5. Details and Areas of Research of Faculty Members at Graduate School of Biomedical Sciences

Doctoral Courses [Four years (Department of Medical and Dental Sciences, Infection Research, Life Sciences and Radiation Research, Division of Advanced Preventive Medical Sciences)]

① Areas of Research in Department of Medical and Dental Sciences

*The [ ] in the name in the "Professor, etc." column indicates the planned retirement at the end of March 2027.

Area of Research	Professor, etc.	Details of main research work
Macroscopic Anatomy	TAKAMURA Keiko (Professor) ENDO Daisuke (Senior Assistant Professor)	① Microstructural analysis of bone tissue ② 3D structural analysis and finite element analysis of CT images of bones ③ Research into functional adaptation of motor organs from the perspective of skeletal microevolution among Japanese people ④ Research on human clinical anatomy ⑤ Anthropological and population genetic research into skeletal transformation in archeological remains excavated in western Japan
Histology and Cell Biology	AKAZAWA Yuko (Professor) SHIBATA Yasuaki (Associate Professor)	① AI-assisted fibrosis anaysis and spatial prolifing to predict patient outcome ② Mitochondiral dysfunction, ER stress, and DNA damage response in gastroenterology and hepatology diseases ③ Epigenetic regulation of germ cell differentiation ④ Role of Wnt/b-catenin signaling-related molecules on juvenile development and poor prognosis of hepatocellular carcinoma
Oral Anatomy and Dental Anthropology	OYAMADA Joichi (Associate Professor)	① Dental anthropological study of the ancient Japanese ② Dental anthropological study of the ancient Chinese ③ Dental pathological study of the ancient people ④ Anatomical study of head and neck
Skeletal Development and Regenerative Biology	MATSUSHITA Yuki (Professor)	① Cellular dynamics of bone and tooth stem cells ② The mechanism of bone regeneration based on the skeletal stem cells ③ Cancer and skeletal stem cells ④ Discovery of novel biological sciences by the interdisciplinary approach
Physiology of Visceral Function and Body Fluid	INOUE Tsuyoshi (Professor)	① Elucidation of the pathophysiology of kidney diseases and development of treatment methods ② Anti-inflammatory and organ protection mechanisms through the nervous-immune systems ③ Atherosclerosis progression mechanism ④ Mechanisms of hypertension development
Biochemistry		
Oncology	IKEDA Hiroaki (Professor)	① Development of novel immuo cell therapy for cancer patients ② Development of novel gene therapy for cancer patients ③ Translational research of novel immuno-therapy for cancer patients ④ Development of cancer immunotherapy that overcomes tumor heterogeneity ⑤ Research into T cell functionality
Molecular and Genomic Biomedicine	MIZUTA Satoshi (Assistant Professor) OTAKI Hiroki (Assistant Professor)	① Oncology and drug development based on molecular and quantum medical science ② Optimization of radiotherapy and radioprotection based on molecular and quantum medical science and radiation biology ③ Biochemistry and molecular epidemiology on environmental stress biomarkers based on molecular and quantum medical science ④ Biochemistry and molecular epidemiology on disease biomarkers based on molecular and quantum medical science
Oral Chrono-Physiology	NAKAMURA Wataru (Professor)	① Circadian regulation of Physiological Functions ② Neural mechanism in the Suprachiasmatic nucleus; internal circadian clock ③ Age related decline in physiological rhythms
Medical Pharmacology	ARUGA Jun (Professor) HATAYAMA Minoru (Senior Assistant Professor) MATSUNAGA Hayato (Senior Assistant Professor)	① Molecular function and physiological role of synapse organizer proteins ② Function and pathophysiology of blood-brain-barrier ③ Analysis of pathological conditions and development of therapeutic strategies in neurological disorders ④ Wiring mechanism of neural circuit and its regulation by diffuse modulatory system
Dental Pharmacology	TSUKUBA Takayuki (Professor)	① Functions and pathological condition of endo-lysosomal protease ② Molecular biological research into endosome and lysosome systems ③ Cellular biological research into osteoclast-induced bone resorption mechanisms ④ Research into protease in bacteria pathogenic in gum disease
Pathology	OKANO Shinji (Professor) PARK Seongjoon (Senior Assistant Professor)	① Pathobiological analysis for carcinogenesis and progression of hepato-pancreato-biliary cancer and development of new therapeutic drug and ② Identification of tumor-agonistic dysbiosis of oral and gut microbiota in carcinogenesis and progression of cancer and elucidation of the ③ Pathological assessment of rejection of composite transplantation and elucidation of the mechanism ④ Pathobiological analysis of medication-related osteonecrosis of the jaw ⑤ Pathobiological analysis of cancer immunotherapy and development of new therapeutic drug and biologics ⑥ Elucidation of western medical mechanism of Kampo medicine treatment effects in cancer-burden patients ⑦ Research on novel longevity mechanisms and anti-aging factors in energy metabolic pathways ⑧ Searching for longevity factors by applying lipid metabolism regulation specific to calorie restriction ⑨ Development of novel therapeutic targets for fatty liver disease focusing on immunometabolism ⑩ Control of metabolic diseases by sex-specific lipid metabolic pathways
Pathology Informatics	FUKUOKA Junya (Professor)	① Standardization of pathological diagnosis using digital technology ② Pathological examination of interstitial lung diseases ③ Image analysis using artificial intelligence ④ Artificial intelligence applied to pathologycal diagnoses
Oral Pathology	KATASE Naoki (Associate Professor)	① Head and Neck Cancer Control via Medium-Molecular-Weight Drug Development Targeting DKK3 ② Hisopathological study of oral lesions for pathological diagnosis ③ The role of Wnt signaling in bone homeostasis
Dental and Biomedical Materials Science	WATANABE Ikuya (Professor)	① Development of low-elasticity, highly corrosion-resistant titanium alloy for bone replacement material ② Optical characteristics of all-ceramic repair porcelain ③ Cellular suitability evaluation of biomaterials for dental or biological implant ④ Abrasion resistance evaluation of metallic biomaterial ⑤ Controlled drug-release system for dental materials
Molecular Tumor Biology	ITO Kosei (Professor)	① Differentiation, proliferation and tumorigenesis of mesenchymal stem cells ② Functional analysis of oncogenes and anti-oncogenes using gene targeted mice ③ Molecular analysis of tumor metastasis using gene targeted mice
Forensic Pathology and Science	IKEMATSU Kazuya (Professor)	① Forensic pathology ② Child abuse and neglect ③ Forensic molecular pathology ④ Forensic genetics ⑤ Metabolic Autopsy
Clinical Epidemiology	SATO Izumi (Professor)	① Clinical epidemiological study using a large-scale medical database ② Research of pharmacoepidemiology using a large-scale medical database

Area of Research	Professor, etc.	Details of main research work
Comparative Medicine	[OHSAWA Kazutaka] (Professor)	① Research of infectious desease in laboratory animals ② Research of human infectious diseases from laboratory animals ③ Research of infection prevention of laboratory animals
Biomedical Models	KOBAYASHI Atsushi (Professor)	① Elucidation of the mechanisms of prion disease development ② Establishment of the animal models for spontaneous prion disease ③ Elucidation of the common mechanisms of formation and transmission of misfolded proteins
Functional Genomics	KISHINO Tatsuya (Associate Professor)	① Molecular analysis of genomic imprinting ② Clarification of establishment of epigenetics in early embryos and neurons ③ Production and analysis of model mice of epigenetics diseases ④ Functional analysis of responsible genes of diseases with mental retardation
Forensic Dental Science		
Frontier Oral Science	KADOWAKI Tomoko (Professor)	① Molecular and biological research on the mechanisms of progression and persistence of inflammatory diseases ② Analyses and regulation of causative inflammatory factors ③ Study on the maintenance and disorder of homeostasis system, focusing on membrane traffic
Oral Health	IRIE Koichiro (Professor)	① The cohort study on periodontal disease and arterial sclerosis, diabetes and other systemic health ② Clinical study of perioperative oral management ③ The study of medication-Related Osteonecrosis of the jaw ④ Community oral health activities and their evaluation
Ophthalmology and Visual Sciences	OISHI Akio (Professor)	① Research on the mechanism of macular disease and its new treatment ② Research on the anatomy and function of the vitreous body ③ Basic and clinical research on retinal and choroidal circulation ④ Development of new vitreoretinal surgery methods ⑤ Clinical research on the treatment of diabetic retinopathy/macular edema ⑥ Basic and clinical research on exfoliation glaucoma ⑦ Epidemiological research and treatment on HTLV-1 associated uveitis
Otolaryngology - Head and Neck Surgery	KUMAI Yoshihiko (Professor)	① Development of the innovative treatment for the radiation induced vocal fold scar in head and neck cancer patients ② Development of the innovative treatment for the aspiration caused by sarcopenia in elder patients ③ Elucidation of the pathophysiology of aspiration associated with reconstruction surgery of head and neck cancer ④ Analysis of the expression of the 53BP1 in meso-pharyngeal cancer patients ⑤ Proto-oncogene mutations in middle ear cholesteatoma contribute to its pathogenesis ⑥ Development of an new screening system for newborn hearing-impaired children
Neurosurgery	MATSUO Takayuki (Professor)	① Technological development of skull base surgery ② Development of support system for brain tumor surgery ③ Research into neuroendoscopic surgery ④ Research into radiobiological effect for brain tumor after stereotactic irradiation ⑤ Analysis of mechanism in blood brain barrier
Anesthesiology and Intensive Care Medicine	HARA Tetsuya (Professor)	① Pathology of acute heart failure and its control ② Control of molecular pathology in ischemia/reperfusion injury ③ Intestinal pathology of septic shock ④ Neural mechanism of chronic pain and its control
Cardiovascular Surgery	MIURA Takashi (Professor)	① Research into valvuloplasty ② Research into video-assisted minimally invasive cardiac surgery ③ Research into microscopic bypass surgery with permanent graft patency ④ Robotic surgery ⑤ Research into aortic root anatomy in patients with aortic regurgitation using 4D-CT ⑥ Research into the surgical anatomy of mitral valve complex in hypertrophic obstructive cardiomyopathy ⑦ Research into surgery for secondary tricuspid regurgitation due to leaflet tethering
Surgical Oncology	MATSUMOTO Keitaro (Professor)	① Research into molecular biology of lung, gastrointestinal, thyroid and breast cancer ② Research into environmental factors and genetic mutations in lung, gastrointestinal, thyroid, and breast cancer ③ Research into novel Therapeutic Methods for Intractable Diseases of the Respiratory and Gastrointestinal Tracts ④ Research into respiratory function preserving surgery and reconstructive surgery ⑤ Research into lung transplantation and organ preservation ⑥ Research into regenerative medicine in the respiratory and gastrointestinal tracts ⑦ Development of new medical devices by medical-engineering ⑧ Research into perioperative infection ⑨ Research into minimally invasive surgery and automated robotic surgery
Digestive Surgery and Transplantology	EGUCHI Susumu (Professor)	① Research into digestive organ transplantation (liver, pancreas, islets, small bowel, etc.) ② Research into digestive organ regenerative medicine (digestive tract, liver, pancreas, islets, etc.) ③ Research into digestive organ cancer (digestive tract, liver, pancreas, biliary tract) ④ Research into laparoscopic and robot and AI surgery ⑤ Research into thyroid and breast surgery and cancer ⑥ Research into development of new strategy for pediatric surgery ⑦ Research into immunotherapy for malignant tumors and organ transplantation
Urology	IMAMURA Ryoichi (Professor)	① Research into biomarkers for early diagnosis of antibody-related rejection after kidney transplantation ② Research into the efficacy of the new generation antioxidants for interstitial fibrosis after kidney transplantation ③ Interaction between regulatory T cells and natural killer cells in microenvironment of renal cell carcinoma ④ Elucidation of the pathological significance of the Hippo pathway in bladder cancer ⑤ Primary Aldosteronism：Research into Predicting Hypertension Outcomes Following Adrenalectomy
Obstetrics and Gynecology	MIURA Kiyonori (Professor)	① Research into Placental and Fetal Functions ② Research into Clinical Significance of Perinatal Stem Cell in Obstetrics and Gynecology ③ Research into Mother-to-Child Infections ④ Research into Reproductive Medicine ⑤ Research into Gynecologic Oncology ⑥ Research into Women's Healthcare ⑦ Research into Laparoscopic and Robot Surgery in Obstetrics and Gynecology
Orthopaedic Surgery	OSAKI Makoto (Professor)	① Research on bone microstructure using high resolution peripheral quantitative CT (HR-pQCT) ② Research on osteoporosis ③ Research on rheumatoid arthritis ④ Research on sports injuries ⑤ Research on joint implants ⑥ Joint dynamics analysis ⑦ Biofilm research ⑧ Epidemiological research on orthopedic diseases

Area of Research	Professor, etc.	Details of main research work
Plastic and Reconstructive Surgery	KASHIYAMA Kazuya (Professor)	① Research into reconstructive surgery ② Research into microsurgical research and clinical application ③ Basic and clinical research of keloids in wound ④ Development of new operating methods in the hand surgery ⑤ Research into the application of adipose tissue derived stem cells in the reconstructive surgery ⑥ Application of amniotic membrane and placenta-derived stem cells for tissue repair
Neuropsychiatry	KUMAZAKI Hirokazu (Professor)	① Reasearch about the achievements and limitations of traditional psychiatry ② Research about the current state of the art and challenges of the latest robotic and avatar technologies ③ Research about the current state of artificial intelligence technology and challenges in its application to psychiatric medicine ④ Research on the use of tele-operated medicine to improve psychiatric services ⑤ Research about the consciousness and sensory trait for psychiatric disorders
Dermatology	MUROTA Hiroyuki (Professor)	① Research on skin diseases and skin physiological functions Establishment of a novel therapeutic stratedies for anhidrosis and hyperhidrosis based on a physiological and functional analysis of human sweat Pathological and physiological analysis of sensory abnormalities (e.g. pruritus and pain) and tactile dysfunction Pathogenesis of inflammatory skin diseases with a focus on sebum ② Research on skin allergies and chronic inflammatory diseases Survey for epidemiology of allergy, and evaluation of buren in patients with allergic skin diseases Exploratory study on the impact of sweat properties on the skin microbiome in atopic dermatitis Spatial omics analysis of inflammatory skin diseases and the dynamics of molecular targeted therapy on the skin microbiome ③ Research on malignant skin tumors Establishment of immune cell transfusion therapy for both skin cancer and cutaneous lymphomas Development of a breakthrough treatment for malignant skin tumors aimed at reducing disease burden and healthcare costs ④ Research on skin infections Survey for actual condition and epidemiological investigation of skin infection (e.g. fungal disease, acid-fast bacteria, and bacterial infection, Component analysis of metabolic products of skin-resident fungi through medical–engineering collaboration ⑤ Development research to overcome unmet needs Diagnosis of rare intractable diseases and development of new treatments for those diseases (e.g. pseudoxanthoma elasticum, Fabry disease, and neurofibromatosis, etc.) Investigaion for biomarkers and microbiomes which are of benefit to involved in treatment options for skin diseases (e.g. psoriasis, atopic Development of a clinical support application for dermatological diseases Pathophysiological analysis and noninvasive biomarker assessment in Yusho Exploration of biomarkers in patients with vitiligo
Cardiovascular Medicine	[MAEMURA Koji] (Professor)	① Basic and clinical research on the mechanisms and treatment of arteriosclerosis and pulmonary hypertension ② Development of biomarkers of cardiovascular disease and its clinical application ③ Research on the application of chronotherapy to cardiovascular disease ④ Association of myocardial tissue changes with genetic abnormlities of cardiomyopathy and lethal arrhythmia ⑤ Epidemiology of acute myocardial infarction in Nagasaki ⑥ Research on the relationship between cancer and cardiovascular disease ⑦ Research on the application of adipose tissue derived stem cells in cardiovascular regenerative medicine ⑧ Research on implementation of a regional clinical pathway for cardiovascular disease
Gastroenterology and Hepatology	MIYAAKI Hisamitsu (Professor)	① Molecular biology, mutations and pathology of hepatitis virus ② Interferon signals within hepatic cells ③ Life and death of hepatic cells ④ Early diagnosis and carcinogenic inhibition of hepatic cell cancer ⑤ Development of new treatment methods for digestive organ cancer ⑥ Digestive organ disorders and metabolic syndrome ⑦ Pathological analysis and development of new treatment methods for autoimmune hepatitis ⑧ Pathological analysis and development of new diagnostic methods for D198:D205hypersensitivity pneumonia
Respiratory Medicine		
Laboratory Medicine	YANAGIHARA Katsunori (Professor)	① Research into new methods of diagnosing infectious diseases ② Clarification of drug-resistant mechanisms and research into drug resistant bacteria control ③ Clarification of severe infection mechanisms and development of new treatment methods ④ Research about the role of microbiota on human health ⑤ Clarification of ATL pathology and development of new treatment methods ⑥ Establishment of custom-made diagnostics for neoplasm and infection ⑦ Development of new antimicrobials
Pediatrics	MIYAKE Noriko (Professor) DATEKI Sumito (Associate Professor)	① Research into hereditary diseases and genetic diagnosis ② Clinical and Genetic research into short statures ③ Clinical and Genetic research into pediatric endocrinologic disorders ④ Research into genetic etiologies of undiagnosed congenital diseases ⑤ Epidemiological and clinical research into mother-to-child infections ⑥ Investigation on involvement of coronaviruses in the onset of Kawasaki disease ⑦ Research on reactogenecity to COVID-19 vaccine ⑧ Investigation on prevalence of antimicrobial resistant bacteria among infants and toddlers in the community
Radiological Science	TOYA Ryo (Professor)	① Diagnostic imaging of inflammatory and degenerative diseases ② Imaging and staging of malignant tumors ③ Application of molecular imaging into radiotherapy planning ④ Physics analysis and clinical application of high-precision radiation therapy
Clinical Oncology	ASHIZAWA Kazuto (Professor)	① Research into management of pulmonary nodules using diagnostic imaging ② Research into molecular imaging for use in determining effectiveness of cancer treatments ③ Cutting edge clinical cancer research involving clinical trials on cancer drug treatments in multi-organ cancer cases ④ Development of novel therapeutic strategies in rare cancers
Clinical Physiology	SANUKI Takuro (Professor) KURATA Shinji (Associate Professor)	① Research into management upper airway patency during sleep and anesthesia ② Investigation on influence of anxiety on pain perception ③ Research into functional role of opioid receptor ④ Investigation on swallowing disorder
Orthodontics and Dentofacial Orthopedics	[YOSHIDA Noriaki] (Professor)	① Biomechanical analysis of orthodontic tooth movement ② Effect of soft diet feeding on masticatory function development and craniofacial growth ③ Etiology and pathogenesis of stomatognathic function disorders ④ Mechanisms of root resorption induced by orthodontic tooth movement ⑤ Development of orthodontic diagnosis and treatment support system using AI ⑥ Development of treatment system for achieving efficient tooth movement ⑦ Mechanisms of osteoclast differentiation and its control

Area of Research	Professor, etc.	Details of main research work
Developmental and Nurturing Dentistry	FUJITA Yuko (Professor) TANOUE Naomi (Associate Professor)	① Molecular biological research of pathogenic factors of dental caries and periodontal disease ② Molecular biological research of teeth and craniofacial growth and development ③ Development of new congnitive behavioral therapy ④ Materials-based approach to dental and oral diseases
Periodontology and Endodontology	YOSHIMURA Atsutoshi (Professor)	① Physical properties and clinical results of endodontic tools and materials ② Wound healing mechanism in pulpitis and apical periodontitis ③ Pulp regenerative medicine and biomaterials ④ Analysis of alveolar bone resorption mechanism ⑤ Role of immune system in periodontal tissue breakdown ⑥ Epidemiological study of periodontal diseases ⑦ Analysis of virulence factors of periodontopathic bacteria ⑧ Associations between periodontal disease and systemic disease
Applied Prosthodontics	SAWASE Takashi (Professor)	① Biocompatibility and biodynamics of dental implants ② Understanding of pathophysiology of and treatment strategy for MRONJ ③ Manufacture, clinical application and evaluation of polymers/composite materials/ceramics ④ Surface modification of dental materials
Prosthetic Dentistry	HARADA Kae (Associate Professor)	① Research into the development and clinical application of dental materials such as soft denture liners and denture adhesives ② Research into mastication function and jaw movement ③ Clinical research of prosthetic dentistry ④ Maintenance of dentures ⑤ Developmental research on innovative oral care methods for elderly adults
Oral and Maxillofacial Surgery	YAMADA Tomohiro (Professor)	① Basic and clinical research on maxillofacial deformities and congenital anomalies ② Basic and clinical research on oral tumors ③ Basic and clinical research on oral and maxillofacial reconstruction ④ Research on treatment support systems using digital technology
Radiology and Biomedical Informatics	SUMI Misa (Professor)	① Diagnostic imaging of head and neck tumors ② Diagnosis and treatment of Sjögren's syndrome ③ Deep learning approach for imaging diagnosis ④ DNA damage and repair mechanisms
Medical Research and Development for Oral Disease	SUMITA Yoshinori (Professor)	① Translational research of novel cell and gene therapies for jaw and alveolar bone defects ② Translational research of novel cell therapies for xerostomia (atrophic salivary glands) ③ Research into the function of tissue specific macrophages on morbid aged salivary glands ④ Research into the function of megakaryocytes on bone metabolism and regeneration
Pharmacotherapeutics	TSUKAMOTO Kazuhiro (Professor)	① Research into DNA-based diagnostic methods for personalized medicine ② Research into association studies on susceptibility genes for diseases, progression, drug effectiveness, adverse effects, and prognosis using genetic polymorphic markers
Pharmaceutical Informatics	KAWAKAMI Shigeru (Professor) MUKAI Hidefumi (Associate Professor)	① Research into targeted DDS using external stimuli from medical equipment ② Development of Designer Cells Using Nucleic Acid Pharmaceuticals and Their Application in Cancer Treatment ③ Development of high functionality and quality (HFQ) lipid nanoparticles and their application in treatments for intractable diseases and vaccines ④ Development of designer bacterial drugs for the treatment of refractory cancer ⑤ Development of new PET probes and novel methods for pharmacokinetic analysis
Pharmaceutics	NISHIDA Koyo (Professor)	① Research on drug delivery system aiming to develop new administration forms ② Development of control method for distribution of genetic medicine in the body and its pharmaceutical formulation with the purpose of optimizing ③ Research on kinetic analysis of drug disposition in the body and dosage regimen under diseased state
Pharmacy Practice	HIROTA Takeshi (Professor)	① Elucidating mechanisms of interindividual variability in pharmacokinetics and drug response for personalized pharmacotherapy ② Development of liquid biomarkers using miRNAs, epigenetic markers, and extracellular vesicles ③ Pharmacometric approaches for predicting drug response and optimizing dosage ④ Comprehensive profiling of antigen–antibody complexes to elucidate disease pathophysiology and to identify novel diagnostic and therapeutic targets
Molecular Pathochemistry	OHYAMA Kaname (Professor) KODAMA Yukinobu (Associate Professor)	① Clinical application and advanced research of comprehensive analysis of immune complexes ② In-house production of blood drug measurement by LC-MS/MS and research on drug treatment design based on large-scale data ③ Research on optimization of drug treatment and proper use of drugs by artificial intelligence ④ Elucidation of the molecular basis of hibernation ⑤ Development of drugs and genetic delivery systems
Nursing Sciences	ETO Hiromi (Professor) HONDA Sumihisa (Professor) [SAWAI Terumitsu] (Professor) ISHIMATSU Yuji (Professor) KURODA Hiromi (Professor) MATSUURA Emi (Professor) TANAKA Junichi (Associate Proffesor)	① Research on midwifery and women's health ② Research on sleep of mother and child ③ Research on health promotion for the community citizens ④ Research on ostomy rehabilitation ⑤ Research on prevention for perioperative complication ⑥ Research on chronic respiratory nursing ⑦ Research on infection control nursing ⑧ Research on cardiovascular nursing ⑨ Research on people with sleep disturbance ⑩ Research on chronic disease nursing ⑪ Research on collagen disease nursing ⑫ Research on health literacy ⑬ Research on acute care nursing ⑭ Research on children's health and nutrition
Physical Therapy Sciences	KOZU Ryo (Professor) OKITA Minoru (Professor) [ORIGUCHI Tomoki] (Professor) SAKAMOTO Junya (Professor) TANAKA Takako (Associate professor)	① Clinical research on rehabilitation for acute and chronic cardiorespiratory disorders ② Research and development in rehabilitation for cancer ③ Clarification of the mechanism for locomotive disorders (joint contracture, muscle atrophy, pain, etc) ④ Research and development in rehabilitation for musculoskeletal diseases ⑤ Research on rehabilitation for rheumatic diseases ⑥ Fundamental and clnical research on pain in rehabilitation ⑦ Research on individual rehabilitation and prognosis in chronic respiratory diseases ⑧ Research on rehabilitation and recurrence prevention in elderly people with pneumonia
Occupational Therapy Sciences	IWANAGA Ryoichiro (Professor) IMAMURA Akira (Professor) MORIUCHI Takefumi (Associate Professor) MARUTA Michio (Associate Professor)	① Research for assessment of children with developmental disabilities ② Research for dysfunction of sensory and motor in the individuals with autism spectrum disorder ③ Research on psychiatric rehabilitation ④ Research on investigation and support of addiction ⑤ Research on the biological basis of autism spectrum disorder and schizophrenia ⑥ Fundamental research on Rehabilitation through Neurophysiological Approaches ⑦ Research on Rehabilitation for Pain Using Virtual Reality ⑧ Research on support for people with mental health conditions and peer support ⑨ Research on daily life activities in people with dementia

Area of Research	Professor, etc.	Details of main research work
Health Sciences	OHNISHI Mayumi (Professor) HIGASHI Toshio (Professor) SATOH Katsuya (Professor) HIRANO Yuko (Professor) KOSAKA Satoko (Associate Professor)	① Research on health promotion for the community citizens ② Research in improving the health of people living under disadvantaged conditions ③ Research on rehabilitation for the disabled ④ Research and development in rehabilitation for neurological disease and muscle disease ⑤ Research and development in diagnose for dementia disease and rehabilitation for the prevention of dementia disease ⑥ Research on transfer of Japan's care technology to Asian countries ⑦ Research on the Sense of Coherence and its implication to health ⑧ Research on life adaptation and stress coping of foreign health workers in Japan
Preventive Medicine		
Medical Innovation	TANAKA Yoshimasa (Professor)	① Development of novel combination cancer therapy harnessing PD-1 immune checkpoint inhibitors ② Development of novel cancer immunotherapy harnessing gd T cells ③ Development of novel cancer immunotherapy harnessing nanobodies ④ Development of novel cancer immunotherapy harnessing natural products
Community Network for Health Welfare		
Endocrinology and Metabolism	HORIE Ichiro (Senior Assistant Professor)	① Analysis of bone microarchtecture in patients with endocrine disorders ② Analysis of circulating tumor DNA obtained from venous blood sampling in patients with endocrine disorders ③ Evaluation of efficacy of continouos glucose monitoring in patients with gestational diabetes ④ Research on pathophysiology of type 1 diabetes using non-obese diabetes mice
Clinical Neuroscience	TSUJINO Akira (Professor) TATEISHI Yohei (Senior Assistant Professor)	① Development of new diagnostic and therapeutic techniques for the neurological diseases ② Research on molecular, pathological and physiological mechanisms underlying the neurological diseases ③ Epidemiological and statistical analysis of omics and clinical data in the neurological diseases ④ Biomarker development for precision medicine in the neurological diseases ⑤ Translational research and clinical research of regenerative medicine in the neurological diseases
Nephrology	NISHINO Tomoya (Professor)	① Research into mechanisms of kidney diseases and development of new treatment methods ② Basic and clinical research into renal replacement therapy including hemodialysis, peritoneal dialysis and kidney transplantation ③ Epidemiological and clinical research into chronic kidney disease ④ Research into mechanisms and new treatment for complication of chronic kidney disease
Emergency Medicine	TASAKI Osamu (Professor)	① Pathophysiological clarification of sepsis, and research into the development of treatment ② Pathophysiological clarification of ischemia-reperfusion injury, and research into the development of treatment ③ Pathophysiological clarification of severe trauma, and research into the development of treatment ④ Pathophysiological clarification of heatstroke, and research into the development of treatment ⑤ Research into nutrition management of critically ill patients ⑥ Research on disaster medicine, including nuclear disasters ⑦ Exploration of an International Public Health Approach through Molecular Diagnosis and Epidemiological Studies of Snakebite Envenomation
Rehabilitation Medicine	TAKAHATA Hideaki (Professor)	① Research on prevention and treatment of dysphagia and pneumonia in stroke patients ② Study of dysphagia in critical care patients ③ Studies on myonuclei and satellite cells for muscle regeneration in critically ill patients
Neurological Science		
Neuroimmunology	HIGUCHI Osamu (Professor)	① Development of targeted drug for neurological diseases ② Development of drug discovery platform targeting protein kinases ③ Development of measurement technology for neurological disease biomarkers
Comprehensive Community Care	MINE Takashi (Professor) ICHIKAWA Tatsuki (Professor)	① Research into comprehensive community care system ② Research into the policy for community health ③ Research into network system for comprehensive community care ④ Research into primary health care in local community ⑤ Research into dementia and mild cognitive impairment in community ⑥ Research into assessment for sarcopenia ⑦ Viral hepatitis and metabolic syndrome
Comprehensive Oncology	GOTO Koichi (Professor) KONDO Tadashi (Professor) IGAKI Hiroshi (Professor) OGIWARA Hideaki (Professor) SUZUKI Hiromichi (Professor) WATANABE Keisuke (Associate Professor)	① Research into fundamental causes and prevention of cancer ② Research into diagnosis and treatment for cancer ③ Research into cancer pathophysiology and survivorship ④ Research into precision medicine for cancer patients ⑤ Development of cellular immunotherapies for cancers ⑥ Development of medical devices and programs for cancer treatment
Precision Oncology and Translational Research		

②Areas of Research in Department of Infection Research
*The [ ] in the name in the "Professor, etc." column indicates the planned retirement at the end of March 2027.

Area of Research	Professor, etc.	Details of main research work
Immunology	AOSHI Taiki (Professor) INOUE Shin-Ichi (Associate Professor)	① Research on immune responses to infection, tumors, allergies, and autoimmunity ② Development of type I innate immune activators ③ Development of humanized disease models for infectious diseases and tumors using immunodeficient mice ④ Development of antimalarial drugs ⑤ Research on the relationship between photodynamic therapy (PDT) and immune responses ⑥ Research and development of new antimalarial drugs ⑦ Molecular mechanism of memory T cell-differentiation and their persistence during *Plasmodium* ・*Leishmania* ⑧ Mechanism underlying immune response of γδ T cells and their roles in *Plasmodium* ・*Leishmania* infection
Cellular and Molecular Biology	NAKAGAKI Takehiro (Professor)	① Analysis of prion pathogen behavior and infection/proliferation mechanisms ② Analysis of host immune response in regard to prion infection, and development of immunomodulation therapy ③ Research into development of viral infection and prion infection diagnosis methods ④ Research into development of new drug treatments for pathogens
Infectious Diseases	IZUMIKAWA Koichi (Professor)	① Analysis of antifungal resistance mechanisms and virulence, and development of novel diagnostic tools and treatments for the infections caused by pathogenic fungi (Aspergillus, Candida, and Cryptococcus) ② Investigation of the molecular basis of host-pathogen interaction for bacteria causing the respiratory infection ③ Investigation of epidemiology and pathogenesis of the emerging, re-emerging infectious diseases as well as diseases caused by drug-resistant pathogens ④ Intervention for the preventing the spread of hospital-acquired infection
Medical Virology	UNO Naoki (Associate Professor)	① Technical innovation in molecular viral diagnostics ② Molecular assay development for pathogen detection and quantification
Microbiology and Oral Infection	NAITO Mariko (Professor)	① Analysis of transport and secretion system of pathogenic factors in periodontal pathogen ② Molecular biological analysis of pathogenic factors of periodontal and relative bacteria ③ Search and development of antibacterial drugs targeting periodontal pathogen
Molecular Virology	TAKAMATSU Yuki (Professor)	① An Intracellular dynamics of highly pathogenic viruses using live cell imaging system ② Molecular replication machinary of highly pathogenic viruses (flaviviruses, alphaviruses, filoviruses and bunyaviruses) ③ Molecular mechanisms of pathogenicity in highly pathogenic viruses (flaviviruses, alphaviruses, filoviruses and bunyaviruses) infection ④ Seroepidemiological and molecular epidemiological studies of arthropod-borne viruses (e.g. Japanese encephalitis virus, Dengue virus, Zika virus, Chikungunya virus, etc) ⑤ Development of diagnostic, therapeutic and preventive measurements against arthropod-borne viruses (e.g. Japanese encephalitis virus, Dengue virus, Zika virus, Chikungunya virus, etc) ⑥ Analysis of SARS-CoV2 pathogenecity and development of diagnostic and therapeutic methods
Bacteriology	KODAMA Toshio (Professor)	① Research on pathogenesis of enteropathogenic bacteria ② Immune response and host defense mechanism to enteropathogenic bacteria ③ Molecular epidemiological study on enteropathogenic bacteria in endemic areas
Medical Protozoology	KANEKO Osamu (Professor)	① Molecular mechanisms of erythrocyte invasion by malaria parasites ② Molecular mechanisms of adhesion of erythrocytes infected with malaria parasites and their involvement in pathogenicity ③ Molecular epidemiology of malaria vaccine candidate antigens and drug-resistance genes ④ Evolution of malaria parasites ⑤ Understanding the biology of the dormant liver stage of malaria parasites ⑥ Development of vaccines, drugs and diagnostic tools for malaria ⑦ Development of sustainable control methods for zoonotic malaria through an integrated One Health approach
Biochemical Parasitology	MI-ICHI Fumika (Professor)	① *Entamoeba* lipid metabolism; biochemistry, molecular and cell biology, and physiology ② Study for the molecular mechanism underlying *Entamoeba* encystation ③ Construction of metabolic pathway of *Entamoeba histolytica* and identification of the targets for the development of anti-amoebiasis drugs
Medical Helminthology	HAMANO Shinjiro (Professor)	Target parasitic diseases: Neglected Tropical Diseases (NTDs) such as schistosomiasis, leishmaniasis, African trypanosomiasis, amebiasis, and lymphatic filariasis, among others. ① Research and development of novel monitoring methods, spatio-temporal epidemiology, and intervention studies centered on Social and Behavior Change (SBCC) for parasitic diseases in Africa ② Research, development, and evaluation of vaccines and novel diagnostic methods against parasitic diseases ③ Studies on host immune responses and protective immunity to parasitic infections ④ Studies on parasite survival strategies and pathogenicity/virulence mechanism
Infection Biochemistry	INAOKA Ken Daniel (Professor)	Target infectious diseases: Malaria, and Neglected Tropical Diseases (NTDs) such as schistosomiasis, Chagas Disease, African trypanosomiasis, leishmaniasis. AntiMicrobial Resistance (AMR) such as Campylobacter, Helicobacter, Mycobacterium, Klebsiella. ① Research on metabolism of host and pathogen. ② Research on drug development and identification/validation of drug targets. ③ Biochemical and structural biology research of drug target proteins. ④ Research and development of new assay systems relavant to target product profile and target candidate profile of target diseases.
Immunogenetics		
Clinical Investigation		

Area of Research	Professor, etc.	Details of main research work
Ecoepidemiology and Epidemiological Informatics in Tropical Medicine	KANEKO Satoshi (Professor)	① Research on the establishment of a large-scale surveillance system for neglected tropical diseases ② Research on the linkage between environmental DNA and epidemiological data on tropical diseases ③ Research on the application of biometrics to regional medical information systems ④ Epidemiological study on growth retardation (stunting) in children in developing countries ⑤ Study on electronic resident registration and maternal and child registration in developing countries ⑥ Epidemiological study on fungal mycosis
International Health and Medical Anthropology	ITO Hiromu (Associate Professor)	① Development of mathematical models for sexually transmitted infections ② Investigation of sexual behavior and sexual contact networks ③ Application of game theory to antimicrobial resistance issues ④ Hypoxic adaptation and the risk of disease among Tibetan highlanders ⑤ Oral health, infections, and birth outcomes among pregnant women in low- and middle-income countries ⑥ The relationship between stress exposure in pregnant women and the sex ratio at birth
Vector Ecology and Environment	FUTAMI Kyoko (Associate Professor)	① Ecological and population genetic studies on disease vectors (mainly mosquitoes) and intermediate hosts (e.g. snails). ② Epidemiology and theoretical studies on vector borne diseases.
Clinical Tropical Medicine	MORIMOTO Konosuke (Professor) KUBO Yoshinao (Associate Professor)	① Clinical epidemiology of acute respitatory tract infection among adult ② Clarification of acute respiratory infection in developing countries, and countermeasures ③ Pathological clarification of other tropical infectious diseases in developing countries, and countermeasures
Tropical Pediatric Infectious Diseases	YOSHIDA Lay-Myint (Professor)	① Clinical epidemiology and microbiology of paediatric infectious diseases in tropical regions ② Pediatric Acute Respiratory Infection: clinical epidemiology, etiology, pathogeneis, prevention and treatment ③ Clinical epidemiological and modelling studies on impact of vaccination and other intervention ④ Statistical analysis of disease surveillance data ⑤ Environmental factors and infectious diseases
Clinical Product Development		
Tropical Bacteriology		
Tropical Microbiology	ABE Haruka (Associate Professor)	① Development of comprehensive diagnostic methods for emerging viraldiseases in tropical regions ② Serological and molecular epidemiological studies of emerging viral diseases in tropical regions ③ Epidemiological studies of viral diseases and exploration of novel viruses in Vietnam ④ Development of point-of-care (POC) testing methods for viral diseases
Emerging Viral Diseases	YASUDA Jiro (Professor)	① Molecular mechanisms of replication of hemorrhagic fever viruses ② Development of novel anti-viral strategies against highly pathogenic viruses (especially influenza, SFTS, Ebola, Marburg and Lassa viruses) ③ Development of diagnostic methods for emerging viral diseases ④ Analyses of the pathogenicity of SARS-CoV-2 and development of the treatments for COVID-19 ⑤ Epidemiological and ecological studies on viral diseases in Gabon, Brazil, and Thailand
Cellular and Molecular Virology	NANBO Asuka (Professor)	① Molecular mechanism of infrction and pathogenesis of Filovirus ② Characterization of extracellular vesicles released from tumor virus-infected cells ③ Molecular mechanism of development of Epstein-Barr virus-associated epithelium tumors ④ Development of therapeutics and diagnosis for Filovirus and tumor viruses-associated diseases
Viral Ecology	YOSHII Kentaro (Professor)	① Persistence and transmission of arthropod-borne viruses in hosts ② Pathogenic mechanisms of arthropod-borne viruses ③ Development of diagnostic methods and epidemiological research of arthropod-borne viruses ④ Development of vaccines and therapeutics for arthropod-borne viruses
Immune Dynamics in Viral Infections	KAWASAKI Takumi (Associate Professor)	① Study of vairal immune response in cultured cells ② Analysis of Immune dynamics in laboratory animals during viral infections ③ Elucidation of the mechanisms of viral replication and virulence ④ Applied research for prevention and diagnosis for viral infections
Integrative Regulation	IMAIZUMI Yoshitaka (Professor)	① Research on the clinical pathogenesis and prognosis of refractory tumors ② Clinical research on the medical treatment of malignant tumors in the elderly
Healthcare Research	KOMORI Atsumasa (Professor)	① Development and proposal for public policy about viral hepatitis ② Development and proposal for public policy about intractable liver diseases ③ Characterization and proposal for patient-centered outcomes-based medicine in viral hepatitis and in intractable liver diseases
Viral Hepatitis	YATSUHASHI Hiroshi (Professor)	① Clinical research of hepatitis C and B, and research into the development of treatment methods ② Research into the genetic mutation, pathology and treatment of hepatitis virus ③ Studies on the pathophysiology and treatment of liver fibrosis and cirrosis ④ Clinical research on the development of liver cancer and its suppression
Advanced Research	NAKAMURA Minoru (Professor)	① Development of molecular target therapy for refractory autoimmune liver diseases (primary biliary cholangitis, autoimmune hepatitis) ② Development of order-made treatment for chronic viral hepatitis based on individual analysis of immune-response ③ Development of regenerative medicine for diseases in the liver/bile duct based on molecular mechanisms for cellular damage/regeneration
Molecular Immunology		
Function and Morphology	KUROKI Tamotsu (Professor)	① Diagnosis and surgical treatment for liver cancers hepatic cancer, intrahepatic bile duct cancer, etc. ② Clinical and experimental research into regenerative capacity and mechanisms in liver diseases ③ Development of the novel assessment method for hepatic functional reserve hepatic cell transplant methods ④ Clinical and experimental research into the relationship between hepatocellular carcinoma and lifestyle diseases

Area of Research	Professor, etc.	Details of main research work
Clinical Pathology	ITO Masahiro (Professor)	① Clinical and pathological research into viral hepatitis/hepatic neoplasm ② Clinical and pathological research into refractory autoimmune hepatic disease ③ Molecular pathological research into neoplastic disorders ④ Clarification of occurrence mechanisms for radiation-induced neoplasm
Basic Mycobacteriosis	MITARAI Satoshi (Professor) KEICHO Naoto (Professor) OHKADO Akihiro (Professor) SETO Sintaro (Associate Professor)	① Research on the development and evaluation of bacteriological diagnostic methods for tuberculosis ② Research into drug-resistant mechanisms in mycobacteria and their diagnosis/treatment ③ Epidemiological research on Mycobacterial diseases including molocular analysis ④ Analytical research on the relationship between mycobacterial function and its microstructure ⑤ Functional analyses of mycobacteria with OMICS information ⑥ Research on mycobacterial infection, development and recurrence of the disease at genetic, molecular and cellular levels
Clinical Mycobacteriosis	SHIRAISHI Yuji (Professor) MORIMOTO Kozo (Professor)	① Clinical research into treatment of susceptible pulmonary tuberculosis ② Research into DOTS (Directly Observed Treatment Short-course) ③ Clinical research into multi-resistant tuberculosis ④ Clinical research (including clinical trials) into the effectiveness of new antituberculosis drug treatments ⑤ Research into non-tuberculous mycobacterial disease ⑥ Research into pulmonary rehabilitation for patients with mycobacterial disease ⑦ Pathophysiological analyses of systemic inflammation and sarcopenia in pulmonary mycobacteriosis ⑧ Pulmonary rehabilitation and nutritional strategies for pulmonary mycobacteriosis

③Areas of Research in Department of Life Sciences and Radiation Research
*The [ ] in the name in the "Professor, etc." column indicates the planned retirement at the end of March 2027.

Area of Research	Professor, etc.	Details of main research work
Molecular Oncology	MITSUTAKE Norisato (Professor)	① Molecular mechanisms of thyroid cancer development and progression ② Molecular mechanisms of ionizing radiation-induced carcinogenesis
Radiation Molecular Epidemiology		
Radiation Biology and Protection	YOKOYAMA Sumi (Professor)	① Research on radiation dosimetry ② Research on radiation protection ③ Research on radiation risk communication
Health Society and Statistics	HAYASHIDA Naomi (Professor)	① Epidemiological research in local population ② Research on health effects due to radiation ③ Research on thyroid
Stem Cell Biology	LI Tao-Sheng (Professor)	① Translational studies on stem cells (cardiovascular diseases, wound healing, cancer, aging…) ② Understand how low dose radiation exposure affects the health by viewing the stem cells ③ Characterize cancer stem cells and uncover the mechanism on therapeutic resistance ④ Investigate the role of autophagy on genomic instability ⑤ Basic and translational studies on biomechanical stresses
Hematology	ANDO Koji (Associate Professor)	① Development of new diagnostic methods and treatments for hematopoietic diseases ② Molecular analysis for the pathogenesis of hematopoietic neoplasms ③ Epidemiology and pathological research for radiation-induced hematopoietic diseases ④ Molecular analysis for hematopoietic stem cells ⑤ Development of treatments for hematological disorders using hematopoietic cell transplantation and immunotherapy
Radioisotope Medicine	KUDO Takashi (Professor)	① Research into the clinical/pre-clinical use of radioisotopes ② Research into measurement of human low dose internal radiation ③ Research into risk/benefit assessment of the medical radiation and occupational radiation related to medical radiation usage
International Hibakusha Medical		

④Areas of Research in Division of Advanced Preventive Medical Sciences
*The [ ] in the name in the "Professor, etc." column indicates the planned retirement at the end of March 2027.

Area of Research	Professor, etc.	Details of main research work
Integrative Neuroscience	MASUI Kenta (Professor) NAKAHATA Yasukazu (Associate Professor)	① Multi-omics analysis of pathological connectome in CNS disorders ② Development of novel AI platform for genetic and epigenetic diagnosis of CNS disorders ③ Successful aging by revealing molecular mechanisms of how the circadian clock regulates aging process ④ In vivo study to control the aging process by the circadian clock ⑤ Analysis of the pathological progression mechanisms in neurodegenerative diseases ⑥ Analysis of neuronal aging mechanisms for neuroprotection ⑦ Physiological Analysis of the Hypothalamic-Pituitary Axis Regulating Gonadal Function ⑧ Physiological Study on Endocrine Changes and Cognitive Decline during Menopause
Public Health	ARIMA Kazuhiko (Associate Professor)	① Community health based on health promotion science ② Prevention of bone/joint disease ③ Industrial health ④ Prevention of lifestyle-related disease ⑤ Physiological polymorphism based on physiological anthropological research
Medical Informatics	MATSUMOTO Takehiro (Associate Professor)	① Development and evaluation of Hospital Information System ② Development and evaluation of Health Information Exchange ③ Hospital management using Medical DX ④ Development and evaluation of Hospital Information System for medical Safety
Community Medicine	[NAGATA Yasuhiro] (Professor)	① Research in community medicine ② Research into the epidemiology of life-style related disease ③ Research into community medical information and partnerships ④ Research into community-based medical education ⑤ Research into comprehensive community care system
Immunology and Rheumatology	IWAMOTO Naoki (Associate Professor) KOGA Tomohiro (Senior Assistant Professor)	① Research into causes and pathology of autoimmune disease/autoinflammatory disease and development of new treatment ② Integrated analysis of inflammatory arthritis: Etiology,Pathology and Therapy ③ Genetic and environmental analysis of autoimmune disease and autoinflammatory disease ④ Onset mechanisms for autoimmune disease brought on by viral infection ⑤ Multimodal investigation of Preclinical-RA and Pre-RA by genomic, immunological and environmental approach ⑥ Multimodal investigation of connective tissue disease associated interstitial lung disease ⑦ Research into causes and pathology of refractory autoimmune neural disease ⑧ Research into causes and pathology of lifestyle-related disease and development of new treatment ⑨ Radiation exposure and thyroid cancer ⑩ Reserch of osteoporosis: pathological aspect and advanced treatments
General Medicine	YAMANASHI Hirotomo (Associate Professor)	① Epidemiological Research for the Prevention and Diagnosis of Lifestyle-Related Diseases ② Clinical Research Conducted Through a Primary Care Practice-based Research Network ③ Research on the Utilization and Integration of Community Healthcare Information ④ Research on the Pathophysiology and Prevention of Sarcopenia and Frailty ⑤ Research on Rare Diseases in Primary Care Settings ⑥ Research on the Pathophysiology, Prevention, and Treatment of Functional Somatic Syndromes ⑦ Research in Medical Education
Disaster Resilience and Science	TAKAMURA Noboru (Professor)	① Environmental monitoring in Fukushima ② Evaluation of exposure doses in Fukushima ③ Risk perception of residents in Fukushima ④ Epidemiological study of radiation victims in fomer USSR
Human Genetics	YOSHIURA Koichiro (Professor)	① Identification of the genes responsible for onset of disease ② Research into the relationship between human genetic polymorphism and disease ③ Research into the control of genetic expression through epigenetics mechanisms ④ The creation of disease model mice and pathophysiolological analytical research thereof ⑤ Development of methods to quantify radiation damage
Tissue Repair and Regenerative Medical Science	MORI Ryoichi (Professor)	① Establishment of novel multi-omics analysis ② Elucidation of molecular mechanisms of skin wound healing and scar formation ③ Development of nucleic acid therapeutics that promote healing and attenuate organ fibrosis ④ Elucidation of the involvement of inflammation- and tissue repair-related genes in age-related diseases ⑤ Elucidation of the molecular mechanisms of radiation-induced pulmonary fibrosis
Tumor and Diagnostic Pathology	NAKASHIMA Masahiro (Professor)	① Research into molecular pathological specificity of neoplasms in atomic bomb Hibakusha ② Research into late-onset radiation-induced disorders ③ Creation of Hibakusha neoplasm tissue bank ④ Pathology of thyroid neoplasm ⑤ Research into pathological diagnostics and new molecular pathological diagnostics

Doctoral Course [3 years]
①Areas of Research in Department of Pharmaceutical Sciences
*The [ ] in the name in the “Professor, etc.” column indicates the planned retirement at the end of March 2027.

Area of Research	Professor, etc.	Details of main research work
Cell Regulation	TAKEDA Kohsuke (Professor) TANIMURA Susumu (Associate Professor)	① Roles of mitochondrial sensing and stress response ② Mitochondrial functions in the regulation of inflammation ③ Mechanisms of inflammatory death of macrophage lineage cells ④ Development of shark IgNAR-derived single-domain antibodies
Pharmacology and Therapeutic Innovation	KANEKO Masayuki (Professor) MATSUHISA Koji (Associate Professor)	① Physiological roles and drug discovery of ubiquitin ligases ② Drug discovery using proteolysis-inducing drugs ③ Analysis of gene function and drug discovery using genome editing
Pharmaceutical Chemistry	TANAKA Masakazu (Professor) UEDA Atsushi (Associate Professor)	① Design and synthesis of non-proteinogenic amino acids and their use in pharmaceutical chemistry ② Development of helical peptides as an asymmetric organocatalyst ③ Design of cell-penetrating foldamers and their application to drug delivery system
Pharmaceutical Organic Chemistry	ISHIHARA Jun (Professor)	① Synthesis of biologically active natural products ② Development of highly effective formation of carbon framework ③ Development of reaction diversity catalysts
Synthetic Chemistry for Pharmaceuticals	KURIYAMA Masami (Professor)	① Electrochemical and catalytic reactions for green chemistry ② Precise construction of bioactive molecules based on selectivity control ③ Efficient synthetic processes for heterocyclic compounds ④ Novel introduction methods for fluorine, deuterium, and related atoms
Genome-based Drug Discovery	IWATA Nobuhisa (Professor) SHIROTANI Keiro (Associate Professor)	① Analysis of molecular mechanisms underlying the pathogenesis of Alzheimer's disease ② Development of disease-modifying therapy and biomarker of Alzheimer's disease ③ Analysis of pathophysiological roles of convulsive neurological disease-causing gene PRRT2 in the synapse ④ Analysis of tissue-specific gene expression mechanism in eukaryotes
Chemical Biology and Medicinal Chemistry	YAKUSHIJI Fumika (Professor) YAMADA Koji (Associate Professor) SAITO Yoshinori (Associate Professor)	① Chemical biology and medicinal chemistry research related to histone modifications ② Chemical biology and medicinal chemistry research related to natural product synthesis ③ Screening and identification of novel bioactive compounds from our original compound library ④ Research related to natural products isolated from plants and microbial sources; isolation/structural determination/metabolism/function
Structure Analysis for Chemicals	MAKI Toshihide (Associate Professor)	① Design and development of photofunctional molecules ② Research into structure-activity relationship of bioactive compounds based on organic chemistry ③ Exploitation of practical synthetic methodologies and their application for medicinal chemistry
Chemistry of Biofunctional Molecules	KAMADA Rui (Professor)	① Elucidation of cancer immune regulation by innate immune cells ② Investigation of the mechanisms of cellular oncogenic transformation and differentiation, and development of inhibitory compounds ③ Identifying the Formation of Cellular Memory in Response to Stimuli and Its Regulatory Mechanisms ④ Elucidation of innate immune and cellular stress responses mediated by PPM phosphatases
Hygienic Chemistry	TORIBA Akira (Professor) ABIKO Yumi (Associate Professor)	① Environmental dynamics analysis for atmospheric organic pollutants ② Studies on human exposure and health effects of environmental pollutants ③ Studies on cellular responses against environmental pollutants and effect of combined exposure ④ Exploring of cytoprotective effect of phythochemicals against oxidative stress
Analytical Chemistry for Pharmaceuticals	KISHIKAWA Naoya (Professor) FUCHI Yasufumi (Associate Professor)	① Development of luminescence reagent and its application to biomedical analyses ② Development of ultra sensitive analytical method for trace biologically active substances and pharmaceuticals ③ Design of novel chemiluminescent reaction systems and their application to analytical chemistry ④ Development of rapid separation method for biologically active substances