelope (SASE) to receive exam admission ticket	Write your name, address, and postal code on the front of the envelope, and affix sufficient postage (664 yen to cover postage and simplified registration express mail fee).
8	*	Address labels	Fill in your postal code, address, and name. Labels will be used to send notification of acceptance (delivered on results notification date) and the admissions letter (issued March 2023).
9	*	Enrollment consent form	Applicants planning to work full-time after enrollment must also submit an enrollment consent form (provided by the university) separate from the application. The enrollment consent form must be submitted in accordance with the following guidelines: 1. Employees working full-time at the time of application who plan to continue working full-time after enrollment: Submit consent form with application 2. Applicants with an offer of employment at the time of application: Submit consent form with application 3. Applicants who receive an offer of employment after submitting the application: Submit consent form prior to enrollment 4. Applicants meeting conditions 1-3 who change their place of employment: Re-submit consent form prior to enrollment 5. Employed students who change their place of employment after enrollment: Submit consent form at any time after enrollment Students who obtain full-time work after enrollment must notify the school promptly by submitting the enrollment consent form.

Notes

- 1) Incomplete applications will not be processed.
- 2) Students found to have falsified application information will be subject to withdrawal of admission, even after enrollment.
- 3) Application documents will not be returned for any reason.
- 4) Applicants must immediately notify the Student Affairs Office (Graduate School Division) of any changes to their mailing address.
- 5) Applicants with physical disabilities who require assistance during examinations or school attendance should request this with the Student Affairs Office (Graduate School Division) prior to application.

How to fill out the "Courses and Subjects" section of the application form

(1) Course Selection

Applicants must select either the **General Course** or the **Professional Training Course in Cancer Medicine** or the **Training Course in Forensic Generalist, Forensic Specialist** and designate their selection in the appropriate field on the application.

(2) Subject Selection

(1) General Course Applicants

Selection of the main subject of study (referred to hereafter as “main subject”) and supplementary subjects (referred to hereafter as “supplementary subjects”)

- 1) **Applicants should consider the “Basic Approach to Department Assignments” below and select one main subject of study and one supplementary subject (i.e., a “linked supplementary subject”). These subjects must be declared in the required fields on the application.**
- 2) The main subjects are listed in Table 1 above. **Students must consult with the academic advisor (professor) from whom they wish to receive research guidance regarding their selection.**

Procedure for Selecting Linked Supplementary Subjects

One supplementary subject must be taken as a required linked supplementary subject, and must be selected from outside the subject group of the student’s main subject (see Table 3: Group A, Group B).

(Example) If the student selects *Endocrinology and Metabolism (Group B)* as the main subject, the linked supplementary subject must be selected from among those listed in Group A.

Basic Approach to Department Assignments

- 1) Department assignments are made by the Graduate School of Medical Science with consideration for academic/research guidance, with the aim of further elevating the quality of research conducted at the Kyoto Prefectural University of Medicine.
- 2) Department assignments are made to promote collaboration and integration between subject areas.
- 3) Department assignments are made to ensure graduate students receive sufficient and necessary academic/research guidance in their subject area.
- 4) Based on the above, students must select and enroll in a “linked supplementary subject” from the group outside their main subject (excluding advanced courses; see Table 3). This facilitates academic/research guidance for graduate students.
- 5) Admitted students will be assigned their main subject areas according to their preference, but with priority given to academic rank (achievement).

(2) Professional Training Course in Cancer Medicine

- 1) **Applicants must select one major subject area and designate it in the specified field on the application.**
- 2) The major subjects are listed in Table 2 above. **Students must consult with the academic advisor (professor) from whom they wish to receive research guidance regarding their selection.**

(3) Training Course in Forensic Generalist, Forensic Specialist

Applicants must write "Forensic Medicine" in the "Main or Major Subject" field of the application form, and the name of the supervising professor. In addition, do not fill in the "Linked Supplementary Subject" field as a blank.

Table 3: Linked Supplementary Subject Groups (Group A / Group B)

Group	Linked Supplementary Subjects	Field
Group A	Molecular-Targeting Prevention	Community Health and Social Medicine
	Epidemiology for Community Health and Medicine	
	Forensic Medicine	
	Community Medicine	
	Lifelong Health and Medicine	
	Innovative Administration for Community-based Healthcare	
	Department for Medical Innovation and Translational Medical Science	
	Biostatistics	
	Biomedical Ethics	
	Mathematics and Statistics in Medical Sciences	
	Communication, Education and Language	Human Growth and Development
	Genomic Medical Sciences	Emerging and Genomic Medicine
	Biochemistry and Molecular Biology	
	Department of Drug Discovery Medicine	
	Anatomy and Neurobiology	Biological Data and Functional Morphology
	Anatomy and Developmental Biology	
	Molecular Cell Physiology	
	Physiology and Systems Bioscience	
	Fundamental physics and life science	
	Developmental Neurobiology	
Basic Geriatrics		
Pathology and Cell Regulation	Pathological Analysis and Regulatory Medicine	
Pathology and Applied Neurobiology		
Infectious Diseases		
Immunology		
Molecular Pharmacology		
Medical Chemistry	Functional Control and Regenerative Medicine	
Cellular Regenerative Medicine		
Group B	Emergency Medicine	Community Health and Social Medicine
	Medical Education & Primary Care	Community Health and Social Medicine
	Pediatrics	Human Growth and Development
	Pediatric Surgery	
	Obstetrics and Gynecology	
	Infection Control & Molecular Laboratory	Emerging and Genomic Medicine
	Molecular Diagnostics and Therapeutics	
	Inflammation and Immunology	
	Endocrinology and Metabolism	
	Molecular Cardiology and Vascular Regenerative Medicine	
	Molecular Nephrology and Hypertension	
	Respiratory Molecular Medicine	
	Molecular Gastroenterology and Hepatology	
	Molecular Hematology and Oncology	
	Molecular Neurology and Gerontology	
	Dermatology	
	Plastic and Reconstructive Surgery	
	Surgical Pathology	
	Psychiatry	Functional Control and Regenerative Medicine
	Radiology	
	Digestive Surgery	
	Transplantation and Regenerative Surgery	
	Endocrine Surgery	
	Cardiovascular Surgery	
	General Thoracic Surgery	
	Neurosurgery	
Orthopaedics		
Rehabilitation Medicine		
Ophthalmology		
Otolaryngology-Head and Neck Surgery		
Urology		
Anesthesiology		
Palliative Medicine		
Dental Medicine		

8 Admissions Selection Process

Selection is based on a comprehensive review of aptitude test scores (foreign language exam, proficiency exam, and oral exam) and academic transcripts.

Entrance Exam Schedule

General Candidate Exam

Date	Time	Aptitude Test	Location
Early-Term: Sep. 13 (Tue), 2022	9:15 – 11:15	Foreign language (English) exam	Kyoto Prefectural University of Medicine, school building of Nursing 1st floor
Late-Term: Jan. 17 (Tue), 2023	12:30 – 14:30	Proficiency exam	
	15:00 –	Oral exam (interview)	To be announced on exam date

Notes

- 1) The foreign language (English) exam consists of English-Japanese and Japanese-English translation. Candidates are permitted to bring one English-Japanese dictionary and one Japanese-English dictionary; electronic and medical dictionaries are not allowed.
- 2) In the proficiency exam, candidates must select and respond to two prompts from the list provided.

Foreign Candidate Exam A

Date	Time	Aptitude Test	Location
Early-Term: Sep. 13 (Tue), 2022	9:15 – 11:15	Foreign language (English) exam	Kyoto Prefectural University of Medicine, school building of Nursing 1st floor
Late-Term: Jan. 17 (Tue), 2023	12:30 – 14:30	Proficiency exam	
	15:00 –	Oral exam (interview)	To be announced on exam date

Notes

- 1) The foreign language (English) exam consists of English-Japanese translations only. Candidates are permitted to bring one English-Japanese dictionary; but electronic and medical dictionaries are not allowed.
- 2) In the proficiency exam, candidates must select and respond in either Japanese or English to two prompts from the list provided.

Foreign Candidate Exam B

Date	Time	Aptitude Test	Location
Early-Term: Sep. 13 (Tue), 2022	12:30 – 14:30	Proficiency exam (comprehensive)	Kyoto Prefectural University of Medicine, school building of Nursing 1st floor
Late-Term: Jan. 17 (Tue), 2023	15:00 –	Oral exam (interview)	
			To be announced on exam date

Notes

- 1) Candidates are permitted to bring one English dictionary to the proficiency exam (comprehensive exam); electronic and medical dictionaries are not allowed
- 2) The proficiency exam (comprehensive exam) will be conducted in English, and responses must be in English.

International applicants must select Foreign Examination A or B on their applications. The selection cannot be changed after the application is submitted.

International applicants who have graduated (or are expected to graduate by March 2023) from a Japanese university must take the General Candidate Exam.

9 Notification of Results

Early-Term Exam: Oct.14 (Fri), 2022, 10:00 am

Late-Term Exam: Feb.8 (Wed), 2023, 10:00 am

The results of the early-term and late-term exams will be posted on the Kyoto Prefectural University of Medicine Student Affairs Division bulletin board, and a notification of acceptance will be sent to accepted applicants. The Kyoto Prefectural University of Medicine website will also post the identification numbers of accepted applicants after the date and time listed above. However, information published on the website is unofficial and intended solely for reference. Please verify with the official results posted on the bulletin board of the Kyoto Prefectural University of Medicine Student Affairs Office or with the mailed notification of acceptance. Please note that we do not respond to inquiries by phone.

10 Registration Process

- 1) Enrollment fee: 282,000 yen (due upon enrollment)*
- 2) Tuition: 535,800 yen (assessed separately after enrollment)**
- 3) Instructions regarding the enrollment process, schedule, and required materials will be provided in the notification of acceptance.

**The enrollment fee may be reduced, waived, or postponed if payment is a hardship due to a natural disaster that occurred within 1 year of the date of admission.*

***Tuition may be reduced or waived if payment is an economic hardship and the student is recognized for excellent academic achievement.*

Notes

- 1) Enrollment fee and tuition amounts are subject to change. If tuition is modified during a student's period of attendance, the new tuition will apply from the time of revision forward.
- 2) The enrollment fee and tuition are non-refundable.
- 3) Tuition is to be paid over two semesters (first and second semester).
- 4) Offer of admission may be rescinded if registration is not completed by deadline.

11 Other Information

- 1) Candidates must arrive at the testing center at least 15 minutes prior to the start of each exam.
- 2) To request the application guidelines and/or application form by mail, please enclose a self-addressed (postal code, address, name), stamped (250 yen), square type-2 envelope, clearly marked "Graduate School PhD Program Application Form Request" on the front side using red ink. Requests must be mailed to the address below.

465 Kajii-cho, Kawaramachi-Hirokoji, Kamigyo-ku, Kyoto, Japan 602-8566

Kyoto Prefectural University of Medicine, Student Affairs Office (Graduate School Division)

**Kyoto Prefectural University of Medicine,
Graduate School of Medical Science
Integrated Medical Science PhD Program
Enrollment Guide**

1) Objective

The aim of the Graduate School of Medical Science at Kyoto Prefectural University of Medicine is to foster the advanced research capabilities necessary to conduct independent research, as well as a wealth of academic knowledge underlying these capabilities.

2) Length of Study

The standard length of study is 4 years.

*Upon review of special circumstances such as full-time employment, candidates may be permitted to enroll in the educational program for a scheduled period beyond the standard length of study (up to 8 years). For details, please contact the Student Affairs Office (Graduate School Division).

e-mail: gkyoumu@koto.kpu-m.ac.jp

3) Programs, Course Overview, and Research Topics

Outlined on the following page.

4) Degrees Awarded

Students who complete the program are awarded a doctoral degree in medicine. The doctoral degree is awarded to candidates who have been enrolled in the graduate school for a minimum of 4 years (3 years for those with exceptional research achievements), earned 30 or more credits satisfying the program requirements, and passed both the final examination and dissertation examination after receiving the required research guidance.

Overview of Programs and Courses

Integrated Medical Science PhD Program

In response to the sophistication, diversification, and interdisciplinary advancement of medicine/medical care, it became imperative for Kyoto Prefectural University of Medicine to foster unique and superior talent possessing outstanding character and independent problem-solving abilities, thus continually developing and maintaining academic creativity. The graduate school was reorganized in April 2003 to achieve this end.

The philosophy of the restructuring placed utmost emphasis on the cultivation of unique and superior talent. Thus, the selection of majors was changed from the previous five majors to a single integrated medical science program consisting of six fields and core areas of study, with the aim to provide detailed guidance customized to each graduate student and allow for a highly flexible course offering.

Furthermore, in April 2008, the *Specialized Course for Oncologic Pharmacotherapy* was established, independent from the conventional General Course, to train high-quality specialists who would become the new leaders in cancer treatment. This course was renamed the Professional Training Course in Cancer Medicine in June 2012, when its composition was changed to include the *Specialist Course for Multidisciplinary Radiodiagnosis and Radiotherapy* and the *Specialist Course for Comprehensive Palliative Care* in addition to the conventional *Specialist Course for Oncology*.

Furthermore, the "Revitalization Program for the Training of Basic Research Physicians" selected by the Ministry of Education, Culture, Sports, Science and Technology in 2022, the University, Shiga University of Medical Science and Osaka Medical and Pharmaceutical University jointly implemented the "Training of Forensic Generalists and Specialists Active in the Community" project is adopted.

In response, the three universities have jointly established the "Training Course in Forensic Generalist, Forensic Specialist " in 2022 to train doctors and dentists who can utilize their forensic knowledge and abilities in clinical medicine.

General Course

1) Community Health and Social Medicine

The field of Community Health and Social Medicine includes the following subjects: Molecular-Targeted Cancer Prevention, Epidemiology for Community Health and Medicine, Forensic Medicine, Emergency and Disaster Medical Systems, Medical Education and General Medicine, Community Medicine, Medical Frontier Expansion, Biostatistics, Medical Ethics, and Biological Foundation of Mathematics. To disseminate the university's advanced education, research results, and medicine back to society, the field has also includes the subjects of Community Administrative Systems for Healthcare and Welfare, and Community and Environmental Medicine, both of which organically utilize the medical center at Kyoto Prefectural University of Medicine, an institution that has made great achievements in promoting community health and improving public health in the region.

This field of study aims to foster abilities for research and implementation that can be widely utilized in the field of Community Health and Social Medicine, while also cultivating highly specialized physicians and medical researchers who possess the ability to build a system to improve the quality of community health.

2) Human Growth and Development

The field of Human Growth and Development includes the following subjects: Prenatal Medicine, Neonatal-Perinatal and Developmental Medicine, Adolescent Medicine, and Obstetrics and Gynecology. It is a medical field centered around human birth and development, and broadly encompasses related fields that advance research on issues related to human growth and development. The field aims to cultivate highly specialized physicians and medical researchers with the ability to continue pioneering advances in the field of Human Growth and Development.

3) Emerging and Genomic Medicine

Emerging and genomic medicine have entered the post-genomic era; development and expansion of new research methods are now required in this field. Today, this field of study boldly blazes new trails based on genomic medicine and applies the results of emerging research to the medical field to promote further research.

Thus, the Emerging and Genomic Medicine field conducts developmental studies spanning various organs of the body, based on research in basic biochemistry and molecular biology and made possible by the organic and wide-ranging mutual collaboration between basic and clinical medicine. In this way, this field of study aims to foster highly specialized physicians and medical researchers who can independently put ideas into action.

4) Biological Data and Functional Morphology

Living organisms possess diverse regulatory systems to maintain homeostasis; the breakdown of these systems causes disease. Thus, it is extremely important to elucidate the control mechanisms that regulate biological data and functionality.

The field of Biological Data and Functional Morphology advances research on brain function and steroid hormones; research on the molecular mechanisms that determine the lateral axes of vertebrates; functional morphological research of the biorhythmic center; research on the generation, development, and plasticity of neural circuits; comprehensive research aimed at understanding higher-order nerve functions—that is, functional integration in the brain (learning, memory, cognition, emotion, consciousness, will, etc.); and research to clarify a wide range of physiological control mechanisms, such as epithelial transport regulation, environmental adaptation, and control of the microcirculation system.

This field of study aims to foster specialized physicians and medical researchers with the ability to conduct comprehensive research shedding light on the control mechanisms underlying biological data and functionality, making use of cutting-edge and diverse methods effective in analyzing functional data from morphological data.

5) Pathological Analysis and Regulatory Medicine

Proper medical care made possible by accurate analysis of a patient's medical condition. Advanced and detailed pathological analysis has supported modern advanced medicine, and this field has come to be regarded as the most basic source of medicine/medical care, since pathological analysis will become the foundation for cutting-edge emerging medicine of the future. This field of study will continue to advance research on various methodologies as it applies to a wide range of medical areas.

The field of Pathological Analysis and Regulatory Medicine comprehensively tackles the pathological analysis related to mental phenomena by combining new developments in neuroimaging methods with neuroscientific, molecular-biological, and molecular-pharmacological analysis. With respect to the study of pathological control rooted in molecular pharmacology, this field focuses on developing methods to control the diabetes and neurodegenerative diseases, which have greater social demands; with respect to the study of

infectious immunity and parasitic pathological control, the field carries out applied studies to analyze the roles of interferons and cytokines and the functionality of mast cells, and channels the results back into pathological control.

Because the scope of this field of study is wide and diverse, the departmental faculty leading the education and research guidance will work together to train physicians and medical researchers who possess the ability to promote integrated medicine and medical care.

6) Functional Control and Regenerative Medicine

The objective of all medical care is total healing. Thus, society has turned its attention to regenerative medicine and medical care; expansion of this area has been greatly anticipated.

The field of Functional Control and Regenerative Medicine cultivates talent capable of advancing new areas of transplantation and regenerative medicine by assigning specialized groups to lead academic and research guidance in studies such as developmental research of pancreas, heart, and liver transplants; research of tissue regeneration using somatic stem cells and embryonic stem cells; and research of stem cell transplants. In addition, the field improves surgical methods and focuses on developing new technologies to prioritize function preservation, cultivating the talent to develop assistive devices and training the talent capable of progressing QOL-enhancing medicine (including pain clinics and rehabilitation) and resuscitation medicine.

Rooted in Kyoto Prefectural University of Medicine's achievements in renal and corneal transplantation, this field aims to train specialized physicians and medical researchers who possess the ability to not only expand and develop transplantation medicine, but also to lead in a new era of transplantation and regenerative medicine.

Professional Training Course in Cancer Medicine

The Cancer Recovery Specialist Training Course, formerly the Specialized Course for Oncologic Pharmacotherapy, established in 2008, aims to train high-quality specialists who will become leaders in medical oncology.

This course includes the following four components: a palliative care specialist training course, pivotal in the promotion, dissemination, and construction of pre- and postgraduate educational systems of palliative care; a specialist training course for the multidisciplinary medical care of pediatric and adolescent and young adult (AYA) cancer; an educational program for radiotherapy specialists, including proton beams; and a training course for oncology specialists capable of treating high-grade cancers in adults and elderly people. In particular, the course will implement cross-disciplinary education and guidance in cancer research to physicians certified by the medical societies of each department, or those who have completed their medical specialist training, allowing them to attain qualifications and degrees as oncologic pharmacotherapy specialists, radiology specialists, radiotherapists, pediatric hematology/oncology specialists, or palliative care specialists. Through this educational guidance, the course also intends to train healthcare team professionals in multidisciplinary treatment of cancer.

1) Core Subject Areas

To train medical oncologists capable of implementing multidisciplinary cancer treatment, the core subject areas aim to provide lectures on multi-organ cancers, teach fundamental knowledge about tumors through clinical training, and provide training in diagnosis and treatment through actual clinical practice. The objectives of the study areas include acquisition of cutting-edge knowledge from fundamental biology, such as histological

characteristics of tumor cells in each organ and the molecular analysis of malignant tumors; cultivation of knowledge necessary to execute specialized research, such as tumor diagnoses, molecular-targeted therapy, immunotherapy, and objective evaluation of their therapeutic effects; and palliative care to improve the QOL of patients and their families.

2) Specialized Subject Areas

The specialized subject areas are intended to provide specialized knowledge and procedures to diagnose and treat tumors in each organ and anatomical region, and to train high-quality specialists with the capacity to become leaders in medical oncology through exposure to the latest technology practiced in each department, such as surgical treatments, molecular-targeted therapy, immunotherapy, and chemotherapy. Specifically, the techniques include multi-drug combination therapy, high-dose chemotherapy combined with hematopoietic stem cell transplantation (HSCT), diagnostic imaging using MRI/CT, SPECT/PET, and radiation therapy. In addition, the specialized subjects aim to provide practical knowledge and techniques with respect to the fundamentals and clinical applications of genomic medicine through genomic analysis and participation in genetic counseling.

Research Topics for Subjects of Study

as of June 1, 2022

General Course

Community Health and Social Medicine

Subject	Advisor(s)	Research Topics
Molecular-Targeting Prevention	Professor Michihiro Mutoh	<ul style="list-style-type: none"> Preventive intervention trial for colorectal cancer by chemoprevention Development of novel cancer prevention based on regulation of gene expression Development of novel cancer prevention for cancer high-risk group (preemptive medicine) Identification of target molecules of cancer-preventive compounds using chemical biology Analysis of molecular mechanisms of cancer preventive compounds through the regulation of gene expression Development of prevention against carcinogenesis by epigenetic abnormalities Development of molecular-targeted combination prevention for cancers based on the molecular mechanisms Dissemination and implementation research for preventive awareness.
Epidemiology for Community Health and Medicine		<ul style="list-style-type: none"> Population-based cohort study Epidemiological studies related to community health
Forensic Medicine	Professor Hiroshi Ikegaya	<ul style="list-style-type: none"> Forensic pathology Forensic toxicology Utilization of microorganisms in forensic medicine Disaster response and abuse prevention Medical jurisprudence and bioethics Methodology for age estimation using aging factors
Telemedicine (Advanced Course)	Professor Kei Yamada	<ul style="list-style-type: none"> Community medical support systems Telemedicine/health information networks
Emergency Medicine	Professor Bon Ohta	<ul style="list-style-type: none"> Methodology for evaluation of the quality of emergency medical care Advancement of new rules for consultation with respect to emergency diagnosis and treatment Verification of the importance of communication in emergency medicine Construction of a database for emergency medical care to verify each region's emergency medical system Proposal of a more fair and efficient emergency medical system in response to decreasing birthrate and aging population Comparison of emergency medical systems in other countries Examination of the overlap of emergency medicine with pre- and postgraduate medical education and consideration of improvements in instruction methodology Proposal for the future of the disaster medical system
Alternative Medicine (Advanced Course)	Professor Michiaki Fukui	<ul style="list-style-type: none"> Social medicine research on complementary and alternative medicine Traditional Chinese medicine and herbal remedies Aromatherapy and massage Acupuncture and moxibustion Dietary supplements
Medical Psychology (Advanced Course)	Professor Jin Narumoto	<ul style="list-style-type: none"> Relationship between medical care providers and patients Holistic medical care (biological / psychological / social / ethical model) Palliative care

Subject	Advisor(s)	Research Topics
Community Environmental Medicine (Advanced Course)	Professor Takaaki Nakaya	<ul style="list-style-type: none"> Emerging/re-emerging infectious diseases and the environment Diagnosis and treatment of emerging and re-emerging infectious diseases Effects of the environment on the immune system
Medical Education & Primary Care		<ul style="list-style-type: none"> Techniques and programs for medical education Medical education systems and policies Primary care or general medicine Factors associated with aging and longevity
Community Medicine		<ul style="list-style-type: none"> Use of geographical information (GIS) to improve the efficiency of community health systems Team-based medical care and risk communication in community health Educational systems for community health
Lifelong Health and Medicine	Professor Kazuhiro Yagita	<ul style="list-style-type: none"> Translational research of Lifelong health and medicine Animal models for Lifelong health and medicine Clinical research for Lifelong health and medicine Circadian rhythms and sleep in human
Innovative Administration for Community-based Healthcare		<ul style="list-style-type: none"> POCT (point-of care testing) in community-based medicine Healthcare administration Effects of community on healthcare and aging
Department for Medical Innovation and Translational Medical Science		<ul style="list-style-type: none"> Clinical research ethics Health services and clinical research Implementation of clinical research
Biostatistics	Professor Satoshi Teramukai	<ul style="list-style-type: none"> Clinical study design Quality control of clinical study data Data analysis methods
Biomedical Ethics	Professor Koichi Setoyama	<ul style="list-style-type: none"> Research integrity and research ethics: consent and protection of research subjects in medical research Paternalism in medical care and conflicts among the four basic principles of medical ethics and their resolution Ethical, social, and legal issues caused by advanced technology in frontier of medical science
Mathematics and Statistics in Medical Sciences	Professor Ikumitsu Nagasaki	<ul style="list-style-type: none"> Topology and its applications in life sciences Differential and difference equations appearing in life sciences Data analysis using statistical and topological methods

Human Growth and Development

Subject	Advisor(s)	Research Topics
Pediatrics	Professor Tomoko Iehara	<ul style="list-style-type: none"> • Identifying activators of endocrine and thermogenic function in brown fat • Discovery of biomarker and a new class of anti-obesity drug in childhood obesity • Pathological analysis of developmental and epileptic encephalopathy using human disease-specific iPS cells • Clarification of the functional condition of genetic abnormalities caused by rhabdomyosarcoma and their pathological diagnosis, and application to development of molecular-targeted drugs • Development of diagnosis methods for genetic abnormalities with poor prognoses using isolated tumor DNA in the blood serum of neuroblastoma patients • Development of immunotherapy for pediatric cancer • Development of new therapeutic drugs for pediatric cancer • Genetic analysis of intractable hematological malignancies to identify the novel target of therapy. • Biomarker research in pediatric rheumatic diseases. • Development of cell-based, new molecular targeted therapies in rheumatic diseases. • Prognostic prediction model for motor function in preterm infants using diffusion-tensor MRI imaging • Long-term prognosis and prevention of chronic lung disease in babies with extremely low birth weight (under 1500 g) • Impact of developmental care on neonatal growth • Construction of a network of perinatal mother and baby medical centers • Molecular pathological analysis of hereditary neurological disease using drosophila models • Diagnosis and treatment of congenital heart disease • Clinical research of diagnosis and treatment of congenital heart disease • Basic and clinical research on the causes and treatment of Kawasaki disease • Analysis of the mechanisms of intravenous immunoglobulin-resistant Kawasaki disease using iPS cell technology • Clinical research in pathophysiology and treatment of arrhythmias in children • Fundamental study of cardiac formation and morphogenesis • Clinical research of chemotherapy-related cardiomyopathy • Clinical research of cardiac failure of adult congenital heart disease • Gene therapy and regenerative medicine for the cardiovascular system
Pediatric Surgery		<ul style="list-style-type: none"> • Molecular biology and new treatment for pediatric solid malignant tumors • Embryological study for the congenital anomalies of gastrointestinal tract • Gastrointestinal function and physiology in pediatric patients • Pathological analysis and new treatment for biliary atresia • Pathology and carcinogenesis for anomalous arrangement of the pancreaticobiliary duct • Basic research for small bowel transplantation in children

Subject	Advisor(s)	Research Topics
Obstetrics and Gynecology	Professor Taisuke Mori	<ul style="list-style-type: none"> • Elucidation of the mechanism of endometriosis and development of novel therapeutic strategies • Novel diagnostic, therapeutic, and preventive methods for gynecological malignancies • Clinical and basic research on reproductive physiology and gamete manipulation such as assisted reproductive techniques • Analysis of the embryo-fetal-placental environment for maintenance of pregnancy • Basic, epidemiological, and clinical research for comprehensive support of women's health • Construction of a network to realize fertility preservation therapy. • Establishment of a medical support system to realize prenatal diagnosis and fetal treatment
Communication, Education and Language	Professor Masataka Kizuka	<p>Research areas:</p> <ul style="list-style-type: none"> • The process of acquiring and developing professional knowledge and expertise. • Methodology and practice of initial teacher education and the education of medical doctors employing case studies. • Language communication by professionals (school teachers and medical doctors). • The processes of child cognitive development (ex. language and learning) from the standpoint of educational theories, pedagogy, linguistics, medicine and related academic disciplines. • English language teaching methodology, theory and practice. • School education and medical care and development, enhancement and improvement of professional expertise of school teachers and medical doctors on remote islands in Japan and the United Kingdom. • Theory and practice of initial teacher education and the education of medical doctors in the United Kingdom and other countries.

Emerging and Genomic Medicine

Subject	Advisor(s)	Research Topics
Genomic Medical Sciences	Professor Kei Tashiro	<ul style="list-style-type: none"> • Genetic analysis of multi-factorial diseases and cancer (GWAS and NGS) • Development of a Glaucoma risk prediction system based on genetics • Molecular biology of cytokines • Establishment of technology to secure biological resources compatible with genomics and proteomics • Molecular biology of regulation mechanisms for gene expression • Development and application of new molecular-genetic and molecular-biological experimental techniques
Biochemistry and Molecular Biology		<ul style="list-style-type: none"> • Biochemical/molecular biological analysis of tumorigenesis mechanisms • Molecular mechanism of cell proliferation and differentiation • Development of methods for molecular-targeted therapy • Pathological analysis of diseases using developmental engineering techniques • Molecular mechanism of biomolecular metabolism and functional expression • Genomic/epigenetic analysis of cancer stem cells • Clarification of the molecular basis of childhood cancers and development of new treatment methods • Clarification of the formation, differentiation, and tumorization mechanisms of hematogenous/immune cells
Department of Drug Discovery Medicine	Associate Professor Mano Horinaka	<ul style="list-style-type: none"> • Development of rational screening system for agents against malignancies • Development of unique but rational screening system for agents against a variety of diseases • Academic-industrial collaboration on agents obtained by the screenings above • Academic-industrial collaboration on cancer-preventive foods focusing on carcinogenic mechanisms • Academic-industrial collaboration on development of a novel diagnostic system of cancer
Infection Control & Molecular Laboratory	Professor Yoko Nukui	<ul style="list-style-type: none"> • Molecular epidemiological analysis of drug-resistant bacteria and infectious diseases • Development of clinical examination and diagnostic methods based on molecular pathology • Pathological analysis of various diseases using flow cytometry
Molecular Diagnostics and Therapeutics		<ul style="list-style-type: none"> • Analysis of the molecular pathology of malignant tumors using molecular cytogenetic techniques • Development of new molecular diagnostic and treatment methods • Pathological analysis of neurological diseases using iPS cells • Study of neurological diseases using <i>Drosophila melanogaster</i>
Inflammation and Immunology	Medical Professor Yutaka Kawahito	<ul style="list-style-type: none"> • Causes, pathology, treatment, and complication against complications of rheumatoid arthritis • Analysis of factors for the pathological regulation of autoimmune diseases • Sugar-chain molecules involved in abnormal immune responses • Inflammation and arteriosclerosis • Mechanisms of fibrosis
Endocrinology and Metabolism	Professor Michiaki Fukui	<ul style="list-style-type: none"> • Causes of type 1 diabetes • Energy metabolism and molecular endocrinology • Pathological analysis and gene therapy for endocrine and metabolic disorders • Effects of diet and exercise therapy and their mechanisms • Complications of type 2 diabetes and pathogenic mechanisms

Subject	Advisor(s)	Research Topics
Molecular Cardiology and Vascular Regenerative Medicine	Professor Satoaki Matoba	<ul style="list-style-type: none"> • Investigation of the regulation of myocardial metabolism and mitochondrial functions during heart failure • Role of the tissue renin-angiotensin-aldosterone system (RAAS) and perivascular adipose tissue in the advancement of arteriosclerosis • Clarification of the pathogenic mechanisms of cardiovascular diseases caused by abnormalities in cell membrane function • Myocardial regeneration from human iPS (induced pluripotent stem) cells • Investigation of disease mechanism and drug development by crisper screening • Drug discovery research for new coronavirus (COVID-19) infection • Study for prognosis related Treatment by transcatheter aortic valve replacement (TAVI) and transcatheter mitral valve closure. • Novel arrhythmia research using IoT and AI • Study based on cardiovascular disease registry • Exercise physiology and optimal programming for patients with implanted cardio devices such as pacemakers and implantable defibrillators (ICD) • Pathological analysis of heart valve diseases through new techniques of heart sounds, mechanocardiography, and echocardiography • Development of new methods for diagnosis and treatment of pulmonary hypertension • Clinical epidemiological study of acute myocardial infarction and adult congenital heart disease patients in the Kyoto/Shiga region
Molecular Nephrology and Hypertension	Professor Satoaki Matoba	<ul style="list-style-type: none"> • Clarification of molecular biological mechanisms converting acute renal injuries to chronic renal failure • Establishment of in vivo gene transfer methods in the kidneys • Clinical study of exacerbators and cardiovascular complications of chronic kidney disease • Clinical study of drug-induced renal injury
Respiratory Molecular Medicine	Professor Koichi Takayama	<ul style="list-style-type: none"> • Molecular pathology of lung cancer • Clinical study of molecular-targeted therapies for lung cancer • Effects of smoking on the lungs • Cellular and molecular mechanisms of asthma • Cellular and molecular pathology of acute lung injury • Mechanisms of ion transport regulation and its role in respiratory diseases
Molecular Gastroenterology and Hepatology	Professor Yoshito Itoh	<ul style="list-style-type: none"> • Pathological analysis of viral hepatitis and evaluation of new treatment methods • Analysis and clinical applications of molecular mechanisms involved in the onset and advancement of liver cancer • Identification and analysis of genes indispensable for the onset of non-alcoholic steatohepatitis (NASH) • Pathological analysis of and new treatments for non-alcoholic steatohepatitis (NASH) • Pathological analysis of the regeneration and proliferation of pancreatic function cells • Clarification of the exacerbation mechanisms of pancreatic inflammation and development of new treatment methods • Pathological analysis of gastrointestinal diseases by gut microbiota • Mechanism of the onset and advancement of gastrointestinal cancer • Pathological analysis and treatment of inflammatory bowel disease • Pathological analysis and treatment of functional dyspepsia

Subject	Advisor(s)	Research Topics
Molecular Hematology and Oncology	Professor Junya Kuroda	<ul style="list-style-type: none"> • Identification and functional analysis of molecular abnormality underlying the pathogenesis of hematologic malignancy • Clinical study for the factors associated with therapeutic response by chemotherapy and stem cell transplantation and with adverse events • Development of novel cytogenetic/molecular diagnostic strategy for hematologic malignancy • Functional analysis of tumor environment in hematologic malignancy • Immuno-Oncology in hematologic malignancy • Development of molecular targeted agent through translational research for hematologic malignancy
Molecular Neurology and Gerontology		<ul style="list-style-type: none"> • Basic and clinical studies of dementia • Basic and clinical studies of neurodegenerative disease • Basic and clinical studies of white matter lesions • Basic and clinical studies of cerebrovascular disease • Basic and clinical studies of immune-mediated neurological disorders • Basic and clinical studies of neurophysiology • Basic and clinical studies of peripheral nerve • Basic and clinical studies of epilepsy • Rehabilitation for neurological disorders
Dermatology	Professor Norito Katoh	<ul style="list-style-type: none"> • Basic, clinical, and epidemiological studies of skin allergies such as atopic dermatitis and contact dermatitis • Analysis of the causes of intractable skin ulcers and study of new treatment • Study of new treatment for skin malignancies combining immunotherapy and gene therapy
Plastic and Reconstructive Surgery	Medical Professor Toshiaki Numajiri	<ul style="list-style-type: none"> • Causes of keloids and hypertrophic scars • Clinical study of cleft lip/palate • Basic and clinical study of adipose-derived stem cells • Simulation training and computer-assisted surgery in the maxillofacial region

Biological Data and Functional Morphology

Subject	Advisor(s)	Research Topics
Anatomy and Neurobiology	Professor Masaki Tanaka	<ul style="list-style-type: none"> • Neural circuits for stress response/emotional behaviors • Molecular mechanisms and intracellular dynamics concerning physiological effects of neuropeptides involved in sex hormones and reproduction • Autophagy in the nervous system • Alpha-synuclein in the neurodegenerative diseases such as Parkinson's disease and Dementia with Lewy body dementia (DLB)
Anatomy and Developmental Biology	Professor Kenta Yashiro	<ul style="list-style-type: none"> • Intracellular signal transduction and morphogenesis • Mechanism of cardiovascular development • Molecular mechanism of cell fate commitment to cardiac cells • Mechanism of cardiomyocyte maturation • Differentiation and maintenance of cardiac progenitor cells • Molecular and physiological difference between left and right ventricle • Molecular mechanism of cilia underlying ciliopathy and heterotaxia
Molecular Cell Physiology	Professor Akiyuki Taruno	<ul style="list-style-type: none"> • Molecular and cellular mechanisms of chemical senses including taste and visceral sensation • Chemical senses and lifestyle diseases • Mechanisms, physiology, and pathophysiology of purinergic signaling • Ion channel biophysics using patch clamp electrophysiology and live imaging • Channelopathies • Physiology of calcium homeostasis modulator (CALHM) ion channels
Physiology and Systems Bioscience	Professor Kazuhiro Yagita	<ul style="list-style-type: none"> • Formation, development, and aging mechanisms of the internal circadian clock • Circadian rhythm sleep disorders and the internal circadian clock system • Cell-based assays of circadian rhythms using ES/iPS cells • Mammalian circadian clock and reproduction • Analysis of local neural circuits using in vivo electrophysiology • Human physiology of circadian rhythm
Fundamental physics and life science		<ul style="list-style-type: none"> • Analysis of nonlinear phenomena • Mathematical analysis of complex systems • Mathematical model of open systems
Developmental Neurobiology		<ul style="list-style-type: none"> • Formation of the central nervous system and sensory organs in vertebrates • Development of gene transfer methods • Analysis of the formation of glial cells • Evolutionary developmental biology of the cerebral cortex
Basic Geriatrics		<ul style="list-style-type: none"> • Analysis of molecular mechanisms for autophagic regulation • Basic research and development of treatment methods for amyotrophic lateral sclerosis (ALS) and Parkinson's disease • Analysis of neural functions and autophagy • Analysis of RNA editing during emotion/compensation control

Pathological Analysis and Regulatory Medicine

Subject	Advisor(s)	Research Topics
Surgical Pathology	Medical Professor Eiichi Konishi	<ul style="list-style-type: none"> • Analysis of differential diagnoses of benign and malignant tumors based on the contrast between clinical and histological images • Histomorphological analysis of differential diagnoses of benign and malignant tumors • Genetic analysis useful for diagnosis of benign and malignant tumors • Clarification of the prevalence/frequent susceptibility to gastrointestinal cancer • Relationship analysis of morphological changes and genetic abnormalities
Pathology and Cell Regulation		<ul style="list-style-type: none"> • UV light-mediated cell manipulation • Study of myocardial viability using Raman scattering spectroscopy • Study of the tumor microenvironment using optical methods • Optical molecular imaging for ultra-early detection of cancer and its lymph node metastasis • Regulatory mechanism for heme biosynthesis and its applications to protoporphyrin fluorescence-based diagnosis of cancer
Pathology and Applied Neurobiology		<ul style="list-style-type: none"> • Investigation of pathogenesis on abnormal brain development, using genetically modified mice • Pathological analysis of brain malformation using patients-derived neural stem/progenitor cells • Molecular neurobiological studies on disordered corticogenesis • Molecular pathological studies on human brain developmental disorders, neurodegenerative diseases, and brain aging • Investigation of molecular pathogenesis on hereditary neuromuscular disorders (Exploratory research on discovering novel therapies for intellectual disabilities, based on molecular studies on brain-type dystrophin Dp71)
Infectious Diseases	Professor Takaaki Nakaya	<ul style="list-style-type: none"> • Pathogenic molecular mechanism of the influenza virus • Pathogenic exacerbation mechanisms caused by the genomic diversity of viruses • Bioimaging study on virus infection dynamics • Metagenomic study of infectious agents • Developmental study of new “on-chip” devices (e.g., lab-on-a-chip, organ-on-a-chip) for detection of pathogenic microorganisms • Diagnosis, treatment, and epidemiological study of viral and parasitic infections
Immunology	Professor Osam Mazda	<ul style="list-style-type: none"> • Molecular mechanisms of the somatic cell reprogramming, especially direct conversion, and application of the reprogrammed cells to regenerative therapy • Exploration of chemical compounds that inactivate viruses, analysis of the molecular mechanisms of the virus inactivation, and application of the compounds to anti-virus defense • Molecular mechanisms and regulation of anti-tumor immune responses • Molecular mechanisms and regulation of allergic responses • Molecular mechanisms and regulation of antiviral immune responses

Subject	Advisor(s)	Research Topics
Molecular Pharmacology	Professor Atsushi Umemura	<ul style="list-style-type: none"> • Development of novel drug treatment strategies for cancer • Development of pharmacological strategy for lifestyle-related diseases and cardiovascular diseases • Development of pharmacological strategies for obesity and fatty liver disease • Anti-inflammatory and anti-fibrotic therapies for chronic inflammatory diseases • Signaling mechanisms of reactive oxygen species aimed at clinical application • Comprehensive analysis using genetically modified animals
Psychiatry	Professor Jin Narumoto	<ul style="list-style-type: none"> • Cognitive behavioral therapy for depression, obsessive-compulsive disorder, and panic disorder • Neuroimaging study of psychiatric disorders • Liaison psychiatry including palliative care • Diagnosis and treatment of dementia and community support • Clinical study of the diagnosis and treatment of eating disorders • Clinical study of medication-related adverse events
Radiology	Professor Kei Yamada	<ul style="list-style-type: none"> • Clinical applications of diagnostic methods using functional imaging such as MRI and X-ray computed tomography (CT) • Analysis of tracer dynamics in living organisms using nuclear medicine and development of molecular imaging • Development of new procedures and treatment methods using Interventional Radiology (IVR) • Establishment and optimization of radiotherapy methods • Study of AI used diagnosis
Medical Chemistry	Professor Makoto Oba	<ul style="list-style-type: none"> • Design and synthesis of unnatural amino acids and their use in drug discovery research • Study on peptide foldamers for artificial control of secondary structures • Development of peptide-based drug delivery system • Study on gene therapy and nucleic acid therapeutic • Development and therapeutic applications of mRNA vaccines and therapeutics
Diagnostic and Therapeutic Radiology (Advanced Course)	Professor Kei Yamada	<ul style="list-style-type: none"> • Morphological diagnosis of cancers using MRI/CT imaging • Diagnosis of cancers through functional/metabolic/molecular imaging and trace analysis using SPECT/PET • Radiotherapy and isotope therapy of cancers in various organs • Vascular and nonvascular interventional radiology of cancers in various organs

Functional Control and Regenerative Medicine

Subject	Advisor(s)	Research Topics
Digestive Surgery	Professor Eigo Otsuji	<ul style="list-style-type: none"> • Study of peritoneal cancer metastasis using genetic diagnosis • Utilization of new advanced technologies in laparoscopic surgery • Cancer genes in gastrointestinal cancer • Gene therapy for cancer • Basic and clinical study of cancerous peritonitis • Improvements in performance of surgical treatments for gastrointestinal cancer • Cancer-targeted drug delivery systems (DDS) • Surgical treatments for the liver/biliary tract • Surgical treatments for gastrointestinal cancer
Transplantation and Regenerative Surgery	Medical Professor Hidetaka Ushigome	<ul style="list-style-type: none"> • Organ preservation • Formation mechanisms of transplantation immune responses and immune tolerance induction • Immunosuppressive therapy after kidney transplantation • Clinical and experimental study of liver transplantation • Clinical and experimental study of pancreas transplantation and simultaneous pancreas-kidney transplantation • Genetic study of xenografts • Research and development of new immunosuppressants
Endocrine Surgery	Professor Yasuto Naoi	<ul style="list-style-type: none"> • Study and development of minimally invasive treatments for breast cancer • Study and development of breast reconstruction methods with high aesthetic outcome and curability • Study and development of treatments and selection methods for breast cancer considering drug sensitivity and safety • Study and development of molecular-targeted drugs for breast cancer • Study and development of supportive treatments for adverse events of breast cancer pharmacotherapy
Cardiovascular Surgery		<ul style="list-style-type: none"> • Development of small-diameter artificial blood vessels • Development of valvuloplasty procedures in valvular disease surgery • Development of artificial heart valves through application of cellular engineering • Development of artificial conduits for right ventricular outflow tract reconstructions in children • Development of left ventricular reconstructive surgery based on evaluation of myocardial viability • Development of stentless mitral valve implantation using the patient's own heart • Development of evaluation methods for revascularization surgery using computer simulation • Development of MRI analysis evaluation methods for postoperative endoleaks after aortic stent graft repair • Development of synthetic vascular grafts using in vivo regenerative medicine
General Thoracic Surgery	Professor Masayoshi Inoue	<ul style="list-style-type: none"> • Clinical study of minimally invasive surgery for lung cancer • Clinical study of multidisciplinary treatments for locally advanced lung cancer • Microenvironment of lung cancer and metastatic pulmonary tumors • Clinical study of minimally invasive surgery for mediastinal disease • Immunological pathology of malignant thymic epithelial tumors • Immunological pathology of myasthenia gravis

Subject	Advisor(s)	Research Topics
Neurosurgery	Professor Naoya Hashimoto	<ul style="list-style-type: none"> • Molecular mechanisms of brain dysfunction and regeneration • Molecular pathophysiology of and optimum treatments for cerebrovascular disorders • Biology of brain tumors and individualized treatment • Molecular pathophysiology of traumatic brain injury and brain protection • Pathophysiology and neuromodulation of functional neurosurgery • Image-based analysis on brain and spinal function
Orthopaedics	Professor Kenji Takahashi	<ul style="list-style-type: none"> • Pathological analysis of the musculoskeletal system (locomotor system) using nuclear magnetic resonance (NMR) • Regeneration of peripheral nerves/tendons • Regeneration of spinal intervertebral discs • Pathology of idiopathic osteonecrosis of the femoral head (ONFH) • Development of early diagnosis methodologies for osteoarthritis • Pharmacotherapy development for osteoarthritis and rheumatoid arthritis • Analysis of bone microstructures in osteoporosis • Promotion of bone fusion through biophysical stimulation • Three-dimensional biomechanics of the joints and spine • Development of gene analysis and gene therapy for the musculoskeletal system • Pathology of muscle injury • Development of antimicrobial coatings for biomaterial • Chronobiology of the musculoskeletal system
Department of Pediatric Orthopedic Surgery (Advanced Course)	Associate Professor Toshiharu Shirai	<ul style="list-style-type: none"> • Pathology of Perthes disease and development of treatment methods • Development of antibacterial medical materials using photocatalysts • Utilization of the Ilizarov method for limb deformity correction/lengthening • Clinical application of methods to promote provisional bone formation through biophysical stimulation • Development of methods to monitor bones using bio-impedance measurements • Biomagnetic field measurements using SQUID • Development of treatment methods for premature epiphyseal plate closure
Rehabilitation Medicine	Professor Yasuo Mikami	<ul style="list-style-type: none"> • Promotion of development of rehabilitation robotics • Development of rehabilitation medicine applying biophysical stimulation (magnetic stimulation, electrical stimulation, etc.) • Development of rehabilitation medicine combined with pharmacotherapy • Development of treatment methods for muscle weakness (sarcopenia) • Development of new prosthetics/braces
Department of Sports and Para-Sports Medicine (Advanced Course)	Associate Professor Yuji Arai	<ul style="list-style-type: none"> • Training methods for disabilities in sports and trauma prevention • Physiological responses during exercise unique to people with disabilities • Effects of adaptive sports on health • Development of training methods to win at the Olympic and Paralympic Games • Development of robots to support staff affiliated with adaptive sports and families

Subject	Advisor(s)	Research Topics
Ophthalmology	Professor Chie Sotozono	<ul style="list-style-type: none"> • Tissue engineering concerning corneal regeneration • Molecular cell biology of corneal stem cells • Ocular immunology • Pathology of severe drug eruption and ocular disease • Pathogenic mechanisms of glaucoma • Molecular cell biology of retinal wound healing • Visual functional analysis in refractive surgery • Tissue engineering in ocular formation • Pathology of age-related macular degeneration
Otolaryngology-Head and Neck Surgery	Professor Shigeru Hirano	<ul style="list-style-type: none"> • Laryngology: laryngeal wound healing mechanism, regenerative medicine, neural networks controlling voice, swallow, and respiration • Head and neck oncology: immune-environment of squamous cell carcinoma of the head and neck, molecular target and immune-therapy, head and neck cancer in elderly • Otology: molecular mechanisms of auditory functions, clinical diagnosis of hereditary deafness, immune-environment of inner ear • Equilibrium: eye movements and visual perception • Rhinology: molecular biological research of the pathology of chronic paranasal sinusitis and respiratory tract diseases, development of new treatment methods for allergic rhinitis
Urology	Professor Osamu Ukimura	<ul style="list-style-type: none"> • Diagnosis and treatment of urological tumors • Function-preserving surgery • Molecular-targeted therapy • Regeneration in the field of urology • Neurophysiology in the field of urology
Anesthesiology	Professor Teiji Sawa	<ul style="list-style-type: none"> • Prevention and treatment of sepsis and acute lung injury • Mechanism for inflammation induction and regression through surgical invasion • Blood coagulation and platelet functions during the perioperative period • Mechanisms of anesthesia • Molecular mechanism of postoperative pain
Palliative Medicine	Professor Fumimasa Amaya	<ul style="list-style-type: none"> • Epidemiology of chronic pain • Mechanisms of chronic pain • Mechanisms of cancer pain • Development of ultrasound guided nerve block technique • Development of chemotherapy induced neuropathic pain treatment
Dental Medicine	Medical Professor Narisato Kanamura	<ul style="list-style-type: none"> • Molecular biological analysis of oral disease • Basic and clinical study of dental/oral diseases and systemic diseases • Basic and clinical study of regenerative medicine for oral tissues • Effects of odontogenic infection on cancer treatments and transplantation therapy • Oral care in the perioperative period • Structural analysis of oral tissue using Raman spectroscopy and development of new device. • Clinical application of novel biomaterials for dental.
Comprehensive Palliative Care Medicine (Advanced Course)	Professor Fumimasa Amaya	<ul style="list-style-type: none"> • Development of novel opioid receptor analgesics • Epidemiology of opioid analgesics • Epidemiology of palliative care medicine • Development of interventional pain treatment against cancer pain • Epidemiology of Advance Care Planning • Development of palliative care educational tool for residents • Practical training of end of life care

Subject	Advisor(s)	Research Topics
Cellular Regenerative Medicine	Research Professor Ping Dai	<ul style="list-style-type: none"> • Conversion of somatic cells to neurons using small-molecule compounds: study on molecular mechanism for direct conversion to chemical compound-induced neuronal cells(CiN cells) • Genetic characterization of CiN cells • Functional analysis of CiN cells in vitro and in vivo • Development for conversion methods of somatic cells to cell types other than CiN cells using small-molecule compounds

Professional Training Course in Cancer Medicine

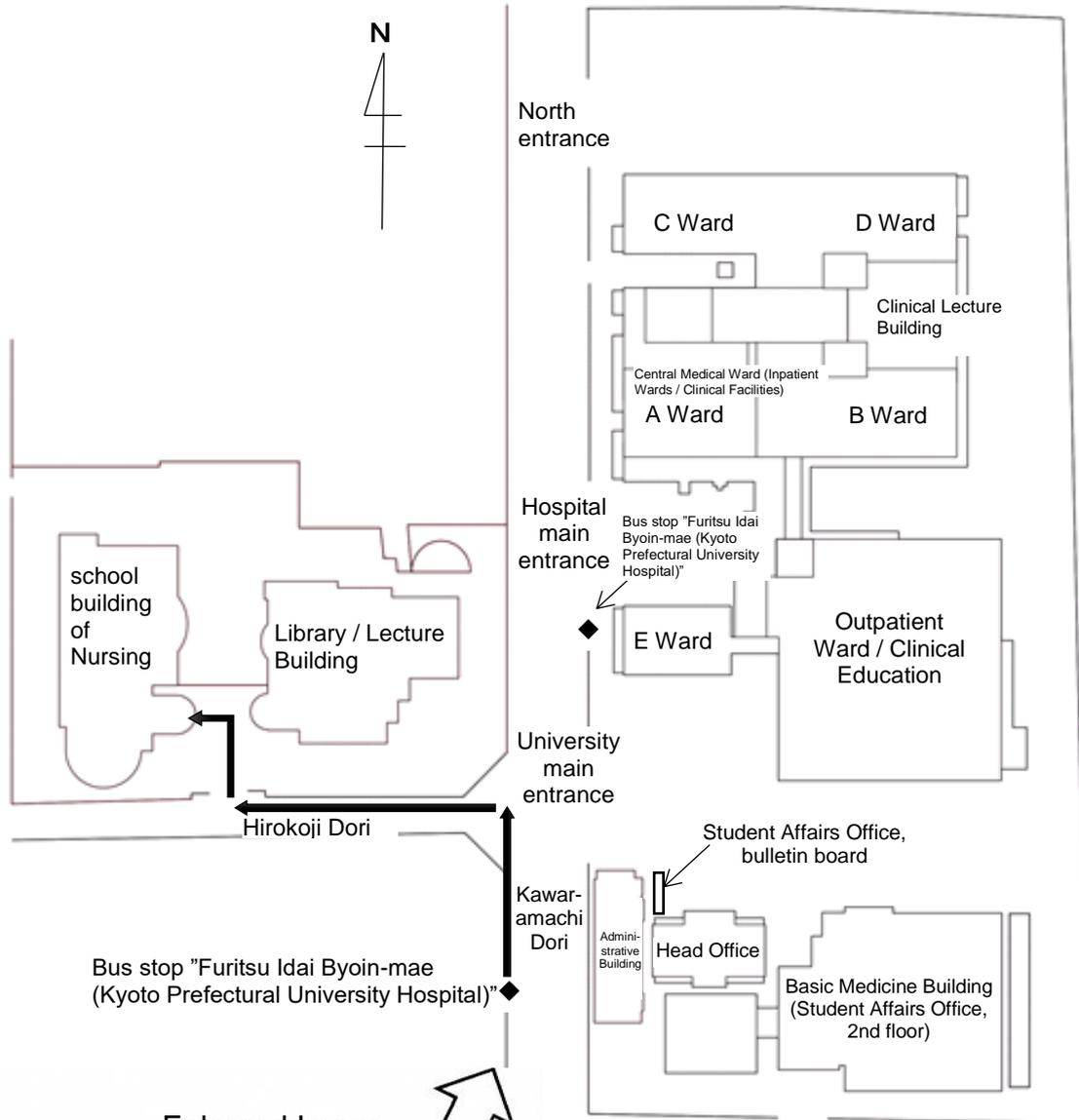
Subject	Advisor(s)	Research Topics
Molecular Hematology and Oncology	Professor Junya Kuroda	<ul style="list-style-type: none"> • Classification/action mechanisms of and actual treatments using anticancer drugs and molecular-targeted therapy drugs • Multidrug combination therapy and high-dose chemotherapy combined with hematopoietic stem cell transplantation (HSCT) • Countermeasures against side effects and adjuvant therapy for anticancer drugs and molecular-targeted drugs • Genomic analysis of onset mechanisms of cancers and hematological malignancies • Basic study of HSCT therapy • Development and basic study of molecular-targeted drugs
Diagnostic and Therapeutic Radiology	Professor Kei Yamada	<ul style="list-style-type: none"> • Morphological diagnosis of cancers using MRI/CT imaging • Diagnosis of cancers through functional/metabolic/molecular imaging and trace analysis using SPECT/PET • Radiotherapy and isotope therapy of cancers in various organs • Vascular and nonvascular interventional radiology of cancers in various organs
Comprehensive Palliative Care Medicine	Professor Fumimasa Amaya	<ul style="list-style-type: none"> • Development of novel opioid receptor analgesics • Epidemiology of opioid analgesics • Epidemiology of palliative care medicine • Development of interventional pain treatment against cancer pain • Epidemiology of Advance Care Planning • Development of palliative care educational tool for residents • Practical training of end of life care
Pediatrics	Professor Tomoko Iehara	<ul style="list-style-type: none"> • Clinical studies and clinical trials to establish standard treatments for children and Adolescent and Young Adult (AYA) with cancer • Research to analysis for genetic abnormalities of pediatric cancer • Research to develop new treatments for pediatric cancer
Obstetrics and Gynecology	Professor Taisuke Mori	<ul style="list-style-type: none"> • Surgical treatment for gynecological cancer (uterine cervical, endometrial, ovarian cancer) • Chemotherapy, molecular targeted therapy, and radiation therapy for gynecological cancer • Fertility preservation therapy for gynecological cancer • Challenges of onco-fertility therapy for cancer survivors
Respiratory Molecular Medicine	Professor Koichi Takayama	<ul style="list-style-type: none"> • Clinical pharmacology of anticancer agents • Chemotherapy for lung cancer using cytotoxic anticancer drugs • Molecular-targeted therapy for lung cancer • Current state of clinical trials for lung cancer
Dermatology	Professor Norito Katoh	<ul style="list-style-type: none"> • Surgical treatments for malignant skin tumors • Chemotherapy for malignant skin tumors • Immunotherapy for malignant skin tumors
Molecular Gastroenterology and Hepatology	Professor Yoshito Itoh	<ul style="list-style-type: none"> • Basic and clinical studies and clinical trials concerning hepatic and gastrointestinal cancer • IVR, local treatment, systemicotherapy, and radiotherapy for liver cancer • Systemicotherapy for pancreatic cancer, stomach cancer, colorectal cancer, biliary tract cancer and gallbladder cancer • Chemoradiotherapy for esophageal cancer
Digestive Surgery	Professor Eigo Otsuji	<ul style="list-style-type: none"> • Recommendation of clinical studies of gastrointestinal cancer • Surgical therapy for gastrointestinal cancer • Chemotherapy as an adjunctive therapy for gastrointestinal cancer

Subject	Advisor(s)	Research Topics
Endocrine Surgery	Professor Yasuto Naoi	<ul style="list-style-type: none"> • Pharmacotherapy systems for breast cancer • Hormone therapy for breast cancer • Chemotherapy for breast cancer • Molecular-targeted therapy for breast cancer
General Thoracic Surgery	Professor Masayoshi Inoue	<ul style="list-style-type: none"> • Clinical study of multidisciplinary treatments for locally advanced lung cancer • Microenvironment of lung cancer and metastatic pulmonary tumors • Immunological pathology of malignant thymic epithelial tumors
Neurosurgery	Professor Naoya Hashimoto	<ul style="list-style-type: none"> • Molecular cytogenetics of brain tumors • Surgical treatment and image/fluorescence-induced surgery of brain tumors • Multidisciplinary treatments and immunotherapy for brain tumors • Individual optimization of treatments for metastatic brain tumors
Orthopaedics	Professor Kenji Takahashi	<ul style="list-style-type: none"> • Chemotherapy for malignant bone and soft-tissue tumors
Otolaryngology-Head and Neck Surgery	Professor Shigeru Hirano	<ul style="list-style-type: none"> • Induction chemotherapy for head and neck cancers • Chemoradiotherapy for head and neck cancers • Superselective intra-arterial injection combined with chemoradiotherapy for head and neck cancers • Adjuvant chemotherapy for head and neck cancers • Ambulatory chemotherapy for head and neck cancers • Molecular-targeted therapy drugs for head and neck cancers
Urology	Professor Osamu Ukimura	<ul style="list-style-type: none"> • Pathology and consultation/treatment of renal cancers, bladder cancers, prostate cancer, and testicular tumors • Immunotherapy and molecular-targeted therapy for renal cancer • Chemotherapy and immunotherapy for bladder cancer • Endocrine therapy, chemotherapy, and function-preserving surgery for prostate cancer • Chemotherapy for testicular tumors

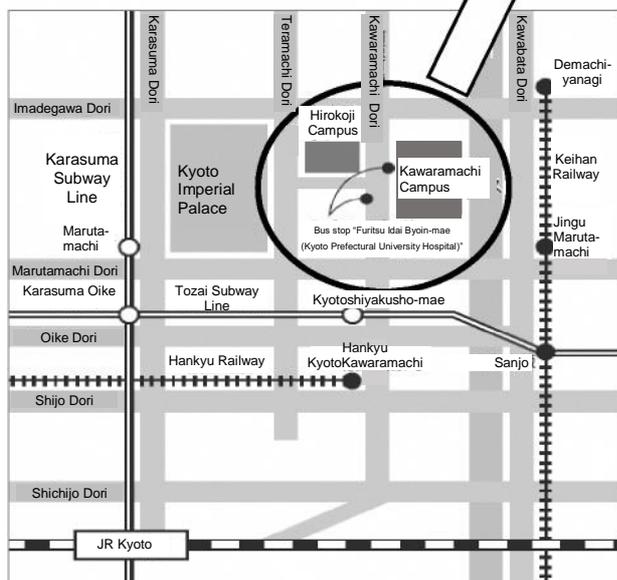
Training Course in Forensic Generalist, Forensic Specialist

Subject	Advisor(s)	Research Topics
Forensic Medicine	Professor Hiroshi Ikegaya	<ul style="list-style-type: none"> • Forensic pathology • Forensic toxicology • Utilization of microorganisms in forensic medicine • Disaster response and abuse prevention • Medical jurisprudence and bioethics • Methodology for age estimation using aging factors

Testing Center Access Map



Enlarged Image



Transportation Guide

From JR Kyoto Station: Kyoto City Bus Lines #4, 17, and 205 to the "Furitsu Idai Byoin-mae (Kyoto Prefectural University Hospital)" bus stop

From Hankyu Kyoto Kawar-amachi Station: Kyoto City Bus Lines #3, 4, 17, and 205 to the "Furitsu Idai Byoin-mae (Kyoto Prefectural University Hospital)" bus stop

From Sanjo Station: Kyoto City Bus Lines #37 and 59 to the "Furitsu Idai Byoin-mae (Kyoto Prefectural University Hospital)" bus stop

or
Kyoto Bus Co. Routes #21, 23, 41, and 43 to the "Furitsu Idai Byoin-mae (Kyoto Prefectural University Hospital)" bus stop

From Keihan Jingu-Marutamachi Station: 10-minute walk