Application Guidebook for Research Students
Graduate School of Medical Sciences
Nagoya City University
for Academic Year 2024 (April Enrollment)

Enrollment of research students takes place twice a year, in April and October.
This application guidebook is intended for April 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.[22] graduate education, based on 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.

1. Prescribed enrollments Only a limited number of students

2. Eligibility of applicants

A person who fall under any of the followings:

(1) A person who has completed a program in medicine, dentistry, pharmacy or veterinary medicine (limited to 6 years for pharmacy and veterinary medicine) and graduated from university or is expected to graduate from university by March 2024.

(2) A person who has completed an18-year program (limited to programs including a course in medicine, dentistry, pharmacy or veterinary medicine) in school education in a foreign country or is expected to complete such a program by March 2024.

(3) A person who has completed an 18-year program (limited to programs including a course in medicine, dentistry, pharmacy or veterinary medicine) in school education in a foreign country by completing in Japan the same program of correspondence education provided by the foreign country or is expected to complete such a program by March 2024.

(4) A person who has completed or is expected to complete by March, 2024 an 18-year program (only limited programs including a course in medicine, dentistry, pharmacy or veterinary medicine) of the foreign educational institution established in Japan based on the educational system of this foreign country. In such cases, the institution should be specified by the Minister of Education, Culture, Sports Sciences and Technology of Japan.

(5) A person who has completed or is expected to complete by March, 2024 a 5-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 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.

(6) A person who has been designated by the Minister of Education, Culture, Sports, Science and Technology of Japan

a. A person who has graduated from National Defense Medical College established under the Ministry of Defense Establishment Law (Law No. 164, 1954) or is expected to graduate from said college by March 2024.

Contact details: 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 e-mail.***

b. A person who has completed a master's program or is qualified to be awarded the master's degree, and been enrolled in a doctoral program (not divided into 2 segments: first 2-year for master's course and second 3-year for doctor's course) for 2 years or more, acquired 30 or more credits, received necessary research guidance, and is determined by the Graduate School of Medical Sciences to have an academic ability equivalent to or better than those who have completed a program of medicine, dentistry, pharmacy or veterinary medicine at university.
c. A person who has graduated from university (excluding a course in medicine, dentistry, pharmacy or veterinary medicine) or completed a 16-year program of school education in a foreign country, subsequently been engaged in research for 2 years or more at a university, research institute or the like, and is determined by the Graduate School of Medical Sciences from their achievements in such research to have an academic ability equivalent to or better than those who have completed a program of medicine, dentistry, pharmacy or veterinary medicine at university.

(7) A person who has been enrolled in university (only limited a course in medicine, dentistry, pharmacy or veterinary medicine) for 4 years or more, or completed a 16-year program (only limited programs including a course in medicine, dentistry, pharmacy or veterinary medicine) in school education in a foreign country, and is determined by the Graduate School of Medical Sciences to have acquired the prescribed credits with excellent academic results.

(8) A person who has determined by the Graduate School of Medical Sciences to have academic ability equivalent to or better than that those defined in (1) and will be 24 years old by March 31, 2024.

Note 1: Prior to submitting application materials to NCU, please contact the faculty member whom you would like to have as a supervisor, and consult him/her about your application.

Note 2: Some programs may require a medical license depending on your research theme. Consult with faculty member in advance, whom you would like to have as a supervisor.

3. Screening of Qualification for the examination under Category (6) b , (6) c , (7) or (8) as described above

(1) Application period for "Screening of Qualification for the examination"

January 4 (Thu) – 11 (Thu), 2024 ※must be reached at the end of period.

(2) Application documents

Applicants who fall under Category (6) b , (6) c , (7) or (8) must write in red "application qualification documents, Graduate School of Medical Sciences, Research Students (April Enrollment)"on the envelope and send the following documents by registered express post, or bring them in person to the address of NCU in page3.

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

Applicants who fall under Category (6) b,

Send the following documents ; (ⅰ) Request for Screening of Eligibility for Examination (prescribed form of "R-3"),(ⅱ)Resumé (prescribed form of "R-2"), (ⅲ)Certificate of Completion of graduate school, and (ⅳ) Academic Transcript of graduate school.

Applicants who fall under Category (6) c,

Send the following documents ; (ⅰ) Request for Screening of Eligibility for Examination (prescribed form of "R-3"),(ⅱ)Resumé (prescribed form of "R-2"), (ⅲ) Diploma, (ⅳ) Academic Transcript , (ⅴ)Certificate of Engagement in Research, and(ⅵ) Achievement Records (prescribed form of "R-4").

Applicants who fall under Category (7): A person who has been enrolled in university (limited to c a course in medicine, dentistry, pharmacy or veterinary medicine) for 4 years.

Send the following documents ; (ⅰ) Request for Screening of Eligibility for Examination (prescribed form of "R-3"),(ⅱ)Resumé (prescribed form of "R-2"), (ⅲ) Academic Transcript , (ⅳ) Course Curriculum , and , (ⅴ) Syllabus of the university.

Applicants who fall under Category (7): A person who has been completed a 16-year program (limited to programs including a course in medicine, dentistry, pharmacy or veterinary medicine) in school education in a foreign country.

Send the following documents ; (ⅰ) Request for Screening of Eligibility for Examination (prescribed form of "R-3"),(ⅱ)Resumé (prescribed form of "R-2"), (ⅲ) Diploma, and (ⅳ) Academic Transcript.

Applicants who fall under Category (8),
Send the following documents ; (ⅰ) Request for Screening of Eligibility for Examination (prescribed form of "R-3"),(ⅱ)Resumé (prescribed form of "R-2"), and (ⅲ) "Diploma" of schools after junior high school (senior high school, junior college, other school) if you have graduated from such school.

※Several documents such as "Certificate of Completion", "Diploma", "Academic Transcript" and "Certificate of Engagement in Research" must be written in Japanese or English, or the translated documents in either of these languages should be attached.
※R-2, R-3 and R-4 forms can be downloaded from the following website.
URL: https://www.nagoya-cu.ac.jp/english/faculty/admissions/med/index.html

Office hours: 9:00 – 16:00 (excluding Saturday, Sunday and National Holiday and between 12:00 – 13:00)

Send application document by registered express post or hand-delivery to:

Student Affairs Division, Administration Office, 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
January 19 (Fri) – January 26 (Fri), 2024 ※must be reached at the end of period.

Office hours: 9:00 – 17:00 (excluding Saturday, Sunday and National Holiday and between 12:00 – 13:00)
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. Instead of post, hand-delivery to the above address will be also acceptable.
Applications which cannot reach 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 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 February 2 (Fri). If you did not receive by those dates, please contact the administrators, Office of Medical School (refer to page1).

5. Application documents, etc.

Documents, etc.		Description
1	Application for admission/ Examination Admission card	[Use the prescribed form of "R-1"] ・Stick your photograph on the application form. A photograph should be taken within 3 months, full-faced, upper body, no caps or hats, no background, full-color and sized 4cmx3cm. ・ Please fill in the address which you are (or a proxy is) certain to be contacted.
2	Resumé	[Use the prescribed form of "R-2"] ・ In "Academic Background," start from admission to university. ・ If you have work experience, provide details in "Employment History". ・ If you submit an application under Category (2) or (3), or under Category (5), (6)c or (7) of "2. Eligibility of applicants," with completion of a 16-year program in school education in a foreign country, fill in your school education in full from elementary education (elementary school) to higher education (equivalent to university education). ・ If you submit an application under Category (8) of "2. Eligibility of applicants," fill in your school education after junior high school.
3	Academic transcript	・ Academic transcript should be prepared by the university you are currently enrolled in or have graduated from. If you graduated (or are expected to graduate) from the Medical School of NCU, it is not necessary to submit. ・ If you submit an application under Category (2), (3) ,(5), (6)c or (7) of "2. Eligibility of applicants," and you have completed a 16-year program in school education in a foreign country, submit one of 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)	・ Your diploma should be prepared by the university you are enrolled in or have graduated from. If you graduated (or are expected to graduate) from the Medical School of NCU, it is not necessary to submit the diploma. ・ If you submit an application under Category (2) or (3), or under Category (5), (6)c or (7) of "2. Eligibility of applicants," and you have completed with completion of a 16-year program in school education in a foreign country, submit your diploma of higher education (equivalent to university) completed in a foreign country. ・ A photocopy of your diploma 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. ・ If your visa status is for short-term residence, submit a photocopy of the Japan entry visa stamped on your passport. ・If you are residing in a foreign country, submit a photocopy of your passport. ※Only the residence certificate without the "Social Security and Tax Number" is acceptable. If the number is printed on the certificate, please make sure to make it invisible by using a permanent black pen.

6	Examination fee (10,144 yen)	【Paying the examination fee in Japan】 When paying the examination fee, fill in the transfer request form (prescribed form of NCU) with the required information, and present it with 10,144 yen (9,800yen for Examination fee＋344yen 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.)The relevant bank fees are to be paid by the applicant. 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.) 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. ・ The application documents were not submitted after the examination fee has been transferred (or the application was not accepted). 【Paying the examination fee from overseas】 Transfer application fees of 10,144 yen (9,800yen for Examination fee＋344yen for Express mail fee for the admission card to be sent) to the following accounts by January 26 (Fri) 2024. ※must be paid at the end of this day. After transferred, submit a copy of the foreign remittance request form. Type of Transfer: Electronic Transfer Bank Transfer Fees: Paid by the remitter Amount of Transfer: 10,144yen (JPY) ＋all fees associated with the transfer 1) The remitter should pay “Japanese bank fees,” “remitter’s bank fees,” and all fees associated with the transfer. 2) If you transfer money in foreign currency, your application will not be accepted. Purpose of Transfer: Application fees [Application Fields] Bank Name: The Bank of Mitsubishi UFJ, LTD Bank Branch: Takiko Branch Account Number: 1232518 Beneficiary Name: Nagoya City University Address: 1 Kawasumi, Mizuho-cho, Mizuho-ku, Nagoya-shi, Aichi 467-8601 JAPAN Currency: JPY Swift Code: BOTKJPJT
7	Mailing label	[Use the prescribed form of NCU] The mailing label will be used to announce the examination result to the applicants.
8	NCU Address label	Filled in the details on the designated address label and stick it onto A4 sized envelop to be sent to the Entrance Examination and Public Relations Division.

Note1: If you have already submitted the documents required for application at the screening of qualification for examination, it is not necessary to submit them again when applying for the exam.

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 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 prove that your name has been changed (e.g., family register).

Note 4: D-2 and D-4 forms can be downloaded from the following website.

URL: https://www.nagoya-cu.ac.jp/english/faculty/admissions/med/index.html

6. Prior consultation with the applicants with disability

Applicants who need special assistance for their disability during the examination or to complete their graduate studies should contact to the administrator, Office of Medical School, NCU by e-mail (refer to page 1).

7. Method of selection for admission

Screening of application documents.
An interview examination may be conducted. The date and time will be notified.

8. Results of selection for admission

February 9, 2024 (Fri) 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. (or to your proxy if the applicant resides in a foreign country). (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.)

9. Admission procedure

(1) Date of procedure: March, 2024
Detailed schedule will be noticed at the announcement of examination results.

(2) Details of procedure
The details of the procedure will be notified to you together with the results of the selection for admission. Note that if the procedure is not taken on time, the admission will be revoked.

(3) Fees payable during the admission procedure

a. Admission fee	Nagoya City residents, etc.	69,600 yen
	Others	99,600 yen
b. Disaster and accident insurance for student education and research		1,000 yen

Note 1: "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 (April, 1) by his/her resident certificate'.
Note 2: The admission fee should be paid through a financial institution before commencing the admission procedure. The paid admission fee is not refundable.
Note 3: Amount of the above fee is example of year 2023. Any revisions to the fees upon admission shall become effective immediately.

10. Tuition

Semester amount: 178,200 yen (Annual amount: 356,400 yen)
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: Amount of the above tuition fee is example of year 2023. Any revisions to the fees upon admission shall become effective immediately.
Note 3: Graduate School of Medical Sciences may charge additional cost without any advance notification.

11. 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 it immediately to the administrators, Office of Medical School, NCU by e-mail (refer to page 1).
(5) If you a foreign citizen, contact the following regarding details of entry permission:
Foreign Residents Information Center (Nagoya Regional Immigration Bureau)
5-18, Shoho-cho, Minato-ku, Nagoya, Aichi 455-8601
Tel: +81-52-559-2151

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. Particularly as the examination day draws near, pay close attention to the website of NCU.
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/

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.

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 around university campuses.

Research Contents Classified by Specialized Fields of Study

Major	Specialized field of study / Faculty member in charge	Research contents
Structure and Function in Biomedical Sciences	Integrative Anatomy Prof.Takatoshi Ueki	(1) Molecular neurological studies aiming at comprehensive understanding of pathophysiology of neurodegenerative diseases such like amyotrophic lateral sclerosis (ALS), and studies of molecular machinery underlying the involvement of dysfunction of neuron-glia interaction in the onset and progress of those diseases. (2) Molecular neurobiological studies of homeostasis of neuroimmune system, and pathophysiology of dysfunction of neuroimmune system and its association with the etiology of neurodevelopmental disorders such as autism.
	Anatomy and Neuroscience Prof. Shinya Ugawa	Conducting seamless research into both sensory organs and the brain (1) Identification of auditory/gustatory recipience; and functional analysis using genetically-modified animals (2) Morphological / molecular biological / physiological research into the new nerves of adult brain hippocampus
	Biochemistry (TBA)	(TBA)
	Cell Biology 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 Prof. Hikaru Hashitani	Investigations into the functional and morphological characteristics of smooth muscle cells and their neighbouring cells. (1) Generation and propagation of spontaneous activity in smooth muscle. (2) Neurohumoral regulation of smooth muscle function. (3) Intrinsic properties of microvasculature in visceral organs. Major techniques employed: electrophysiology, intracellular calcium imaging and fluorescent immunohistochemistry.
	Neurophysiology and Brain Science 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
	Gastroenterological Surgery Prof. Shuji Takiguchi	Analysis of mechanisms of tumorigenesis, invasiveness, metastasis, and angiogenesis in digestive organ. Inflammation and cancer. Nutrition, Immunity and Inflammation. Development of techniques in laparoscopic surgery. Surgical Infection.
	Thoracic and Pediatric Surgery Prof. Katsuhiro Okuda	Research on the surgical and molecular target therapy for thoracic malignant tumors including lung cancer and thymic epithelial tumors. Especially focused on the clinical and scientific usefulness of minimally invasive surgery for thoracic malignancies.
	Nephro-urology 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, genetic therapy, development for voiding function, epigenetic mechanism for urological disease, congenital urological basic research, Robotics, VR technology.
	Cardiovascular Surgery Prof. Hisao Suda	Development of surgical simulation and training method using 3D printing technology and VR (Virtual Reality) technology. Research on social implementation (entrepreneurship) through medical device development. Application ofhydrogen gas, which has anti-arteriosclerosis and anti-inflammatory effects, to cardiovasucular diseases.
	Breast Surgery Prof. Tatsuya Toyama	1. Research on molecular mechanisms of hormone dependent growth in breast cancer, 2. Research on predictive factors of endocrine therapy in breast cancer, 3. Research on "triple negative" breast cancer, 4. Research on prognostic factors in breast cancer.

Research Contents Classified by Specialized Fields of Study

Major	Specialized field of study / Faculty member in charge	Research contents
Structure and Function in Biomedical Sciences	Pediatric urology Prof. Yutaro Hayashi	Basic and clinical researches about etiology, diagnosis, and treatment of pediatric or congenital disease. (1) Kidney and urinary tract: differentiation of the kidney; regenerative medicine of the kidney using ES/iPS cells; etiology of the CAKUT (congenital anomalies of the kidney and urinary tract); investigation of the histology and gene expressions in hydronephrosis or vesicoureteral reflux (2) Gonad and genitalia: molecular biological mechanism of sex differentiation, testicular development, testicular descent, spermatogenesis, and differentiation of external genitalia; differentiation of spermatogonial stem cells; endocrinology (3) Others: pediatric oncology, rare disease such as cloacal exstrophy
	Ophthalmology and Visual Science Prof. Tsutomu Yasukawa	Basic researches to elucidate pathogenesis of vitreoretinal diseases, clinical reaserches for diagnosis and therapy by multi-modal imaging, and researches on artificial intelligence (AI) (1) Pathogenesis of age-related macular degeneration (lipid metabolism and roles of macrophages and mast cells) (2) Ocular drug delivery system（DDS）（intraocular sustaind release of drug） (3) Regenerative medicine by use of a cell sheet (4) Multi-modal imaging to elucidate pathogenesis of retinal vein occlusion (5) Focal laser phogocoagulation by navigation system to treat diabetic macular edema (6) AI-assisted imaging devices and data science in the field of Ophthalmology
	Otolaryngology, Head and Neck Surgery Prof. Shinichi Iwasaki	1. Investigation of the molecular mechanism of hereditary hearing loss and development of new treatment for sensorineural hearing loss 2. Investigation of the molecular mechanism of facial nerve palsy and development of new surgical treatment 3. Development of new diagnostic device and new treatment strategy for peripheral vestibular dysfunction 4. Investigation of the immune mechanisms of head and neck cancer and development of new treatments using oncolytic virus 5. Investigation of the mechanism of spasmodic dysphonia and development of new methods of thyroplasty
	Geriatric and Environmental Dermatology Prof. Akimichi Morita	Mechanism analysis and development of phototherapy for refractory skin diseases Development of treatment using dendritic cells for allergic, autoinflammatory and malignant diseases Environmental factors and skin aging Peripheral immune tolerance and cutaneous immune regulation
	Oral and Maxillofacial Surgery Prof.Yasuyuki Shibuya	1. Basic and clinical study on jaw bone regeneration. 2. Basic and clinical study on treatment for oral precancer lesion. 3. Development of new dental implant therapy. 4. Basic and clinical study on jaw bone reconstruction and oral rehabilitation. 5. Clinical study on oral care.
	Plastic and reconstructive surgery Prof. Kazuhiro Toriyama	Management of impaired wound healing, soft tissue reconstruction by adipocyte-derived stem cells, lymphedema and lymphatic regeneration
Biosignaling and Regulation in Medical Sciences	Experimental Pathology and Tumor Biology 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. ・Clinicopathological analysis for development and progression of prostate, breast, and female gynecologic tumor ・The potential of a gap junctional protein in experimental and human hepatocarcinogenesis ・Discovery of modifying effects against carcinogenesis and their molecular mechanisms by natural products and compounds including health food products
	Pathology and Molecular Diagnostics Prof. Hiroshi Inagaki	Our research fields include human pathology, diagnostic pathology, molecular pathology, surgical pathology, neoplastic pathology, and pathology of the lymphoid tissue, digestive system, lung, soft tissue, head and neck (salivary gland), and thymus.
	Comparative and Experimental Medicine Prof. Hisashi Oishi	We are 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.

Research Contents Classified by Specialized Fields of Study

Major	Specialized field of study / Faculty member in charge	Research contents
Biosignaling and Regulation in Medical Sciences	Pharmacology / Prof. Susumu Ohya	Ion channels are potential targets for drug discovery in cardiovascular and inflammatory diseases and cancers. We are interested in understanding of the expression, functional role, and regulatory mechanism of ion channels (especially, Ca^{2+} and K^{+} channels) in cardiac, immune, and cancer cells (i.e. lymphocytes, macrophages) by electrophysiological and molecular and cellular biological approaches.
	Bacteriology / Prof. Tadao Hasegawa	Pathogenesis of virulent bacteria, such as group A streptococcus (*Streptococcus pyogenes*), Analysis of the function and the expression of virulence-associated proteins of bacteria, Development of novel strategies for the treatment of severe bacterial infectious diseases.
	Immunology / Prof.Sayuri Yamazaki	(1) Immune regulation using dendritic cells and regulatory T cells (2) Cell based immune therapy using (1) (3) Inducing effective immune responses by breaking immune tolerance (4) Developing new molecular targeted immune therapy
	Virology / Prof. Yusuke Okuno	1. Comprehensive genetic analysis of Epstein-Barr virus (EBV)-associated diseases 2. Comprehensive genetic analysis of rare cancers and inherited diseases 3. Genetic diagnosis of patients with undiagnosed diseases 4. Comprehensive detection of pathogens using next-generation sequencing
	Orthopaedic Surgery / Prof. Hideki Murakami	1) Mechanism of hypertrophic change of flavum in lumbar spinal stenosis. 2) Radio-hyperthermo-chemotherapy for malignant soft tissue tumors. 3) Pathophysiology of hip joint disorder in childhood. 4) Regeneration of peripheral nerve using artificial nerve. 5) Biomechanical study of ACL injured knee and ACL reconstructed knee. 6) Mechanism of pathogenesis in rheumatoid arthritis. 7) Effectiveness of drug treatment and operative therapy in rheumatoid arthritis. 8) Basic and clinical research for throwing-related shoulder and elbow injuries. 9) Regenerative medicine for post-traumatic bone and cartilage defect. 10) Molecular research of pathogenesis and therapeutics in ischemic of osteonecrosis.
	Psychiatry and Cognitive-Behavioral Medicine / 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.
	Psycho-oncology / Prof. Yosuke Uchitomi (Cooperative graduate school)	Supprtive, Palliative and Psychosocial intervention for cancer patients with patient-public involvement; Survivorship care planning; Advance care planning; Communication; Collaborative care programs; Psycho-geriatric oncology; Family support for patients with pediatric cancer; Education for oncology staff, Implementation Science of digital mental health, Cancer control research with Big data science.
	Neurosurgery / Prof. Mitsuhito Mase	Surgery of ischemic cerebrovascular disorder; molecular mechanism of brain lesion repair; molecular biological study of the pathological condition of subarachnoid hemorrhage, hydrencephalus and increase in intracranial pressure; development of a new method for basilar surgery, stereoencephalotomy and cerebrovascular surgery; development of a surgical treatment method for Parkinson's disease; pathological analysis and development of treatment for diffuse brain injury; development of neural function recovery by means of stem cell transfusion; development of operation assisting imaging technology; development and introduction of a new functional brain surgery
	Rehabilitation Medicine / 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 ⑤A Nationwide Survey on the current state of rehabilitation of neurodegenerative disorders
	Obstetrics and Gynecology / 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.

Research Contents Classified by Specialized Fields of Study

Major	Specialized field of study / Faculty member in charge	Research contents
Biosignaling and Regulation in Medical Sciences	Pediatrics and Neonatology / 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.
Biodefense System and Comprehensive Medical Sciences	Neurocognitive Science / 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.
	Glial Cell Biology / (TBA)	(TBA)
	Neurodevelopmental Disorder Genetics / Prof. Kazuhiro Yamakawa	It has been revealed that genetic backgraound 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, intellectural 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 / Prof. Masumi Suzui	(1) Development of a screening method of potential carcinogens by using *in silico* toxicogenomics, risk assessment of xenobiotics in foods and occupational or environmental exposure, development of a biomarker that predicts adverse side effects of medical drugs; (2) Molecular design and generation of a new antitumor drug aiming at toxicity mitigation, *in silico* analysis of its anticancer activity and activity analysis by using the wet system; (3) Development of an animal model that is highly sensitive to carcinogenesis by using transgenic technology, analysis of molecular mechanism of carcinogenesis, evaluation of extrapolative efficacy of the animal models to humans, development of a diagnostic biomarker of cancer; (4) Discovery of therapeutic agents for axonal injury
	Developmental and Regenerative Neurobiology / 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.
	Gastroenterology and Metabolism / Prof. Hiromi Kataoka	1. Exploration of novel markers of diagnosis and treatment efficacy for digestive organ cancer, 2. Development of diagnostic method and treatment using photodynamics for gastrointestinal cancer, 3. Development of novel treatment for inflammatory bowel disease, 4. Development of novel diagnostic method and treatment for IgG4-related disease and autoimmune pancreatitis, 5. Development of treatment using metallic stent for malignant stenosis of biliary and gastrointestinal tract, and multidisciplinary opinion including dynamic standpoint, 6. Development of treatment for non-alcoholic steatohepatitis, 7. Development of treatment for the prevention of hepatocarcinogenesis, 8. Viral and human genomic analysis in viral hepatitis, 9. Investigation of pathogenesis and exploration of novel target molecules of treatment for diabetes mellitus, dyslipidemia, obesity and endocrine disease
	Respiratory Medicine, Allergy and Clinical Immunology / Prof. Akio Niimi	・Chronic airway deceases (asthma, chronic cough, COPD and chronic airways infection): epidemiology, disease concept, pathophysiology, genetic determinants, CT image analysis, diagnosis and treatment. ・Lung cancer: molecular pathobiology, susceptibility to anticancer agents,and multicenter large-scale studies. ・Respiratory infection（nontuberculous mycobacteriosis, pneumonia）: epidemiology, pathophysiology, CT image analysis, diagnosis and treatment. ・Interstitial lung diseases: pathophysiology, CT image analysis and treatment. ・Relationship of respiratory symptoms such as cough and gastroesophageal reflux disease. ・Connective tissue disorders: search of novel autoimmune molecules, pathophysiology analysis and diagnosis using clinical samples, and treatment.
	Cardioangiology / Prof. Yoshihiro Seo	1. Development of early diagnosis algorithm and treatment for heart failure, 2. Development of Nagoya City model for chronic heart failure treatment, 3. Development of 4D speckle tracking echocardiography, 4. Research on acute kidney injury in acute heart failure, 5. Development of intra-renal circulation imaging system in heart disease, 6. national research of cardiac amyloidosis to develop a new diagnostic system, 7. Development of a method to evaluate atrial histology and its application to the treatment of atrial fibrillation, 8. Research on atrial function and heart failure, 9. Research on lipid abnormalities and diabetes-related to coronary artery disease, 10. Research on the significance of central artery pressure in cardiovascular coupling.

Research Contents Classified by Specialized Fields of Study

Major	Specialized field of study / Faculty member in charge	Research contents
Biodefense System and Comprehensive Medical Sciences	Nephrology Prof. Takayuki Hamano	1. Complications of chronic kidney disease, especially renal anemia and mineral bone disorders 2. Research on diabetic kidney disease and congestive kidney focusing on the kidney size 3. Research on acute kidney injury 4. Research on pathophysiology of cardiorenal syndrome
	Neurology Prof. Noriyuki Matsukawa	Clinical study of the pathological condition of cerebrovascular accidents and intractable nervous diseases; development of model animal preparation method for neurodegenerative diseases; development of gene therapy for intractable nervous disease; clarification of memory and recall mechanisms; clarification of molecular biological pathogenic mechanism and development of treatment method for Alzheimer's disease and vascular dementia
	Community-based Medical Education Prof. Hirotaka Ohara	Establishment of teaching methods and systems by the educational general medical team. The studies of educational methods with medical simulators. Establishment of the efficient education of general medicine. The investigation about the usefulness of medical network system in community medical care system. Establishment of the effective and efficient preventive medicine with cooperation in community medical care system.
	Anesthesiology and Intensive Care Medicine Prof. Kazuya Sobue	1. Elucidation of the mechanisms of neurocognitive dysfunction in the perioperative period 2. Elucidation of the pathogenesis of central nervous system disorders caused by sepsis and development of treatment methods, 3. Elucidation of the pathogenesis of chronic pain and development of treatment methods 4. Elucidation of the mechanisms of chronic pain in the oral region and development of treatment methods 5. Basic research on nutritional management for critically ill patients 6. Clinical research in the areas of anesthesia and intensive care
	Radiology Prof. Akio Hiwatashi	1. Research on advanced imaging modalities, 2. Development of new radiology service with artificial intelligence, 3. Creation of new treatment in interventional radiology, 4. Optimization and standardization of radiation treatment including proton beam therapy, 5. Clarification of the effect of radiation with biology
	Hematology & Oncology 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 2. Development of novel immune therapies against cancer with therapeutic antibodies or chimeric antigen receptor T-cell (CAR-T) therapies 3. Planning and conducting preclinical studies and clinical trials against cancer
	Clinical Pharmaceutics Prof. Yoko Hibi	1. Analysis of risk factor of side effect on chemotherapy. 2. Efficacy evaluation of new therapeutic drug monitoring software of antibacterial agents. 3. Analysis of the relationship between urinary / kidney diseases and drugs and development of new treatments. 4. Clinical research based on drug treatment issues, etc.
	Cognitive Function and Pathology *Endowed course 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. 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.
	Department of Advancing Acute Medicine Prof. Hiroshi Sasano 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. (Prof. Tomonori Hattori) The effect of immune regeneration by bone marrow transplant for the immunoparalysis in sepsis. The effect of treatment by PMX-DHP and HDF for septic shock patients.
	Department of Emergency and Critical Care Prof. Asako Matsushima	Clinical study of sepsis and infection control. Clinical study of trauma and critical care. Study of disaster reduction and medicine Stusy of helthcare art at emergency room

Research Contents Classified by Specialized Fields of Study

Major	Specialized field of study / Faculty member in charge	Research contents
Community Medicine, Environmental Health Sciences and Medical Education	Occupational and Environmental Health / 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 / 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 / Prof. Yasuhito Aoki	Forensic genetics. Forensic pathology. Forensic analysis of digital imaging of human body.
	Medical Education / 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.
	Department of Medical Innovation / Prof. Takeshi Kamiya	1. Pathophysiology, epidemiology and new therapeutic strategies of functional gastrointestinal disorders 2. Methodiology and pedagogy of clinical studies 3. Basic studies on the mechanisms of visceral perception 4. Database studies on gastrointestinal and circulatory diseases 5. Pathophysiology and new therapeutic strateries of heart failure 6. Clinical studies of emerging infectious diseases by mathematical models 7. International studies of prevention and treatment on peuminia and ARDS