

Research Subjects, Graduate School of Medical and Dental Sciences, Master's Program, Health Sciences and Biomedical Engineering Track

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No.	Department	Code	Supervisor	Research Subject	Classification
1	Cell Biology	0010	NAKATA Takao	<ol style="list-style-type: none"> 1. Optogenetic control of intracellular signaling 2. Cell biological approach using optogenetics to understand the mechanism of calcium signaling 3. Applications of optogenetics to regenerative medicine 4. A simple model system of uneven emergence of polarity protein by light and optogenetic proteins 5. The study of cell differentiation to muscles, neurons, and osteocytes using optogenetic tools 	M
2	Medical Biochemistry	0020	HATA Yutaka <small>Scheduled to retire in March 2022</small>	<ol style="list-style-type: none"> 1. Study on the tumor suppressor Hippo pathway 2. Study on the tumor suppressor RASSF proteins 3. Study on the molecular link between chronic inflammation and oncogenesis 4. Study on skeletal muscle progenitor cells and the development of drugs against sarcopenia 5. Development and analysis of senescent accelerating animals 	M
3	Global Health Promotion	0030	FUJIWARA Takeo	<ol style="list-style-type: none"> 1. Social epidemiology (impact of social inequality, social capital, social network, and social support on health) 2. Life-course epidemiology (impact of child poverty and adverse childhood experiences on health) 3. Prevention on child abuse and neglect 4. Disaster and child and their family's mental health 5. Climate change and health 	M
4	Environmental Parasitology Not recruiting this year	0040	YAMAOKA Shoji (concurrently assigned)	<ol style="list-style-type: none"> 1. Research on drug resistance mechanism in malaria parasites 2. Research on developmental stages control by transcriptional factors in malaria parasites 3. Research on a communication system by small RNAs in blood fluke, Schistosoma japonicum 4. Research on mechanisms of action of novel anti-schistosomal drugs 5. Research on development systems of parasitic helminth 	M
5	Forensic Medicine	0050	UEMURA Koichi	<ol style="list-style-type: none"> 1. Studies on the mechanisms of cell death induced by drugs 2. Forensic toxicology / Alcohol medicine 3. Forensic pathology 4. Drug analysis 	M
6	Health Care Management and Planning	0060	FUSHIMI Kiyohide (concurrently assigned)	<ol style="list-style-type: none"> 1. The significance of public healthcare planning, its challenges, and influences on the healthcare system 2. Structural analyses and policy choices concerning national blood services 3. The government role in preventing medical errors 4. Structural analyses of healthcare system in the community 5. Systemizing and evaluating public health policies 	M
7	Neuroanatomy and Cellular Neurobiology	0070	TERADA Sumio	<ol style="list-style-type: none"> 1. Molecular mechanism of cytoskeletal dynamics 2. Spectroscopy development for a biomolecular localization and network analysis 3. Development of novel biosensors for cell biological applications 4. Microscopy development to visualize the dynamics of small chemical molecules 	M
8	Systems Neurophysiology	0080	SUGIHARA Izum	<ol style="list-style-type: none"> 1. Development mechanisms and functional significance of the compartmentalization in the brain 2. Neuronal circuitry mechanisms in sensorimotor, autonomic and cognitive control 3. Sensorimotor integration in the oculomotor system 	M
9	Pharmacology and Neurobiology	0090	ISOMURA Yoshikazu (concurrently assigned)	<ol style="list-style-type: none"> 1. Microglial Ca channel function in Neuroinflammation/Neurodegenerative diseases 2. Energy metabolic imaging at single cell level 	M
10	Immune Regulation	0100	Satoh Takashi	<ol style="list-style-type: none"> 1. Basic and applied research for innate immunity 2. Study on diversity of various immune cells such as macrophages 3. Screening for druggable target involved in disease onset and progression. 4. Elucidation of crosstalk between immune cells and non-immune cells 	M
11	Molecular Virology Not recruiting this year	0110	YAMAOKA Shoji	<ol style="list-style-type: none"> 1. Molecular studies on the replication and pathogenicity of human immunodeficiency virus (HIV) 2. Viral proteins and signal transduction 3. Development of methods for efficient lentiviral production 	M
12	Immunotherapeutics Not recruiting this year	0120	KITAGAWA Masanobu (concurrently assigned) <small>Scheduled to retire in March 2022</small>	<ol style="list-style-type: none"> 1. Development of anti-tumor vaccines for adult T-cell leukemia 2. Analysis of immunological risks for HTLV-1-related diseases in virus carriers 3. Innate immune-mediated pathogenesis in chronic virus infection 4. Molecular mechanism to regulate HIV-1 genome replication 	M
13	Physiology and Cell Biology	0130	ISOMURA Yoshikazu	<ol style="list-style-type: none"> 1. Functional signaling in neuronal circuits of rodent cerebral cortex 2. Functional signaling in neuronal circuits of rodent basal ganglia 3. Behavioral evaluation of brain functions in rodents (for master's course) 4. A novel physiological technique to explore functional signaling among brain areas 	M
14	Clinical Anatomy	0140	AKITA Keiichi	<ol style="list-style-type: none"> 1. Anatomic bases of functional preservation in surgical procedures 2. Developmental biological analyses for further understanding of anatomical issues 3. Comparative anatomic and developmental biological analyses of the spatial arrangement of the organs 	M
15	Systems BioMedicine	0150	ASAHARA Hiroshi	<ol style="list-style-type: none"> 1. Four dimensional gene expression database construction and its application to regenerative medicine 2. The function of non-coding RNA in development and inflammatory diseases 3. Systems approaches for developmental biology and medicine 4. Genome dynamics during embryogenesis examined by new technique 5. In silico medical science integrating bioinformatics and imaging technique 	M
16	Molecular Oncology	0160	TANAKA Shinji	<ol style="list-style-type: none"> 1. Molecular analysis of refractory malignancies including liver, pancreatic and scirrhous gastric cancers 2. Development of molecularly targeted therapy for refractory malignancies 3. Cancer epigenetics/epigenomics and clinical application in refractory malignancies 4. Research of cancer stem cells and targeted therapy 5. Development of regenerative medicine using stem cell research 	M

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17	Comprehensive Pathology	0170	KITAGAWA Masanobu Scheduled to retire in March 2022	1. Analysis of the mechanisms for retrovirus-induced leukemogenesis and host reaction 2. Molecular pathological analysis of the pathogenesis of myelodysplastic syndromes 3. Correlation of retroviral infection and apoptosis-related signal pathways in mouse/human cells 4. Molecular pathological study of the mechanisms for drug resistance of neoplastic cells 5. Interactions of neoplastic cells with stromal cells in hematopoietic neoplasms	M
18	Human Pathology	0180	OHASHI Kenichi	1. Histogenesis and progression mechanism of early gastrointestinal cancers 2. Histogenesis of H.pylori-related gastric cancer 3. Pathogenesis of sarcoidosis 4. Prognostic prediction of renal diseases based on renal biopsy diagnosis 5. Pathogenesis of amyloidosis and evaluation of therapeutic effects	M
19	Surgical Pathology	0190	AKASHI Takumi	1. Development of morphological diagnostic methods of human diseases 2. Development of diagnostic markers discerning cancer cell invasion 3. Clinical and basic pathology of malignant mesothelioma 4. Clinical and basic pathology of glomerular disease 5. Clinical and basic pathology of pancreatic neuroendocrine tumor	M
20	Cellular and Environmental Biology	0200	HARA Masayuki	1. Chromatin higher-order structure and machinery 2. Proteomics-based analysis of nuclei 3. Cellular defence against oxidative stress 4. Cellular responses against its external environment, such as drug, substance, and radiation	M
21	Signal Gene Regulation	0210	HATA Yutaka (concurrently assigned) Scheduled to retire in March 2022		M
22	Experimental Animal Model for Human Disease	0220	KANAI Masami	1. Molecular biological analysis of organ formation using knockout mice and knockout ES cells. 2. Application of Sox17 mutant mice as the animal model for human disease. 3. Analysis of molecular mechanisms using mice with implantaion defects.	M
23	Plastic and Reconstructive Surgery (Plastic and Reconstructive Surgery)	0230	MORI Hiroki	1. Pre and post operative breast or facial contour evaluation using 3D camera 2. Sensory recovery in the nipple-sparing or skin-sparing mastectomy 3. Development of classification and algorithm in blepharoptosis and blepharospasm surgery 4. Elucidation of the role of TRP channel and the midkine in the interaction between keratinocyte and peripheral nervous system 5. Blood circulation study of the surgical flap using indocyanine green angiography and multi slice CT	M
24	Plastic and Reconstructive Surgery (Functional Reconstruction)	0240	MORI Hiroki TANAKA Kentaro	1. Development of functional and aesthetic reconstruction following cancer ablation in head and neck 2. Does the improvement of capillary patency rate contribute to the preservation of transferred fatty tissue volume ? 3. Evaluation of blood supply to various flaps using ICG fluorescence angiography 4. Development of ambulatory functional reconstruction for refractory ulcer especially in CLI patients 5. Development of functional and aesthetic reconstruction for facial paralysis	M
25	Head and Neck Surgery	0250	ASAKAGE Takahiro	1. Anatomy of skull base 2. Relationship between HPV and head and neck cancer 3. Standardization of neck dissection 4. Development of skull base surgery 5. Endoscopic diagnosis and transoral surgery for superficial pharyngeal carcinoma	M
26	Radiation Therapeutics and Oncology	0260	YOSHIMURA Ryoichi	1. Development of brachytherapy for oral cancer, prostate cancer, and uterine cancer 2. Clinical research and development of IMRT and SRT 3. Development of radiotherapy in multimodality treatment for cancer	M
27	Joint Surgery and Sports Medicine	0270	KOGA Hideyuki	1. Regeneration and reconstruction of bone and joint tissues using mesenchymal stem cells 2. Mechanism analysis and development of treatment methods of bone- and joint-related inflammation and fibrosis 3. Analysis of mechanism for bone- and joint-related pain and development of its treatment 4. Analysis of sports injury mechanism and development of its treatment 5. Development of new joint prosthesis	M
28	Research Development	0280	FUSHIMI Kiyohide (concurrently assigned)	1. Management technology for comprehensive clinical administration 2. Development and procurement of hospital information system 3. Electronic medical record and clinical pathway 4. Medical malpractice and medical law suit 5. Science and ethics in medicine and practice	M
29	Family Medicine	0290	TAKEMURA Yousuke	1. Research on the relationship between the characteristic of physicians and patients' medical seeking behavior or their health status 2. Research on non-verbal communication using artificial intelligence (AI) 3. Other researches of family medicine/general practice	M
30	Laboratory Medicine	0300	TOHDA Shuji	1. Molecular diagnostic tests for cancer and infectious diseases 2. Molecular pathogenesis of leukemia/lymphoma cells and its application for drug sensitivity tests 3. Search for signalling molecules to regulate leukemia stem cells for developing novel molecular-targeted drugs 4. Analysis of pathophysiology of cases showing abnormal data in clinical laboratory tests	M
31	Department of Intensive Care Medicine	0310	UCHIDA Tokujiro (concurrently assigned)	1. Analysis of the effect of rapid response system and associated risk factors for patient safety in Japanese hospitals 2. Patient outcomes related to implementation of ICU systems 3. Investigation of the roles and mechanisms of extracellular vesicles in critical illness 4. Effective Medical Creation: Improvement of patient care and outcome in ICU related to 5 senses	M
32	Medical Education Research and Development	0340	YAMAWAKI Masanaga	1. Research on Medical Education & Professional Development 2. Research on Interprofessional Education 3. Research on cognitive development in medical competence 4. Social Implementation of Innovation in Medical Educational 5. Research on Education in Health Promotion	M
33	Acute Critical Care and Disaster Medicine	0350	OTOMO Yasuhiro	1. Research on mechanisms of biological responses to severe stress and development of new therapeutic strategy 2. Clinical and basic research in related to serious torso/multiple trauma and epidemiology of trauma 3. Research on coagulopathy following traumatic injury/sepsis 4. Research on disaster medicine for largely scaled disasters such as earthquake and terrorism 5. Basic research on lipid mediators involved in multiple organ dysfunction after hemorrhagic shock	M

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34	Clinical Oncology	0360	MIYAKE Satoshi	1. Palliative care for cancer patients and their family; theory and practice 2. Precision medicine for cancer 3. Analysis of genetic profile for carcinoma of unknown primary 4. Role of biomarkers for the effect of novel anti-cancer drugs 5. Communication and consensus building in cancer therapy and care	M
35	Ophthalmology and Vision Science	0370	OHNO Kyoko	1. Study on the mechanism of high myopia 2. Study on the mechanism of macular diseases 3. Study on the mechanism of uveitis 4. Development of new diagnostic tools in uveitis	M
36	Otorhinolaryngology	0380	TSUTSUMI Takeshi	1. Molecular biology in hearing and dysequilibrium disorder 2. Evaluation of gravity perception (basic and clinical researches) 3. Function of the inner ear hair cell (basic research) 4. Investigation of images and image-guided surgery in Otorhinolaryngology 5. Development of the management procedure for carcinoma in external auditory canal	M
37	Neurology and Neurological Science	0390	YOKOTA Takanori	1. Gene therapy for neurodegenerative diseases with new oligonucleotide drugs 2. Research of pathophysiology and development of miRNA biomarkers for neurological and neuroimmunological diseases 3. Research on pathogenic mechanisms and a strategy for an early treatment of Alzheimer's disease 4. Research for pathophysiology and new therapy of stroke 5. Development of propagation and development primate model of neurodegenerative diseases	M
38	Psychiatry and Behavioral Sciences (Psychiatry and Behavioral Sciences)	0400	TAKAHASHI Hidehiko	1. Brain imaging studies on mental disorders 2. Studies on molecular and genetic pathophysiology of mental disorders and development of novel therapeutics 3. Development of biomarker and novel treatment using artificial intelligence 4. Neuroscientific studies on higher brain functions and mental activities	M
39	Psychiatry and Behavioral Sciences (Forensic Mental Health)	0410	TAKAHASHI Hidehiko OKADA Takayuki	1. National and international epidemiology study of forensic mental health system 2. Research on bio-psycho-social factors of various social problematic behavior 3. Framework formulation for enhancement in the quality of forensic psychiatric examination 4. Study on legal issues in mental health and psychiatric issues in law 5. Mental health care ethics	M
40	Psychiatry and Behavioral Sciences (Liaison Psychiatry and Psycho-oncology)	1810	TAKAHASHI Hidehiko TAKEUCHI Takashi	1. Clinical and psychophysiological studies on delirium 2. Studies on prognosis of attempted suicide by means of low lethality 3. Studies on cardiac autonomic function in psychiatric diseases and epilepsy 4. Studies on psycho-social aspects of cancer patients and their family 5. Studies on the influence of textbooks on children's views of illness and death	M
41	Neurosurgery	0420	MAEHARA Taketoshi	1. Development of novel treatment for brain tumor with use of biomarker assay and molecular imaging 2. Establishment of appropriate surgical intervention for cerebrovascular diseases based on clinical pathophysiological analysis. 3. Analysis on pathophysiological mechanism of intractable epilepsy and on the effectiveness of its surgical treatment. 4. Investigation on the mechanism of secondary neuronal damage and higher brain dysfunction by neurotrauma and on the method for its prevention. 5. Analysis on the correlation between genetic background and clinical characteristics of patients with moyamoya disease.	M
42	Endovascular Surgery	0430	SUMITA kazutaka	1. Investigation of microvascular anatomy and vasculogenesis in central nervous system and head and neck region. 2. Integration of the fluid engineering technology into the endovascular field in an effort to explore new surgical treatment. 3. Analysis of platelet aggregation function during perioperative period in endovascular surgery. 4. Invention and assessment of endovascular devices applied bioactive material technology. 5. Research for less invasive surgical approach for vascular disease.	M
43	Pediatrics and Developmental Biology	0440	MORIO Tomohiro	1. Research on molecular backgrounds of pediatric immunological disorders including primary immunodeficiency and collagen diseases, and development of innovative gene/cell therapies for the disorders 2. Analysis of genetic backgrounds and development of innovative therapeutic approaches for pediatric malignant diseases 3. Identifying of pathogenesis in pulmonary hypertension and hereditary arrhythmia 4. Research on molecular mechanisms of disorder of sex development and other congenital endocrinological disorders 5. Molecular and biochemical analysis of intractable and/or congenital pediatric disorders in neurology, nephrology, neonatology.	M
44	Rheumatology	0450	YASUDA Shinsuke	1. Translational research on rheumatoid arthritis 2. Translational research on polymyositis and dermatomyositis 3. Translational research on systemic lupus erythematosus/antiphospholipid syndrome 4. Clinical research on the rheumatic diseases in transitional period	M
45	Dermatology	0460	MIYAZAKI Yasunari (concurrently assigned)	1. Elucidation of melanomagenesis and development of novel therapies against melanomas 2. Analysis of melanocyte stem cell and elucidation of mechanisms of vitiligo 3. Analysis of the mechanism and treatment for atopic dermatitis and contact hypersensitivity 4. Analysis of the role of eosinophils and basophils in allergic skin diseases 5. Analysis of mechanisms of sweat dysfunction and development of novel therapies	M
46	Respiratory Medicine	0470	MIYAZAKI Yasunari	1. Pulmonary fibrosis in interstitial pneumonia 2. Causative antigen and susceptibility gene of hypersensitivity pneumonitis 3. Pathophysiology of hypersensitivity pneumonitis 4. Airway remodeling in bronchial asthma 5. Pathology of sarcoidosis 6. Pathophysiology of sleep apnea	M
47	Gastroenterology and Hepatology	0480	OKAMOTO Ryuichi	1. Therapeutic development of immunoregulatory and regenerative medicine for inflammatory bowel disease 2. Functional analysis of the intestine using ex-vivo culture 3. Analysis of stem cell function and tissue regeneration in the gut and liver. 4. Development of novel disease models and molecular targets using human iPS cells to elucidate pathophysiology of intestinal and hepatobiliary diseases 5. Analysis of gastrointestinal and hepato-biliary-pancreatic carcinogenesis and pathophysiology.	M
48	Specialized Surgeries	0490	FUJII Yasuhisa (concurrently assigned)	1. Combination therapy of surgery and chemotherapy for colorectal cancer 2. Development of effective treatment strategy for the breast cancer 3. Development of new technology in peripheral vascular surgery 4. Development of new technology and treatment in pediatric surgery	M

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49	Cardiovascular Medicine	0500	SASANO Tetsuo	1. Novel gene therapy for cardiovascular diseases 2. Mechanism of atrial fibrillation due to genetic and acquired cause 3. Novel diagnostic approach for cardiovascular disease using artificial intelligence 4. Intercellular and interorgan communications in arrhythmic disease 5. Mechanisms linking autophagy/mitophagy and heart failure	M
50	Anesthesiology	0520	UCHIDA Tokujiro	1. Pathophysiology of perioperative organ dysfunction 2. Biomarker analyses for perioperative organ dysfunction 3. Perioperative monitoring of hemostasis and coagulation 4. Impact of anesthetic technique on postoperative outcome 5. Perioperative database analyses for clinical factors predicting postoperative organ dysfunctions	M
51	Cardiovascular Surgery	0530	ARAI Hirokuni <small>Scheduled to retire in March 2022</small>	1. Study to improve safety and quality of coronary artery bypass grafting 2. Development of new surgical treatment for ischemic myocardial disease 3. Development of surgical technique of beating mitral valve plasty 4. Heart and lung transplantation 5. Regenerative therapy for severely failing heart to improve cardiac function	M
52	Nephrology	0540	UCHIDA Shinichi	1. Water and electrolyte transport in the kidney 2. Development of novel therapies for kidney diseases and channelopathies 3. Clarification of the pathogenesis of chronic kidney disease and development of novel therapies 4. Comprehensive genetic analysis of hereditary kidney disease 5. Elucidation of pathophysiology using iPS cells derived from kidney disease patients	M
53	Comprehensive Reproductive Medicine	0550	MIYASAKA Naoyuki	1. Research of physiology, endocrinology and metabolism in reproductive medicine 2. Mechanism of age-dependent female physical and mental changes 3. Clinical and basic research in perinatal medicine	M
54	Urology	0560	FUJII Yasuhisa	1. Novel minimally invasive surgery for kidney, bladder, and prostate cancer (Robot-assisted surgery and minimum-incision surgery) 2. Development of bladder preservative therapy for muscle invasive bladder cancer 3. Development of clampless and sutureless partial nephrectomy for kidney cancer 4. Development of focal therapy for prostate cancer 5. New generation imagings for urologic diseases	M
55	Educational system in Dentistry	0570	NITTA Hiroshi (concurrently assigned)	1. Development, practice and analysis of the evaluation method for the dental education curriculum 2. Development of the inspection method of universality, validity, and the reliability in the evaluation for the dental educational system 3. Development of the evaluation system of international educational standards for undergraduate and postgraduate dental students 4. Development of the program to improve clinical skills for dentistry with the virtual reality education/simulation system	D
56	Gastrointestinal Surgery	0580	KINUGASA Yusuke	1. Development of novel surgical techniques for gastrointestinal cancer which are appropriate from both the perspective of tumor curability and function preservation 2. Clinical studies on minimally invasive treatments for esophageal, gastric and colorectal diseases 3. Development of new medical instruments on gastrointestinal surgery	M
57	Thoracic Surgery	0590	OKUBO Kenichi	1. Minimally invasive surgery for lung cancer 2. Induction therapy for locally invading lung cancer 3. Surgical treatment for metastatic lung tumor 4. Adjuvant chemotherapy for lung cancer surgery 5. Multimodality treatment for malignant pleural mesothelioma	M
58	Hematology	0600	MORI Takehiko	1. Exploration of tumorigenesis and treatment-refractoriness of hematological malignancies 2. Development of novel diagnostic methods and treatments for complications, including infections, of hematological disorders 3. Development of novel cellular therapy for hematological malignancies	M
59	Immunotherapy for Hematopoietic Disorders Not recruiting this year	0610	MORI Takehiko KAWAMATA Norihiko	1. Genetic analysis of Hematopoietic Disorders 2. Development of Animal Models for Hematopoietic Disorders 3. Development of Immunotherapy for Hematopoietic Disorders	M
60	Molecular Endocrinology and Metabolism	0620	YAMADA Tetsuya	1. Molecular mechanisms of diabetes mellitus and metabolic syndrome and their Therapeutic Strategies 2. Mechanisms of thermogenesis in systemic energy metabolism 3. Molecular Mechanisms of thermogenic fat induction 4. Epigenetic regulation of metabolic syndrome and its clinical implications 5. Molecular mechanisms of hormone-producing tumors and their pathophysiology	M
61	Hepatobiliary and Pancreatic Surgery	0630	TANABE Minoru	1. Establishment of multidisciplinary treatment for HPB malignancies based on surgery 2. Identification of new strategies for the minimum invasive surgery in HPB diseases 3. Development of therapeutic agents and markers related to drug-susceptibility for HPB malignancies 4. Clinical and basic research for liver transplantation 5. Pathophysiological research for liver microcirculation	M
62	Orthopaedic and Spinal Surgery	0640	OKAWA Atsushi	1. Bone and cartilage metabolism 2. Development and evaluation of biomaterials for clinical application 3. Mechanism of spinal ligament ossification 4. Development of measuring device for spinal cord magnetic signals 5. Research of bone and spinal metastatic tumors	M
63	Pharmacokinetics and Pharmacodynamics	0650	NAGATA Masashi	1. Pharmacokinetics and pharmacodynamics of drugs in disease states 2. Clinical pharmacokinetics and therapeutic drug monitoring 3. Prediction of PK and PD using AI method	M
64	Rehabilitation Medicine	0660	OKAWA Atsushi (concurrently assigned)	1. Rehabilitation for total joint arthroplasty 2. Three dimensional motion analysis of upper/lower extremities and gait analysis 3. Risk management in rehabilitation medicine 4. Nutritional management in rehabilitation 5. Biomechanical research for prevention of sports injury	M
65	Health Policy and Informatics	0670	FUSHIMI Kiyohide	1. Health information management for the development of DPC case mix system and PDPS payment system 2. Quantitative analytical method for planning and assessment of health care providing system 3. Methodology for hospital profiling and assessment of hospital functions 4. Utilization of electric health data of health system 5. Health cost analysis and hospital management	M

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66	Diagnostic Radiology and Nuclear Medicine	0680	TATEISHI Ukihide	1. Development of new imaging device 2. Development of imaging application using AI 3. Development of methodology for clinical trials using radioisotope 4. Development of new imaging drugs	M
67	Life Sciences and Bioethics	0690	YOSHIDA Masayuki	1. Bioethical issues surrounding medical research 2. Development of efficient IRB management 3. Clinical and basic research in Medical Genetics 4. Genetic Counselor course (Master course only) http://www.tmd.ac.jp/bec/45_5b0631b6d7471/genetic-counseling.html 5. Clinical and basic research in vascular biology and atherosclerosis	M
68	Oral Pathology	0700	IKEDA Tohru	1. Mechanism of bone destruction by oral cancer 2. Mechanism of infiltration and microenvironment of oral cancer 3. Development of digital histopathological diagnosis system 4. Novel diagnostic markers for salivary gland tumors	D
69	Bacterial Pathogenesis, Infection and Host Response	0710	SUZUKI Toshihiko	1. Molecular mechanisms of infection by pathogenic bacteria 2. Mechanisms of activation and regulation of inflammasomes 3. Study of virulent genes based on comparative genomics 4. Relationship between persistent bacterial infection and chronic inflammatory diseases	D
70	Molecular Immunology	0720	AZUMA Miyuki	1. Cellular and molecular levels of functional analyses of immune diseases such as infection, allergy, autoimmune disease and cancer 2. Analyses of lymphocyte functional molecules and development of immunotherapy by molecular targeting 3. Understanding of unique features of oral immune responses 4. Therapeutic approach for control of oral diseases by immune intervention	D
71	Advanced Biomaterials	0730	UO Motohiro	1. Development of glass/ceramics for dentistry 2. Distribution and chemical state analysis of trace elements in the biological tissues 3. Development of dental composite resins 4. Non-destructive analysis methods for dental materials and tissues 5. Evaluations for various properties of dental materials and tooth	D
72	Maxillofacial Anatomy	0740	SHIBATA Shunichi <small>Scheduled to retire in September 2021</small>	1. Development of tooth germ and roots using organ culture system. 2. Structure and function of dental stem cell nich. 3. Analysis of extracellular matrix in orofacial region. 4. Structural analysis of jaw bone and mandibular condylar cartilage. 5. Morphology and development of teeth and periodontal tissues.	D
73	Cognitive Neurobiology	0750	UESAKA Naofumi	1. Elucidation of mechanisms of developmental synapse elimination 2. Elucidation of roles of Glia in development, function, disease of brain 3. Research of Oral-Brain crosstalk 4. Elucidation of tumor-microenvironment interaction in the progression and invasion of brain tumor 5. Development of innovative imaging probe for elucidation of cell-cell interaction	D
74	Molecular Craniofacial Embryology	0760	ISEKI Sachiko	1. Molecular mechanisms of craniofacial morphogenesis 2. Application of developmental mechanisms of craniofacial tissues to regenerative medicine 3. Molecular mechanisms of congenital anomalies and their clinical application	D
75	Cellular Physiological Chemistry	0770	Under Selection	1. Studies of cell-cell communication via gap junction. 2. Studies of the mechanism of bone remodeling	D
76	Biostructural Science	0780	AKITA Keiichi (concurrently assigned)	1. Study of organogenesis and cell differentiation in tooth using rodents 2. Study of the development of oral tissues and periodontal tissues using rodents 3. Study of the origin and evolution of tooth using fish scales and tooth	D
77	Pharmacology	0790	FURUKAWA Tetsushi (concurrently assigned)	1. Pharmacological analyses of formation and resorption on bones and teeth 2. Analyses of drug side effects appeared at oral tissues 3. Development of new therapeutic drugs for diseases in dental pulp 4. Pharmacological analyses of heavy metal binding protein-Metallothionein at oral tissues	D
78	Connective Tissue Regeneration Not recruiting this year	0800	WATABE Tetsuro (concurrently assigned)		D
79	Biochemistry	0810	WATABE Tetsuro	1. Understanding the multiple aspects of cancer microenvironment 2. Formation of cancer associated fibroblasts (CAFs) through endothelial-to-mesenchymal transition (EndMT) 3. Targeting tumor angiogenesis and lymphangiogenesis for inhibiting progression and metastasis of cancer 4. Structural and functional analysis of lysosomal membranes 5. Heparan sulfate proteoglycan-mediated intracellular transport	D
80	Cell Signaling	0820	NAKASHIMA Tomoki	1. Signal transduction mechanisms of bone cells such as osteoclast, osteoblast and osteocytes. 2. Development of clinical applications for diseases of the skeletal and locomotor system. 3. Exploitation of osteonetwork (systemic network between bone and other systems).	D
81	Forensic Dentistry	0830	SAKURADA Kouichi	1. Personal identification based on dental findings 2. Personal identification using hard tissues such as teeth and bones, soft tissues, and body fluids 3. Personal identification based on facial reconstruction and image analysis 4. Development of new identification methods with biochemical or molecular biological techniques	D
82	Health Care Economics	0840	KAWABUCHI Koichi	1. Cross-sectional research on healthcare, dental care, nursing care, long-term care, and pharmaceuticals from the viewpoint of economics 2. Proposals on policy making in efficient delivery of healthcare, nursing care, and long-term care 3. Borderless and mutual development of various specialties such as dental care, healthcare, economics, management and accounting	D
83	Dental Education Development	0850	MORIO Ikuko	1. Research on curriculum for health care professional education 2. Comparative study of domestic and international dental education 3. Research and development of educational methods in health care professional education 4. Research and development of English education programs in health care professional education	D
84	Diagnostic Oral Pathology	0860	Under Selection		D
85	Oral Radiation Oncology	0870	MIURA Masahiko	1. Visualization of tumor radioresponse by molecular imaging 2. Mechanism of DNA damage response 3. Radioresistant signal transduction pathways 4. Clinical study on radiotherapy for oral cancer	D

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86	Oral and maxillofacial surgery	0880	HARADA Hiroyuki	1. Molecular biological research on the invasion and metastasis of oral cancer 2. Studies on the dysfunction and QOL of oral cancer after surgery 3. Clinical and basic research of oral cancer 4. Studies on the jaw reconstruction using by tissue engineering	D
87	Oral and Maxillofacial Radiology	0890	KURABAYASHI Tohru Scheduled to retire in March 2022	1. Improvement of maxillofacial imaging efficacy 2. Novel MRI techniques for maxillofacial diagnosis 3. Differential diagnosis of maxillofacial lesions using sectional imaging 4. Molecular mechanisms of cellular radiosensitivity	D
88	Dental Anesthesiology and Orofacial Pain Management	0910	MAEDA Shigeru	1. Non invasive drug delivery system 2. Autonomic nervous responses of non-invasive and invasive stimulation 3. Anxiety mechanism in central nervous system 4. Elucidation of the cause of chronic pain and the background factors related to chronic pain 5. Study on temporomandibular disorders and bruxism (sleep and awake)	D
89	Pediatric Dentistry / Dentistry for Persons with Special Needs	0920	IWAMOTO Tsutomu	1. Basic research on tooth and bone development and emotional changes in children 2. Development of dental pulp examination and diagnostics in children 3. Study on abnormal oral morphology and function in children and its treatment 4. Study on oral biofilm formation and its inhibition 5. Oral management and oral health status of the persons with special needs 6. Development of self-help tools that combine with the retention device in the mouth for people with physical disabilities	D
90	Orthodontic Science	0930	ONO Takashi	1. Comprehensive research related to respiratory function and cranio-maxillofacial morphology and function and central nervous system 2. Neurophysiological research related to stomatologic function and neuronal plasticity in the central and peripheral nervous systems 3. Morphological and molecular cytobiological research related to maxillofacial cranium and temporomandibular joint 4. Molecular cytobiological research related to biological reaction and tissue regeneration in response to functional changes or mechanical stresses 5. Biomaterial, bioengineering and biomechanical research related to morphologic and functional changes of occlusion in orthodontic treatment	D
91	Cariology and Operative Dentistry	0940	OKIJI Takashi (concurrently assigned)	1. Study on new caries prevention strategies 2. Study on new caries diagnostic methods 3. Study on improvement of adhesive resin restoration 4. Study on esthetic tooth restoration with minimal intervention 5. Study on new tooth bleaching material and method	D
92	Fixed Prosthodontics	0950	WAKABAYASHI Noriyuki (concurrently assigned)	1. Clinical application of the latest technology and development of the new materials (CAD/CAM, Zirconia, optical impression etc.) 2. Occlusion and Mastication (mandibular position, mandibular movement, articulator, masticatory efficiency) 3. Development of new CAD for manufacturing dental prosthesis in harmony with stomatognathic function 4. Influence of the dental materials to the human body (metal allergy etc) 5. Development of new ceramics biomaterial by the surface modification and nanostructure control.	D
93	Pulp Biology and Endodontics	0960	OKIJI Takashi	1. Dental pulp tissue regeneration 2. Immunohistochemical and molecular biological analysis of pulpal and apical periodontal diseases 3. Evaluation and improvement of nickel-titanium endodontic rotary instruments 4. Application of lasers, cone-beam CT and optical coherence tomography to endodontics	D
94	Removable Partial Prosthodontics	0970	WAKABAYASHI Noriyuki	1. Function and Sensation in Partial Denture Wearers 2. Optimization of Partial Denture Design based on Stress Analysis 3. Clinical Applications of New Prosthodontic Biomaterials 4. Assessment of Oral Tissues in Denture Wearers 5. Epidemiology and Education of Removable Partial Prosthodontics	D
95	Oral Implantology and Regenerative Dental Medicine	0980	WAKABAYASHI Noriyuki (concurrently assigned)	1. Development of next-generation dental implant 2. Time-dependant change of the tissues supporting dental implants 3. Optimization of the implant superstructure 4. Regeneration of bone and soft tissue	D
96	Maxillofacial Surgery	0990	YODA Tetsuya	1. Clinical study of cleft lip and palate, and orthognathic surgery. 2. Cell biology and bone regeneration for reconstruction of facial bone and alveolar bone. 3. Basic and clinical research of temporomandibular joint and masticatory muscle disorders. 4. Basic and clinical research of diseases in oral and maxillofacial region.	D
97	Maxillofacial Orthognathics	1000	MORIYAMA Keiji	1. Research on etiology, diagnosis, and treatment for developmental and congenital anomalies in the craniofacial region 2. Biomaterials research for the development of new orthodontic appliances 3. Epidemiological research related to dentofacial growth and malocclusion 4. Research on mechanical stress and bone metabolism 5. Research on stomatognathic function and central nervous system	D
98	Maxillofacial Prosthetics	1010	WAKABAYASHI Noriyuki (concurrently assigned)	1. Research for prosthetic diagnosis in patients with a maxillofacial defect 2. Research for functional rehabilitation of patients with a maxillofacial defect 3. Research for masticatory function in patients with a maxillofacial defect 4. Research for speech evaluation in patients with a maxillofacial defect 5. Research for development of new materials for facial prosthesis	D
99	Periodontology(Periodontology)	1020	IWATA Takanori	1. Research on periodontal regeneration and stem cell therapy 2. Research on the mechanisms of periodontal pathogenicity 3. Research on the association between periodontitis and systemic diseases 4. Analysis of bacterial flora related to periodontal diseases and peri-implantitis	D
100	Periodontology (Photoperiodontics)	1030	IWATA Takanori AOKI Akira	1. Research on the application of lasers/LEDs in periodontal and peri-implant therapy 2. Research on photobiomodulation (PBM) effects of lasers/LEDs on cells/tissues 3. Research on the application of antimicrobial photodynamic therapy (a-PDT) in periodontal and peri-implant therapy 4. Research on the application of optical coherence tomography (OCT) in periodontal therapy	D
101	Oral Health Promotion	1040	AIDA Jun	1. Research on epidemiology for oral health, relationships between oral and general health, and prevention of oral diseases 2. Research on social determinants of health inequalities and oral health promotion 3. Research on community dentistry and international oral health 4. Research on oral health care system 5. Research on teledental system	D

No.	Department	Code	Supervisor	Research Subject	Classification
102	Sports medicine and dentistry	1050	UENO Toshiaki	1. Relations between exercise and oral environment, imframation/immunity and risks of dental injuries/oral diseases 2. Relationship between mastication/occlusion and general function, sports performance and cerebral function 3. Optimal design, new materials and fabricating technique for high functionality of sports mouthguard and faceguard 4. Development of sensors and sensing devises for sports 5. Application of hyperbaric oxygen therapy to dental injuries and oral diseases	D
103	Gerodontology and Oral Rehabilitation	1060	MINAKUCHI Shunsuke	1. Research on the whole body control at the time of elderly people's dental treatment 2. Dysphagia rehabilitation in the elderly 3. Implant over denture for the elderly patient 4. Complete denture using CAD/CAM technique 5. Development of the new denture materials which was adapted for the aged society	D
104	General Dentistry	1080	NITTA Hiroshi (concurrently assigned)	1. Research on the diversity of diagnosis and treatment plans for patients with multiple symptoms. 2. Research on the analysis of various factors required to make an accurate diagnosis 3. Research on the development of training methods for improving the abilities of students and residents 4. Behavioral science research in dentistry 5. Research on curriculum development and evaluation of dental education	D
105	Psychosomatic Dentistry	1090	TOYOFUKU Akira	1. Study on pathophysiological mechanisms of oral psychosomatic disorders 2. Psychosomatic study on oro-facial medically and psychiatrically unexplained symptoms 3. Psychopharmacological study on oral psychosomatic disorders 4. Brain imaging study of oral psychosomatic disorders with phantom pain or bite 5. Study on guidelines for the management of oral psychosomatic disorders	D
106	Professional Development in Health Sciences	1110	TAKADA Kazuki	1. Needs assessment in health care 2. Needs assessment in professional development in health science fields	M
107	Educational Media Development	1120	KINOSHITA Atsuhiro	1. Development of computer-assisted clinical simulation system for medical and dental practice training. 2. Development of new education system using information and communication technologies for medical and dental students. 3. Development and study of computerized dental simulator for training of dental cavity preparation and prosthodontic tooth preparation practices. 4. Development and study of dental model and kit for practical training. 5. Development of composing and screening system for original 3D movies from operator's viewpoint.	D
108	Lifetime Oral Health Care Science	1130	ARAKAWA Shinichi	1. Basic and clinical studies of the effects of ozone Ultrafine bubble water : Wound healing, Treatment for oral mucositis in patients, Periodontal therapy, Prevention of bacteremia and aspiration pneumonia, Preventing DUWL (Dental Unit Water Lines) contamination. 2. Clinical evaluation regarding Slight Acidic Electrolytic Water (SAEW) : Prevention of bacteremia and aspiration pneumonia, Preventing DUWL (Dental Unit Water Lines) contamination. 3. Development and evaluation of the education system for dental hygienists in perioperative oral care	OH
109	Oral Care for Systemic Health Support	1140	KABASAWA Yuhji	1. Research on oral management and multidisciplinary collaboration during cancer treatment and perioperative period. 2. Development of the new methods for oral care, oral mucositis prevention and oral mucosal disease treatment. 3. Research on social inequalities in oral health.	
110	Preventive Oral Health Care Science	1150	SHINADA Kayoko	1. Oral Health strategy for preventive methods on oral diseases 2. Studies on preventive oral health care and oral health promotion 3. Development or assessment of oral care goods, materials and substances 4. Development and assessment of new programs in basic or clinical education for dental hygiene students 5. Development of education system for dental hygiene process or assessment	OH
111	Oral Health Sciences for Community Welfare	1160	MATSUO Koichiro	1. Invention of oral frail preventive program for community dwelling older adults 2. Invention of monitoring system for eating behavior in dependent older adults 3. Innovative food technology systems for independent senior living 4. Establishment of oral management system during stroke recovery 5. Invention of perioperative oral management system for cancer patients	OH
112	Oral Health Care Education	1170	YOSHIDA Naomi	1. Research and development of oral health education methods 2. Research and development of assessment tool for oral health 3. Development and evaluation of dental hygiene education system 4. Role of dental hygienists in team approaches to care of patients	
113	Basic Sciences of Oral Health Care	1180	Under selection		
114	Metallic Biomaterials Not recruiting this year	1190	HANAWA Takao	1. Development of zirconium alloys for minimizing MRI artifacts 2. Bio-functionalization of metals by electrochemical surface treatment and modification techniques 3. Strengthening of titanium alloys by severe working 4. Control of differentiation of stem cells on nanometer-level surface topography 5. Elucidation of interfacial reaction between materials and tissues	BM
115	Inorganic Biomaterials	1200	KAWASHITA Masakazu	1. Development of ceramic micro/nano-particles for intra-arterial therapy of deep-seated cancer 2. Formation of antibacterial and bioactive titanium oxide surface layer on titanium by surface chemical modification 3. Elucidation of bone-bonding mechanism of hydroxyapatite -From a view point of protein adsorption- 4. Development of inorganic-organic composites for wound dressing 5. Biomedical application of organically modified octacalcium phosphate	D
116	Organic Biomaterials Not recruiting this year	1210	YUI Nobuhiko	1. Dynamic surfaces for modulating cellular functions 2. Biocleavable polyrotaxanes as therapeutics for intractable diseases 3. Supramolecular polyelectrolyte complexes of biomolecules to induce enhanced biological activities 4. Polyrotaxane-based three-dimensional architectures for supramolecular biomaterials	BM
117	Biomedical Devices and Instrumentation	1220	MITSUBAYASHI Kohji	1. Basic and applied research on "BioMedical Sensing" (integration with various engineering technologies) 2. Wearable devices and artificial organs with MEMS-tech and biocompatible polymers 3. Bio-fluorometric sensing of disease-based breath chemicals 4. Real-time imaging of transcutaneous volatiles for metabolic evaluation 5. Surface plasmon technologies for monitoring of biological and environmental information	BM
118	Biomedical Information	1230	NAKAJIMA Yoshikazu	1. Fundamental and applied researches on bio-imaging. 2. Research on high-dimensionalization of medical images and data. 3. Research on computer analysis and diagnosis of medical data. 4. Research on description of biological information, human-body modeling, human-body simulation and their application for medicine. 5. Research on computer-integrated surgical assistance systems.	BM

No.	Department	Code	Supervisor	Research Subject	Classification
119	Bioelectronics Not recruiting this year	1240	MIYAHARA Yuji <small>Scheduled to retire in March 2022</small>	1. Fundamental and applied research on bio-sensing engineering 2. Electrical detection of bio-molecules and cell functions 3. Chemical modification at solid/liquid interface for functional expression of bio-molecules and cells 4. Synthesis of intelligent polymers for blood glucose control 5. New sensing scheme based on nano- and micro- technologies	BM
120	Biodesign	1800	Under Selection	1. Surgical workflow analysis and skill assessment on minimally invasive surgery 2. Autonomous control of surgical workflow and robot 3. Surgical navigation and robotic system with automatic control of surgical workflow and procedure 4. Surgical training system with digital analysis and XR technologies 5. Optimization of surgical environment using surgical informatics	BM
121	Biomechanics	1250	Under Selection		BM
122	Material-Based Medical Engineering	1260	KISHIDA Akio	1. Research on the materials and the engineering for tissue engineering and regenerative medicine 2. Research on the processing and high functionality of biological materials 3. Research on the novel method for evaluating inflammatory responses on medical materials in vitro 4. Research on the control technology of cellular functions by extracellular matrix-bounded nanovesicles 5. Research on the high selective cell capture devices for immunomodulation	BM
123	Organic and Medicinal Chemistry	1270	KAGECHIKA Hiroyuki	1. Medicinal Chemistry of Retinoid and Nuclear Receptors 2. Development of Novel Modulators of Gene Transcription or Signaling Pathway for Clinical Application toward Intractable Diseases 3. Development of Functional Fluorescent Molecules for Elucidation of Cellular Signaling Pathway 4. Aromatic architecture based on the amide conformational properties	BM
124	Chemical Bioscience	1280	HOSOYA Takamitsu	1. Drug seed development based on new synthetic methodologies 2. Development of new methods to connect molecules based on strained molecules 3. Probe synthesis for target protein identification of bioactive compounds 4. Probe design and synthesis for in vivo molecular imaging	BM
125	Medicinal Chemistry	1290	TAMAMURA Hirokazu	1. Development of bifunctional molecules using organic synthesis. 2. Development of peptidomimetics and drug discovery templates. 3. Development of anti-HIV viral agents and anti-cancer agents. 4. Development of bioprobes and chemical biology.	BM
126	Biofunction Research	1300	ITAKA Keiji	1. Molecular design of nucleic acids for mRNA therapeutics 2. DDS for mRNA and nucleic acid delivery 3. Application for treating intractable diseases and regeneration medicine 4. Development of a new diagnostic imaging system	M
127	Stem Cell Biology	1310	NISHIMURA Emi	1. Identification of somatic stem cells in the skin 2. Mechanisms of tissue stem cell maintenance 3. Mechanisms of tissue aging 4. Mechanisms of cancer development 5. Device for in vivo stem cell regulation	M
128	Neuropathology	1320	OKAZAWA Hitoshi	1. Elucidation of molecular mechanisms of polyglutamine diseases 2. Elucidation of molecular mechanisms of Alzheimer's diseases 3. Development of novel therapeutics against neurodegenerative diseases 4. Elucidation and therapeutic application of molecular mechanisms of neural stem cell differentiation	M
129	Biodefense Research	1330	OHTEKI Toshiaki	1. Pathophysiology induced by monocytes and macrophages and its therapeutic application 2. Maintenance and failure of brain function by transcriptional regulation in microglia 3. Mechanism of stress-induced emergency myelopoiesis 4. Establishment of human squamous epithelial cancer organoid biobank and its therapeutic application 5. A new COVID-19 sequelae model mouse and pathological elucidation	M
130	Pathological Cell Biology	1340	SHIMIZU Shigeomi	1. Analysis of Molecular Mechanisms of Cell Death and its Clinical Application 2. Physiological and Pathological Roles of Autophagy in Mammals 3. Analysis of Molecular Mechanisms of Mitochondria-related Diseases 4. Development of Novel Therapies to Treat Ischemic Diseases 5. Establishment of refractory viirus disease model mouse and application to anti-viral drug development.	M
131	Molecular Medicine and Metabolism	1350	Under Selection		M
132	Stem Cell Regulation	1360	TAGA Tetsuya	1. Molecular basis of neural stem cell self-renewal and fate determination in functional brain development 2. Hematopoietic stem cell development and growth/ differentiation regulation during fetal stage 3. Molecular characterization and regulation of cancer stem cells and their niche 4. Signaling pathways and epigenetic mechanisms governing stem cell regulation	M
133		1370	SEGAWA Katsumori	1. Identification of factors responsible for cellular membrane dynamics. 2. Aberrant membrane dynamics and associated diseases. 3. Identification of factors responsible for cellular homeostasis.	MR
134	Genetic Regulation	1380	Under Selection		M
135	Molecular Cell Biology	1390	SHIBUYA Hiroshi	1. Molecular mechanism in cellular signaling of growth and differential factors 2. Molecular mechanism in the onset and progress of diseases 3. Molecular mechanism in the early development	MR
136	Developmental and Regenerative Biology	1400	NISHINA Hiroshi	1. Study on signaling pathways that regulate cell survival and death 2. Study on signaling pathways that regulate embryonic stem cell proliferation and differentiation 3. Study on liver formation and regeneration using mice and fish 4. Study on molecular mechanisms regulating circadian clock	MR
137	Immunology	1410	TSUBATA Takeshi <small>Scheduled to retire in March 2022</small>	1. Study on the regulatory mechanisms for autoantibody production in SLE and Guillain-Barre syndrome 2. Study on organella signaling in B lymphocyte activation 3. Study on glycan signals that regulate antibody production 4. Development of novel drugs for multiple sclerosis and type 1 diabetes that regulate regulatory B cells. 5. Development of novel cancer immunotherapy	MR
138	Epigenetics	1420	Under Selection	1. Genomic imprinting in mammalian development and its relations to human diseases 2. Mammalian reproductive mechanism and epigenetic reprogramming 3. Mammalian evolution by acquired genes from retroelements	MR

No.	Department	Code	Supervisor	Research Subject	Classification
139	Structural Biology	1440	ITO Nobutoshi	1. Structural biology by X-ray crystallography and cryo-electron microscopy 2. Structural and kinetic analyses of protein-protein interactions 3. Molecular recognition of small-molecule ligands (drugs) by proteins 4. Computational biology of biological macromolecules using structural information	MR
140	Molecular Neuroscience	1450	TANAKA Kohichi	1. The pathophysiology of major mental illnesses 2. The pathophysiology of neurodegenerative diseases 3. The role of neurotransmitters in brain development 4. The role of glial cells in brain function 5. Generation of animal models for neuropsychiatric disorders using genome editing tools	M
141	Molecular and Cellular Cardiology Not recruiting this year	1460	FURUKAWA Tetsushi	1. Personalized medicine of cardiac arrhythmias, sudden death 2. Basic research for nucleic acid medicine of cardiovascular diseases 3. Cardiovascular research using regenerative cardiomyocytes (mainly iPS cells) 4. Cardiovascular research using disease model mouse 5. Basic research of gender-specific medicine in cardiovascular system	M
142	Molecular Cytogenetics Not recruiting this year	1470	INAZAWA Johji Scheduled to retire in March 2022	1. Identification of genes responsible for intractable diseases including cancer and genomic disorders through integrative genomics and epigenomics 2. Development of miRNA-based therapies by replacing tumor-suppressor miRNAs (TS-miRs) 3. Establishment of an autophagy-based diagnosis and therapy in human cancers 4. Comprehensive understanding of unknown genetic disorders, e.g. multiple congenital anomalies and/or intellectual disabilities (MCA/ID), and epilepsy	M
143	Applied Gene Medicine	1480	MIKI Yoshio Scheduled to retire in March 2022	1. Analysis of the molecule mechanism of human oncogenesis 2. Development of the new strategies for diagnosis and treatments of breast cancer by integrative cancerbiology and genomics 3. Analysis of carcinogenesis and the DNA damage and repair 4. New molecular genetics of hereditary breast and ovarian cancer 5. Cancer genome informatics	M
144	Molecular Epidemiology Not recruiting this year	1490	MURAMATSU Masaaki Scheduled to retire in March 2022	1. Study on gene-environment interaction in the development of common chronic diseases. 2. Study on Developmental Origins of Health and Diseases (DOHaD). 3. Bioinformatics on disease mechanism. 4. Environment and epigenetic changes. 5. Application of personal genome information to human health care.	M
145	Functional Genome Informatics	1500	NIKAIDO Itoshi	1. Development of data science technologies for large-scale genome analysis using machine learning and computer science 2. Development of new experimental techniques for large-scale genome science 3. Study of the development of regenerative medicine and drug discovery using large-scale genome analysis	MR
146	Genomic Function and Diversity	1510	KOCHI Yuta	1. Functional analysis of risk loci for complex diseases 2. Expression and splicing quantitative trait locus (eQTL and sQTL) analysis 3. Transomics analysis of complex diseases 4. Prediction of disease states based on genomic data	M
147	Lipid Biology	1520	SASAKI Takehiko	1. Exploring bioactive lipids that cause disease conditions 2. Exploring bioactive lipids that reflect disease conditions 3. Elucidation of the true nature of cancer, inflammatory diseases, and neurodegenerative diseases by lipid 4. Development of lipid analysis technology based on mass spectrometry 5. Pathological analysis of mice lacking lipid metabolizing enzymes (PI3K, PTEN, etc.)	M
148	RIKEN Molecular and Chemical Somatology	1530	TANIUCHI Ichiro SODEOKA Mikiko WATANABE Nobumoto TANAKA Motomasa TANAKA Katsunori HAGIHARA Shinya	1. Regulatory mechanisms for the lymphocyte development (Ichiro Taniuchi) 2. Design and synthesis of bioactive molecules based on synthetic organic chemistry and chemical biology research (Mikiko Sodeoka) 3. Discovery, target identification and analyses of mechanism of action of bioactive compounds that regulate biological function (Nobumoto Watanabe) 4. Molecular basis of psychiatric diseases and neurodegenerative disorders (Motomasa Tanaka) 5. Advances in in vivo synthetic chemistry: New modality in medicinal chemistry and therapeutics (Katsunori Tanaka) 6. Regulation of physiological function of plants with synthetic molecules (HAGIHARA Shinya)	※1
149	NCNP Brain Physiology and Pathology	1540	HOSHINO Mikio ICHINOHE Noritaka GOTO Yuichi AOKI Yoshitsugu YAMASHITA Yuichi OKI Shinji	1. Clarification of molecular machinery underlying brain development (Mikio Hoshino) 2. Social brain and its disorder (Noritaka Ichinohe) 3. Molecular mechanism of intellectual disability (Yuichi Goto) 4. Molecular pathogenesis and therapies for neuromuscular diseases (Yoshitsugu Aoki) 5. Computational approach for psychiatric disorders (Yuichi Yamashita) 6. Significance of dysregulated immune responses in pathogenesis of CNS diseases (Shinji Oki)	※2
150	Igakuken Disease-oriented Molecular Biology	1550	HARA Takahiko ARAI Makoto HASEGAWA Masato SHICHITA Takashi MIYAOKA Yuichiro	1. Blood regeneration by using ES/iPS cells and development of CXCL14 etc.-based anti-cancer/leukemia drugs 2. Research on etiology of mental illnesses and therapeutics using molecular biology including studies of iPS cells 3. Molecular mechanisms of neurodegenerative diseases and the development of new therapeutic approaches 4. The cellular and molecular mechanisms of neuroimmunology and neural repair in stroke 5. Development of novel therapies for genetic disorders by genome editing in iPS cells	※3
151	NCC Cancer Science	5230	ARAKAWA Hirofumi MASUTOMI Kenkichi HAMAMOTO Ryuji YASUNAGA Masahiro KOGA Yoshikatsu UEMURA Yasushi	1. Carcinogenesis and molecular mechanism 2. Functions of cancer-associated genes and their alterations 3. Genomic, epigenomic and proteomic analysis of cancer and personalized medicine 4. Tumor microenvironment/cancer stem cells/non-coding RNA/signaling pathway 5. Molecular target/drug delivery/diagnosis and therapy	※4
152	Human Genetics and Disease Diversity	1570	TANAKA Toshihiro	1. Elucidation of genetic architecture of human metabolic diseases using genome and meta-genome information 2. Biomarker identification for genome-based personalized medicine Pharmacogenomics 3. Functional Genomics Statistical Genetics	M
153	NCCHD Child Health and Development	1580	AKUTSU Hidenori ONODERA Masafumi FUKAMI Maki HATA Kenichiro MATSUMOTO Kenji TAKADA Syuji	1. Exploring molecular mechanism for acquisition of zygote totipotency, epigenetic reprogramming and pluripotency in stem cells 2. Application studies for reproductive medicine and regenerative medicine 3. Identification of target molecules in severe diseases and establishment of disease model mice by studying molecular mechanisms of genomic imprinting, gametogenesis and sexual differentiation 4. Elucidation of genetic abnormality in congenital severe metabolic diseases using advanced genetic analysis Studying for cellular model in human severe disease by advancing flow cytometry 5. Elucidation for allergic disease mechanism and target molecules using molecular biology and 'omics' technology 6. Elucidating for molecular mechanism of perinatal abnormality using system biology	※5

No.	Department	Code	Supervisor	Research Subject	Classification
154	Applied Regenerative Medicine	4470	SEKIYA Ichiro	1. Development of regenerative medicine with stem cells 2. Realization and industrialization of cell and regenerative therapy 3. Establishment of safety test for regenerative medicine 4. Translational research	M
155	JFCR Cancer Biology	4460	NAKAMURA Takuro HIROTA Toru SHIBA Kiyotaka TAKEUCHI Kengo TOMIDA Akihiro SAITO Noriko	1. Molecular mechanisms of carcinogenesis and identification of cell-of-origin of cancer 2. Understanding mitotic chromosome dynamics in cancer, to exploit mitotic control to cancer intervention 3. Application of nanobiotechnology in cancer diagnostics 4. Pathological and genetic analysis of human cancer such as malignant lymphoma and lung cancer 5. Strategy for innovative drug therapy based on cancer biology 6. Regulation of gene expression in the nucleus and higher-order chromatin structure in cancer	※6
156	Insured Medical Care Management	1610	AI Masumi	1. Development of methodology and materials for education on medical insurance system and rules for insured medical treatment 2. Studies on management and supports for billing for medical service fees at insurance medical institutions 3. Studies on affairs of medical insurance system and provision of medical services	M
157	Basic Oral Health Engineering	1620	AOKI Kazuhiro	1. Development of novel bone anabolic reagents with suitable scaffold by interdisciplinary research among medical, dental, and engineering toward clinical applications. 2. Relationship between oral bacteria and systemic diseases - Interdisciplinary research toward improvement of lifestyle-related diseases - 3. Study on the quality of life related to functional restoration by dental prostheses 4. Research on the oral and maxillofacial prosthetic rehabilitation 5. Research on the role of dental technicians in team approaches	
158	Oral Biomaterials Development Engineering	1630	KANAZAWA Manabu	1. The applications of the digital dentistry for the dental practice 2. The development of methods for fully digital removable dentures 3. The development of the artificial intelligence for the diagnosis of dental disease 4. The methods for the digitalized dental educations	D
159	Oral Prosthetic Engineering	1640	WAKABAYASHI Noriyuki (concurrently assigned)	1. Study on evaluation, improvement and development of CAD/CAM dental technology 2. Reevaluation of conventional analog techniques in dental laboratory 3. Application of dental technology by dental technician to various medical fields 4. Improvement of work environment and expansion of job categories for dental technicians 5. Study on international standardization of the dental technology in dental laboratory	D
160	Global Health Entrepreneurship	1660	NAKAMURA Keiko	1. International development of trade and workforce for health services 2. Development of social business models for equitable delivery of healthcare 3. Lessons for healthcare entrepreneurs from the Healthy Cities Program 4. Evaluation of health impact of climate change 5. Community mHealth Integrated Care (ComHIC) to manage hypertension/diabetes in diverse economy settings	M
161	Personalized Genomic Medicine for Health	1670	ISHIKAWA Kinya	1. Developing a new personalized genomic medicine for preventing common health problems, such as cancer, cardiovascular disease, and aging. 2. Studying monogenic disease toward gene identification, discovering pathogenesis and fundamental therapy.	M
162	Anatomical Science	1680	HOSHI Osamu	1. Application of atomic force microscopy to biological fields. 2. Analysis of high-order structure of human chromosomes. 3. Analysis of dynamics of growth cones of neuron.	MT
163	Biochemistry and Biophysics	1690	SUMI Yuki (concurrently assigned)	1. Molecular Biology of Stem Cells 2. Human Resource Development of Regeneration Medicine	MT
164	Molecular and Cellular Biology	1700	SUZUKI Nobuharu	1. Elucidation of the mechanisms of myelination and axon maintenance in the CNS and identification of novel molecular markers 2. Analyses of murine models and molecular structures related to neurological and mental disorders 3. Study of the regulation of cell functions by extracellular matrix and the development of novel substrates for cell culture	MT
165	Molecular Pathology	1710	SAWABE Motoji Scheduled to retire in March 2022	1. Immunohistochemical analysis of human and murine cardiac conduction system 2. Proteomic analysis of human cardiac aging 3. Molecular pathological study of hepatobiliary tumors 4. Molecular epidemiologic study of Lipoprotein(a)	MT
166	Biophysical System Engineering	1720	ITO Minami	1. Mathematical models for context dependent visual information processing 2. Neural mechanisms underlying context dependent visual information processing 3. Developing methods to monitor vital information with aid of mathematical models	MT
167	Respiratory and Nervous System Science	1730	SUMI Yuki	1. Pathogenic mechanisms of bronchial asthma, COPD, interstitial pneumonia 2. Gene therapy and immunotherapy for lung diseases 3. Pathogenesis of neuropsychiatric disease using non-invasive brain function tests and image analyses 4. Investigation of epilepsy using EEG 5. Evaluation of brain function using the event-related potential analysis	MT
168	Clinical and Diagnostic Laboratory Science	1740	KAKINUMA Sei	1. Development of novel disease models using human iPSC cells to elucidate the pathophysiology of hepatobiliary diseases 2. Analysis of cell-to-cell interaction regulating development and progression of hepatobiliary diseases 3. Development of hepatobiliary and pancreatic disease models using organoid culture system 4. Molecular mechanisms regulating homeostasis of stem/progenitor cells in hepatobiliary and pancreatic tissues 5. Research on molecular mechanisms regulating liver regeneration and hepatic fibrosis	MT
169	Analytical Laboratory Chemistry	1750	OHKAWA Ryunosuke	1. Development of a new biomarker to estimate residual risk for cardiovascular disease 2. Mechanism of HDL diversification and its effect on the character and function 3. Molecular mechanism of red blood cell-related lipids metabolism	MT
170	Laboratory Molecular Genetics of Hematology	1760	NISHIO Miwako	1. Laboratory molecular and genetic analyses on hematologic neoplasms 2. Epstein-Barr virus positive T- or NK-cell neoplasms: Clarification of the onset mechanisms and development of the new treatment strategies 3. Development of brown adipocytes detection method using human ES / iPSC cells	MT
171	Immunopathology	1770	Under Selection		MT
172	Molecular Microbiology	1780	SAITO Ryoichi	1. Mechanism of antimicrobial resistance in bacteria 2. Regulation of bacterial virulence 3. Molecular epidemiology in bacteria	MT
173	Organogenesis and Neogenesis	1790	TAKEBE Takanori	1. Developing self-organizing complex organoids by modeling organogenesis 2. Applying human organoid technology for drug development and (re)generative medicine 3. Studying novel inter-cellular communications mediated by physical cell-to-cell contact 4. Devising "Organo-Machines" based on the integral-disciplinary approach	M

No.	Department	Code	Supervisor	Research Subject	Classification
174	Dysphagia Rehabilitation	1820	TOHARA Haruka	1. The effects of aging and frailty on swallowing function 2. The effect of dysphagia rehabilitation 3. Development of non-invasive device detects aspiration 4. Development of devices for evaluating oral and swallowing function 5. Basic research on nutritional status and intestinal bacteria using gastrostomy rats	D
175	Interdisciplinary Sciences	1830	HATTORI Atsuhiko NARA Masayuki TOKUNAGA Shin-ichi	1. Circadian clock and learning and memory mechanism 2. Space biology and energy metabolism 3. Spectroscopic analysis for molecules of life 4. Problems of graph theory as the basis of network structure in life science	
176	Integrated Analytics	1840	MIYANO Satoru	1. Knowledge acquisition from big data by supercomputer and AI technologies 2. Unravelling the origin and heterogeneity of cancer by large-scale data analysis and mathematical modeling 3. Study on large-scale multi-omics data analysis 4. Study on system modeling and simulation for diseases	DS (M)
177	Biostatistics	1850	TAKAHASHI Kunihiro	1. Biostatistical methodologies for medical and dental data analysis 2. Statistical assessments of spatio-temporal data 3. Statistical analysis for effective use of real-world database 4. Statistical methods and their applications for meta-analysis	DS (M)
178	Data Science Algorithm Design and Analysis	1860	BANNAI Hideo	1. Algorithms and data structures for matching, searching, and discovering patterns 2. Algorithms and data structures for compression and compressed data processing 3. combinatorics on strings	DS
179	AI Technology Development	1870	PARK Heewon	1. Statistical theory and data-analytic approaches 2. Explainable AI technologies for systematic understanding of diseases 3. Analysis of omics data for healthcare 4. Network biology for uncovering gene regulatory networks	DS
180	Clinical Biostatistics	1890	HIRAKAWA Akihiro	1. Methodology for trial designs and statistical methods in clinical studies 2. Theoretical and practical research on data science in medical and health fields 3. Bayesian approach for clinical science 4. Regulatory science in pharmaceutical and medical device development	M
181	Infectious Diseases	1900	GU Yoshiaki	1. Antimicrobial stewardship in hospitals and clinics 2. Public awareness of infectious diseases and antimicrobial resistance 3. Prevention and treatment of healthcare-associated infection 4. Preparedness and response to health crisis due to infectious diseases	M

M : School of Medicine
D : School of Dentistry
OH:Track of Oral Health Care Sciences
OE:Track of Oral Health Engineering
MH:Medical Hospital
MT:Biomedical Laboratory Sciences
DH:Dental Hospital
BM:Institute of Biomaterials and Bioengineering

MR:Medical Research Institute
RC:Research Core
CE:Center for Education Research in Medicine and Dentistry
SR:Center for Stem Cell and Regenerative Medicine
ME:Life Science and Bioethics Research Center
EA:Center for Experimental Animals
PH:Center for Personalized Medicine for Healthy Aging
DS:M&D Data Science Center

※ 1 : Institute of Physical and Chemical Research (Riken)
※ 2 : National Center of Neurology and Psychiatry
※ 3 : Tokyo Metropolitan Institute of Medical Science
※ 4 : National Cancer Center
※ 5 : National Center for Child Health and Development
※ 6 : Japanese Foundation for Cancer Research