

# Graduate School of Comprehensive Human Sciences

## Degree Programs in Comprehensive Human Sciences

Choose your prospective research fields from the list below and write the names in the “Prospective research fields (supervisors)” section on the application form. You can choose up to three research fields. As a general rule, you will be assigned to a research group during the process of selecting students for admission, so please choose carefully. It is hard to determine the exact details of your prospective group’s research solely from the research themes listed below. To avoid writing your master’s thesis on a different research topic from the one you had in mind, be sure to contact the supervisor in the field of your choice. Also, if you have any questions, please consult with the following person about your choice.

For guidance, contact:

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<b>Medical Sciences Basic Medicine</b>		
<b>Research Area</b>	<b>Faculty</b>	<b>Research</b>
Anatomy and Embryology	高橋 智 TAKAHASHI Satoru	<ul style="list-style-type: none"> <li>①Elucidation of molecular mechanism of pancreatic beta cell development and its application.</li> <li>②Functional analysis of large Maf transcription factor family, MafB and c-Maf in macrophage development and functions.</li> <li>③Elucidating biological roles of carbohydrates using glycosyltransferase conditional KO mice.</li> <li>④Study of diseases and drug discovery by development of novel imaging system.</li> <li>⑤Elucidation of etiology and gene function in disease model mice.</li> </ul>
Anatomy and Neuroscience	武井 陽介 TAKEI Yosuke	<ul style="list-style-type: none"> <li>①Animal model studies on synaptic dysfunction in schizophrenia and autism.</li> <li>②Cell-biological studies on synaptic dysfunction in schizophrenia and autism.</li> <li>③Studies on synaptic dysfunction caused by inflammation.</li> <li>④Studies on intracellular transport in neurons and glia.</li> </ul>
Diagnostic Pathology	松原 大祐 MATSUBARA Daisuke	<ul style="list-style-type: none"> <li>①Search for molecular targets of cancer, based on molecular markers and histomorphology, using surgical specimens and cell lines.</li> <li>②Elucidation of the molecular mechanism of abnormal differentiation (dedifferentiation, neuroendocrine differentiation, EMT, gastrointestinal epithelial differentiation, etc.) in lung cancer.</li> <li>③Study of drug sensitivity and resistance acquisition mechanism using cancer cell lines.</li> </ul>

Experimental Pathology	加藤 光保 KATO Mitsuyasu	①Molecular mechanisms of stemness induction in cancer development ②Cell division kinetics of cancer stem cells by application of live imaging and three-dimensional quantitative analysis
Cognitive and Behavioral Neuroscience	松本 正幸 MATSUMOTO Masayuki	①Roles of monoamine systems in cognitive, emotional and motivational brain functions ②Brain mechanisms underlying value-based decision making
Neurophysiology	小金澤 禎史 KOGANEZAWA Tadachika	①Study on the neural regulation of the cardiovascular system ②Study on the neural regulation of the respiratory system ③Study on the neural regulation based cardiovascular and respiratory diseases
Biochemistry , Molecular Cell Biology	入江 賢児 IRIE Kenji	①Post-transcriptional regulation of gene expression by RNA-binding proteins ②Molecular mechanism of mRNA localization and local translation regulating cell polarity, asymmetric cell division, and cell-fate ③Regulation of endoplasmic reticulum stress response ④Prosopore membrane formation by vesicle docking
Molecular and Developmental Biology	小林 麻己人 KOBAYASHI Makoto	①Development of hematopoietic stem cells and digestive organs ②Dietary antioxidants and health life extension ③Defence against oxidative and/or organelle stresses ④Non-mammalian models of human diseases (zebrafish, African turquoise killifish)
Biochemistry , Gene Regulation	久武 幸司 HISATAKE Koji	①Molecular mechanisms of iPS cell induction ②Mechanisms of adipocyte and chondrocyte differentiation ③Molecular basis of epigenetics ④Chromatin modifications and transcriptional regulation
Cellular and Physiological Biology	大林 典彦 OHBAYASHI Norihiko	①Physiological functions of the small G proteins: Rab and Arf ②Membrane dynamics research aiming at invasion/metastasis, vascularization and pigmentation
Molecular Neurobiology	榊 正幸 MASU Masayuki	①Molecular studies on neural development and neural circuit formation ②Molecular studies on signal transduction in the nervous system ③Molecular studies on heparan sulfate in neural function ④Development and function of the corticospinal tract ⑤Regulatory mechanism of spinal motor nerve development
Infection Biology (Molecular Virology)	川口 敦史 KAWAGUCHI Atsushi	①Molecular mechanism of virus replication , species specificity and pathogenicity of emerging viruses including influenza virus ②Molecular mechanism of innate immunity

Infection Biology (Bacteriology)	森川 一也 MORIKAWA Kazuya	①Infection strategies in pathogenic bacteria ②Adaptation and evolution of staphylococci
Infection Biology (Molecular Parasitology)	HO, KIONG	①Understanding the mechanism of gene expression in protozoan parasites with a goal in identifying parasite-specific processes that can be exploited as targets for novel therapeutic interventions. ②Mechanism of mRNA recapping pathway in regulating gene expression. ③RNA repair - understanding of the function and mechanism behind cellular responses to RNA damage.
Immunology	渋谷 和子 SHIBUYA Kazuko	①To reveal host defense mechanisms against cancer and infectious diseases, and to develop their therapeutic manipulation ②To reveal cellular and molecular basis of inflammation, allergy and autoimmune diseases, and to develop their therapeutic manipulation
Medical Genetics	野口 恵美子 NOGUCHI Emiko	①Identification of the susceptible genes related to allergic diseases ②Genetic analysis using next generation sequencer ③Functional studies of genes involved in allergy.
Molecular and Genetic Epidemiology	土屋 尚之 TSUCHIYA Naoyuki	①Identification of genomic variants associated with development and clinical characteristics of human autoimmune rheumatic diseases such as systemic lupus erythematosus and ANCA associated vasculitis ②Genomic diversity of <i>HLA</i> and other immune system gene families and its significance in medicine
Genome Biology	村谷 匡史 MURATANI Masafumi	①Integrative genome and epigenome analysis of clinical samples to understand mechanisms of cancer development and for discovery of new drug targets and biomarkers. ②Cell-free DNA and RNA profiling to monitor environmental stress responses in internal tissues.
Regenerative Medicine and Stem Cell Biology	大根田 修 OHNEDA Osamu	①Development of Stem Cell Therapy using Mesenchymal Stem Cells ②Functional Analysis of Hypoxia Inducible Transcription Factors in vivo ③Analysis of Cancer Stem Cells and Tumor Stromal Cells ④Regeneration of retinal ganglion cells
Stem Cell Biology and Biotechnology	西村 健 NISHIMURA Ken	①Functional analysis of transcription factors during cell reprogramming ②Epigenetic regulation during cell reprogramming ③Safe and efficient production of differentiated tissue cells

Laboratory Animal Science	杉山 文博 SUGIYAMA Fumihiro	①Development of new technology for producing genetically modified mice. ②Development of genetically modified mice for analyzing biological function ③Investigating the novel gene function in germ cell maintenance and maturation.
Bioinformatics	尾崎 遼 OZAKI Haruka	①Development of technologies to interpret and predict the function of genome sequences: genome (DNA), transcripts (RNA) and AI ②Development of single-cell level omics data analysis techniques: scRNA-seq and spatial transcriptome ③Automation of life science research: automation of experiment planning, experiment execution, and data analysis ④Medical data analysis: Large-scale databases such as hospital data and cohorts, databases
In silico Drug Design and Chemical Biology	広川 貴次 Hirokawa Takatsugu	①In silico drug discovery using molecular modeling and simulation ②Development of the methods based on bio-chem informatics for in silico drug discovery and design
Stem Cell Therapy	山崎 聡 YAMAZAKI Satoshi	①Development of advanced therapeutic technology using stem cells ②Cell reprogramming mechanism using nuclear transplantation technology ③Development of xeno chimeric animals using early developmental embryos
Medical Physics	榮 武二 SAKAE Takeji	①Development of techniques for high precision proton therapy ②Development of dose calculation system for neutron capture therapy ③Application of techniques for photon therapy ④Quality assurance of radiation therapy ⑤Development of new techniques for radiation measurement ⑥Study for radiation protection ⑦Basic research for acquiring information of biological function with image diagnostic techniques
Molecular Biology	深水 昭吉 FUKAMIZU Akiyoshi	① Metabolism and methylation-regulated aging and longevity (cultured cells・C. elegans) ② Cardiorenal damage in mice with hypertension

Developmental Genetics	丹羽 隆介 NIWA Ryusuke	①Mechanisms of interorgan communication in the regulation of development, energy metabolism, stem cell proliferation and environmental tolerance ②Molecular, cellular, and systemic mechanisms of the interaction between insects and parasitoid wasps ③Structural Biology and Chemical Biology of Insect Growth Control Agents
Biomaterials Science	長崎 幸夫 NAGASAKI Yukio	①Design of Nanomedicine ②Design of Drug Delivery System ③Design of Materials for Degenerative Medicine ④Design of Bionterfaces
International Institute for Integrative Sleep Medicine (WPI-IIMS) Yanagisawa/Funato Laboratory	柳沢 正史 YANAGISAWA Masashi	Our lab aims at solving the mystery of sleep ①Elucidation of the molecular mechanism regulating sleep/wakefulness through a forward genetic approach ②Medicinal chemistry to develop new drug for sleep disorder ③Visualization of neural and glial cell activity during sleep/wakefulness behavior
International Institute for Integrative Sleep Medicine (WPI-IIMS) Kutsumura/Saitoh Laboratory	沓村 憲樹 KUTSUMURA Noriki	①Synthesis of novel biologically active molecules ②Research on chemical reactions useful for drug discovery ③Elucidation of the mechanism of action of biomolecules
	齊藤 毅 SAITOH Tsuyoshi	We aim at creating innovative molecules contributing to biomedical sciences, such as: ①Drugs targeting GPCRs for the treatment of insomnia, narcolepsy, pain, and mental disorders (drug design, synthesis, pharmacology) ②Novel chemical probes to visualize biological functions ③Opto-pharmacological probes for the flexible control of drug function ④New chemical reactions using electron and photon as external energy.

International Institute for Integrative Sleep Medicine (WPI-IIIIS) Sakurai (Takeshi) /Hirano Laboratory	櫻井 武 SAKURAI Takeshi	①Elucidation of physiological roles of novel neuropeptide ②Revealing the neural circuits and neural mechanisms that work in the system that regulates emotion. ③Studies on the neural circuits and neural mechanisms that play roles in the regulation of sleep/wakefulness states. ④Elucidation of neural circuits and mechanisms by which body temperature and metabolisms are regulated.
	平野 有沙 HIRANO Arisa	①Research on oscillatory mechanism of the circadian clock and the effect of disrupted rhythms on mice. ②Elucidation of molecular mechanism of phase-resetting of the circadian clock and circadian photo-reception. ③Identification and functional analysis of neural circuits regulating the circadian rhythms. ④Development of optogenetics tools.
	征矢 晋吾 SOYA Shingo	①Elucidation of neural mechanisms of social distance and behavior ②Uncovering how neuropeptide affects the emotion. ③Revealing the neural circuits that regulate thermal and metabolic regulation in exercise-induced fatigue.
International Institute for Integrative Sleep Medicine (WPI-IIIIS) Greene/Vogt Laboratory	VOGT Kasper Manuel	①Measuring and understanding brain activity in waking and sleep ②Determine the effect of sleep on brain circuits ③Discover the control mechanisms for sleep depth ④Develop new technologies and mathematical tools to study sleep function
International Institute for Integrative Sleep Medicine (WPI-IIIIS) Sakaguchi Laboratory	坂口 昌徳 SAKAGUCHI Masanori	①Function of sleep in memory ②Function of sleep and adult neurogenesis for memory ③Developing new therapy for PTSD via sound stimulation in sleep <a href="https://sakaguchi-lab.org/">https://sakaguchi-lab.org/</a>
International Institute for Integrative Sleep Medicine (WPI-IIIIS) Lazarus/Oishi Laboratory	LAZARUS Michael	①Understanding the link between sleepiness and motivation by exploring mesolimbic glia-neuron interactions ②Sleep circuits as potential therapeutic targets for insomnia ③Exploring the anti-psychotic effects of hyperadenosinergic activity ④Single-cell gene expression analysis of crosstalk between sleep and immune system <a href="https://www.wpiiiiislazaruslab.org/">https://www.wpiiiiislazaruslab.org/</a>
	大石 陽 OISHI Yo	①Sleep regulation by dopamine-related neural circuits ②Sleep mechanisms and functions using short-sleeper mice ③Neural mechanisms of sleepiness explored from antihistamines' effects

<p>International Institute for Integrative Sleep Medicine (WPI-IIIIS) Honjoh Laboratory</p>	<p>本城 咲季子 HONJOH Sakiko</p>	<p>①The dynamics of thalamocortical system across sleep/wake cycles ②Elucidation of neural circuits underlying NREM sleep specific EEG patterns ③Analysis of vigilance state-depedent transcriptional changes ④Elucidation of the function of vigilance-state specific genes in neural activity</p>
<p>International Institute for Integrative Sleep Medicine (WPI-IIIIS) Abe Laboratory</p>	<p>阿部 高志 ABE Takashi</p>	<p>①Functional roles of human sleep ②Neurobehavioral consequences of sleep deprivation ③Development of non-invasive methods to improve human sleep ④Development of new methods to evaluate human sleep and wakefulness</p>
<p>International Institute for Integrative Sleep Medicine (WPI-IIIIS) Sakurai(Katsu) Laboratory</p>	<p>櫻井 勝康 Sakurai Katsuyasu</p>	<p>①Functional analysis of the sexual behavior related neural circuits ②Functional analysis of the sleep related neural circuits ③Functional analysis of the emotion related neural circuits ④Functional analysis of the sensory system related neural circuits</p>
<p>Occupational Psychiatry / Space Psychiatry</p>	<p>松崎 一葉 MATSUZAKI Ichiyo</p>	<p>①A study of the strong qualities unexpectedly in space ②Salutogenesis and Sense of coherence ③Nature based Rehabilitation</p>
<p>Vascular Matrix Biology (TARA Center)</p>	<p>柳沢 裕美 YANAGISAWA Hiromi</p>	<p>①Identification and functional analysis of novel extracellular matrix proteins in the vessel wall ②Molecular mechanism of aortic aneurysm formation and rupture ③Mechanotransduction in the vessel wall ④Characterization of niche matrix associated with epidermal stem cells</p>

Clinical Medicine		
Research Area	Faculty	Research
Nephrology	山縣 邦弘 YAMAGATA Kunihiro	①Mechanism of chronic progressive kidney diseases ②Method of early diagnosis and prevention of kidney diseases ③Approach to treatment of progressive kidney diseases ④Epidemiology of acute kidney injury and chronic kidney disease ⑤Outcome research of lifestyle diseases
Clinical Immunology and Rheumatology	( )	①Molecular mechanism in autoimmune diseases such as rheumatoid arthritis and connective tissue diseases ②Specific regulation of autoimmune diseases ③Approach to genetic therapy and disease-specific iPS cells therapy in autoimmune diseases
Hematology	千葉 滋 CHIBA Shigeru	①Mechanism of leukemo/lymphomagenesis ②Mechanism of bone marrow failure ③Translational research on stem cell therapy ④Laboratory hematology for hematopoietic disorders
Hemato-oncology	坂田 麻美子 Sakata Mamiko	①Bioinformatics using clinical specimens of hematological cancer patients ② Elucidation of molecular mechanisms of hematological cancers by analyzing genetically modified mice ③Cancer immunology regulated by clonal hematopoiesis harboring epigenetic abnormalities
Gastroenterology	土屋 輝一郎 TSUCHIYA Kiichiro	①Basic research about pathogenesis of intestinal epithelial cells in inflammatory bowel disease ②Basic research about pathogenesis of inflammatory bowel disease related carcinogenesis
Pulmonary Medicine	檜澤 伸之 HIZAWA Nobuyuki	①Molecular genetics of chronic inflammatory lung diseases including asthma and COPD ②Role of genetics and environmental factors in allergic diseases ③Study of interactions between genetics and environment in respiratory diseases
	佐藤 浩昭 SATOHI Hiroaki	①Study of chemotherapy for lung cancer ②Clinical application of carbohydrate antigens for respiratory diseases ③Optimal therapeutic strategy development for lung cancer in the elderly
Cardiology	家田 真樹 IEDA Masaki	①Cardiac regeneration and translational research ②Reprogramming to generate cardiomyocytes ③Molecular mechanism and new therapy for cardiovascular diseases



Cardiology	宮内 卓 本間 覚 MIYAUCHI Takashi HONMA Satoshi	①Establishment of mechanism and treatment of arrhythmia ②Establishment of evaluation of hemodynamics ③Establishment of new treatment strategy of heart failure ④Relation between arteriosclerosis and endothelial function ⑤Medical quality assurance and risk management
Metabolism and Endocrinology	島野 仁 SHIMANO Hitoshi	①Molecular mechanism of obesity, diabetes, dyslipidemia, and atherosclerosis ②Physiology and pathophysiology of transcription factors involved in the metabolism of carbohydrate and lipid ③Sensing mechanism and transcriptional regulation of energy metabolism ④Hub-metabolites and epigenetic regulation in carbohydrate, lipid, and protein metabolism ⑤Quality aspect of fatty acids and physiology and pathophysiology of various organs ⑥Molecular visualization at organelle level and synthetic biology ⑦Inhibition of cholesterol synthesis, myopathy, and brain dysfunction
Lipid Medicine	松坂 賢 MATSUZAKA Takashi	①Role of fatty acid elongase Elovl6 in metabolic syndrome ②Role of Elovl6 in brain, neurodegenerative disease and sphingolipidosis ③Role of Elovl6 in cancer and stem cell ④The structural basis of Elovl6 ⑤Development of the new Elovl6 inhibitor
Infectious Diseases	人見 重美 HITOMI Shigemi	①Epidemiological investigation of serious infectious diseases and HIV infection. ②Molecular investigation of pathogenic and drug-resistant factors of microorganisms. ③Evaluation of precautions against transmissible infectious diseases. ④Clinical studies among patients with infectious diseases
General Thoracic Surgery	佐藤 幸夫 SATOY Yukio	This course is programmed to investigate on 1) minimal invasive thoracoscopic surgery for lung cancer, 2) angiogenesis and invasion of lung cancer, 3) leukocytes-endothelial interaction in acute lung injury, 4) novel sealant material for surgery, 5) screening of lung cancer with exhaled breath and 6) surgical simulation, and estimation of postoperative lung regeneration and function using 3D-CT.

Cardiovascular Surgery	平松 祐司 HIRAMATSU Yuji	<ul style="list-style-type: none"> <li>①Development of novel microangiography system using synchrotron radiation</li> <li>②Elucidation of signal transduction in aneurysmal formation</li> <li>③Elucidation of hematological deterioration during cardiopulmonary bypass</li> <li>④Study of ischemic myocardial remodeling using knockout mice</li> <li>⑤Development of novel tissue crosslinking treatment technology</li> <li>⑥Development of vitamin K-reduced functional food</li> <li>⑦Development of valve simulation technology</li> <li>⑧Exploration of valve-sparing right ventricular outflow reconstruction</li> <li>⑨Study in rehabilitation medicine in reduced venous return</li> <li>⑩Regulation of gaseous microemboli in cardiopulmonary bypass</li> <li>⑪Regenerative medicine using stem cells</li> <li>⑫Production of 3D heart replicas</li> </ul>
	鈴木 保之 SUZUKI Yasuyuki	<ul style="list-style-type: none"> <li>①Development of new surgical procedure about congenital cardiac surgery</li> <li>②Development of cardiac assist device using artificial muscle</li> <li>③Elucidation of hematological deterioration during cardiopulmonary bypass</li> <li>④Development of the new regenerative therapy using intraoral mesenchyma system cells</li> </ul>
Pediatric Surgery	増本 幸二 MASUMOTO Koji	<ul style="list-style-type: none"> <li>①Bioengineered tissue transfer in infants and children</li> <li>②Studies related to carcinogenesis and progression of malignant solid tumors in children</li> <li>③Pathological, molecular biological and genetic studies of the alimentary tract malformations</li> <li>④Studies of treatment for hypoplastic lungs in congenital diaphragmatic hernia</li> </ul>
Neurosurgery	松丸 祐司 MATSUMARU Yuji	<ul style="list-style-type: none"> <li>① <b>Neurooncology</b> <ul style="list-style-type: none"> <li>①-1 <b>Neurooncology(Advanced Therapeutics):</b> Boron neutron capture therapy(BNCT), Proton therapy, Tumor vaccination, Gene thrapy, Photodynamic diagnosis and treatment (PDD, PDT)</li> <li>①-2 <b>Neurooncology(Diagnostics):</b> Molecular maker and gene analysis of brain tumor(glioma, pediatric brain tumor, craniopharyngioma), Intraoperative neurophysiological monitoring (MEP, SEP, EEG), Imaging study(Intraoperative MRI, Tractography, PET)</li> </ul> </li> <li>② <b>Cerebrovascular disease:</b> Neuroprotection using nanoparticle and stem cell therapy for ischemic stroke. Prevention of carotid artery restenosis. Evaluation of oxidative stress in brain. Regenerative Medicine using dental pulp stem cells</li> <li>③ Analysis of <b>cerebral function, perfusion and metabolism using neuroimaging</b> (functional -MRI, MR spectroscopy, diffusion tensor imaging, PET)</li> </ul>

		<ul style="list-style-type: none"> <li>④ Neurorehabilitation using <b>Robot Suit HAL</b>, Brain machine interface</li> <li>⑤ <b>Functional neurosurgery</b> for epilepsy, involuntary movement, central pain and Headache</li> <li>⑥ <b>Gene therapy and regeneration therapy</b> using DDS (Angiogenesis, bone regeneration)</li> <li>⑦ <b>Pediatric Neurosurgery</b>: Epigenetic biomarkers from woman with neural tube defect affected pregnancies</li> <li>⑧ <b>Development of advanced medical equipment and device</b> (laser endoscope, new device of endoscopic surgery)</li> <li>⑨ Neuroendovascular Therapy: Development of new devices, functional neurovascular anatomy, Outcome research of neuroendovascular therapy</li> </ul>
Control of the Musculoskeletal System	<p>山崎 正志 YAMAZAKI Masashi</p>	<p>Clinical and basic research on following themes:</p> <ul style="list-style-type: none"> <li>①Treatment of spinal disorders</li> <li>②Treatment of joint disorders</li> <li>③Sports medicine</li> <li>④Regeneration of peripheral nerve</li> <li>⑤Functional improvement treatment using Robot suit HAL for musculoskeletal disorders</li> </ul>
Rehabilitation Medicine	<p>羽田 康司 HADA Yasushi</p>	<ul style="list-style-type: none"> <li>①Medicine for disabilities</li> <li>②Adapted sports</li> <li>③Rehabilitation using robot suit HAL</li> <li>④Development of new rehabilitation equipment through medical-engineering collaboration</li> </ul>
Urology	<p>西山 博之 NISHIYAMA Hiroyuki</p>	<ul style="list-style-type: none"> <li>①Cancers of genitourinary system</li> <li>②Urodynamics</li> <li>③Andrology</li> <li>④Urolithiasis</li> <li>⑤Urinary tract infection</li> </ul>
Ophthalmology	<p>大鹿 哲郎 OSHIKA Tetsuro</p>	<ul style="list-style-type: none"> <li>①Visual science</li> <li>②Visual optics</li> <li>③Minimally invasive ocular surgery</li> <li>④Vision-related quality of life</li> <li>⑤Development of artificial vitreous</li> <li>⑥Development of new generation of OCT</li> </ul>
Otolaryngology & Head and Neck Surgery	<p>田淵 経司 TABUCHI Keiji</p>	<ul style="list-style-type: none"> <li>①Inner ear pathology</li> <li>②Research for head and neck surgery</li> </ul>
Oral and Maxillofacial Surgery	<p>武川 寛樹 BUKAWA Hiroki</p>	<ul style="list-style-type: none"> <li>①New development of biological marker for oral cancer (p63 and GNT-V)</li> <li>②Research for clinical diagnosis and treatment of oral cancer using microRNA (miR203, miR155, miR205 and let-7)</li> <li>③Regenerated research using dental pulp stem cell</li> <li>④Research for oral bacterial flora involved internal medical disease (NASH, NAFLD and diabetes mellitus)</li> </ul>

Psychiatry	新井 哲明 ARAI Tesuaki	①Neuropathology of dementia and neurodegenerative disorder ②Clinical study of diagnosis, therapeutics, prevention and care of dementia ③Geriatric psychiatry ④Neuroimaging of neuropsychiatric disorders ⑤Transdisciplinary team approach for psychiatry
Disaster and Community Psychiatry	太刀川 弘和 TACHIKAWA Hirokazu	①Psychosocial study of disaster victims ②Mental health support for disaster supporters including health workers ③Development of post-disaster mental health and psychosocial support systems ④Social psychiatry of depression and suicide prevention ⑤Development of community mental health services and systems
Pediatrics	高田 英俊 TAKADA Hidetoshi	①Development of new gene therapy for genetic disorders of childhood using new Sendai virus vector ②Immunological analysis of host factor in children who developed vaccination-related adverse reaction ③Analysis of the characteristics of immune reaction of fetuses and neonates ④Nation-wide analysis of child disorders including primary immunodeficiencies ⑤Long term analysis of therapeutic effect of childhood cancer ⑥New objective analysis of the development of children
Obstetrics and Gynecology	濱田 洋実 HAMADA Hiromi	Basic and clinical researches about diagnosis, treatment, and prevention of diseases/disorders in the field of obstetrics and gynecology are conducted. Major subjects are gynecological malignancy, infertility, reproductive endocrinologic disorder, fetal genetic disease/malformation, fetomaternal infection, maternal, natal, and puerperal complications, etc.
Diagnostic and Interventional Radiology	中島 崇仁 NAKAJIMA Takahito	①Research in basic and clinical fields related to diagnostic imaging 1) Radiomics and Artificial Intelligent 2) DICOM transfer and storage system 3) Big data association with medical imaging and genomics ② Basic and clinical research about novel IVR treatments 1) Transarterial chemoembolization with balloon-occlusion 2) Cryoablation 3) Photoimmunotherapy
Radiation Oncology	櫻井 英幸 SAKURAI Hideyuki	①Research for radiosensitivity, and improvement of radioresistance ②Radiation treatment planning using multimodality imaging ③New cancer therapy using particle radiation therapy

Radiation Health Risk Science	磯辺 智範 ISOBE Tomonori	①Environmental radiation (distribution of radiation in soil, river, sea, crops and wildlife) ②Radiation exposure evaluation ③Soil and surface decontamination technology ④Dose Evaluation and Radiation Protection Technique of Medical Radiation Exposure to Eye Lens ⑤Dose evaluation of neutron exposure in radiotherapy ⑥Technical development on radiation disasters ⑦Development of new educational tool using X Reality
Anesthesiology	田中 誠 TANAKA Makoto	①Effects of anesthetics and anesthetic techniques on arterial baroreflex function ②Genetic polymorphism of opioid receptor in humans ③Research on basic mechanisms of pain perception ④Effects of anesthetics and age on Bispectral Index
Clinical Laboratory Medicine	川上 康 KAWAKAMI Yasushi	①Molecular understanding of the endocrine tumor and apoprotein. ②Molecular analysis of the cell proliferating factor. ③Molecular understanding of the hormone synthesis and secretion.
Molecular Sportology	竹越 一博 TAKEKOSHI Kazuhiro	①Personalized treatment for exercise through using genetic information ②Research for anti-doping ③Exercise and hormone, especially catecholamine ④Exercise and stress marker, especially salivary Chromogranin A (collaborated with Prof. Omori)
Pharmaceutical Sciences	本間 真人 HOMMA Masato	①Gene Polymorphism analysis for assessing drug metabolizing enzymes and transporters ②Therapeutic drug monitoring for assessing drug efficacy and adverse reactions. ③Pharmacokinetic analysis of Kampo-medicine (Japanese herbal remedies)
Emergency and Critical Care Medicine	井上 貴昭 INOUE Yoshiaki	①Physiology of septic shock and shock ②Physiology of acute respiratory distress syndrome and multiple organ failure ③Physiology of Post cardiac arrest syndrome ④Scientific approach for post intensive care syndrome and delirium
Clinical and Translational Research Methodology	橋本 幸一 HASHIMOTO Koichi	①Regulatory science ②Clinical trials for functional foods ③Improvement of efficiency of practical medicine using AI and IOT ④Construction of seamless platform for translational research ⑤Education of experts of integrative celerity research process for translational researches

Clinical Research and Regional Innovation	<p>松阪 諭 MATSUSAKA Satoshi</p>	<p>①Development of clinical decision system (Liquid biopsy analysis) for cancer chemotherapy ②Understanding the mechanisms of cancer metastasis and anticancer agent resistance ③Functional studies of Organoids with Cancer Stem Cell-like Properties</p>
Primary Care and Medical Education	<p>前野 哲博 MAENO Tetsuhiro</p>	<p>①Clinical research in primary care ②Development of community-based medical System ③Health promotion in the community ④Clinical medical education</p>
Integrated Study on Health Information	<p>大庭 良介 OHNIWA Ryosuke</p>	<p>①Studies to unravel the activities of researchers and their communities ②Studies to understand the relationship between researchers and public society ③Studies to implement science communication ④Studies to reconsidering the scientific methodology</p>