# Application Guidebook for Students of General Selection
# Graduate School of Medical Sciences
# Master's Degree Program of Major in Medical Sciences
# Nagoya City University
# for Academic Year 2025（October Enrollment）

## Admission policy of Graduate School of Nagoya City University

Nagoya City University (NCU) aims to be a university in which all citizens feel pride and affinity. In graduate education, based on our recognition that research guidance for graduate students is a challenge in offering research activities. We aim to cultivate researchers and professionals who can gain advanced expertise and an interdisciplinary thinking.
With this philosophy and aim, the graduate school is widely looking for individuals who possess advanced expertise and an eagerness and aptitude for activity both within Japan and abroad, in addition to diverse skills and work experience.

### [Master's Degree Program of Graduate School of Medical Sciences]

**《Desirable Students》**

Individuals who are keenly interested in the most advanced medical science, medical care and life science
Individuals who intend to be a pioneering and creative researcher or a highly-specialized engineer
Individuals who have sufficient academic ability in the basic field of natural science, and are motivated to work at study and research proactively and autonomously.

**《Content and level of knowledge that should have been acquired》**

In addition to having acquired university-level knowledge in various fields of natural sciences, applicants are required to have specialized basic knowledge in life science or related fields. In addition, as reading research papers in English is necessary during research, applicants are also required to have a sufficient level of reading comprehension in English.

### 1. Prescribed enrollments (total of April and October enrollment and special selection on recommendation)

Major in Medical Sciences　　10 students

### 2. Eligibility of applicants

All applicants must satisfy at least one of the following conditions:

(1) A person who has graduated from university or is expected to graduate from university by September, 2025.
(2) A person who has a bachelor's degree by the National Institution for Academic Degrees and Quality Enhancement of Higher Education under Article 104 (4) of the School Education Law, or who is expected to complete that course by the end of September, 2025.
(3) A person who has completed a 16-year course of schooling program outside Japan or is expected to complete that course by September, 2025.
(4) A person who has completed a 16-year course of schooling program outside Japan that is provided by correspondence education in Japan or is expected to complete that course by September, 2025.
(5) A person who has completed or is expected to complete by September, 2025 a 16-year program of the foreign educational institution established in Japan based on the educational system of this foreign country. In such cases, this the institution should be approved by the Minister of Education, Culture, Sports, Science and Technology of Japan.

---

Contact: Administration Officer, Administration Office, Graduate School of Medical Sciences
Nagoya City University
E-mail : med-daigakuin@sec.nagoya-cu.ac.jp　***Inquiries must be made by email.***

(6) A person who has completed or is expected to complete to be awarded a bachelor's degree by September, 2025 a 3-year or more year's program in the university or other tertiary institution in a foreign country assured by the government or authorized organization in the original country, or specified by the Ministry of Education, Culture, Sports, Science and Technology of Japan. The program includes the comprehensive education study provided by the foreign university in tertiary institution in Japan, or the program provided by the foreign educational institution established in Japan based on the educational system of the original country. In such cases, the institution should be specified by the Ministry of Education, Culture, Sports, Science and Technology of Japan.
(7) A person who has completed a specialized training course in an advanced vocational school (it is limited that the courses have 4 or more years and that the level of courses is designated by the Ministry of Education, Culture, Sports, Science and Technology of Japan) after the date designated by the Ministry of Education, Culture, Sports, Science and Technology, or who is expected to complete such a course by the end of September, 2025.
(8) A person who has been approved by the Minister of Education, Culture, Sports, Science and Technology of Japan.
(9) A person who has been enrolled in university for 3 years or more, or completed a 15-year course of schooling program outside Japan, and who have acquired the prescribed credits with excellent academic results that is approved by the Graduate School of Medical Sciences.
(10) A person who has academic ability equivalent to or higher than those who have graduated from university by individual achievement test conducted by Graduate School of Medical Sciences and will become 22 years or older by September 30, 2025.

*Prior to submitting application documents, please contact the faculty member in charge of the department where you wish to belong, consult him/her regarding your application, and then indicate the potential supervisor by email below.

**【Destination】med-daigakuin@sec.nagoya-cu.ac.jp**

<Email Example>
(Title) Master's Degree Program of Major in Medical Sciences October Enrollment
(Text) Full name: First/Middle/Last name
Potential Supervisor: Professor's name

To contact the faculty member, please refer to the following URL:
**https://www.nagoya-cu.ac.jp/med/labo/**

## 3. Screening of Qualification for examination under Category（9）or (10) as described above

(1) Application period of "Screening of Qualification for examination"
**June 18 (Wed) – June 25 (Wed), 2025 *must be reached at the end of period.**
(2) Application documents
Applicants who fall under Category (9) or (10) must write in red "application qualification documents enclosed, Graduate School of Medical Sciences, Master's Degree Program (October Enrollment)" on the envelope, and send the following 5 documents by registered express mail.
① Request for Screening of Eligibility for Examination (prescribed form "M-4" )
② Resumé (prescribed form "M-2")
③ Achievement Records (prescribed form "M-5")
④ Academic Transcript,
⑤ Diploma (a graduation letter), certificate of completion (expected completion)
*M-2, M-4 and M-5 forms can be downloaded from the following website.
URL: https://www.nagoya-cu.ac.jp/english/faculty/admissions/med/
*Must be sent by post. Delivery in person is not accepted. Applications which cannot be reached by the designated date will not be acceptable. (the date printed on the postmark is not accountable.)
*If you would like to apply from overseas, please make sure to entrust your application procedure to the proxy residing in Japan. Application by post directly from overseas will not be accepted. Notifications from NCU will be sent to your proxy's address.

Send the application documents by mail to:

Admissions Office, Student Affairs Division, Administration Office of Nagoya City University
1 Kawasumi, Mizuho-cho, Mizuho-ku, Nagoya, Aichi 467-8601, Japan

(3) Results of the screening
The results of the screening will be notified to applicants as early as possible. Applicants who passed the screening can apply to the examination.

## 4. Period of application and application procedures

(1) Period of application
**July 11 (Fri) –July 18 (Fri), 2025 *must be reached at the end of period.**

(2) Application procedures
a. Enclose the application documents, etc. into the A4 sized envelope, stick NCU designated address label which should be filled in the details and send them by registered express mail.
b. Must be sent by post. Delivery in person is not accepted. Applications which cannot be reached by the designated date will not be acceptable.
c. Applications which cannot be reached by the designated date will not be acceptable. (the date printed on the postmark is not accountable.)

*** If you would like to apply from overseas, please make sure to entrust your application procedure to the proxy residing in Japan. Application by post directly from overseas will not be accepted. Notifications from NCU will be sent to your proxy's address.**

Once your application documents are accepted, admission card and Test center information will be posted to applicants before July 31st (Thu). If you did not receive by those dates, please contact Administration Office of Graduate School of Medical Sciences (refer to page1).

## 5. Graduate Course of International Program to Conjoin Brain Science and Society

(1) This course is a joint education program in which five graduate schools of NCU (Medical Sciences / Pharmaceutical Sciences / Design and Architecture / Nursing / Science) work together to accept international students mainly from developing countries and educate them with Japanese students. Through this program, students will have a comprehensive perspective on brain science and society, and aim to become highly specialized human resources who can take on the challenge of solving social issues based on the principles of the SDGs. The ultimate goal of this course is to systematically and internationally study the brain and mind, including medical and pharmaceutical sciences, and to acquire the ability to put it into practice in society.
(2) A limited number of applicants will be admitted.
(3) Students of this program will be determined through the internal selection from those who have passed the Master Program entrance exam.
*Students of this program is required to simultaneously satisfy the requirements of both their major in the graduate school and this program.
*For details, please refer to the application guidelines of this program.

## 6. Application documents, etc.

*For candidates residing overseas, please be sure to apply by post through a proxy residing in Japan, as the online applications are not accepted. Form M1 is not uploaded online, and the application form must be ordered and completed in the candidate's own handwriting (or by a proxy). Notification of examination result and information on enrollment procedures will also be sent by the university to the proxy.

| Documents, etc. | | Description |
|---|---|---|
| 1 | Application for admission/ Photo Identification card/ Examination Admission card | [Use the prescribed form "M-1"]<br>Stick your photograph on the application form. A photograph should be taken within 3 months, full-faced, upper body, no caps or hat, no background, full-color and sized 4cm ×3cm.<br>Please fill in the address which you are (or a proxy is) certain to be contacted. |

| | | |
|---|---|---|
| 2 | Resumé<br>*Note 1 | [Use the prescribed form "M-2"]<br>In "Academic Background," start from admission to university (including the course and the department).<br>If you have work experience, provide details in "Employment History."<br>If you apply under Category (3), (4), (5) (6) or (9) of "2. Eligibility of applicants," and you have completed curricula in a foreign country, fill in your education history from elementary education (equivalent to elementary school) to higher education (equivalent to university education). |
| 3 | Academic transcript<br>*Notes 1, 3 | Academic transcript should be prepared by university you are currently enrolled in or have graduated from.<br>If you apply under Category (2) or (8) of "2. Eligibility of applicants," the academic transcript is not required.<br>If you apply under Category (3), (4), (5) (6) or (9) of "2. Eligibility of applicants," and you have completed curricula in a foreign country, submit an original transcript of your higher education (equivalent to university) completed in a foreign country. A photocopy will not be acceptable (*Note 2). These documents must be written in Japanese or English, or the translated document in either of these languages should be attached. In this case, however, prepare the translation documents separated from the original transcript. |
| 4 | Diploma (graduation letter)<br>*Notes 1, 3 | Your diploma should be prepared by the university you are enrolled in or have graduated from.<br>If you apply under Category (2) or (8) of "2. Eligibility of applicants," submit a document certifying your eligibility.<br>If you apply under Category (3), (4), (5) (6) or (9) of "2. Eligibility of applicants," and you have completed curricula in a foreign country, submit an original transcript of your higher education (equivalent to university) completed in a foreign country. A photocopy of your transcript will not be acceptable. (*Note 2). These documents must be written in Japanese or English, or the translated document in either of these languages should be attached. In this case, however, prepare the translation documents separated from the original transcript. |
| 5 | Residence certificate | If you are a foreign national and eligible for residence in Japan, residence certificate is required to submit.<br>If your visa status is for short-term residence, submit a photocopy of the Japan entry visa stamped on your passport.<br>If you are residing in a foreign country, submit a photocopy of your passport.<br>*Residence certificate without the"Social Security and Tax Number System" is acceptable. If the number is printed on the certificate, please make sure to make it invisible by using a permanent black pen. |
| 6 | Letter of permission for taking examination | [Use the prescribed form "M-3"]<br>If you are in employment and wish to be admitted while remaining employed, submit the examination permission issued by the superior from your workplace. |
| 7 | Examination fee etc. (30,410 yen) | 【Paying the examination fee in Japan】<br>When paying the examination fee, fill in the transfer request form (prescribed form of NCU) with the required information, and present it with 30,410 yen (30,000yen for Examination fee＋410yen for Express mail fee for the admission card to be sent) at bank, etc. for transfer. (*Yucho* Bank does not accept this transfer. Do not use an ATM, etc.; use only a teller service.)<br>The relevant bank fees are to be paid by the applicant.<br>Submit the "Examination Fee Payment Certificate (Slip B)" received from the bank, etc., together with the other application documents. (Do not submit the "Receipt of Transfer Amount (and Transfer Fee) (Slip A)," which should be retained by you.)<br>The examination fee is not normally refundable. However, under a few circumstances, the paid examination fee may be refunded. Confirm this on the NCU website. |

| | | |
|---|---|---|
| | | ・The examination fee was transferred twice.<br>・The application documents were not submitted after the examination fee has been transferred (or the application was not accepted).<br><br>【Paying the examination fee from overseas】<br>Transfer application fees of 30,410 yen (30,000yen for Examination fee＋410yen for Express mail fee for the admission card to be sent) to the following accounts by July 18 (Fri) 2025, and submit a copy of the foreign remittance request form.<br><br>Type of Transfer: Electronic Transfer<br>Bank Transfer Fees: Paid by the remitter<br>Amount of Transfer : 30,410 yen (JPY) ＋all fees associated with the transfer<br>1) The remitter should pay "Japanese bank fees," "remitter's bank fees," and all fees associated with the transfer.<br>2) If you transfer money in foreign currency, your application will not be accepted.<br>Purpose of Transfer: Application fees<br>[Application Fields]<br>Bank Name: The Bank of Mitsubishi UFJ, LTD<br>Bank Branch: Takiko Branch<br>Account Number: 1232518<br>Beneficiary Name: Nagoya City University<br><br>Address: 1 Kawasumi, Mizuho-cho, Mizuho-ku, Nagoya-shi, Aichi 467-8601 JAPAN<br>Currency: JPY<br>Swift Code: BOTKJPJT |
| 8 | Mailing label | [Use the prescribed form of NCU]<br>The mailing label will be used to announce the examination result to the applicants. |
| 9 | NCU Address label | Filled in the details on the designated address label and stick it onto the A4sized envelop to be sent to the Entrance Examination and Public Relations Division. |

Note1: If you have taken the screening of qualification for examination, it is not necessary to submit the application documents 2, 3 and 4 when you apply.

Note2: If any of your "Diploma," "Academic Transcript" and other certificates issued by a higher educational institution in a foreign country cannot be reissued, a photocopy is acceptable. If a photocopy is submitted, the original certificates must be presented at the administration office, Entrance Examination and Public Relations Division when you come for the admission procedure.

Note 3: If the name written on your "Academic Transcript," "Diploma" or other certificates is different from your current name, provide the document to prove that your name has been changed (e.g., family register).

Note 4: M-2 and M-3 forms can be downloaded from the following website.
URL: https://www.nagoya-cu.ac.jp/english/faculty/admissions/med/

## 7. Prior consultation of applicants with a physical disability

Applicants (to the degree as determined by Article 22-3 of the School Education Act), who need special assistance during the examination or with their graduate studies should contact the administrator, Office of Medical School, NCU by e-mail (refer to page 1).

## 8. Date and method of selection for admission

| Examination date | Examination time | Examination subject | Examination place |
|---|---|---|---|
| **August 5 (Tue), 2025** | 10:00－12:00 | English (Written test. Dictionaries may be permitted except electronic one. | Lecture Room B, 11th floor, Medical School Research Building |
| | 13:00－14:30 | Basic science (Written test. Japanese or English proficiency is required.) | Lecture Room B, 11th floor, Medical School Research Building |
| | 15:00－ | Interview | Details will be presented on the day of the examination |

*Please arrive at the venue 15 minutes before the start of the test for English and Basic Science, respectively.

## 9. Results of examination:

**September 2 (Tue), 2025 at 14:00**

The results of the examination will be announced on the bulletin board on the 1st floor of the Medical School Research Building of NCU, and also posted to each applicant. (Please contact Administration Office of Graduate School of Medical Sciences (refer to P.1), if the result won't be delivered even one week after the announcement day.)

## 10. Admission procedure

(1) Time period of procedure:
Mid-September, 2025
Further details will be announced later.

(2) Details of procedure
The details of the procedure will be notified to you together with the results of the examination.

(3) Fees payable during the admission procedure

a. Admission fee Nagoya City residents, etc. 232,000 yen
Others 332,000 yen

b. Disaster and accident insurance for student education and research 1,750 yen

c. Additional coverage for the prevention of contact infection 40 yen

d. Insurance for accidents involving third parties or their property 1,000 yen

Note 1: The admission fee should be paid through a financial institution before commencing the admission procedure. Paid admission fee is not refundable.

Note 2: "Nagoya City residents, etc." means 'enrolled students' or 'those whose spouse or first-degree family member can prove that his/her continuous residential period in Nagoya city is at least one year before the date of admission by his/her resident certificate'.

Note 3: Any revisions to the fees upon admission shall become effective immediately.

## 11. Tuition

Annual amount 535,800 yen (267,900 yen per semester for 1st and 2nd semesters)

Note 1: After admission, tuition is to be paid twice a year (for the 1st semester and the 2nd semester) (automatic withdrawal from your account).

Note 2: Any revisions to the tuition during enrollment shall become effective immediately.

Note 3: Graduate School of Medical Sciences may charge additional cost without any advance notification.

## 12. A waivers of tuition

Students who can hardly afford the tuition fees with financial reasons and who are recognized to be achieving excellent results in their academic work can apply for a waiver of either full, half, or a quarter of their tuition fees.

## 13. Scholarship system

(1) JASSO
Scholarships of the Japanese Student Services Organization (JASSO) are available to graduate students. Students wishing to apply to the programs will be referred following a review of academic achievement, research ability, etc., to determine eligibility.

(2) Nagoya Kyoso Kenkyu Kikin Scholarship (University's Own Scholarship)
There are income restrictions (less than 1.8 million yen per year) and other screening requirements. 250,000 yen per semester (maximum 500,000 yen per year) per student.

## 14. Cautions

(1) Applications lacking necessary documents will not be accepted.
(2) Applications found to have made false statements in their applications may have their admission revoked even after their enrollment.
(3) Application documents, etc. will not be returned.
(4) If your return address has been changed, notify this immediately to the Administration officer, Graduate School of Medical Sciences, NCU by e-mail (refer to page 1).
(5) Because the coursework is basically conducted in Japanese, applicants must have sufficient Japanese ability, however, a limited number of classes conducted in English is also available.
(6) A double enrollment is prohibited under the rule.

## 15. Treatment of your personal information

NCU treats your personal information in accordance with the Act on the Protection of Personal Information of Nagoya City.

(1) Use of your personal information
a. Your name, address and other personal information given in application documents, etc. are used for our operations of selection for admission (e.g., application registration, selection, application result announcement, admission procedure).
b. Your personal information used for selection for admission (e.g., academic transcript) may be used as reference material for investigative research and academic research to improve future selection for admission and graduate education. (Investigative research results are announced in such a way that individuals cannot be identified.)
c. After you are admitted, your personal information is used for operations related to educational affairs (e.g., enrollment management, schooling guidance), student support (e.g., health control, tuition waiver, application for scholarship, job placement support), and tuition collection.

(2) Entrustment of operations to external business operators
The operations of (1) above may be entrusted to some external business operators under an agreement with them for proper treatment of personal information.

## 16. Notifications from NCU in case of emergency

In case of emergency (e.g., occurrence of disaster) or if changes are required to the contents of this application guidebook, students will be notified those changes through the website of NCU. With those reasons, please make sure to check the website, especially the examination date comes closer. Applicants may also be directly contacted. In your application documents, therefore, be sure to provide contact details where you can always be reached.

NCU Website https://www.nagoya-cu.ac.jp/

## 17. Smoke free campus

NCU hold the smoke free policy on campus. All students are required to follow this policy, and asked to further cooperate to avoid smoking on roads and alleys around university campus.

| Specialized field of study<br>Faculty member in charge | Research contents |
|---|---|
| Integrative Anatomy<br>Prof. Takatoshi Ueki | (1) Neuroscience research to reveal the mechanism underlying the regulation of brain function and pathology of neurological and psychiatric disoreders by modulating neuron-glia interaction and metabolic system.<br>(2) Research to develop the advanced rehabilitation technology based on newly identified therapeutic targets and diagnostic markers in the studies of animal models and patients of several kinds of brain dysfunctions. |
| Anatomy and Neuroscience<br>Prof. Shinya Ugawa | Our current projects are focused on:<br>(1) trying to understand how auditory hair cells convert sounds such as speech and music into electrical signals that the brain can interpret<br>(2) trying to understand how newborn neurons in the adult hippocampus are integrated into functional circuits of the existing network<br>Our lab consists of highly talented individuals with expertise in microscopy, molecular biology and electrophysiology needed to efficiently advance our research. |
| Molecular Oncology<br>Prof. Ayumi Taguchi | We leverage proteomics-driven multi-omics analysis to decode the molecular mechanisms of cancer and drive innovation in diagnostics and therapeutics.<br>(1) Development of cutting-edge proteomics and proteogenomics<br>(2) Development and translation of blood-based biomarkers for early detection and precision oncology<br>(3) Integrated molecular profiling for the discovery and clinical application of novel therapeutics |
| Cell Biology<br>Prof. Yoichi Kato | Cilia are antenna-like organelles which are outgrowths of the plasma membrane of eukaryoitc cells. They are known to be related to a wide rage of diseases. We focus on the following subjects; (1) Elucidating the mechanism of ciliogenesis (2) Understanding the regulatory mechanism of signal pathways by cilia (3) Dissecting the pathogenesis of ciliopathies (4) Discovering the roles of cilia in various diseases |
| Cell Physiology<br>Prof. Hikaru Hashitani | Investigations into the functional and morphological characteristics of smooth muscle cells and their neighbouring cells.<br>(1) Generation and propagation of spontaneous activity in smooth muscle.<br>(2) Neurohumoral regulation of smooth muscle function.<br>(3) Intrinsic properties of microvasculature in visceral organs.<br>Major techniques employed: electrophysiology, intracellular calcium imaging and fluorescent immunohistochemistry. |
| Neurophysiology and Brain Science<br>Prof. Hideki Hida | Neuroscience & neurophysiological techniques are used to know physiological brain function through three projects with pathophysiological analyses. 1) the mechanism of forelimb function recovery after intracerebral hemorrhage by rehabilitation 2) the mechanism of function recovery by stem cell (ES / iPS cell) transplantation in a model of neonatal white matter injury 3) the mechanism in the formation of emotion by gut-brain interaction that is activated by umami ingestion |
| Nephro-urology<br>Prof. Takahiro Yasui | Molecular biology for urolithiasis, endoscopic urology, prostate cancer and bone metastasis, thermotherapy for urological cancer, male infertility and reproductive urology, space urology, technological development for urological surgery, bimolecular science for urology, pediatric urology, genetic therapy, development for voiding function, epigenetic mechanism for urological disease, congenital urological basic research, Robotics, VR technology. |

| Specialized field of study<br>Faculty member in charge | Research contents |
|---|---|
| Experimental Pathology and Tumor Biology<br>Prof. Satoru Takahashi | Research Description: We principally employ cell culture and genetically engineered rat models to understand the molecular characteristics of prostate cancers, and to explore their potential as chemopreventive targets. Alternatively, the following themes are studied in subgroups.<br>・Clinicopathological analysis for development and progression of prostate, breast, and female gynecologic tumor<br>・The potential of a gap junctional protein in experimental and human patocarcinogenesis<br>・Discovery of modifying effects against carcinogenesis and their molecular mechanisms by natural products and compounds including health food products |
| Pathology and Molecular Diagnostics<br>(TBA) | (TBA) |
| Pharmacology<br>Prof. Susumu Ohya | 1. Pathophysiological roles of ion channels in inflammatory diseases<br>2. Role of ion channels in cancer and immunosuppressive cells under tumor microenvironment (cancer therapy resistance, cancer stemness, and recruitment of immunosuppressive cells by chemokines)<br>3. Regulation of ion channels and their regulators in osteoblast differentiation and bone-related diseases<br>4. Molecular mechanisms of mechanotransduction in cardiac physiology and pathology |
| Bacteriology<br>Prof. Tadao Hasegawa | Pathogenesis of virulent bacteria, such as group A streptococcus (*Streptococcus pyogenes* )<br>Analysis of the function and the expression of virulence-associated proteins of bacteria<br>Development of novel strategies for the treatment of severe bacterial infectious diseases |
| Immunology<br>Prof. Sayuri Yamazaki | Investigating immune regulation by dendritic cells and regulatory T cells and further exploring the new strategies for treatment of various diseases |
| Virology<br>Prof. Yusuke Okuno | 1. Comprehensive genetic analysis of Epstein-Barr virus (EBV)-associated diseases<br>2. Comprehensive genetic analysis of rare cancers and inherited diseases<br>3. Genetic diagnosis of patients with undiagnosed diseases<br>4. Comprehensive detection of pathogens using next-generation sequencing |
| Comparative and Experimental Medicine<br>Prof. Hisashi Oishi | We are working on the following subjects through the generating genome-editing animals and the phenotypic analysess; (1) The effect of membranous proteins recycling pathway on the early development of mammals, (2) Improvement of pregnancy rate by homeostatic and epigenetic analyses of reproductive aging. |
| Rehabilitation Medicine<br>Prof. Yoshino Ueki | ① The evaluation of motor and cognitive function using non-invasive methods and creating new neurorehabilitation based on the personalized functional disability ②Creating a novel personalized rehabilitation system after total hip arthroplasty using wearable cyborg ③ Creating new gait rehabilitation in parkinsonian syndrom using closed loop stimulation ④ prediction and adjust the appropriate rehabilitation ⑤ A Nationwide Survey on the current state of rehabilitation of neurodegenerative disorders |
| Psychiatry and Cognitive-Behavioral Medicine<br>Prof. Tatsuo Akechi | Development of novel treatment using cognitive behavioral therapy, interpersonal therapy, and digital technology for mood disorders, anxiety disorders, post-traumatic stress disorder, eating disorders, and cancer patients. Research on family intervention and family psychoeducation for mood disorders and schizophrenia. Development of intervention for developmental disabilities, truant children, and their families. Research on treatment optimization for refractory depression (mECT, TMS, etc.). Research in the areas of consultation liaison psychiatry including perinatal care, psycho-oncology, palliative medicine, epileptology, student mental health, and community mental health s also being conducted. |

| Specialized field of study<br>Faculty member in charge | Research contents |
|---|---|
| Obstetrics and Gynecology<br>Prof. Mayumi Sugiura | Recurrent pregnancy loss, preimplantation genetic diagnosis; prenatal diagnosis and fetal therapy; assisted reproduction technology; genital tumor development mechanism; genetic counselling; Birth cohort of the Japan Environment and Children's study. |
| Pediatrics and Neonatology<br>Prof. Shinji Saitoh | Pathogenesis and treatment of neonatal brain injury, diagnosis and treatment of pediatric endocrinological disorders, Comprehensive management of congenital heart diseases, diagnosis and treatment of pediatric malignancy, pathogenesis of pediatric liver diseases, pathogenesis of pediatric neurological disorders, genomic medicine in pediatrics, pediatric application of regenerative medicine, evaluation and management of developmental disabilities. |
| Neurocognitive Science<br>Prof. Takashi Saito | Our final goal is to elucidate molecular mechanisms underlying pathogenesis of neurocognitive disorders, particularly Alzheimer's disease (AD) and related disorders, and to develop preventive or therapeutic strategies for the disease. (1) elucidation of the role of chronic neuroinflammation (neuro-glial interaction) associating disease development (2) understanding of the brain-peripheral interaction for pathogenesis of AD (3) understanding of the disease-disease interaction for acceleration of AD pathogenesis. |
| Neuro-Oncology<br>Prof. Daisuke Kawauchi | Our research aims to elucidate the mechanisms underlying the initiation and progression of brain tumors in both children and adults, and to identify new therapeutic target molecules based on these findings. We are particularly focused on developing spontaneously occurring brain tumor mouse models that recapitulate human disease, and are working to uncover new cancer signals from a unique perspective that integrates developmental neurobiology, tumor biology, and bioinformatics approaches. Additionally, through pharmacological experiments using models with transplanted tumors from human patients, we are advancing research that bridges basic and clinical studies, in collaboration with domestic and international partners. |
| Neurodevelopmental Disorder Genetics<br>Prof. Kazuhiro Yamakawa | It has been revealed that genetic background largely contributes to the pathogenesis of developmental disorders, and many responsible genes have been identified. Our group has been studying molecular genetics of neurodevelopmental disorders, intellectual disabilities and epilepsy by identification of responsible genes and analyses of model mice. we are now trying to develop therapeutic approaches including gene therapies. |
| Neurotoxicology<br>Prof. Masumi Suzui | (1) Risk assessment of nano-sized materials in the central nervous system and lung tissue, focusing on the toxicogenomics (cell culture system and animal experiments) and underlying mechanisms (cytokines and cancer-related genes); (2) Drug discovery of new antitumor agents aiming at toxicity mitigation, in silico analysis of a target molecule, QSAR analysis, mechanism of action (transcription factor and angiogenesis); (3) Studies on the intercellular interactions via exosomes; (4) Functional analysis of the intracerebral signal peptide: (5) Development of an animal model that is highly sensitive to carcinogenesis by using transgenic technology, evaluation of extrapolative efficacy of the animal model to humans, development of a diagnostic biomarker of cancer |
| Developmental and Regenerative Neurobiology<br>Prof. Kazunobu Sawamoto | Our lab is interested in new neurons generated by neural stem cells in the adult brain. We are studying the mechanisms for neuronal migration, maturation and survival in the physiological and pathological conditions using a variety of in vitro and in vivo systems. We are also developing technologies to promote migration and regeneration of brain cells. |
| Cognitive Function and Pathology *Endowed course<br>Prof. Hiroshi Nomura | 1. Elucidation of neural mechanisms of learning and memory and emotion. Analysis of neural networks by measurement and manipulation of neural activity in vivo and selective visualization of neural circuits.<br>2. Elucidation of the pathophysiology of neurological and psychiatric disorders related to disruption of memory and emotion. Development of novel therapeutic and preventive methods for these disorders. |

| Specialized field of study<br>Faculty member in charge | Research contents |
|---|---|
| Respiratory Medicine, Allergy and Clinical Immunology | |
| Cardiology<br>Prof. Yoshihiro Seo | 1. Advanced echocardiographic techniques: development and clinical application<br>2. Coronary microcirculation: research and investigation<br>3. Heart failure: exploration of novel risk factors<br>4. Arrhythmias: comprehensive studies |
| Nephrology<br>Prof. Takayuki Hamano | 1. Complications of chronic kidney disease, especially renal anemia and mineral bone disorders<br>2. Research on diabetic kidney disease and congestive kidney focusing on the kidney size<br>3. Research on acute kidney injury<br>4. Research on pathophysiology of cardiorenal syndrome |
| Hematology & Oncology<br>Prof. Shinsuke Iida | 1. Dissection of molecular pathogenesis of hematopoietic neoplasms, identification of novel molecular targets, exploration of biomarkers predicting for the efficacy and adverse events of molecular targeting therapies, and mechanisms responsible for the drug resistance<br>2. Development of novel immune therapies against cancer with therapeutic antibodies or chimeric antigen receptor T-cell (CAR-T) therapies<br>3. Planning and conducting preclinical studies and clinical trials against cancer |
| Anesthesiology and Intensive Care Medicine<br>Prof. Kazuya Sobue | 1. Elucidation of the mechanisms of neurocognitive dysfunction in the perioperative period<br>2. Elucidation of the pathogenesis of central nervous system disorders caused by sepsis and development of treatment methods,<br>3. Elucidation of the pathogenesis of chronic pain and development of treatment methods<br>4. Elucidation of the mechanisms of chronic pain in the oral region and development of treatment methods<br>5. Basic research on nutritional management for critically ill patients<br>6. Clinical research in the areas of anesthesia and intensive care |
| General Medicine & General Internal Medicine<br>Prof. Kei Miyazaki | Quantitative and qualitative research on the following topics. 1.Training of general practitioners/internal medicine physicians (curriculum development, video review, interdisciplinary collaboration, etc.) 2.Promotion of ACP (Advance Care Planning) 3.The usefulness of medical interviews (training of standardized patients, etc.) 4.SDH (Social Determinants of Health) (COVID-19, medical access for foreign residents in Japan, etc.) 5.Development of a new concept of health (positive health) 6.National survey, diagnosis, and development of treatment methods for rare diseases (SCLS etc) 7.Community-based participatory research utilizing community health care centers (such as frailty prevention) |
| Clinical Pharmaceutics<br>Prof. Yoko Hibi | 1. Analysis of risk factor of side effect on chemotherapy.<br>2. Efficacy evaluation of new therapeutic drug monitoring software of antibacterial agents.<br>3. Analysis of the relationship between urinary / kidney diseases and drugs and development of new treatments.<br>4. Analysis of the relationship between delirium and kidney diseases.<br>5. Clinical research based on drug treatment issues, etc. |
| Advancing Acute Medicine<br>Prof. Hiroshi Sasano<br>Prof. Tomonori Hattori | （Prof. Hiroshi Sasano） Breathing-circulation cooperation (heart rate, blood flow variability analysis, physiology of respiratory sinus arrhythmia), the development of clinical devices (ultrasound-guided puncture, oxygen administration), peripherally inserted central venous catheter, medical simulation education.<br>（Prof. Tomonori Hattori） Venous blood gas and lactate studies, Research on sepsis pathology and endothelial-derived hyperpolarizing factor (EDHF), Research on frailty and emergency medicine, Research on lung damage caused by COVID-19, Research on Long COVID-19 |

| Specialized field of study<br>Faculty member in charge | Research contents |
|---|---|
| Department of Emergency and Critical Care<br>Prof. Asako Matsushima | Clinical study of sepsis and infection control.<br>Clinical study of trauma and critical care.<br>Study of disaster reduction and medicine<br>Stusy of helthcare art at emergency room |
| Occupational and Environmental Health<br>Prof. Michihiro Kamijima | (1) Risk assessment of environmental chemicals (research on their health effects, mechanisms of action, exposure characterization), (2) Epidemiologic study on children's environmental health |
| Public Health<br>Prof. Sadao Suzuki | The department specializes in epidemiology. The target outcome includes lifestyle-related diseases such as cancer, diabetes mellitus, and metabolic syndrome, QOL, health status, and death. Using a statistical approach, we discuss the relationship between these outcome and genetic and/or environmental factors such as life styles, psychosocial factors, and genetic polymorphism including the interaction. We also work on evaluation and comparison of diagnostic tests, clinical epidemiology and descriptive epidemiology of intractable diseases. |
| Forensic Medicine<br>Prof. Toru Oshima | Ophthalmological findings in abused children. Biochemical analysis of post-mortem blood samples Determination of causes of death through analysis of extracellular vesicles in the body. Toxicological mechanisms of drugs and poisons in human cells Human genetic studies using mitochondrial DNA Molecular evolutionary studies of human viral pathogens and their forensic applications. Forensic mycology Diagnostic forensic imaging |
| Medical Education<br>Prof. Osamu Takakuwa | Development of medical and healthcare education systems among multiple medical institutes. Development of effective faculty developments for clinicians. Development and assessment for new interprofessional education system. |
| Medical Innovation<br> | |
| Biostatistics and Health Data Science<br>Prof. Kenichi Yoshimura | Development of new statistical methods in the medical field, research on biostatistical methodologies, data science research as an applied field of statistics (e.g. data management, data collection design, statistical analysis, interpretation, and communication methodologies), and research on methodologies related to planning and conducting clinical research and trials as an applied field of biostatistics. |

| Specialized field of study<br>Faculty member in charge | Research contents |
|---|---|
| Clinical Medical Design<br><br>Prof. Takahiro Matsumoto<br>Prof. Akimichi Morita<br>Prof. Takatoshi Ueki<br>Prof. Takashi Kato<br>Prof. Dai Hanawa<br>Prof. Takaya Terada | （Prof. T. Matsumoto） ・Physics between nanomaterials (quantum wires, dots) and near-field electromagnetic waves (surface plasmon polariton and evanescent wave), and its application to nanoscale biomedical engineering.<br>・Deuterium separation by using nanomaterials and the design of new isotope drugs.<br>（Prof. A. Morita） Development of medical device utilizing the photobiological specificity of wavelength Bridging translational research among medicine, biology and engineering<br>（Prof. T. Ueki） ・Application of machine learning for computational anatomy and connectomics, and understanding of the pathophysiology of neurological and psychiatric disorders<br>・Translational studies on construction of automated diagnostic imaging system based on big data analysis<br>・Medical technology of drive system of minimally invasive surgery robot<br>（Associate Prof. T. Kato） Design and development of Control methods for medical equipments, Minimally invasive surgical robots, Preventive medical devices based on human physics & biology, Novel personal healthcare indexes derived from clinical medicine.<br>（Associate Prof. D. Hanawa） ・Human's biological/activity monitoring system using sensor networks<br>・Task supporting system using VR/AR/MR techniques<br>（Assistant Prof. T. Terada） ・Medical engineering・Application of laser and optical technology・Medical device development |