

The year 2019 was the 100th anniversary of
Hokkaido University, School of Medicine.



HOKKAIDO UNIVERSITY

Graduate School of Medicine

Guidebook of the Doctoral Program

2022



HOKKAIDO UNIVERSITY Graduate School of Medicine Guidebook of the Doctoral Program 2022

U R L <https://www.med.hokudai.ac.jp/en/>

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Philosophy and Objectives / Admissions Policy

Philosophy

The Graduate School of Medicine, Hokkaido University leads the world with cutting-edge research in medical science, and aims to equip the next generation of medical researchers and medical professionals with a strong sense of ethics and a well-rounded character to contribute to the health and welfare of humanity.

Educational and Research Objectives

To help students develop advanced levels of knowledge and research skills in the fields of medical and life sciences and gain profound insights that will help them meet the needs of society. To promote world-leading research in the school in its role as part of a major Japanese university and to advance knowledge frontiers for the prosperity of humanity.

Admissions Policy (Expectations of Students)

We are looking for

- Students who are eager to engage in the research tailored to clarify life phenomena, to overcome diseases, and to improve human health standards
- Students who have intellectual curiosity, show the ability to analyze things logically, persevere as a team, and have competence to work as international leaders in each medical field
- Students who have fundamental reading and writing skills in English

Message from the Dean for the Doctoral Program 2022

The Hokkaido University Graduate School of Medicine set as its educational objective the cultivation and fostering of students equipped with advanced levels of knowledge and research skills in the fields of medical and life sciences who have profound insights that will help them meet the needs of society. This objective is in line with the school's philosophy of leading the world with cutting-edge research in medical science and contributing to the health and welfare of humanity by developing the next generation of medical researchers and medical professionals and ensuring they have a strong sense of ethics and a well-rounded character.

The Doctoral Program of the school is comprised of one division and three courses, which place emphasis on multidisciplinary education transcending the boundaries of academic disciplines while at the same time offering substantial curriculums that secure high levels of expertise on the courses. The courses are the Basic Medicine Course designed to nurture the next generation of medical researchers and physician scientists, the Social Medicine Course to develop future experts in social medicine and public health administration, and the Clinical Medicine Course to foster individuals capable of conducting advanced clinical studies.

The graduate school launched a Medical Scientist Training Program (MD-PhD Program) for students at the School of Medicine in 2009 to expedite the fostering of educators and researchers in basic medicine possessing a physician's license, whose declining number is a source of concern. The program allows sixth-year students in the School of Medicine to take classes offered by the Doctoral Program of the Graduate School of Medicine. Students can receive their doctoral degree in three years as long as they meet the program completion requirements. In 2013, the graduate school also initiated a new program named the CLARC (CLinic And Research Combination) Program, which allows clinicians in their second year of clinical training to enroll in the graduate school early. In this program, students take graduate classes offered in the evening while continuing clinical training. The program is popular with clinicians aspiring to become physician scientists because it allows them to enroll in the graduate school while still undergoing clinical training.

Students who pursue groundbreaking medical research at the Graduate School of Medicine will be required to help meet the needs of society by proactively working on creative knowledge practices and addressing social issues with high ethical standards as valued members of the scientific community. As we have built sufficient abilities and systems to meet the expectations of our students, we truly welcome those who are eager to do their part to support the future of medical science and medical care.

April 2022

HATAKEYAMA Shigetsugu, M.D., Ph.D.
Dean, Graduate School of Medicine, Hokkaido University

Students are accepted in the following departments.

(As of July 1, 2022)

Departments

【Division of Medical Science】

Physiological Science	Biochemistry	Molecular Biology** Medical Chemistry
	Anatomy	Anatomy and Embryology Histology and Cytology
	Physiology	Cell Physiology Systems Neuroscience
	Pharmacology	Neuropharmacology Cellular and Molecular Pharmacology
Pathological Science	Pathology	Pathology Cancer Pathology Diagnostic Pathology
	Microbiology and Immunology	Immunology Microbiology and Infectious Diseases
Social Medicine	Social Medicine	Hygiene Public Health Forensic Medicine Health Care Policy** Biostatistics Medical Education and General Medicine Regulatory Science Translational Research Management** Patient Safety Health Data Science Pharmaceuticals and Medical Devices Regulatory Science*
Internal Medicine	Internal Medicine	Respiratory Medicine Rheumatology, Endocrinology and Nephrology Gastroenterology and Hepatology Cardiovascular Medicine Medical Oncology Hematology Health Care Medicine** Clinical Cancer Genomics
	Radiology	Radiation Oncology Diagnostic Imaging Comprehensive Radiological Science*
Surgery	Surgery	Gastroenterological Surgery I Gastroenterological Surgery II Renal and Genitourinary Surgery Cardiovascular Surgery Breast Surgery Thoracic Surgery
	Anesthesiology and Critical Care Medicine	Anesthesia and Perioperative Medicine Acute and Critical Care Medicine
Specialized Medicine	Reconstructive Surgery and Rehabilitation Medicine	Orthopedic Surgery Plastic and Reconstructive Surgery Rehabilitation Medicine** Sports Medicine
	Reproductive and Developmental Medicine	Pediatrics Obstetrics and Gynecology
	Sensory Organ Medicine	Dermatology Otolaryngology - Head and Neck Surgery Ophthalmology
	Neurological Disorder	Psychiatry Neurosurgery Neurology
Interdisciplinary Medicine	Medical Biology	Neurobiology
	Immunology	Immunobiology Functional Immunology Molecular Psychoimmunology Biological Molecular Mechanisms
	Pathological Oncology	Stem Cell Biology Biomedical Oncology
	Clinical Collaboration	Hospitals Serving as Clinical Collaboration

* Collaborative Laboratory Established by Collaboration among Universities (No student enrollments)
** There will be no new enrollments for the 2023 academic year.

Course Outline

The Doctoral Program provides well integrated education, offering courses which may be chosen depending on the goals of individual students to meet social needs.

Basic Medicine Course

For future researchers and educators in medical/life sciences

Students acquire broad expertise required to become independent researchers, learn various research approaches including techniques for designing experiments, and develop their research capabilities. They are also expected to acquire the competence and skills to apply and utilize their expertise to medical and life science fields with interdisciplinary approach.

Clinical Medicine Course

For future clinicians who excel in clinical techniques and research competence

Students will gain the research competence by applying methods targeting human rather than traditional methods using model animals or cells. This course provides the Clinical Collaborative Departments, where students can proceed their research in clinical medicine under multiple instructors including dedicated instructors and collaborative leading clinicians at institutions where advanced and specialized diagnoses, examinations and treatments are conducted.

Social Medicine Course

For future professionals who undertake the task of improvement of health and safety at the regional and international levels.

Students start by learning research methods in social sciences including research ethics, basic and applied statistics, medical informatics and EBM (evidence-based medicine). This course emphasizes social medicine and preventive medicine, rather than biology and life science. Students aim at mastering the research approaches and skills that are necessary for research in public health and preventive medicine.

Standard Duration for Completion: 4 Years

- Early Graduation: A doctoral student who publishes at least two main research papers as the first author in English-language journals with impact factor and who meets other requirements may complete the Doctoral Program up to 1 year before the end of the course term.
- Long-Term Study Program: Working students may take up to 6 years, paying tuition for 4 years.

Interim Evaluation

Students have to undergo an interim evaluation at the beginning of the 3rd year, where examiners will check the progress of the work.

Completion Requirements

- 1) Submission of a thesis (Dissertation).
- 2) One main research paper accepted or published in an English-language journal with impact factor (the applicant must be the first author).
- 3) Completion of the required number of credits (30 or more credits).

Clinical Collaborative Departments

A system of clinical collaborative departments was implemented to promote highly advanced clinical medicine research, and it was designed for Doctoral Program students who choose the Clinical Medicine Course. It aims at training students to be excellent clinicians with impeccable clinical skills and research acumen. Under this system, students can receive research instruction from leading clinicians of unique medical institutions where advanced, specialized diagnoses, examination and treatments are conducted and patients' data, the information which may not be readily available at the university hospital, are collected. Furthermore, full-time faculty members also provide consummate theoretical and practical education.

Messages from Students of the Doctoral Program

A scientific trip from Africa to Asia.

Fayrouz Shawky Abdelmoneim Naim

4th-year Doctoral Student
Basic Medicine Course, Department of Molecular Psychoimmunology [Arab Republic of Egypt]

After getting a master degree in Immunology from Alexandria university, Egypt. I decided to complete my studies in Japan by enrolling in the doctoral course of Hokkaido University. I was interested in neuroimmune science. It has been found that polymorphism of some genes could be involved in the pathogenesis of some neurological diseases. Following that discovery, I focused on the mechanism by which some genes can induce the IL-6 amplifier in chronic neurological disorders through activation of the NF- κ B positive feedback-loop in non-immune cells which accumulate immune cells causing chronic inflammation. These would be promising candidates as novel therapeutic targets of various inflammatory diseases. I think I have been lucky to complete my studies in this field, specifically in my department.

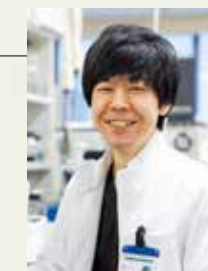


Aiming to develop better treatments

SHIRAISHI Masahiro

3rd-year Doctoral Student
Clinical Medicine Course, Department of Pediatrics

After completion of my clinical training, I worked as a pediatric cardiologist. It was in this capacity that I faced numerous challenges and limitations in my practice as a doctor. These experiences as well as my desire to contribute to the development of better medical treatments led me to apply for the doctoral course. Although cardiac stem cell transplantation therapy may be a therapeutic option for heart failure, many issues remain for clinical application, including therapeutic effects. To improve therapeutic effects, we are conducting research in collaboration with the Laboratory of Molecular Design of Pharmaceuticals, Faculty of Pharmaceutical Science. My theme is the development of cardiac stem cell transplantation therapy using cardiac progenitor cells with activated mitochondria. I look forward to working with you on research that will lead to a brighter future for medical care.



New drug development

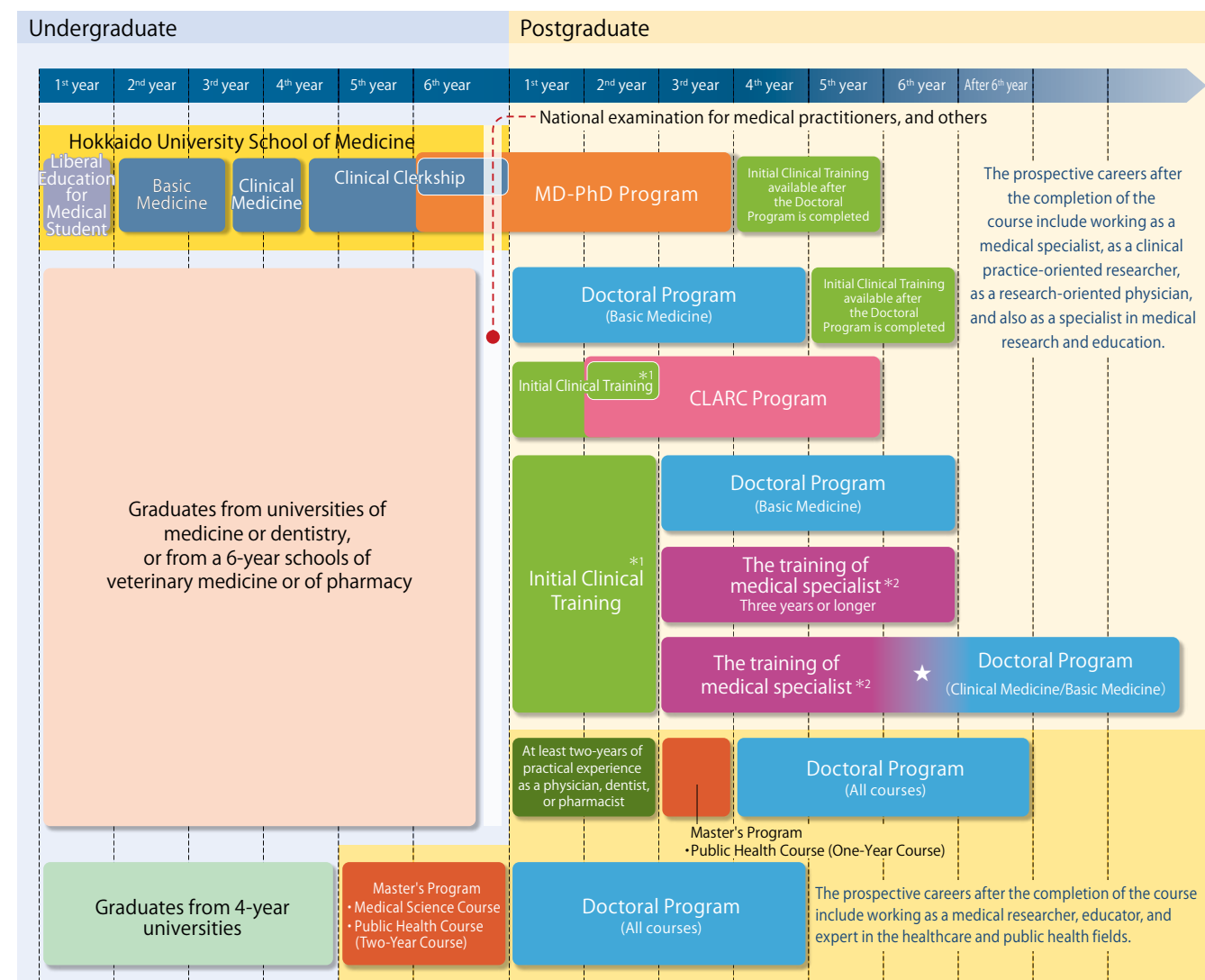
YOKOSHIKI Saki

4th-year Doctoral Student
Social Medicine Course, Department of Regulatory Science

I work at Hokkaido University Hospital to assist researchers in drug development. It is very important to consider the development strategies for application with researchers, because it is difficult to evaluate efficacy and safety in clinical trials to develop new drugs for rare diseases. I decided to go on to a doctoral program because I wanted to know more about how a drug is being developed until the new drugs are approved. Currently, I am researching into how clinical trials have been performed and what has been achieved for approved drugs. I realize the difficulty to obtain approval for new drugs, but there are many things that I can apply in my daily work. I hope that my research will help in the development of new drugs which I was involved with to ensure that they reach patients in the shortest possible time.



Doctoral Program Completion Plan



*1 Students are not allowed to engage in medical practice related work unless they have completed Initial Clinical Training (Article 16 of the Medical Practitioners Act).

*2 Example of the training of medical specialist under the new medical specialist system (started in April 2018)
The period and details of training vary depending on the training program of medical specialist established for each of the basic fields (19 fields including internal medicine and surgery). Those wishing to be medical specialists are required to complete the training of medical specialist.

★ Example of doctoral program started in the final year of the training of medical specialist



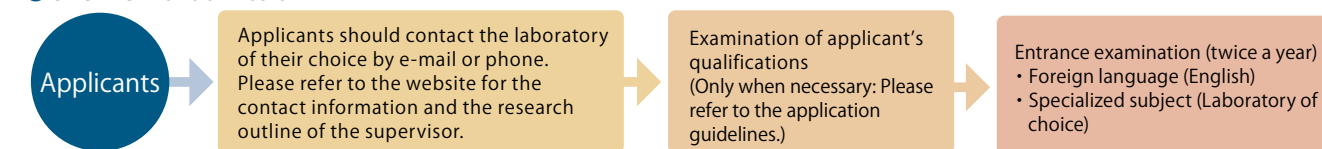
Hokkaido University Hospital

Admission to Doctoral Programs

About the Entrance Examination

- **Number of students to be admitted** Medicine: 90 (This includes a small number of working students.)
- **Qualifications for applicants** Graduates from universities of medicine or dentistry, or from a 6-year schools of veterinary medicine or of pharmacy, or students who have completed a Master's Program are eligible.
- **Application Period** [Midyear entrance examination] Tuesday, 12 July 2022 to Tuesday, 19 July 2022
[Year-end entrance examination] Thursday, 24 November 2022 to Wednesday, 30 November 2022
Office hours: 9:00 AM to 5:00 PM (Japan Standard Time)
Send the application documents to Students Affairs Office by post using express registered mail.
Application documents must reach our Student Affairs Office within the application period.

Overview of admission



- **Examination schedule** [Midyear entrance examination] Tuesday, 16 August 2022
[Year-end entrance examination] Tuesday, 17 January 2023
Even though announced this way, there is a possibility that the graduate school must subsequently revise the examination procedure or postpone/cancel the examination(s) as a measure against COVID-19.

Fees

- **Examination fee*** : 30,000 yen
 - **Admission fee*** : 282,000 yen
 - **Tuition** : 535,800 yen (per year)
- Note: Admission and tuition fees may be changed at any time.
- *Those who are expected to complete the Hokkaido University Master's Program and intend to take examinations for the Hokkaido University Graduate School of Medicine, or government-financed international students (persons receiving MEXT Scholarship grants) are exempted from this fee but must include a statement to this effect when submitting the application.

◎ Please consult the guidelines for applicants for the graduate school for further information.

Information on the Honor and Scholarship

Honor

The Graduate School of Medicine, Hokkaido University

- Best Paper Award Selected applicants receive a certificate and 100,000 yen.
- Takakuwa Eimatsu Scholarship Every year, 3 or 4 outstanding young researchers (including graduate students) are awarded this scholarship (80,000-100,000 yen per awardee as a one-time grant).
- HIROKO International Academic Exchange Foundation This fellowship grant was introduced for researchers who study cancer at overseas universities or research laboratories and return to Japan (applicants must be 35 years old or younger when applying). As a general rule, selected applicants receive 1,000,000 yen per person and up to 2 applicants are selected per year.
- Hokkaido University
 - Hokkaido University Ohtsuka Award This award was introduced as a part of a gender equality project to assist outstanding female students who aspire to become researchers. Those eligible for the award are outstanding female students in the final year of the Doctoral Program who will complete the program during the said period (in principle; except for students who repeat a year). Selected applicants receive 300,000 yen.

Scholarship

The Graduate School of Medicine, Hokkaido University

- Otowa Hiroji Scholarship Fund Both Japanese and non-Japanese students are eligible. Every year, up to 10 Japanese students and 10 non-Japanese students receive this scholarship (150,000 yen per awardee as a one-time grant). Selection is based on both academic and personal excellence.
- Hokkaido University
 - Hokkaido University Ambitious Doctoral Fellowship (SDGs) To help outstanding students work to achieve Sustainable Development Goals (SDGs), regardless of their research field, this program provides financial support (amount paid in FY 2022: 150,000 yen per month for support to devote time to research and an annual subsidy of 400,000 yen for research expenses).
 - Hokkaido University DX Doctoral Fellowship With the aim of developing Japan's science, technology, and innovation, and fostering outstanding doctoral students with the ability to creatively solve important issues and open up the future, this program provides selected applicants with a research incentive grant of 150,000 yen per month and an annual research grant of 400,000 yen (amount paid in FY 2022).

Other Scholarships

Hokkaido University has a range of scholarships available for both prospective and current students.

- Scholarships for Prospective Students Several competitive scholarships of differing amounts are available for students wishing to study at Hokkaido University. Please see the sections below for the scholarships you can apply for prior to leaving your home country.
 - Japanese Government Scholarships (MEXT)
 - Hokkaido University Scholarships
 - Other Scholarships
- Scholarships for Current Students There are various scholarships available to self-supported international students, and either applied for through the University, or directly.

Check the website for details: [Hokkaido Univ. Scholarships](#) [Search](#)

Research Assistant (RA), Teaching Fellow (TF) and Teaching Assistant (TA) Programs

Research Assistant (RA) Program

The RA program was introduced to improve young researchers' research abilities as well as to enhance the research environment by encouraging outstanding students in the Doctoral Program to participate in research projects as research assistants at the Faculty of Medicine. Selected applicants receive an annual salary of approximately 500,000 yen based on their work performance.

Teaching Fellow (TF) Program

As one part of the graduate school education, this program aims to provide students in doctoral programs (who have experience of working as teaching assistants (TA)) with opportunities to be employed as teaching fellows (TF) and be responsible for teaching subjects mainly in the School of Medicine sharing the teaching with members of the faculty. Annual rewards vary depending on the subject they are put in charge of, and an annual stipend of approximately 80,000 to 120,000 yen is paid to such TF depending on their work performance.

Teaching Assistant (TA) Program

This program aims to strengthen the university education by providing economic support for graduate students and offering training opportunities on the path to become faculty members and researchers. As teaching assistants (TA), students in this program engage in educational assistance work in subjects provided mainly in the School of Medicine. The annual rewards vary depending on the subject a TA is put in charge of, and an annual stipend of approximately 70,000 to 100,000 yen is paid to such TA depending on their work performance.

International Exchanges

The Graduate School of Medicine is promoting international collaborations through exchanges of researchers and joint research projects. As an international exchange project, we have established an international exchange fund to provide assistance and aid to be able to invite and accept non-Japanese researchers, dispatch and train young researchers, and provide scholarships and aid to international students.

Center for Medical Education and International Relations International Relations Division

International Relations Division Supports International Students

As of April 2022, 46 international students from 8 countries study at the Graduate School of Medicine. Staff members of International Relations Division are responsible for creating a comfortable environment for international students, and provide academic and personal supports.



International Relations Division

Visit the website for further information.

URL: <https://edu.med.hokudai.ac.jp/international-relations/>

Number of International Students in the Graduate School of Medicines (As of April 1, 2022)

Distribution by Country/Region

Area	Country/Region	Number
Asia 43 students	Bangladesh	1
	China	39
	Malaysia	1
	Taiwan	1
	Vietnam	1
Central and South America 1	Argentina	1
Middle East 1	Afghanistan	1
Africa 1	Egypt	1
TOTAL		46
International Students (Other visa status)		2

International Student Numbers by Graduate Program

(): number of female students included

Master's Program	Doctoral Program
6 (5)	40 (19)

Methods of Financial Support

(): number of female students included

Japanese government	6 (3)
Self-Supported	38 (19)
Foreign government	2 (2)
TOTAL	46 (24)
International Students (Other visa status)	2 (1)
GRAND TOTAL (All International Students)	48 (25)

Message from an International Doctoral Student

Paving the way for medical research using statistical knowledge

Yang Yichi

3rd-year Doctoral Student
Social Medicine Course, Department of Biostatistics [People's Republic of China]

I became interested in statistical methods implemented in medicine and public health areas when I was an undergraduate student majoring in preventive medicine. After studying infectious disease modeling in my master's course, I became more and more interested in the mathematics and statistics behind the methodology. This is why I chose to join the department of biostatistics to engage in further study of statistical methods for medicine.

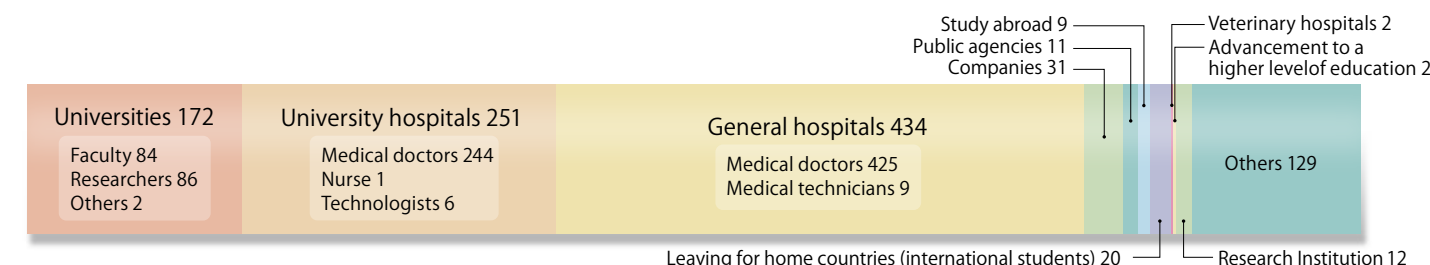
I am currently analyzing asthma cohort study data collected by physicians from the department of respiratory medicine at Hokkaido University Hospital under the supervision of Associate Professor Yokota. This led to my current research theme, which is a joint model for survival analysis of recurrent events. Standing on the shoulders of giants, I hope to further build on the current model developed and improved thus far to better match the respiratory function data collected from asthma patients and propose protocols for the prevention of asthma and the prediction of asthma exacerbations. I would like to continue making every effort to analyze clinical data in an appropriate and effective manner using my statistical skills to pave the way for medical research.



Career Options after Completion of the Doctoral Program

(2007-2020 FY, total number of students who completed the program: 1,073)

More than half of the students completing the Doctoral Program work as medical doctors or medical experts at general hospitals or at university hospitals. The second largest career sector is as researchers at universities and companies.



Message from a Graduate of the Doctoral Program

New perspectives gained from research

Doctoral degree completed in March 2020

NISHIMURA Yoko

Physician, JCHO Sapporo Hokushin Hospital



I have been working as a urologist for 10 years. However, my personal experience with infertility treatment and pregnancy enabled me to recognize the importance of prevention in childhood illness. This in turn led me to enter graduate school. There I engaged in epidemiological research at Hokkaido University's Center for Environmental and Health Sciences with a focus on the theme of "Studies on effects of prenatal exposure to endocrine-disrupting chemicals on sex differentiation." Following graduation, I have continued my research on weekends as a visiting researcher while working at a hospital on weekdays. I am also trying to make my patients aware of the importance of disease prevention. I think that recurrent education will contribute not only to our own growth but also to solving the problems facing society. It is my hope that many people, regardless of their age or career background, will be able to take a new step at Hokkaido University.

Message from a Graduate of the MD-PhD Program

Medical Doctor "&" Doctor of Philosophy

Doctoral degree completed in March 2020

KASHIWAGI Sayaka

Specially Appointed Assistant Professor, Department of Cell Physiology, Faculty of Medicine, Hokkaido University



Since April 2020, I have been engaged in research and education as a specially appointed assistant professor in the Department of Cell Physiology (Prof. Yusuke Ohba). I have been interested in general science since I was a child and entered Hokkaido University as a general science student intending to enter graduate school in the future. The MD-PhD course was thus an ideal system for me and I decided to enter the School of Medicine. At my department we constructively elucidate the operating principles of the "cell," which is the basic unit of life. I am currently investigating the effects of various ions on cellular functions such as endocytosis and membrane trafficking. I believe the advantage of performing basic research through the MD-PhD course is that one can receive a medical education. The experience of learning how individual organs and the human body work, and of being in a clinical setting, will serve as a strong motivation to continue one's research.

●Administration Building



The triangular decorative gable over the entrance continues the history of the building of the school of medicine from the Taisho Era. The main entrance of the Graduate School of Medicine is also the entrance to the Frate hall. The Student Affairs Office is located along the right-hand corridor on the 1st floor.

●The Alumni Hall "Frate"



Constructed for the 90th anniversary of the establishment of the Hokkaido University School of Medicine and completed in 2010, "Frate", which is used for academic lecture meetings, conferences, ceremonies and other gatherings, is a multifaceted facility that includes a hall accommodating up to 280 people, a special conference room and a large training room.

●School of Medicine Centennial Hall



Constructed as part of the 100th anniversary commemorative project of the School of Medicine, and completed in 2019, this hall is used for many purposes such as lectures, conferences, and alumni events.

●Clinical Medicine Lecture Building



Located between the Graduate School of Medicine and the University Hospital, this building is accessible from both buildings. The 2-story building has 2 medium-sized lecture halls on the first floor and a large lecture hall, where mandatory lectures are mainly given, on the second floor. This building is also used for academic lecture meetings and various ceremonies.

●Medical and Dental Research Building



Undergraduate and graduate students are educated here. This building has the latest facilities and equipment, and a variety of practical training and research activities are conducted here.

●Interprofessional Education and Research Building



The building provides an environment for interprofessional education in which students and staff from different health professions (including medicine, dentistry, pharmacy and nursing) learn together. It houses the Clinical Simulation Center, the Medical Innovation Center and other facilities.

●Library



The library has about 150,000 medical books and journals. The reading room and the stacks on the first floor are open from 9 a.m. to 10 p.m. on weekdays. A study room and a computer room are on the second floor, and 2 lecture rooms for undergraduates are on the third floor.
Monday through Friday: 9:00-22:00
9:00-17:00 (long term vacations)

●Cafeteria



There are 70 dishes on the menu, and there is seating for 120 people. The cafeteria also has a shop that sells stationery, food, white gowns and lab coats.
Monday through Friday: 11:00-15:00
(for the shop: 10:00-15:00)
Saturday, Sunday, and Holidays: Closed



Access

J R	S u b w a y	New Chitose Airport to JR Sapporo Station
●JR Sapporo Station: 20-min. walk	●Kita 12-jo Sta. (Namboku Line): 10-min. walk ●Kita 18-jo Sta. (Namboku Line): 10-min. walk ●Kita 13-jo Higashi Sta. (Tōhō Line): 15-min. walk	
B u s		
●Hokudai Byouin Mae (in front of Hokkaido University Hospital): 3-min. walk Take a bus, number 01, 03, or 04 of the Tonden line of Chuo Bus Co. at the Kitaguchi bus depot of JR Sapporo Station		●40 min. by JR ●80 min. by bus