

## [List of Research Supervisor Groups]

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. In order to avoid having to write your Master’s thesis on a research theme different from what you had in mind, please contact the supervisor of your preferred fields or ask the contact person below for guidance about your choice. We also accept applicants who wish to decide which research group to join after they are admitted to the graduate school. In this case, write “To be determined” in the “Prospective research fields (supervisors)” section. Please note that at the time of admission you may not be accepted to a research group which received many applications.

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Medical Sciences Basic Medicine		
Research Area	Faculty	Research
Anatomy and Embryology	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 disease model mice.
Anatomy and Neuroscience	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 neuropsychiatric diseases caused by disrupted intracellular transport.
Neurobiology	SHIGA Takashi	①Roles of monoamines in the synapse formation ②Effects of environmental factors on the development of brain and behavior ③Effects of gravitational stress on the brain ④Functional analyses of novel candidate genes involved in axonal guidance ⑤Analyses of neurodegenerative diseases at a molecular level

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Diagnostic Pathology	NOGUCHI Masayuki	1. Study about molecular mechanisms of multistep carcinogenesis including precancerous or background lesions. 2. Study about molecular carcinogenesis and early progression based on the genomic and epigenomic abnormalities and drug development targetted the early cancer 3. Application of fetal protein to cancer diagnosis and therapy.
Experimental Pathology	KATO Mitsuyasu	①Roles of Transforming Growth Factor- $\beta$ - related molecules in cancer development ②Cell division kinetics of cancer stem cells by application of three-dimensional quantitative analysis and live imaging ③Development of anti-cancer stem cell therapy using macrocyclic peptides
Kidney and Vascular Pathology	NAGATA Michio	①Mechanism of kidney diseases progression ②Podocyte biology and glomerular diseases ③Glomerular cross-talk signals ④Renal vasculogenesis
Systems Neuroscience	SHIDARA Munetaka	①Brain information processing mechanism of motivation and reward expectancy ②Research on reinforcement learning and decision-making mechanism in the brain ③Research on information coding mechanism of reward value in the brain ④Research on visual recognition mechanism in the brain
Cognitive and behavioral Neuroscience	MATSUMOTO Masayuki	①Roles of monoamine systems in cognitive, emotional and motivational brain functions ②Brain mechanisms underlying value-based decision making
Neurophysiology	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
Behavioral Neuroscience and Behavioral Neuroendocrinology	OGAWA Sonoko	①Neuroendocrine basis of emotional and social behavior ②Role and molecular mechanisms of estrogen receptors in the regulation of brain functions and behavior ③Brain mechanisms of sexual differentiation in behavior and genetic and environmental modulation ④Behavioral neuroscience of functional organization of the hippocampus and amygdala

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Biochemistry, Molecular Cell Biology	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
Biochemistry, Gene Regulation	HISATAKE Koji	①Molecular mechanisms of iPS cell induction ②Mechanisms of adipocyte differentiation ③Molecular basis of epigenetics ④Chromatin modifications and transcriptional regulation
Physiological Chemistry	OHBAYASHI Norihiko	①Physiological functions of the small G proteins: Rab and Arf ②Development of novel anti-cancer drugs targeting signal transduction systems ③Membrane dynamics research aiming at invasion/metastasis, vascularization and pigmentation
Molecular Neurobiology	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 and lipid mediators in signal transduction
Infection Biology (Molecular Virology)	KAWAGUCHI Atsushi	①Molecular mechanism of virus replication , species specificity and pathogenicity of influenza virus ②Molecular mechanism of innate immunity ③Dynamics of chromatin remodeling and its function ④Chromosome translocation and tumorigenesis
Infection Biology (Bacteriology)	MORIKAWA Kazuya	①Infection strategies in Gram positive pathogens ②Adaptation mechanisms of staphylococci ③Post-transcriptional regulation in bacteria ④Evolution of RNA regulatory networks in <i>Enterobacteria</i> ( <i>Salmonella</i> / <i>E. coli</i> )
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.

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Immunology	SHIBUYA Akira	①To reveal host defense mechanisms against cancer and infectious diseases, and to develop their therapeutic manipulation ②To reveal cellular and molecular basis of allergy and autoimmune diseases, and to develop their therapeutic manipulation
Medical Genetics	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	TSUCHIYA Naoyuki	①Identification of genomic variants associated with susceptibility and clinical characteristics of human autoimmune rheumatic diseases such as systemic lupus erythematosus, ANCA associated vasculitis, systemic sclerosis and rheumatoid arthritis. ②Molecular mechanisms of <i>HLA</i> and other genes associated with autoimmune rheumatic diseases
Genome Biology	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.
	YAMADA Tomoko	With analyses of gene expression and genome architecture by sequencing, (1) Investigation of differentiation of neurons in mammalian cerebellum, (2) Examination of the molecular mechanism of learning and memory in cerebellum.
Regenerative Medicine and Stem Cell Biology	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
Stem Cell Biology and Biotechnology	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	SUGIYAMA Fumihito	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.

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Medical Physics	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
Radiation Biology	TSUBOI Koji	①Biological effects of proton beams on normal and cancer cells ②Radiation induced cell death and activation of tumor immunological reactions ③Particle beam induced DNA damage and repair
Environmental Biology	KUMAGAI Yoshito	①Understanding environmental response to chemicals causing oxidative and electrophilic stresses ②Understanding reactive sulfur species as a small molecule regulator for stresses
Molecular Biology	FUKAMIZU Akiyoshi	①Metabolism and methylation-regulated aging and longevity (cultured cells・C. elegans) ②Discovery of new methyltransferases and demethyltransferases, and its biological significance (cells・C. elegans・genetic model mice)
Developmental Genetics	NIWA Ryusuke	①Studies on interorgan communications for germline stem cell proliferation and maintenance. ②Studies on interorgan communications for regulating aging process ③Chemical biology for developing pesticides
Biomaterials Science	NAGASAKI Yukio	①Design of Nanomedicine ②Design of Drug Delivery System ③Design of Materials for Degenerative Medicine ④Design of Biointerfaces
Neuroscience	YANAGISAWA Masashi FUNATO Hiromasa	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

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Molecular Behavioral Physiology	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.
Functional sleep science	SAKAGUCHI Masanori	①Function of sleep in memory consolidation revealed by optogenetics ②The mechanisms of circuit integration of new neurons for brain regeneration during sleep ③Function of sleep in processing traumatic memory
Brain maturation/ evolution	HAYASHI Yu	①Elucidation of the function of sleep focusing on brain maturation and aging ②Elucidation of the evolutionary process of sleep based on molecular and developmental approaches
Systems Sleep Biology	LAZARUS Michael	①Motivated behavior as a sleep-regulating factor ②Development of optopharmacologic tools to control sleep ③Link between REM sleep loss and the desire for junk food ④Hypothermia as risk factor for memory consolidation ⑤Development of insomnia treatment by enhancing adenosine A2A receptor signaling
Molecular Circuits of RNAi, Sleep, and Fear	LIU, Qinghua	①Comprehensive understanding of the molecular and neural bases for sleep drive ②Elucidation of the neural circuits for adaptive behaviour to fear
Medicinal Chemistry , Organic Chemistry	NAGASE Hiroshi KUTSUMURA Noriki	①Design and synthesis of orexin receptor agonists ②Design and synthesis of opioid receptor agonists and antagonists ③Elucidation of pharmacologies of orexin and opioid
Molecular and Developmental Biology	KOBAYASHI Makoto	①Hematopoietic stem cell formation ②Digestive organ formation ③Defense against oxidative and ER stresses ④Aging and gerontology study ⑤Foods and drugs for healthy life extension
Occupational psychiatry/Space psychiatry	MATSUZAKI Ichiyo	①A study of the strong qualities unexpectedly in space ②Salutogenesis and Sense of coherence ③Nature based Rehabilitation

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Matrix and Stem Cell Biology	YANAGISAWA Hiromi	①Identification and functional analysis of novel extracellular matrix proteins in the vessel wall ②Phenotypic analysis of mutant mice with vascular diseases ③Molecular mechanism of mechanotransduction in the vessel wall ④Analysis of epidermal stem cell niche ⑤Aging study of epithelial stem cells
Molecular Genetics (RIKEN)	ISHII Syunsuke	①Mechanism of cancer formation ②Reprogramming of somatic cells ③Epigenetic regulation by stress ④Transcription factors regulating development and differentiation
Glycobiology (AIST)	NARIMATSU Hisashi	①Discovery of glycol-biomarkers for cancer ②Biological function of glycans in immunity ③Biological function of glycans in infectious diseases ④Diagnosis and treatment for IgA nephropathy ⑤Analysis of glycan functions using knock-out mice ⑥Development and application of technologies for glycans structural analysis

Clinical Medicine		
Research Area	Faculty	Research
Nephrology	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	SUMIDA Takayuki	1) Molecular mechanism in autoimmune diseases such as rheumatoid arthritis and connective tissue diseases 2) Specific regulation of autoimmune diseases 3) Approach to genetic therapy and disease-specific iPS cells therapy in autoimmune diseases
Hematology	CHIBA Shigeru NINOMIYA Haruhiko	①Mechanism of leukemo/lymphomagenesis ②Mechanism of bone marrow failure ③Translational research on stem cell therapy ④Megakaryocyte and platelet production ⑤Laboratory hematology for hematopoietic disorders

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Medical Oncology and Gastroenterology	HYODO Ichinosuke	①Basic and clinical research on medical oncology ②Development of molecular targeted agent and novel therapy
	YANAKA Akinori	①Pathophysiology of H.pyloir and NSAIDs-related GI disorders ②Studies in chemoprevention against GI cancers
Pulmonary Medicine	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
	SATOH 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
Pulmonary medicine, infection, and allergy	ISHII Yukio	①Elucidation of cellular and molecular mechanisms of pulmonary host responses to environmental stimuli, including cigarette smoke, antigens, chemical carcinogens, and microorganisms. ②Exploring the bio-markers in inflammatory and allergic lung diseases.
Cardiology	IEDA Masaki	①Cardiac regeneration and translational research ②Reprogramming to generate cardiomyocytes ③Molecular mechanism and new therapy for cardiovascular diseases
	AONUMA Kazutaka MIYAUCHI Takashi KOIKE Akira 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 ⑤Exercise physiology and cardiac rehabilitation in cardiac patients ⑥Medical quality assurance and risk management



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Metabolism and Endocrinology	SHIMANO Hitoshi	①Molecular understanding of diabetes, dyslipidemia, obesity and insulin resistance ②Molecular mechanism and gene therapy for atherosclerosis ③Making of pathological animal models by gene engineering ④Sensing mechanism and transcriptional regulation of energy metabolism ⑤Hub-metabolites and epigenetic regulation in carbohydrate, lipid, and protein metabolism ⑥Brain fatty acid metabolism and higher brain functions ⑦Regenerative medicine for pancreatic beta cells ⑧Physiology and pathophysiology of different organs in the quality aspect of fatty acids ⑨Novel approach to life-related diseases by nano-technology
Neurology	TAMAOKA Akira	①Molecular pathogenesis of Alzheimer's disease ②Pathology and biochemistry of neuromuscular disorders ③Neurobiology of neurodegenerative disorders ④Neuro-ophthalmology of neurological disorders ⑤Clinical and epidemiological studies of organoarsenic intoxication
General Thoracic Surgery	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.

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Cardiovascular Surgery	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.
Pediatric Surgery	MASUMOTO Koji	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 the alimentary tract malformations ④Studies of treatment for hypoplastic lungs in congenital diaphragmatic hernia
Gastrointestinal and Hepato-biliary-pancreatic Surgery	( )	1)Platelet and regenerative medicine: To clarify the mechanisms of liver regeneration by platelet function and aging platelet. 2)Drug delivery system : To investigate the mechanisms of liver injury and to develop a method of prevention by the use of a novel DDS. 3)Surgical metabolism and wound healing: To develop a novel treatment for minimizing intestinal damage under surgical stress. 4)Multipotential stem cells and regenerative medicine: To develop a gastroenterological tissue or organ bud in micro-environment with placental or/and other tissue derived stem cells for transplantation trials. 5)CancerComprehensive elucidation of cancer genesis and metastasis by analyzing cancer stem cells, local microenvironment (incl. fibroblast and platelets), and niche in metastatic site (liver Kuppfer cells, platelets). Paying special interest on cancer specific glyco-proteins, which will confer bran-new therapeutic strategy that specifically target cancers by glycan-lectin interaction: 6) Computer assisted Surgery (CAS): To develop and apply the system of the CAS and the novel surgical education system through the medical-engineering collaboration.

Research Area	Faculty	Research
Neurosurgery	MATSUMURA Akira	<p>1) <b>Neurooncology</b></p> <p>1)-1 <b>Neurooncology (Advanced Therapeutics):</b> Boron neutron capture therapy (BNCT), Proton therapy, Tumor vaccination, Gene therapy, Photodynamic diagnosis and treatment (PDD, PDT)</p> <p>1)-2 <b>Neurooncology (Diagnostics):</b> Molecular marker and gene analysis of brain tumor (glioma, pediatric brain tumor, craniopharyngioma), Intraoperative neurophysiological monitoring (MEP, SEP, EEG), Imaging study (Intraoperative MRI, Tractography, PET)</p> <p>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.</p> <p>3) Analysis of <b>cerebral function, perfusion and metabolism using neuroimaging</b> (functional MRI, MR spectroscopy, diffusion tensor imaging, PET)</p> <p>4) Neurorehabilitation using <b>Robot Suit HAL</b>, Brain machine interface</p> <p>5) <b>Functional neurosurgery</b> for epilepsy, involuntary movement, central pain and Headache</p> <p>6) <b>Gene therapy and regeneration therapy</b> using DDS (Angiogenesis, bone regeneration)</p> <p>7) <b>Pediatric Neurosurgery:</b> Epigenetic biomarkers from woman with neural tube defect affected pregnancies</p> <p>8) <b>Development of advanced medical equipment and device</b> (laser endoscope, new device of endoscopic surgery)</p>
Control of the Musculoskeletal System	YAMAZAKI Masashi	<p>Clinical and basic research on following themes:</p> <p>① Treatment of spinal disorders</p> <p>② Treatment of joint disorders</p> <p>③ Sports medicine</p> <p>④ Regeneration of peripheral nerve</p> <p>⑤ Functional improvement treatment using Robot suit HAL for musculoskeletal disorders</p>
Urology	NISHIYAMA Hiroyuki	<p>① Cancers of genitourinary system</p> <p>② Urodynamics</p> <p>③ Andrology</p> <p>④ Urolithiasis</p> <p>⑤ Urinary tract infection</p>
Ophthalmology	OSHIKA Tetsuro	<p>① Visual science</p> <p>② Visual optics</p> <p>③ Minimally invasive ocular surgery</p> <p>④ Vision-related quality of life</p> <p>⑤ Development of artificial vitreous</p> <p>⑥ Development of new generation of OCT</p>

Research Area	Faculty	Research
Otology & Equilibrium Research	( )	Study on theories and methods for pathophysiological, electrophysiological and biochemical research in otology and cochleoneural path way.
Oral and Maxillofacial Surgery	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	ARAI Tesuaki	①Molecular neuropathology of dementia and neurodegenerative disorder ②Clinical study of diagnosis, therapeutics, prevention and care of dementia ③Neuroimaging of neuropsychiatric disorders ④Clinical and social psychiatry for depression ⑤Suicidology and suicide prevention ⑥Psychiatric study of eating disorders
Molecular Embryology and Child Development	( )	①Developmental biology of pancreas, liver and bile duct for regenerative medicine ②Molecular mechanism of metabolic diseases through childhood ③Development of animal models for metabolic diseases using the embryo engineering technologies
Pediatrics	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	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.

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Diagnostic Radiology	MINAMI Manabu	①New development of diagnostic imaging method using 3-dimensional CT data: esp. virtual endoscopy ②Research on radiologic-pathologic correlation in various organs ③New development of qualitative/quantitative methods using MR imaging
Radiation Oncology	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	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 of the lens in radiotherapy ⑤Dose evaluation of neutron exposure in radiotherapy ⑥Technical development on radiation disasters
Anesthesiology	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	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	SHODA Junichi	①Development of novel exercise training for obese subjects with life style-related diseases ②Imaging analysis of organ lipid accumulation in obese subjects with life style-related diseases ③Development of glycobiomarkers for obesity and life style-related diseases ④Development of novel animal models for obesity and life style-related diseases ⑤Exercise-induced activation of antioxidative streass systems ⑥Understanding of exercise-induced inhibitory mechanism against carcinogenesis

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Molecular Sportology	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	HONMA 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	INOUE Yoshiaki	①Molecular biology of septic shock and shock ②Molecular biology of acute respiratory distress syndrome and multiple organ failure ③Molecular biology of clinical toxicology ④Molecular biology of delirium
Clinical and Translational Research Methodology	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	MATSUSAKA Satoshi	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
Primary Care and Medical Education	MAENO Tetsuhiro	①Clinical research in primary care ②Development of community-based medical System ③Health promotion in the community ④Clinical medical education

Public Health / Human Care Science		
Research Area	Faculty	Research
International Community Care and Lifespan Development: Empowerment Sciences	ANME Tokie	①Community empowerment ②Plasticity of lifespan development and implications ③System sciences for health social services
Gerontological Nursing & Caring	MATSUDA Hitomi	①The physiological effect of a narrative care for the elderly ②Adjustment of a life rhythm for the elderly with dementia ③QOL of the family caregiver ④Infection control for the elderly
	HASHIZUME Yumi	①Gender issues and Japanese family Caregiving, Interpersonal support for the middle-aged couple ②Toyamgata day service ③Community care and carers, caregivers, care for the family caregivers ④Community care in Mongolia ⑤Qualitative research method (Grounded theory approach)
Health Services Research	TAMIYA Nanako	①Health Services Research (especially older people and children) ②Cooperation of medical care and welfare in the local community ③Policy evaluation of the long-term care insurance system ④Study for the improvement of the quality of in-home care and facility care for older people and people with disability ⑤Public Health based on legal medicine (older people, child abuse, solitary death, actual state of service-related death, etc.)
Epidemiology	WAGATSUMA Yukiko	①Principles and methods in epidemiology and their applications ②Medical statistics and medical information science ③Epidemiology for diseases ④Sociological survey in the field of medicine ⑤Methods of clinical trials ⑥Strategy to control diseases in developing countries
Environmental Epidemiology	HONDA Yasushi	①Evaluation of health impact of climate change ②Epidemiological studies on environmental factors

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Social Psychiatry & Mental Health	SAITO Tamaki	①Asocial problem behaviors in childhood and adolescence ②Development disorder and maladaptation ③Rehabilitation of people with mental disorder
	MORITA Nobuaki	①Mental health of victims, Psychotherapy ②Intervention and treatment for family violence (Child abuse, Domestic violence, elder abuse and parent abuse by children) ③Recovery of addiction (Substance use disorder, Pathological gambling and internet dependence) ④Forensic psychiatry, Criminology
Forensic Medicine	HONDA Katsuya	①Research on forensic DNA testing ②Mitochondrial DNA polymorphism ③Studies on the toxicological mechanism of xenobiotics ④Research of molecular autopsy on sudden unexpected death
Global Public Health	ICHIKAWA Masao	①Global health research ②Community design & health ③Injury prevention & control
Medical Science and Welfare	YANAGI Hisako	①Preventive medicine for non-communicable diseases and frailty, Medical welfare for elderly ②Genetic counselling, Bioethics
Health care policy and Health economics	KONDO Masahide	①Application of economics for health care ②Health care policy research ③Global health economics
Livelihood Support Science	TOKUDA Katsumi	①Child care and guardians' support ②Beggars with disabilities ③Cemetery, graves and tombs
	MIZUNO Tomomi	①Barrier-free ②Child care and guardians' support ③Understanding persons with special needs