Graduate School of Comprehensive Human Sciences
Degree Programs in Comprehensive Human Sciences
〈Master's Program in Medical 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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Medical Sciences Basic Medicine		
Research Area	**Faculty**	**Research**
Anatomy and Embryology	高橋 智 TAKAHASHI Satoru	①Elucidation of molecular mechanism of pancreatic beta cell development and its application. ②Functional analysis of large Maf transcription factor family, MafB and c-Maf in macrophage development and functions. ③Elucidating biological roles of carbohydrates using glycosyltransferase conditional KO mice. ④Study of diseases and drug discovery by development of novel imaging system. ⑤Elucidation of etiology and gene function in desease model mice.
Anatomy and Neuroscience	武井 陽介 TAKEI Yosuke	①Animal model studies on synaptic dysfunction in schizophrenia and autism. ②Cell-biological studies on synaptic dysfunction in schizophrenia and autism. ③Studies on synaptic dysfunction caused by inflammation. ④Studies on intracellular transport in neurons and glia.
Diagnostic Pathology	松原 大祐 MATSUBARA Daisuke	①Search for molecular targets of cancer, based on molecular markers and histomorphology, using surgical specimens and cell lines. ②Elucidation of the molecular mechanism of abnormal differentiation (dedifferentiation, neuroendocrine differentiation, EMT, gastrointestinal epithelial differentiation, etc.) in lung cancer. ③Study of drug sensitivity and resistance acquisition mechanism using cancer cell lines.

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 ③Glyco-profile using breast cancer cell lines and patient tissues ④Tumor microenvironment research using mouse model ⑤3D imaging using a low-vacuum scaning electron microscopy
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 ③Brain mechanisms underlying subliminal information processing
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 ④Prospore membrane formation by vesicle docking
Molecular and Developmental Biology	小林 麻己人 KOBAYASHI Makoto	①Development of hematopoietic cells and globin switching ②Anti-aging and dietary antioxidants ③Animal models for human diseases and drug safety test ④Epigenetic regulation of learing and memory ⑤Functions of supersulfides in animal development
Biochemistry , Gene Regulation	久武 幸司 HISATAKE Koji	①Molecular mechanisms of iPS cell induction ②Mechanisms of adipocyte and chondrodyte 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	桝 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	（ ）	①Identification of genomic variants associated with development and clinical characteristics of human autoimmune rheumatic diseases such as systemic lupus erythematosus and ANCA associated vasculitis ②Analysis of genomic “dark region” including *HLA* and NK receptor family genes to identify variants which account for “missing heritability” in the autoimmune rheumatic diseases
Genome Biology	村谷 匡史 MURATANI Masafumi	①Technology development and application of spatial multi-omics analysis of limited samples. ②Liquid biopsy analysis of environmental stress responses ③Promotion and organization of open science projects in space life sciences
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 Transctiption Factors in vivo ③Analysis of Cancer Stem Cells and Tumor Stromal Cells ④Regenerarion 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	水野 聖哉 MIZUNO Seiya	①Development of fundamental genetically modified mice for in-depth gene function analysis ②Development of genome editing technology for producing mutant mice ③Identification of redundant genes using multi-gene mutant mice
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	山﨑 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
	熊田 博明 KUMADA Hiroaki	①Developement of techniques for high precision proton therapy ②Developement of dose calculation system for neutron capture therapy ③Application of techniques for photon therapy ④Quality assurance of radiation therapy ⑤Developement 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 Gentics	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 Biointerfaces
Legal Medicine	高橋 遥一郎 TAKAHASHI Yoichiro	①Development of forensic diagnostic methods based on molecular biological techniques ②Elucidation of the mechanisms of metabolism and poisoning of various toxicants ③Introduction of machine learning into forensic practice ④Research on medical jurisprudence and history of forensic medicine
International Institute for Integrative Sleep Medicine (WPI-IIIS) 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-IIIS) 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
	斉藤 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-IIIS) 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/wakefulnesss 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 moleacular mechanism of phase-resetting of the circadian clock and circadian photo-reception. ③Identificatioin 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-IIIS) 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-IIIS) 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 https://sakaguchi-lab.org/
International Institute for Integrative Sleep Medicine (WPI-IIIS) 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 https://iiis-lazarus-oishi-lab.org/
	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
International Institute for Integrative Sleep Medicine (WPI-IIIS) Honjoh Laboratory	本城 咲季子 HONJOH Sakiko	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
International Institute for Integrative Sleep Medicine (WPI-IIIS)	阿部 高志 ABE Takashi	①Functional roles of human sleep ②Neurobehavioral consequences of sleep deprivation ③Development of non-invasive methods to improve human

Abe Laboratory		sleep ④Development of new methods to evaluate human sleep and wakefulness
International Institute for Integrative Sleep Medicine (WPI-IIIS) Sakurai(Katsu) Laboratory	櫻井 勝康 Sakurai Katsuyasu	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
Occupational Psychiatry / Space Psychiatry	松崎 一葉 MATSUZAKI Ichiyo	①A study of the strong qualities unexpectedly in space ②Salutogenesis and Sense of coherence ③Nature based Rehabilitation
Vascular Matrix Biology (TARA Center)	柳沢 裕美 YANAGISAWA Hiromi	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
	木村 健一 KIMURA Kenichi	①Molecular mechanism of aortic dissection ②The role of endothelial cells in vascular diseases ③CD73 and mesenchymal stem cells

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 diaseases ③Approach to treatment of progressive kidney diseases ④Epidemiology of acute kidney injury and chronic kidney disease ⑤Outcome research of lifestyle diseases
Rheumatology	松本 功 MATSUMOTO Isao	①Mechanism of autoimuune diseases and allergy ②Cross talk between human autoimmunity and animal models via translational research ③T-B cell interaction in autoimmune diseases ④Approach to new treatment for suppresiing autoimmunity
Laboratory Hematology	小原 直 OBARA Naoshi	①Elucidation of expansion mechanism of clonal hematopoiesis in PNH ②Elucidation of regulatory mechanism of complement activation ③Mechanism of bone marrow failure
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
Cardiology	（ ）	①Cardiac regeneration and translational research ②Reprogramming to generate cardiomyocytes ③Molecular mechanism and new therapy for cardiovascular diseases
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 organella level and synthetic biology ⑦Inhibition of cholesterol synthesis, myopathy, and brain dysfunction
Neurology	斉木 臣二 SAIKI Shinji	①Development of blood biomarkers for Parkinson's disease ②Development of anti-Parkinson's medicines by autophagy enhancement ③Research on molecular ageing process and its modulators ④Research on molecular pathogenesis of Alzheimer's disease
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	鈴木 広道 SUZUKI Hiromichi 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 infections diseases. ④Clinical studies among patients with infectious diseases
General Thoracic Surgery	佐藤 幸夫 SATOH 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	①Development of novel microangiography system using synchrotron radiation ②Elucidation of signal transduction in aneurysmal formation ③Elucidation of hematological deterioration during cardiopulmonary bypass ④Study of ischemic myocardial remodeling using knockout mice ⑤Development of novel tissue crosslinking treatment technology ⑥Development of vitamin K-reduced functional food ⑦Development of valve simulation technology

		⑧Exploration of valve-sparing right ventricular outflow reconstruction ⑨Study in rehabilitation medicine in reduced venous return ⑩Regulation of gaseous microemboli in cardiopulmonary bypass ⑪Regenerative medicine using stem cells ⑫Production of 3D heart replicas
	鈴木 保之 SUZUKI Yasuyuki	①Development of new surgical procedure aboout congenital cardiac surgery ②Development of cardiac assist device using artificial muscle ③Elucidation of hematological deterioration during cardiopulmonary bypass ④Development of the new regenerative therapy using intraoral mesenchyma system cells
Pediatric Surgery	増本 幸二 MASUMOTO Kouji	①Bioengineered tissue transfer in infants and children ②Studies related to carcinogenesis and progression of malignant solid tumors in children ③Pathological, molecular biological and genetic studies of congenital alimentary tract malformations ④Studies of treatment for hypoplastic lungs in congenital diaphragmatic hernia
Neurosurgery	松丸 祐司 MATSUMARU Yuji 石川 栄一 ISHIKAWA Eiichi	① **Neurooncology** ①-1 **Neurooncology(Advanced Therapeutics):** Boron neutron capture therapy(BNCT), Proton therapy, Tumor vaccination, Gene thrapy, Photodynamic diagnosis and treatment (PDD, PDT) ①-2 **Neurooncology(Diagnostics):** 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) ② **Cerebrovascular disease:** 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 ③ Analysis of **cerebral function, perfusion and metabolism using neuroimaging** (functional -MRI, MR spectroscopy, diffusion tensor imaging, PET) ④ Neurorehabilitation using **Robot Suit HAL**, Brain machine interface ⑤ **Functional neurosurgery** for epilepsy, involuntary movement, central pain and Headache ⑥ **Gene therapy and regeneration therapy** using DDS (Angiogenesis, bone regeneration) ⑦ **Pediatric Neurosurgery:** Epigenetic biomarkers from woman with neural tube defect affected pregnancies ⑧ **Development of advanced medical equipment and device** (laser endoscope, new device of endoscopic surgery) ⑨ Neuroendovascular Therapy: Development of new devices, functional neurovascular anatomy, Outcome research of neuroendovascular therapy

Control of the Musculoskeletal System	（　　）	Clinical and basic research on following themes: ①Treatment of spinal disorders ②Treatment of joint disorders ③Sports medicine ④Regeneration of peripheral nerve ⑤Functional improvement treatment using Robot suit HAL for muscloskeletal disorders
Rehabilitation Medicine	羽田　康司 HADA Yasushi	①Medicine for disabilities ②Adapted sports ③Rehabiltation using robot suit HAL ④Development of new rehabilitation equipment through medical-engineering collaboration
Urology	西山　博之 NISHIYAMA Hiroyuki	①Cancers of genitourinary system ②Urodynamics ③Andrology ④Urolithiasis ⑤Urinary tract infection
Ophthalmology	大鹿　哲郎 OSHIKA Tetsuro	①Visual science ②Visual optics ③Minimally invasive ocular surgery ④Vision-related quality of life ⑤Development of artificial vitreous ⑥Development of new generation of OCT ⑦Arttificial intelligence in Ophthalmology
Otolaryngology & Head and Neck Surgery	田渕　経司 TABUCHI Keiji	①Inner ear pathology ②Research for head and neck surgery
Oral and Maxillofacial Surgery	武川　寛樹 BUKAWA Hiroki	①New development of biological marker for oral cancer (p63 and GNT-V) ②Research for clinical diagnosis and treatment of oral cancer using microRNA (miR203, miR155, miR205 and let-7) ③Regenerated research using dental pulp stem cell ④Research for oral bacterial flora involved internal medical disease (NASH, NAFLD and diabetes mellitus)
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 neuropschyatric 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 neonatates 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 baloon-occulusion 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 infomation 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. ③Pharamcokinetic 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 delilium
Clinical and Translational Research Methodology	橋本 幸一 HASHIMOTO Koichi	①Regulatory science ②Clinical trilas 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
Primary Care and Medical Education	前野 哲博 MAENO Tetsuhiro	①Clinical research in primary care ②Development of community-based medical System ③Health promotion in the community ④Clinical medical education
Integrated Study on Health Information	大庭 良介 OHNIWA Ryosuke	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