GUNMA UNIVERSITY
Graduate School of Medicine

Course of Biomedical Sciences (Master's Program)

2026 Admission

Contents

Dean, Course of Biomedical Sciences

Ken Shirabe

A Message from the Dean

Course of Biomedical Sciences (Master's Program) was installed in 2007 at Graduate School of Medicine. Due to rapid development of life science, medicine, and information science, a possibility of utilizing the advance in bio-medical fields, in such as a bio-correlative industry, drug design, and advanced medicine, has increased. Therefore, Course of Biomedical Sciences was established in order to grow researcher, educator and high-level medical person, who can exercise leadership in life science, medicine and medical field.

In Course of Biomedical Sciences, the interdisciplinary field of medicine and life science is set as the main object of education and research. Namely, it aims at advancing a life process for analysis from a medical viewpoint, promoting the education and research of the interdisciplinary field in medicine and medical treatment, learning and developing new medicine and medical technology which aimed at improvement of health and the quality of life, raising advanced medical person, etc.

Although the graduates of this Course would be divided into the advanced profession people in each field, such as researcher, educator, medical person, and industrial person, or into those who go on to Course of Medical Sciences (Doctoral Program), playing an active part as a leader in each field will be expected, taking advantage of having learned at Course of Biomedical Sciences.

‹Special Educational Course and Program›

Medical Physicist Course

In Gunma University, heavy-ion cancer therapy was started from 2010 in Heavy-Ion Medical Center uniquely installed in Japan. Medical physicist, who takes charge of the cancer medical treatment using radiation, such as heavy-ion, is very insufficient in Japan. So, Medical Physics Course that aimed at cultivation of medical physicist was installed.

Outline of Biomedical Sciences (Master's Program)

1 Aim of Master's Program for Biomedical Sciences

Recent advances in life sciences and information sciences have opened up abundant prospects for applying the achievements of basic research within bio-related industries and new medical services, including drug discovery and regenerative medicine. At the same time, there is a need to solve many challenges, such as medical ethics and information security that are associated with advanced medical technology, and community healthcare support in our aging society, which are opening up a wide range of potential roles for medical researchers and health professionals. Many doors are being opened to non-medical school graduates and trained researchers, educators, and/or highly skilled workers who can exercise leadership in the life sciences and medical fields. However, there is a looming shortage of researchers/educators able to respond to the needs of society and who can take an active role in Biomedical Sciences, this new interdisciplinary field between life sciences and medicine.

There is also a growing number of non-medicine, non-veterinary, and non-dentistry graduates who are hoping to pursue their interest in life science research or medical fields; however, before these graduates can enter a graduate school of medicine to take a PhD course, they either need to have obtained a Master' s Degree or must have more than two years' research experience at a university or research institute. Gunma University Graduate School of Medicine has been shifting its focus of interest to new interdisciplinary fields. For example, in 2003, we re-organized our Medical Sciences Course (Doctoral Program) and our research and educational system into a basic plus clinical integrated style, and established a PhD program in health sciences, now being run by the Graduate School of Health Sciences. The implementation of a day/evening course system for both programs allowed us to offer the course to mature students not from only the medical and health science fields, but also from related fields. However, we were still unable to accept graduates from facilities other than medicine, veterinary, or dentistry directly to our medical sciences course.

In response to increasing demand, and to broaden our intake of graduates from other faculties, we have established a Biomedical Science Course (Master' s program) within the Graduate School of Medicine. Furthermore, we will begin the Day/Evening course system in some major fields from April, 2022. This program aims to educate non-medical school graduates in the fundamental knowledge and skills needed to engage in the type of independent research that increasingly underpins medical and life sciences, and to foster leadership in medical-related fields on the part of health professional experts.

2 Research conducted in Biomedical Sciences

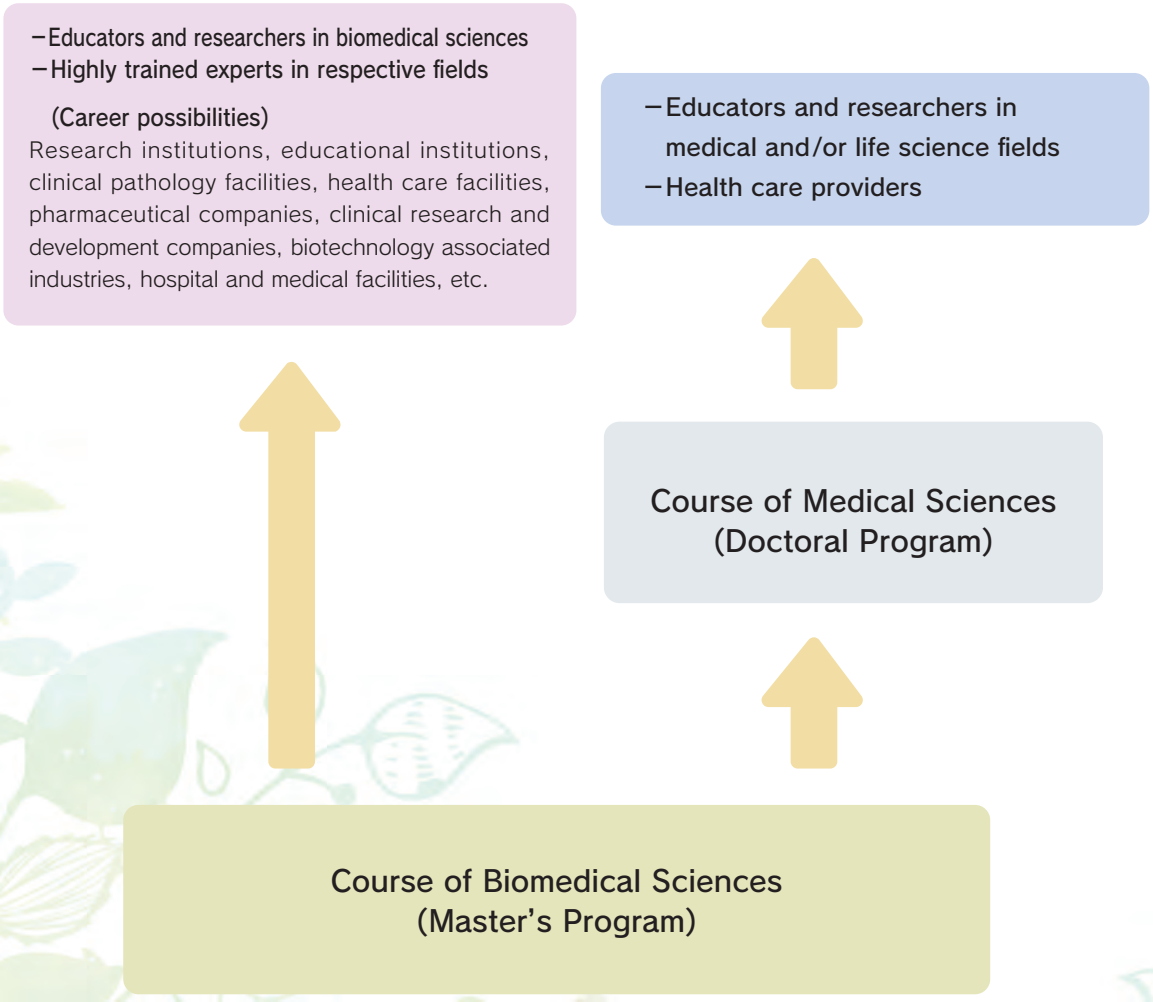
Biomedical Sciences is a general term for the life sciences field, which overlaps medicine, life sciences, and other medical interdisciplinary fields. The Biomedical Sciences Course is designed to draw together life sciences and traditional basic medicine/clinical medicine as educational and research subjects to promote the elucidation of biological processes from a medical perspective and to establish Biomedical Sciences as a discipline that is aimed at the creation of new medical care: not only diagnosis and treatment, but also the promotion of health and improvement of quality of life.

3 Career options after earning Master's Degree

This Master's course will train students in the biomedical sciences. It is hoped they will acquire basic knowledge of medicine, and come to understand the relationship between medicine and life sciences. We hope graduates will become researchers who can propose and conduct original research in biomedical sciences and academic medicine.

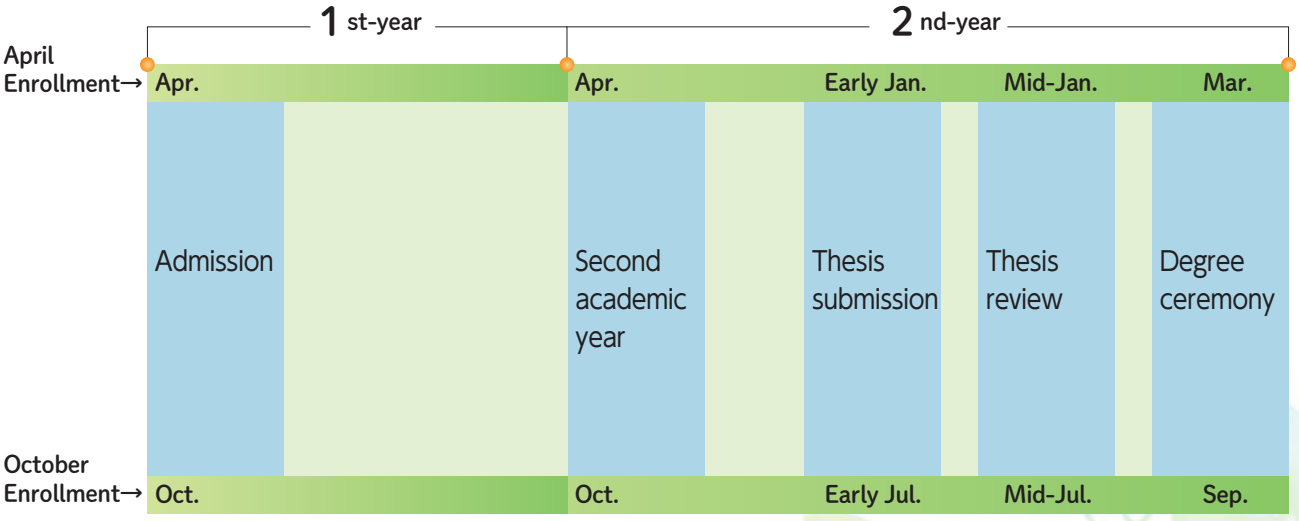
Graduates of this Master's Program can expect to become:

1. Educators and/ or researchers in the area of biomedical sciences (eg. life sciences or medical science related fields)
2. Highly trained experts in the fields of medicine, welfare, pharmacology, biology-related industries
3. Those who continue their education in Medical Sciences (Doctoral program) course



4 Curriculum

1) Subjects are categorized as Basic Subjects, Practical Subjects, and Research Subjects.
2) Basic Subjects are taken in the 1st year. In "required subjects", basic knowledge on life sciences and medical sciences, and basic techniques necessary in biomedical research will be acquired. In "required elective subjects," basic biomedical knowledge needed in multiple fields will be acquired (11 credits of required subjects, 4 credits of required elective subjects).
3) Practical Subjects are electives selected according to research theme and/ or postgraduate career. Practical and applied knowledge needed for specialization and/ or research in chosen fields will be acquired (4 or more credits of Practical Subjects).
4) In Research Subjects, students will conduct biomedical research in their chosen field and compose a master's thesis. They will acquire knowledge and techniques needed to propose and conduct research, and present research findings (13 credits of Research Subjects).
*Please note that entrance is in April or October.
In principle, all classes for students entering in October are conducted in English.



Requirements for degree award
- Acquisition of the credits listed in the Curriculum Table on Page 5.
- Successful completion of Master's thesis review process and passing final examination

Graduation Requirements

Curriculum									
subdivision	Subject	An academic year	General course credits			Teaching methods			備　考
			Required subjects	selectable Required subjects	Elective subjects	Lecture	Seminar	Technical Course	
Basic	Research Ethics	1	1			○			Take all these required subjects (11credits)
	Research Ethics（e-learning）	1	1			○			
	Introduction to Clinical Sciences A	1	2			○			
	Philosophy A	1	2			○			
	Basic Scientific Language A	1	2			○			
	Statistical Informatics A	1	2				○		
	Bio-Scientific Training A	1	1					○	
	Anatomy A	1		2		○			Take more than 2 out of 5 subjects for 4 credits or more.
	Analytical Physiology	1		2		○			
	Biomolecular Chemistry A	1		2		○			
	Socio-Environmental Medicine A	1		2		○			
	Laboratory Animal Science A	1		2			○		
	subtotal（12subjects）	—	11	10	0				
Practical	An Introduction to Pathology	2		2		○			Take 2 subjects for 4 credits or more.
	Bacteriology & Infection Control	2		2		○			
	Neuroscience lecture	2		2		○			
	Reproduction, Regeneration and Development	2		2		○			
	Informational Management	2		2		○			
	International Public Health	2		2		○			
	Ion beam technology for bioengineering	2		2		○			
	Drug Discovery	2		2			○		
	Clinical Trial and Research	2		2			○		
	Exercises in Genomic Medicine	2		2			○		
	Rihabilitation Medicine & Sociology	2		2			○		
	subtotal（11subjects）	—	0	22	0				
Research	Biomedical Scineces Methodology	1～2	2				○		required subjects. Take Methodology and Research in major fields.
	Biomedical Sciences Research	1～2	10				○		
	Research Discussion Seminar	2	1				○		
	subtotal（3subjects）	—	13	0	0	—			
total（27subjects）		—	24	32	0	—			
Degree	Master（Biomedical Science）								
Required						terms			
Students should 1) obtain credits described above, 2) write a dissertation with mentors' guidance, and 3) pass the thesis defense.						terms per year	two terms		
						school weeks per terms	15 weeks		
						time of one class	60-90 minutes		

Admission Policy

Course of Biomedical Sciences in Graduate School of Medicine, Gunma University (Master's Program)

<Aims in Human Resources Development>

Our program aims to cultivate scientists who will pursue medical science, medical ethics, and medical skills. We hope our graduates will integrate these pursuits and contribute to the progress of medical research and education, and become leaders in health care and medical science.

<Attributes of Desired Candidate>

We will accept students who wish to gain knowledge and skills in biomedical sciences through our program, and become highly-skilled professionals or researchers. Specifically, we will accept those who:

1. **strive to gain the ability to perform research independently based on high ethical values and profound academic knowledge.**
2. **strive to contribute to the society in medical science, health care and welfare filed as highly-skilled professionals by making use of the knowledge and skills they acquired.**
3. **strive to further develop the knowledge and skills they acquire, and continue to the PhD program to become researchers and/or educators in Biomedical Sciences field.**
4. **have skills for reading comprehension of literature in English.**

<Basic Policy for Admission Selection>

In order to select applicants with the above qualities, we will make comprehensive evaluation based on the results of the entrance examination (English test and interview) and undergraduate academic transcipts. We offer October admission in addition to the traditional April admission, to expand learning opportunities.

English examination will evaluate "reading comprehension of literature in English" (Attributes of Desired Candidate 4). The oral examination (interview) will evaluate the applicant's basic academic knowledge related to the major field of study and the willingness to engage in research (Attributes of Desired Candidate 1-3). Furthermore, the transcripts will be added for a comprehensive judgment.

Admission Information

1 Qualifications for Application

The main applicants are those who have been conferred a bachelor's degree (or expected to be conferred) or who have completed a specialised course at a vocational school. However, other persons may also be eligible to apply (qualification screening may be required). Please refer to the application guidelines for information on application requirements. For any questions, feel free to contact the admissions office.

2 Acceptance of Application

For more information on the application process, please refer to the website of the Graduate School of Medicine and the Faculty of Medicine, Gunma University. (https://www.med.gunma-u.ac.jp/). The Application forms are also available here.

3 Selection Method and the Number of Students to be Admitted

Selection Method :The evaluation for acceptance is based on an Academic examination(including oral examination), and the academic transcripts submitted by the applicants.
Number of Students to be Admitted:7

4 Examination Date

Examinations for April 2026 entrants are scheduled for September 2025. For more information, please refer to the application guidelines on the website.

5 The Aim of Each Examination Subject

Foreign Language (English) …… English skills sufficient for reading basic academic literature will be examined.
Oral Examination of Desired Major Field …… Basic academic ability necessary for engaging in studies in major field and willingness to study will be examined.

6 Fees following entrance

Entrance and tuition fees
(1) Entrance fee: ¥282,000 (JPY 282,000)
(2)Tuition fee: (Semester tuition fee) ¥267,900 (JPY 267,900) (Annual tuition fee: ¥535,800 (JPY 535,800))
*If the fees are revised at the time of enrollment or during the course of study, the revised amount will be applied.

7 Exemption and Postponement of Entrance and Tuition Fee, Scholarship

The admission fee or the tuition fee may be waived for admitted students who have difficulty paying due to special circumstances. Additionally, the collection of the admission fee or tuition fee can be postponed for a certain period for students who have difficulty paying by the specified deadline. A scholastic loan and benefit system for learning support is provided by Japan Student Services Organization (JASSO) for those with difficulty in paying the tuition fee.
For more information, please contact Education and Student Support Section, Educational Affairs Office, Administration Division, Showa Campus of Gunma University.

For exemptions and postponements : TEL. +81-27-220-7796 For Scholarships: TEL. +81-27-220-7792

8 Information sessions for applicants

An admissions information session is planned for those wishing to enrol in the coming year. For more information on dates and locations, please check our website.

Contact details:
Admissions Section, Educational Affairs Office, Administration Division, Showa Campus of Gunma University
3-39-22 Showa-machi, Maebashi City, Gunma 371-8511, Japan
TEL. +81-27-220-7797 E-mail: kk-mgakumu5@ml.gunma-u.ac.jp

Introduction of Major Field

Basic Medicine

The basic medicine consists of 14 fields.
Research and education of biomedical sciences will be conducted based on basic medicine.

- Anatomy
- Anatomy and Cell Biology
- Molecular and Cellular Neurobiology
- Biochemistry
- Integrative Physiology
- Neurophysiology and Neural Repair
- Pharmacology
- Developmental Genetics and Behavioral Neuroscience
- Bacteriology
- Infectious Diseases and Host Defense
- Public Health
- Legal Medicine
- Medical Philosophy and Ethics
- Medical Education and Development

Clinical Medicine

The clinical medicine consists of 36 fields (Including 8 Internal Medicine and 6 General Surgical Science). Research and education of biomedical sciences will be conducted based on clinical medicine.

(Internal Medicine)
- Cardiovascular Medicine
- Respiratory Medicine
- Gastroenterology and Hepatology
- Endocrinology and Metabolism
- Nephrology and Rheumatology
- Hematology
- Neurology
- Medical Oncology

(General Surgical Science)
- Cardiovascular Surgery
- General Thoracic Surgery
- Gastroenterological Surgery
- Breast and Endocrine Surgery
- Hepatobiliary and Pancreatic Surgery
- Pediatric Surgery

- Radiation Oncology
- Diagnostic Radiology and Nuclear Medicine
- Psychiatry and Neuroscience
- Anesthesiology
- Emergency Medicine
- General Practice Medicine
- Rehabilitation Medicine
- Clinical Laboratory Medicine
- Human Pathology
- Diagnostic Pathology
- Pediatrics
- Obstetrics and Gynecology
- Urology
- Neurosurgery
- Ophthalmology
- Otolaryngology Head and Neck Surgery
- Dermatology
- Plastic Surgery
- Orthopaedic Surgery
- Clinical Pharmacology and Therapeutics
- Oral and Maxillofacial Surgery
- Healthcare Quality and Safety

Cooprative and joint Department

The cooperative department and joint department consist of 10 fields of Institute for Molecular and Cellular Regulation, 2 clinical division of University Hospital, 3 fields of Heavy Ion Medical Center, 1 field of Center for Mathematics and Data Science,1 field of Initiative for Advanced Research and 1 field of Takasaki Advanced Radiation Research Institute, Japan Atomic Energy Agency,1field of Local Incorporated Administrative Institution Saitama Prefectural Hospital Organization.

(University Hospital)
- Clinical Trials and Regulatory Science
- Medical Informatics

(Institute for Molecular and Cellular Regulation)
- Molecular Traffic
- Laboratory of Epigenetics and Metabolism
- MolecularMembrane Biology
- Laboratory of Metabolic Regulation and Genetics
- Laboratory of Integrative Metabolic Regulation
- Developmental Biology and Metabolism
- Diabetes and Metabolic Disorders
- Mucosal Ecosystem Design
- Genome Sciences
- Metabolic Signaling

(Heavy Ion Medical Center)
- Medical Physics for Heavy Ion Therapy
- Medical Biology for Heavy Ion Therapy
- Heavy Ion Clinical Medicine

(Center for Mathematics and Data Science)
- Mathematics and Data Science

(Initiative for Advanced Research)
- Gene Therapy Science

(Takasaki Advanced Radiation Research Institute, National Institute for Quantum and Radiological Sciences and Technology)
- Quantum Biology

(Local Incorporated Administrative Institution Saitama Prefectural Hospital Organization)
- Comprehensive Clinical Medicine

Note : Inquiries about admission should be made directly to supervisors in desired Major Field of Study prior to the actual application process. Furthermore, If you would like to change your major field, you would change it at the end of the 1st semester of the 1st year.

List of supervisors of each major field and Description of Research Objectives (Key Words)

(Please refer to the Application Guidelines for contact information.)
＊The Day/Evening course will be begun. (It based on the special divisions on education methods by Article 14 of the Standards Act for Establishment of Graduate School and conducts the selection.)

Basic Medicine

Anatomy* — Hirohide Iwasaki

Neuronal circuit, connectome, synapse remodeling, iPS cells, organoid, imaging technology, light microscopy, electron microscopy

Anatomy and Cell Biology* — Toshiyuki Matsuzaki

cell membrane, water channels, transporters, microscopy, immunohistochemistry, electron microscopy

Molecular and Cellular Neurobiology — Kenichiro Hata

genomics, epigenomics, microbiome, single-cell analysis, DOHaD, early development, congenital disorders

Biochemistry* — Yoji Andrew Minamishima

Hypoxic response, energy metabolism, DNA damage & repair, cell cycle, cellular senescence, lipid mediators, proteomics, metabolomics, and lipidomics http://biochemistry.med.gunma-u.ac.jp/en/

Integrative Physiology* — (Selection in progress)

hormone, development, plasticity, regeneration, environmental factors, endocrine disruption

Neurophysiology and Neural Repair* — Hirokazu Hirai

memory; learning; motor control; regenerative medicine; viral vector; neurodegenerative disease; marmoset; non-human primate model; aging; stem cell therapy; gene therapy; patch clamp.

Pharmacology* — Hiroshi Kawabe

Ultrastructure of Synapses, Superresolution Microscopy, Psychiatric and Neurological Disorders, Cytoskeleton, Posttranslational Modification, Protein Degradation

Developmental Genetics and Behavioral Neuroscience — Goichi Miyoshi

Neuraldevelopment, Inhibitory circuits, Mouse genetics, Social behavior, Autism spectrum disorder, Neurodevelopmental disorder

Bacteriology* — Haruyoshi Tomita

multi-drug resistant bacteria, VRE, MDRP, enterococcus, bacteriocin, conjugative plasmid, transposon

Infectious Diseases and Host Defense* — Wataru Kamitani

Coronavirus, Molecular biology, Reverse genetics of Virus, Host-Pathogen interracton, Malaria, Infectious immunity

Public Health* — Kei Hamazaki

micronutrient, maternal and child health, lifestyle related diseases, public health nutrition, epidemiological studies

Legal Medicine* — Tadashi Hosoya

Forensic medicine, Next generation sequence, micro RNA, postmortem Laboratory medicine

Medical Philosophy and Ethics* — (Selection in progress)

clinical ethics, medical ethics, philosophy of medicine, medical ethics education

Medical Education and Development — Mikiko Kishi

Medical Education, Lesson Planning, Teaching Material, Curriculum Development

Clinical Medicine

Cardiovascular Medicine — Hideki Ishii (Internal Medicine)

arrhythmia, heart failure, ischemic heart disease,ultrasonic echocardiography, molecular biology, translational research

Respiratory Medicine — Keiju Hiromura (Internal Medicine)

lung cancer, allergic respiratory disease, COPD, lung fibrosis, infectious lung disease

Gastroenterology and Hepatology* — Toshio Uraoka (Internal Medicine)

gastrointestinal tumor, endoscopy, esophageal motility disorder, inflammatory bowel disease, hepatocarcinogenesis, non-alcoholic steatohepatitis, hepatic fibrosis, viral hepatitis

Endocrinology and Metabolism* — Eijiro Yamada (Internal Medicine)

diabetes, endocrine and metabolic diseases, sarcopenia, frailty, molecular biology,gene mutation, translational research

Nephrology and Rheumatology* — Keiju Hiromura (Internal Medicine)

nephrology, glomerulonephritis, tubulointerstitial injury, rheumatology, lupus nephritis, vasculitic syndrome

Hematology* — Hiroshi Handa (Associate Professor) (Internal Medicine)

hematologic malignancy, genome, epigenome, coagulation disorder, next generation sequencer

Neurology* — Yoshio Ikeda (Internal Medicine)

Alzheimer disease, dementia, amyotrophic lateral sclerosis (ALS), spinocerebellar ataxia (SCA), microsatellite-repeat

Medical Oncology — Daisuke Takahari (Internal Medicine)

Medical oncology, Targeted therapy, Immune checkpoint inhibitors, Liquid biopsy, Personalized medicine, Precision medicine

Cardiovascular Surgery* — Hiroshi Saeki (General Surgical Science)

surgery, heart, brain, ischemia, reperfusion injury, organ protection

General Thoracic Surgery — Ken Shirabe (General Surgical Science)

surgical oncology, mechanism of proliferation, invasion and metastasis, driver gene, diagnosis and treatment

Gastroenterological Surgery* — Hiroshi Saeki (General Surgical Science)

carcinogenesis and cancer progression, gastrointestinal motility, novel diagnostic method, development of novel diagnostic and therapeutic method, surgical education

Breast and Endocrine Surgery — Ken Shirabe (General Surgical Science)

breast cancer, biomarkers, lymph node metastasis, TILs, microRNA, PET

Hepatobiliary and Pancreatic Surgery* — Ken Shirabe (General Surgical Science)

cancer microenvironment, hepato-biliary and pancreatic cancer, sarcopenia, and laparoscopic surgery for hepato-biliary and pancreatic disease

Pediatric Surgery — Hiroshi Saeki (General Surgical Science)

surgical oncology, circulating tumor cells, minimally invasive surgery, gastro-intestinal motility, enterobacterial flora

Radiation Oncology — Tatsuya Ohno

Precision medicine, DNA repair, anti-tumor immunity, high precision radiotherapy, image-guided, brachytherapy, carbon ion radiotherapy, multidisciplinary cancer treatment

Diagnostic Radiology and Nuclear Medicine* — Yoshito Tsushima

diagnostic radiology, nuclear medicine, CT, MRI, US, SPECT, PET, interventional radiology

Psychiatry and Neuroscience* — Seiichiro Jinde

psychiatric disorder, neuroimaging, stress, mental illness, brain function

Anesthesiology* — Shigeru Saito

anesthesia, neuroimaging, consciousness, pain, brain function

Emergency Medicine — Kiyohiro Oshima

cardiopulmonary arrest, cardiopulmonary resuscitation, severe trauma, reperfusion injury, coagulation

General Practice Medicine — Keiko Kowase

General medicine, Primary care, community medicine, atherosclerosis, Japanese oriental medicine, diagnostic inference

Rehabilitation Medicine* — Naoki Wada

rehabilitation medicine, disability studies, motion analysis, autonomic nervous system, virtual reality

Description of Research Objectives (Key Words)

Clinical Laboratory Medicine* (Selection in progress)

Clinical laboratory medicine, gene analysis, diabetes mellitus, thyroid disease, atherosclerosis, infectious diseases, sports medicine, lifestyle-related disease, infection control and prevention

Human Pathology* Hideaki Yokoo

neuropathology, brain tumor, molecular and cytogenetics of tumor, glial cells, translational research

Diagnostic Pathology* Morito Kurata (The new supervisor will be arrived from 1 July, 2025.)

cancer morphology, multi-step carcinogenesis, oncogene, tumor suppressor gene, protein expression

Pediatrics Takumi Takizawa

allergic diseases, neurodegenerative disorder, acute leukemia, nephrosis, inflammatory bowel diseases.

Obstetrics and Gynecology* Akira Iwase

Reproductive medicine and biology, Reproductive endocrinology, Gynecologic oncology, Perinatal medicine, Endometriosis, Minimally invasive surgery

Urology* Kazuhiro Suzuki

urological tumor, prostate cancer, androgen dependency, screening

Neurosurgery Soichi Oya

brain tumors, skull base tumors, cerebrovascular diseases, microneurosurgery, neuroendoscopic surgery, surgical assisting device

Ophthalmology* Hideo Akiyama

Optical coherence tomography, Ocular circulation, Minimally invasive surgery

Otolaryngology Head and Neck Surgery* Kazuaki Chikamatsu

head and neck cancer, immunosuppression, cancer immunotherapy, tumor microenvironment

Dermatology Sei-ichiro Motegi

Skin, skin sclerosis, cutaneous malignant tumors, wound healing, hereditary skin diseases

Plastic Surgery Satoshi Yokoo

reconstruction, free flap, wound healing, breast reconstruction

Orthopaedic Surgery — Hirotaka Chikuda

osteoarthritis, spondylotic deformans, joint arthroplasty, sports injury, musuclo-skeletal tumor

Clinical Pharmacology and Therapeutics* — Koujirou Yamamoto

clinical pharmacology, pharmacokinetics, genetic polymorphisms, individualization of drug therapy

Oral and Maxillofacial Surgery — Satoshi Yokoo

oral mucous wound healing, oral and maxillofacial reconstruction, oral cancer, salivary gland, jaw deformity

Healthcare Quality and Safety* — Kazumi Tanaka

healthcare quality, patient safety, quality indicator, shared decision making, interprofessional collaboration, Patient Engagement

Cooperative Department (University Hospital)

Clinical Trials and Regulatory Science* — Yoshiaki Ohyama

clinical research, study design, statistics

Medical Informatics* — Kota Torikai (Associate Professor)

medical information, health care, hospital information system

(Institute for Molecular and Cellular Regulation)

Molecular Traffic — Ken Sato

membrane trafficking, secretion, metabolism, development, C. elegans, knockout mouse

Laboratory of Epigenetics and Metabolism* — Takeshi Inagaki

Epigenetics and Metabolism, Obesity, Diabetes, Energy Metabolism, Transcription Factors, Chromatin Conformation, Histone Modifications

Molecular Membrane Biology — Miyuki Sato

C. elegans, organelle, autophagy, endocytosis, mitochondria, maternal inheritance

Laboratory of Metabolic Regulation and Genetics* — Takashi Nishimura

Drosophila, metabolic homeostasis, sugar metabolism, insulin signaling, inter-organ communication, growth regulation

Laboratory of Integrative Metabolic Regulation — Naoko Hattori

Epigenetics, stem cell, aging, cancer metabolism, organ communication, model mouse

Developmental Biology and Metabolism* — Yoshio Fujitani

diabetes, glucose metabolism, developmental biology, pancreatic beta cells, genetically engineered mice, beige adipocyte, zinc biology, zinc transporter

Diabetes and Metabolic Disorders* — Jun Shirakawa

human islets, biomarkers, organ networks, diabetes, fatty liver, adipose tissue inflammation

Mucosal Ecosystem Design* — Nobuo Sasaki

Adult tissue stem cell, Organoid, Human development, Gut microbiota, Symbiosis, Infection disease

Genome Sciences* — Izuho Hatada

epigenetics, epigenome, DNA methylation, microarray, genome-wide analysis,ageing

Metabolic Signaling — Tadahiro Kitamura

diabetes, obesity, metabolic syndrome, transcription factor, knockout mouse, insulin, glucagon

(Heavy Ion Medical Center)

Medical Physics for Heavy Ion Therapy — Mutsumi Tashiro

Medical physics, Radiation therapy physics, Heavy ion therapy physics, Accelerators, Advancement of heavy ion therapy irradiation techniques

Medical Biology for Heavy Ion Therapy — Akihisa Takahashi

radiation biology, cancer treatment, normal tissue effects, basic clinical radiobiology, space biology

Heavy Ion Clinical Medicine* — (Selection in progress)

heavy ion radiotherapy, multimodality, cancer therapy, biological response, high LET, hypofractionation, Image-guided adaptive radiotherapy

(Center for Mathematics and Data Science)

Mathematics and Data Science* — Yuki Aoki

Mathematical Analysis, Machine Learning, Database, Image Analysis, Python

Mathematics and Data Science* — Mitsuo Uchida

social medicine, medical statistics, occupational health, infectious disease epidemiology, AI, mathematical modeling, regulatory science

(Initiative for Advanced Research)

Gene Therapy Science — Keisuke Nimura

Next generation sequencing, Bioinformatics, Gene expression regulation, Gene therapy science, cancer biology

Joint Department
(Takasaki Advanced Radiation Research Institute, National Institute for Quantum and Radiological Sciences and Technology)

Quantum Biology — Yasuyuki Ishii Yasuhiko Kobayashi Kazuo Funayama

ion beam, microbeam, micro-PIXE, single-ion hit, irradiation of targeted cell, radiomicrosurgery, bystander effect

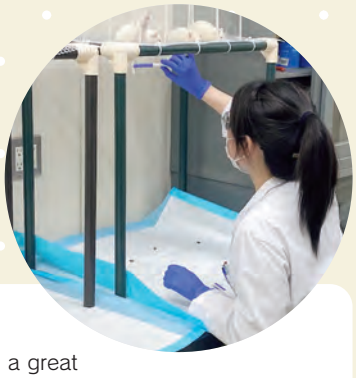
(Local Incorporated Administrative Institution Saitama Prefectural Hospital Organization)

Comprehensive Clinical Medicine — Saitama Prefectural Cancer Center Yukio Kageyama Takehiko Kamijo Saitama Prefectural Children's Medical Center Atsuko Nakazawa

cancer genomicis, cancer epigenomics, adult solid tumors, adult hematological malignancies, molecular target therapy, cancer immunology, robotic-assisted surgery, pediatric tumor (leukemia, solid tumor), pediatric gastrointestinal and hepatic disease, genetic disorders

Interview the graduate students

interview



HE XIN (September 2022,completed)

October 2022, enrolled in Graduate School of Medicine (Doctoral Program)

1 Research Theme

An increasing number of patients suffer from chronic pain each year. In particular, the prevalence of neuropathic pain (one of the most severe chronic pain conditions) is increasing. It has been reported that chronic pain patients and attention deficit hyperactivity disorder (ADHD) and its analogues are commonly comorbid. Ineffectiveness of analgesics is one of the features of both ADHD and chronic pain, and is thought to be one of the mechanisms by the chronicity of pain. Based on the animal model of neuropathic pain, we are trying to understand the mechanism of ineffectiveness of analgesics via behavioral and histological experiments, so as to clarify the mechanisms of pain chronicity.

2 The motive for going on to Biomedical Sciences in Graduate School of Medicine, Gunma University.

When I practiced at the hospital during university, I found that there are many patients that are in great distress caused by pain, which made me realized that pain must be considered as an even more important problem. Japan is one of the most advanced countries in the world in terms of science and technology, and many fields, including medicine, remain at the forefront of the world. After graduating from university, I decided to study in Japan to further my education in the field of pain. About two years after I came to Japan, I majored in the Biomedical Sciences course in Gunma University, performing research on neuropathic pain. With the kind support of everyone here, I graduated with a Master's degree in September of 2022. Now I am continuing my PhD studies for further detailed research.

3 Please tell us about campus life.

Since starting the master's program, my daily life has been very challenging and enjoyable. In the laboratory, I mainly do basic experiments and data analysis, etc., and participate in some specialized courses. Additionally, through regular research seminars with my teachers, I get a lot of instructions and suggestions.

Not only studying my major, but also actively participating in various international and cultural communication activities. It is a great opportunity for me to communicate with Japanese and international students, experiencing different cultures and enjoying the international campus life.

4 Please tell us the good points and the struggles in school. In addition, please tell us how you overcome many difficulties?

The University offers specialized courses and lectures, as well as various research requirements. The professors gave me a lot of instructions and suggestions on academic research. Moreover, the opportunities to communicate with international students helped to improve my cross-cultural communication skills.

However, there were also some difficulties such as language barriers and the stress of academic research. Thus, I attended language lessons to improve my communication skills. And, I also received much help and support from my tutors and other teachers.

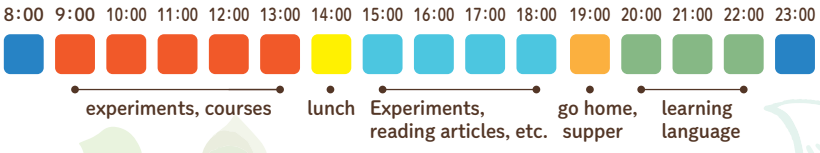
5 Please tell us your future goals.

My major is anesthesiology and now I am studying in the field of pain. It is considered that the treatment of pain is an extremely important area of the modern anesthesiology. Although there has been remarkable progress in contemporary medicine, there is still a lack of progress in chronic pain. For the future, I would like to contribute to the alleviation of pain for those patients with chronic pain. At present, my research is focused on fundamental mechanisms. In the future, I will study both pathological mechanisms and clinical pharmacotherapy.

6 Please tell us your message to the applicants for admissions.

Biomedical science is an evolving field for better understanding and improving of human health. Studying biomedical science offers the opportunity to learn about the fundamentals of biology, the mechanisms of disease, and innovative medical technologies. While there are many difficulties in this field, it also provides us with many opportunities to participate in scientific research to advance medical science. Let’ s all do our best to work hard and to contribute to the development of medical science for mankind in the future.

《Schedule for a day》



Interview the graduate students

interview

Enkhjin Dorjsuren (September 2023,completed)

(Currently enrolled in the Doctoral Program at the Graduate School of Medicine)

1 Research Theme

In my master's course, I joined a research project that looked into how certain biological factors affect metabolism in cells.

2 The motive for going on to Biomedical Sciences in Graduate School of Medicine, Gunma University.

When I finished my undergraduate studies, I wanted to dive deeper into biomedical science. Gunma University offered strong research opportunities and great support for international students. I felt genuinely welcomed and encouraged, especially by a kind professor and the staff at the international affairs office. Their support gave me the confidence to take on this new challenge in a different country. I saw it as a chance not only to continue my education but also to grow both personally and professionally.

3 Please tell us about campus life.

My campus life involved a significant period of adjustment, both academically and culturally. Moving to a new country and adapting to a different educational system was challenging at times. However, what truly made a difference were the international friends I met through classes and university events. Their kindness and encouragement gave me the strength to keep going. I also participated in activities like the English Café, the OPEN club, and GFL program events, which helped me connect more deeply with the culture and meet new people. These moments outside the lab were just as meaningful as my academic work. Through all these experiences, I discovered a lot about myself and what I'm capable of. I am especially thankful to Nishiyama-san, our kind technician, who taught me many things about daily life in Japan.

4 Please tell us the good points and the struggles in school. In addition, please tell us how you overcome many difficulties?

One of the most meaningful parts of my master's experience was being part of an international academic environment. It gave me the opportunity to live in Japan, gain valuable research experience, and grow. I truly appreciated the freedom to explore, not only through my studies but also through daily life. Taking part in cultural events and meeting people from different backgrounds helped me understand new perspectives and made me feel more connected.

At the same time, adjusting to a new environment was not always easy. In the beginning, I sometimes felt isolated and unsure of how to find my place. What helped me most was taking small steps to reach out. I joined university events, attended Japanese language classes, and regularly spoke with the staff at the international office, who were always warm and supportive. I also had the chance to speak with Shimazaki-sensei and Chen-sensei. Their kindness and welcoming gave me a sense of relief during a time when everything felt new and uncertain.

These experiences helped me build confidence and taught me the importance of seeking support. They also deepened my motivation to continue learning and growing through research and new challenges.

5 Please tell us your future goals.

Going through the challenges and growing in a new environment helped me realize how much I enjoy learning and meeting new me. My goal now is to pursue a PhD and become a virologist. There is still a lot to learn, but I feel motivated and excited. I want to contribute to research that helps us better understand viruses and leads to more effective ways to prevent and treat infections. In the future, I hope to work in a research institute or in the industry, depending on where I can keep growing and contribute the most. I want to be part of meaningful projects and support others as well. Even if it is just a small step, it would mean a lot to me.

6 Please tell us your message to the applicants for admissions.

If you are thinking of joining the Biomedical Sciences Course, I truly recommend it. The environment is welcoming and full of opportunities to grow. You will be able to do real research and work with kind and supportive professors. Even though graduate school can be busy and challenging, you will learn so much, not just science, but also how to think independently and overcome problems. I am still learning every day, but I am grateful to be here. I hope you will enjoy the experience too. It's a place where you can discover not only new knowledge, but also more about yourself.

《Schedule for a day》

群馬大学
GUNMA UNIVERSITY

大学院 医学系研究科 HP

Location

(Showa Campus)

Graduate School of Medicine Faculty of Medicine	*3-39-22,Showa-machi,Maebashi City, Gunma 371-8511*	*Telephone* **+81-27-220-7111**
University Hospital	*3-39-15,Showa-machi,Maebashi City, Gunma 371-8511*	