

## [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.

For guidance, contact: Kenji Irie, Provost, Master's Program in Medical Sciences, Graduate School of Comprehensive Human Sciences, University of Tsukuba

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Medical Sciences Basic Medicine		
研究分野(英訳)	教員名	研究内容(英訳)
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 disease 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 neuropsychiatric diseases caused by disrupted intracellular transport.
Neurobiology	志賀 隆 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
Diagnostic Pathology	野口 雅之 NOGUCHI Masayuki	1. Study about molecular mechanisms of multistep carcinogenesis including precancerous or background lesions. 2. Study about molecular carcinogenesis and early

		<p>progression based on the genomic and epigenomic abnormalities and drug development targetted the early cancer</p> <p>3. Application of fetal protein to cancer diagnosis and therapy.</p>
Experimental Pathology	<p>加藤 光保 KATO Mitsuyasu</p>	<p>①Molecular mechanisms of stemness induction in cancer development</p> <p>②Cell division kinetics of cancer stem cells by application of live imaging and three-dimensional quantitative analysis</p> <p>③Development of anti-cancer stem cell therapy using macrocyclic peptides and antibody</p>
Kidney and Vascular Pathology	<p>長田 道夫 NAGATA Michio</p>	<p>①Mechanism of kidney diseases progression</p> <p>②Podocyte biology and glomerular diseases</p> <p>③Glomerular cross-talk signals</p> <p>④Renal vasculogenesis</p>
Systems Neuroscience	<p>設楽 宗孝 SHIDARA Munetaka</p>	<p>①Brain information processing mechanism of motivation and reward expectancy</p> <p>②Research on reinforcement learning and decision-making mechanism in the brain</p> <p>③Research on information coding mechanism of reward value in the brain</p> <p>④Research on visual recognition mechanism in the brain</p>
Cognitive and behavioral Neuroscience	<p>松本 正幸 MATSUMOTO Masayuki</p>	<p>①Roles of monoamine systems in cognitive, emotional and motivational brain functions</p> <p>②Brain mechanisms underlying value-based decision making</p>
Neurophysiology	<p>小金澤 禎史 KOGANEZAWA Tadachika</p>	<p>①Study on the neural regulation of the cardiovascular system</p> <p>②Study on the neural regulation of the respiratory system</p> <p>③Study on the neural regulation based cardiovascular and respiratory diseases</p>
Behavioral Neuroscience and Behavioral Neuroendocrinology	<p>小川 園子 OGAWA Sonoko</p>	<p>①Neuroendocrine basis of emotional and social behavior</p> <p>②Role and molecular mechanisms of estrogen receptors in the regulation of brain functions and behavior</p> <p>③Brain mechanisms of sexual differentiation in behavior and genetic and environmental modulation</p> <p>④Behavioral neuroscience of functional organization of the hippocampus and amygdala</p>
Biochemistry , Molecular Cell Biology	<p>入江 賢児 IRIE Kenji</p>	<p>①Post-transcriptional regulation of gene expression by RNA-binding proteins</p> <p>②Molecular mechanism of mRNA localization and local translation regulating cell polarity, asymmetric cell division, and cell-fate</p> <p>③Regulation of endoplasmic reticulum stress response</p> <p>④Prospore membrane formation by vesicle docking</p>

Molecular and Developmental Biology	小林 麻己人 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
Biochemistry , Gene Regulation	久武 幸司 HISATAKE Koji	①Molecular mechanisms of iPS cell induction ②Mechanisms of adipocyte differentiation ③Molecular basis of epigenetics ④Chromatin modifications and transcriptional regulation
Physiological Chemistry	大林 典彦 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	榑 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 and lipid mediators in signal transduction
Infection Biology (Molecular Virology)	川口 敦史 KAWAGUCHI Atsushi	①Molecular mechanism of virus replication , species specificity and pathogenicity of influenza virus ②Molecular mechanism of innate immunity
Infection Biology (Bacteriology)	森川 一也 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.
Immunology	澁谷 彰 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	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 susceptibility and clinical characteristics of human autoimmune rheumatic diseases such as systemic lupus erythematosus, ANCA associated vasculitis, systemic sclerosis and rheumatoid arthritis. ② Molecular mechanisms of <i>HLA</i> and other genes associated with autoimmune rheumatic diseases
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
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 Fumihito	①Development of new technology for producing genetically modified mice. ②Development of genetically modified mice for analyzing biological function ③ Investigating the novel gene function in germ cell maintenance and maturation.
Bioinformatics	尾崎 遼 OZAKI Haruka	Development of computational methods for interpreting massive biological data and application of bioinformatics to biomedical problems: (1) AI-based prediction of genome sequence functions (2) Understanding of cell-to-cell variability thorough single-cell omics analyses and application to disease reasearches (3) Investigation and prediction of functions of non-coding regions in genome (DNA) and transcripts (RNA) (4) Multi-omics data analyses of biological systems (5) Data science of massive clinical data
Medical Physics	榮 武二 SAKAE Takeji	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

		<p>measurement</p> <p>⑥Study for radiation protection</p> <p>⑦Basic research for acquiring information of biological function with image diagnostic techniques</p>
Environmental Biology	<p>熊谷 嘉人</p> <p>KUMAGAI Yoshito</p>	<p>①Understanding environmental response to chemicals causing oxidative and electrophilic stresses</p> <p>②Understanding reactive sulfur species as a small molecule regulator for stresses</p>
Molecular Biology	<p>深水 昭吉</p> <p>FUKAMIZU Akiyoshi</p>	<p>①Metabolism and methylation-regulated aging and longevity (cultured cells・C. elegans)</p> <p>②Discovery of new methyltransferases and demethyltransferases, and its biological significance (cells・C. elegans・genetic model mice)</p>
Developmental Genetics	<p>丹羽 隆介</p> <p>NIWA Ryusuke</p>	<p>①Studies on interorgan communications for germline stem cell proliferation and maintenance.</p> <p>②Studies on interorgan communications for regulating aging process</p> <p>③Chemical biology for developing pesticides</p>
Biomaterials Science	<p>長崎 幸夫</p> <p>NAGASAKI Yukio</p>	<p>①Design of Nanomedicine</p> <p>②Design of Drug Delivery System</p> <p>③Design of Materials for Degenerative Medicine</p> <p>④Design of Biointerfaces</p>
Neuroscience	<p>柳沢 正史</p> <p>YANAGISAWA Masashi</p>	<p>Our lab aims at solving the mystery of sleep</p> <p>①Elucidation of the molecular mechanism regulating sleep/wakefulness through a forward genetic approach</p> <p>②Medicinal chemistry to develop new drug for sleep disorder</p> <p>③Visualization of neural and glial cell activity during sleep/wakefulness behavior</p>
Molecular Behavioral Physiology	<p>櫻井 武</p> <p>SAKURAI Takeshi</p>	<p>①Elucidation of physiological roles of novel neuropeptide</p> <p>②Revealing the neural circuits and neural mechanisms that work in the system that regulates emotion.</p> <p>③Studies on the neural circuits and neural mechanisms that play roles in the regulation of sleep/wakefulness states.</p>
Functional sleep science	<p>坂口 昌徳</p> <p>SAKAGUCHI Masanori</p>	<p>①Function of sleep in memory consolidation. Correlation of brain plasticity and sleep</p> <p>②Function of sleep in processing traumatic memory  <a href="http://iis.php.xdomain.jp/sakaguchi/www/">http://iis.php.xdomain.jp/sakaguchi/www/</a></p>
Brain maturation/ evolution	<p>林 悠</p> <p>HAYASHI Yu</p>	<p>①Elucidation of the function of sleep focusing on brain maturation and aging</p> <p>②Elucidation of the evolutionary process of sleep based on molecular and developmental approaches</p>
Systems Sleep	LAZARUS Michael	① Understanding the control of sleep and wake by motivation

Biology		② Sleep circuits as potential therapeutic targets for insomnia ③ Link between REM sleep loss and the desire for junk food ④ Elucidation of neural mechanisms of short-sleep ⑤ Analysis of the effects of short-sleep on physiological functions
Molecular Circuits of RNAi, Sleep, and Fear	LIU, Qinghua	① Comprehensive understanding of the molecular and neural bases for sleep drive ② Elucidation of the neural circuits for adaptive behaviour to fear
Medicinal Chemistry, Organic Chemistry, Neuropharmacology	長瀬 博 沓村 憲樹 NAGASE Hiroshi KUTSUMURA Noriki	① Design and synthesis of orexin receptor agonists ② Design and synthesis of opioid receptor agonists and antagonists ③ Elucidation of pharmacologies of orexin and opioid ④ Through pharmacological evaluation (in vitro and in vivo) of the compounds developed above, we aim to create drugs with a new mechanism. ⑤ New drug creation by clarification of plasticity in the central nervous system and change of emotional brain function induced by stress, chronic pain and drugs of abuse.
Electrophysiology and molecular biology of sleep	本城 咲季子 HONJOH Sakiko	① The dynamics of thalamocortical system across sleep/wake cycles ② Elucidation of neural circuits underlying NREM sleep specific EEG patterns ③ Analysis of vigilance state-dependent transcriptional changes ④ Elucidation of the function of vigilance-state specific genes in neural activity
Occupational psychiatry/Space psychiatry	松崎 一葉 MATSUZAKI Ichiyo	① A study of the strong qualities unexpectedly in space ② Salutogenesis and Sense of coherence ③ Nature based Rehabilitation
Matrix and Stem Cell Biology (TARA Center)	柳沢 裕美 YANAGISAWA Hiromi	① Identification and functional analysis of novel extracellular matrix proteins in the vessel wall ② Phenotypic analysis of mutant mice with vascular diseases ③ Molecular mechanism of mechanotransduction in the vessel wall ④ Analysis of epidermal stem cell niche ⑤ Aging study of epithelial stem cells
Molecular Genetics (RIKEN)	石井 俊輔 ISHII Syunsuke	① Mechanism of cancer formation ② Reprogramming of somatic cells ③ Epigenetic regulation by stress ④ Transcription factors regulating development and differentiation
Glycobiology (AIST)	成松 久 NARIMATSU Hisashi	① Discovery of glycol-biomarkers for cancer ② Biological function of glycans in immunity ③ Biological function of glycans in infectious diseases ④ Diagnosis and treatment for IgA nephropathy

		⑤Analysis of glycan functions using knock-out mice ⑥Development and application of technologies for glycans structural analysis
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Clinical Medicine		
研究分野(英語訳)	教員名	研究内容(英語訳)
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	住田 孝之 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	千葉 滋 二宮 治彦 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
Medical Oncology and Gastroenterology	兵頭 一之介 HYODO Ichinosuke	①Basic and clinical research on medical oncology ②Development of molecular targeted agent and novel therapy
	谷中 昭典 YANAKA Akinori	①Pathophysiology of H.pylori and NSAIDs-related GI disorders ②Studies in chemoprevention against GI cancers
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
Pulmonary medicine, infection, and allergy	石井 幸雄 ISHII Yukio	①Elucidation of cellular and molecular mechanisms of pulmonary host responses to environmental stimuli, including cigarette smoke, antigens, chemical carcinogens,

		<p>and microorganisms.</p> <p>②Exploring the bio-markers in inflammatory and allergic lung diseases.</p>
Cardiology	<p>家田 真樹 IEDA Masaki</p>	<p>①Cardiac regeneration and translational research</p> <p>②Reprogramming to generate cardiomyocytes</p> <p>③Molecular mechanism and new therapy for cardiovascular diseases</p>
	<p>青沼 和隆 宮内 卓 小池 朗 本間 覚 AONUMA Kazutaka MIYAUCHI Takashi KOIKE Akira HONMA Satoshi</p>	<p>①Establishment of mechanism and treatment of arrhythmia</p> <p>②Establishment of evaluation of hemodynamics</p> <p>③Establishment of new treatment strategy of heart failure</p> <p>④Relation between arteriosclerosis and endothelial function</p> <p>⑤Exercise physiology and cardiac rehabilitation in cardiac patients</p> <p>⑥Medical quality assurance and risk management</p>
Metabolism and Endocrinology	<p>島野 仁 SHIMANO Hitoshi</p>	<p>①Molecular understanding of diabetes, dyslipidemia, obesity and insulin resistance</p> <p>②Molecular mechanism and gene therapy for atherosclerosis</p> <p>③Making of pathological animal models by gene engineering</p> <p>④Lipid transcription factors and pathophysiology</p> <p>⑤Physiology and pathophysiology of different organs in the quality aspect of fatty acids</p> <p>⑥Brain fatty acid metabolism, neurogenesis, and higher brain functions</p> <p>⑦Regenerative medicine for pancreatic beta cells</p> <p>⑧Stem cell fatty acid and differentiation</p> <p>⑨Sensing mechanism and transcriptional regulation of energy metabolism</p> <p>⑩Hub-metabolites and epigenetic regulation in carbohydrate, lipid, and protein metabolism</p> <p>⑪cholesterol synthesis inhibition and myopathy</p> <p>⑫Cholesterol synthesis inhibition and brain dysfunction</p> <p>⑬Molecular visualization at organella level and synthetic biology</p>
Neurology	<p>玉岡 晃 TAMAOKA Akira</p>	<p>①Molecular pathogenesis of Alzheimer's disease</p> <p>②Pathology and biochemistry of neuromuscular disorders</p> <p>③Neurobiology of neurodegenerative disorders</p> <p>④Neuro-ophthalmology of neurological disorders</p> <p>⑤Clinical and epidemiological studies of organoarsenic intoxication</p>
General Thoracic Surgery	<p>佐藤 幸夫 SATOY Yukio</p>	<p>This course is programmed to investigate on</p> <p>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</p>



		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
Pediatric Surgery	増本 幸二 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
Organ Transplantation, Gastroenterological and Hepatobiliary 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.
Neurosurgery	松村 明 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. Regenerative Medicine using dental pulp stem cells</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	山崎 正志 YAMAZAKI Masashi	<p>Clinical and basic research on following themes:</p> <p>①Treatment of spinal disorders</p> <p>②Treatment of joint disorders</p> <p>③Sports medicine</p> <p>④Regeneration of peripheral nerve</p> <p>⑤Functional improvement treatment using Robot suit HAL for musculoskeletal disorders</p>
Urology	西山 博之 NISHIYAMA Hiroyuki	<p>①Cancers of genitourinary system</p> <p>②Urodynamics</p> <p>③Andrology</p> <p>④Urolithiasis</p> <p>⑤Urinary tract infection</p>
Ophthalmology	大鹿 哲郎 OSHIKA Tetsuro	<p>①Visual science</p> <p>②Visual optics</p> <p>③Minimally invasive ocular surgery</p> <p>④Vision-related quality of life</p> <p>⑤Development of artificial vitreous</p> <p>⑥Development of new generation of OCT</p>
Otology & Equilibrium Research	( )	Study on theories and methods for pathophysiological, electrophysiological and biochemical research in otology and

		cochleoneural path way.
Oral and Maxillofacial Surgery	武川 寛樹 BUKAWA Hiroki	<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	<ul style="list-style-type: none"> <li>①Molecular neuropathology of dementia and neurodegenerative disorder</li> <li>②Clinical study of diagnosis, therapeutics, prevention and care of dementia</li> <li>③Neuroimaging of neuropsychiatric disorders</li> <li>④Clinical and social psychiatry for depression</li> <li>⑤Suicidology and suicide prevention</li> <li>⑥Psychiatric study of eating disorders</li> </ul>
Pediatrics	高田 英俊 TAKADA Hidetoshi	<ul style="list-style-type: none"> <li>①Development of new gene therapy for genetic disorders of childhood using new Sendai virus vector</li> <li>②Immunological analysis of host factor in children who developed vaccination-related adverse reaction</li> <li>③Analysis of the characteristics of immune reaction of fetuses and neonates</li> <li>④Nation-wide analysis of child disorders including primary immunodeficiencies</li> <li>⑤Long term analysis of therapeutic effect of childhood cancer</li> <li>⑥New objective analysis of the development of children</li> </ul>
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.
Radiation Oncology	櫻井 英幸 SAKURAI Hideyuki	<ul style="list-style-type: none"> <li>①Research for radiosensitivity, and improvement of radioresistance</li> <li>②Radiation treatment planning using multimodality imaging</li> <li>③New cancer therapy using particle radiation therapy</li> </ul>
Radiation Health Risk Science	磯辺 智範 ISOBE Tomonori	<ul style="list-style-type: none"> <li>①Environmental radiation (distribution of radiation in soil, river, sea, crops and wildlife)</li> <li>②Radiation exposure evaluation</li> <li>③Soil and surface decontamination technology</li> <li>④Dose Evaluation and Radiation Protection Technique of Medical Radiation Exposure to Eye Lens</li> </ul>

		⑤Dose evaluation of neutron exposure in radiotherapy ⑥Technical development on radiation disasters
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	正田 純一 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 stress systems ⑥Understanding of exercise-induced inhibitory mechanism against carcinogenesis
	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 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	井上 貴昭 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	橋本 幸一 HASHIMOTO Koichi	①Regulatory science ②Clinical trials for functional foods ③Improvement of efficiency of practical medicine using AI

Methodology		<p>and IOT</p> <p>④Construction of seamless platform for translational research</p> <p>⑤Education of experts of integrative celerity research process for translational researches</p>
Clinical Research and Regional Innovation	<p>松阪 諭</p> <p>MATSUSAKA</p> <p>Satoshi</p>	<p>①Development of clinical decision system (Liquid biopsy analysis) for cancer chemotherapy</p> <p>②Understanding the mechanisms of cancer metastasis and anticancer agent resistance</p> <p>③Functional studies of Organoids with Cancer Stem Cell-like Properties</p>
Primary Care and Medical Education	<p>前野 哲博</p> <p>MAENO Tetsuhiro</p>	<p>①Clinical research in primary care</p> <p>②Development of community-based medical System</p> <p>③Health promotion in the community</p> <p>④Clinical medical education</p>

Public Health, Human Care Science		
研究分野(英語訳)	教員名	研究内容(英語訳)
International Community Care and Lifespan Development: Empowerment Sciences	安梅 勅江 ANME Tokie	①Community empowerment ②Plasticity of lifespan development and implications ③System sciences for health social services
Gerontological Nursing & Caring	橋爪 祐美 HASHIZUME Yumi	①Gender issues and Japanese family caregiving, Interpersonal support for the middle-aged couple ②Toyamagata day service ③Community care and formal caregivers, care for the family caregivers ④Community care in Mongolia ⑤Family caregiving by foreign bride and Japanese husband ⑥Qualitative research method (Grounded theory approach) , mixed method
Health Services Research	田宮 菜奈子 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	我妻 ゆき子 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
Social Psychiatry & Mental Health	斎藤 環 SAITO Tamaki	①Asocial problem behaviors in childhood and adolescence ②Development disorder and maladaptation ③Rehabilitation of people with mental disorder
	森田 展彰 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, gambling disorder and internet dependence) ④Forensic psychiatry, Criminology

Forensic Medicine	本田 克也 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	市川 政雄 ICHIKAWA Masao	①Global health research ②Community design & health ③Injury prevention & control
Medical Science and Welfare	柳 久子 YANAGI Hisako	①Preventive medicine for non-communicable diseases and frailty, Medical welfare for elderly ②Genetic counselling, Bioethics
Health care policy and Health economics	近藤 正英 KONDO Masahide	①Application of economics for health care ②Health care policy research ③Global health economics
Livelihood Support Science	徳田 克己 TOKUDA Katsumi	①Child care and guardians' support ②Beggars with disabilities ③Cemetery, graves and tombs
	水野 智美 MIZUNO Tomomi	①Barrier-free ②Child care and guardians' support ③Understanding persons with special needs