

Research Subjects, Graduate School of Medical and Dental Sciences, Doctoral Program, Medical and Dental Sciences Track

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No.	Code	Department	Supervisor	Research Subject	Classification
1	3010	Oral Pathology	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
2	3020	Bacterial Pathogenesis, Infection and Host Response	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
3	3030	Molecular Immunology	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
4	3040	Advanced Biomaterials	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
5	3050	Diagnostic Oral Pathology	Under Selection		D (DH)
6	3080	Oral Radiation Oncology	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
7	3090	Oral and maxillofacial surgery	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
8	3100	Oral and Maxillofacial Radiology	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
9	3110	Dental Anesthesiology and Orofacial Pain Management	MAEDA Shigeru	1. Non invasive drug delivery system 2. Anti-inflammatory and protective effect of anesthetics in the brain 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
10	3130	Pediatric Dentistry/Dentistry for Persons with Special Needs	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
11	3140	Orthodontic Science	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
12	3150	Cariology and Operative Dentistry	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
13	3160	Fixed Prosthodontics	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
14	3170	Pulp Biology and Endodontics	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
15	3180	Removable Partial Prosthodontics	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

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16	3190	Oral Implantology and Regenerative Dental Medicine	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
17	3200	Plastic and Reconstructive Surgery (Plastic and Reconstructive Surgery)	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
18	3201	Plastic and Reconstructive Surgery (Functional Reconstruction)	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
19	3210	Head and Neck Surgery	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
20	3220	Radiation Therapeutics and Oncology	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
21	3230	Maxillofacial Anatomy	SHIBATA Shunichi Scheduled to retire in September 2021	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
22	3240	Cognitive Neurobiology	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
23	3250	Molecular Craniofacial Embryology	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
24	3260	Cellular Physiological Chemistry	Under Selection	1. Studies of cell-cell communication via gap junction. 2. Studies of the mechanism of bone remodeling	D
25	3290	Maxillofacial Surgery	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
26	3300	Maxillofacial Orthognathics	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
27	3310	Maxillofacial Prosthetics	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
28	3320	Cell Biology	NAKATA Takao	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
29	3330	Medical Biochemistry	HATA Yutaka Scheduled to retire in March 2022	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
30	3340	Joint Surgery and Sports Medicine	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
31	3350	Biostructural Science	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

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32	3360	Pharmacology	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
33	3370	Connective Tissue Regeneration Not recruiting this year	WATABE Tetsuro (concurrently assigned)		D
34	3380	Biochemistry	WATABE Tetsuro	1. Understanding the multiple aspects of cancer microenvironment 2. Formation of cancer associate 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
35	3390	Cell Signaling	NAKASHIMA Tomoki	1. Signal transduction mechanisms of bone cells such as osteoclast, osteoblast and osteocyt. 2. Development of clinical applications for diseases of the skeletal and locomotiv system. 3. Exploitation of osteonetwork (systemic network between bone and other systems).	D
36	3410	Periodontology (Periodontology)	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
37	3411	Periodontology (Photoperiodontics)	IWATA Takanori AOKI Akira	1. Research on the application of lasers/LEDs in periodontal and peri-implant therapy 2. Research on photobiomodulation (PBM) effctcs 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
38	5100	Inorganic Biomaterials	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 (BM)
39	3420	Global Health Promotion	FUJIWARA Takeo	1. Social epidemiology (impact of social inequality, social capital, social network, and social support onhealth) 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
40	3430	Environmental Parasitology	YAMAOKA Shoji (concurrently assigned)	1. Research on the cellular and molecular basis for malaria parasite life cycle 2. Research on drug resistance 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-schistosolmal drugs 5. Research on developmet systems of parasitic helminth	M
41	3440	Forensic Medicine	UEMURA Koichi	1. Studies on the mechanisms of cell death induced by drugs 2. Forensic toxicology / Alcohol medicine 3. Forensic pathology 4. Drug analysis	M
42	3460	Health Care Management and Planning	FUSHIMI Kiyohide (concurrently assigned)	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
43	3470	Molecular Epidemiology Not recruiting this year	MURAMATSU Masaaki <small>Scheduled to retire in March 2022</small>	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 helth care.	M (MR)
44	3480	Research Development	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
45	3490	Health Policy and Informatics	FUSHIMI Kiyohide	1. Health information management for the development of DPC case mix system and PDPS payment system 2. Quantitative analytica method for plannning 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
46	3500	Life Sciences and Bioethics	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 (ME)
47	3510	Forensic Dentistry	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

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48	3520	Health Care Economics	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
49	3530	Dental Education Development	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
50	3540	Oral Health Promotion	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
51	3550	Sports medicine and dentistry	UENO Toshiaki	1. Relations between exercise and oral environment, inflammation/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 devices for sports 5. Application of hyperbaric oxygen therapy to dental injuries and oral diseases	D
52	3560	Educational system in Dentistry	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 (CE)
53	3570	Educational Media Development	KINOSHITA Atsuhiko	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
54	4480	Insured Medical Care Management	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
55	4500	Global Health Entrepreneurship	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
56	4580	Clinical Biostatistics	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
57	3590	Rehabilitation Medicine	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 (MH)
58	3600	Gerodontology and Oral Rehabilitation	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
59	4570	Dysphagia Rehabilitation	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
60	3610	Laboratory Medicine	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
61	3620	Department of Intensive Care Medicine	UCHIDA Tokujiro (concurrently assigned)	1. Analysis of the effect of rapid response system and associated risk factors for patient safety in Japanese hospitals 2. Investigation of the roles and mechanisms of extracellular vesicles in critical illness 3. Development of new medical device in the ICU 4. ICU mortality prediction using a machine learning approach	M
62	3640	Pharmacokinetics and Pharmacodynamics	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 (MH)
63	3650	Medical Education Research and Development	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

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64	3660	Acute Critical Care and Disaster Medicine	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
65	3670	Clinical Oncology	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
66	3690	General Dentistry	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
67	3700	Psychosomatic Dentistry	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
68	4490	Professional Development in Health Sciences	TAKADA Kazuki	1. Needs assessment in health care 2. Needs assessment in professional development in health science fields	M
69	3580	Family Medicine	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
70	4590	Infectious Diseases	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
71	3730	Neuroanatomy and Cellular Neurobiology	TERADA Sumio	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
72	3740	Systems Neurophysiology	SUGIHARA Izum	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
73	3750	Pharmacology and Neurobiology	ISOMURA Yoshikazu (concurrently assigned)	1. Microglial Ca channel function in Neuroinflammation/Neurodegenerative diseases 2. Energy metabolic imaging at single cell level	M
74	3760	Molecular Neuroscience	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 (MR)
75	3770	Neuropathology	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 (MR)
76	3780	Ophthalmology and Vision Science	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
77	3790	Otorhinolaryngology	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
78	3800	Neurology and Neurological Science	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
79	3810	Psychiatry and Behavioral Sciences (Psychiatry and Behavioral Sciences)	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
80	3811	Psychiatry and Behavioral Sciences (Forensic Mental Health)	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

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81	3812	Psychiatry and Behavioral Sciences (Liaison Psychiatry and Psycho-oncology)	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
82	3820	Neurosurgery	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
83	3830	Endovascular Surgery	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
84	4430	NCNP Brain Physiology and Pathology	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)	※1
85	3840	Immune Regulation	Satoh Takashi	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
86	3850	Molecular Virology Not recruiting this year	YAMAOKA Shoji	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
87	3860	Immunotherapeutics Not recruiting this year	KITAGAWA Masanobu (concurrently assigned) Scheduled to retire in March 2022	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
88	3870	Cellular and Environmental Biology	HARA Masayuki	1. Chromatin higher-order structure and machinery 2. Proteomics-based analysis of nuclei 3. Cellular defense against oxidative stress 4. Cellular responses against its external environment, such as drug, substance, and radiation	M (RC)
89	3880	Biodefense Research	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 (MR)
90	3890	Pathological Cell Biology	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 virus disease model mouse and application to anti-viral drug development.	M (MR)
91	3900	Lipid Biology	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 (MR)
92	3920	Pediatrics and Developmental Biology	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
93	3930	Rheumatology	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
94	3940	Dermatology	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

No.	Code	Department	Supervisor	Research Subject	Classification
95	4450	NCCHD Child Health and Development	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	※2
96	3950	Human Pathology	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
97	3960	Physiology and Cell Biology	ISOMURA Yoshikazu	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
98	3970	Molecular and Cellular Cardiology Not recruiting this year	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 (MR)
99	3980	Molecular Medicine and Metabolism	Under Selection		M (MR)
100	3990	Stem Cell Regulation	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 (MR)
101	4040	Stem Cell Biology	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 (MR)
102	4050	Respiratory Medicine	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
103	4060	Gastroenterology and Hepatology	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
104	4070	Specialized Surgeries	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
105	4080	Cardiovascular Medicine	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
106	4091	Anesthesiology	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
107	4100	Cardiovascular Surgery	ARAI Hirokuni Scheduled to retire in March 2022	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
108	4110	Nephrology	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
109	4120	Comprehensive Reproductive Medicine	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

No.	Code	Department	Supervisor	Research Subject	Classification
110	4130	Urology	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
111	4140	Gastrointestinal Surgery	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
112	4150	Thoracic Surgery	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 fo malignant pleural mesothelioma	M
113	4440	Igakuken Disease- oriented Molecular Biology	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
114	4160	Clinical Anatomy	AKITA Keiichi	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
115	4170	Systems BioMedicine	ASAHARA Hiroshi	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
116	4180	Comprehensive Pathology	KITAGAWA Masanobu <small>Scheduled to retire in March 2022</small>	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
117	4190	Molecular Oncology	TANAKA Shinji	1. Molecular analysis of refractory malignancies including liver, pancreatic and scirrhus 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 targted therapy 5. Development of regenerative medicine using stem cell research	M
118	4200	Surgical Pathology	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 (MH)
119	4210	Experimental Animal Model for Human Disease	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 (EA)
120	4220	Signal Gene Regulation	HATA Yutaka (concurrently assigned) <small>Scheduled to retire in March 2022</small>		M (RC)
121	4250	Biomedical Devices and Instrumentation	ARAKAWA Takahiro	1. Basic and applied research on advanced BioMedical Sensing 2. Wearable sensors for medical and dental applications (mouthguard, contact lens, headset, etc.) 3. Highly sensitive analysis of disease-based breath chemicals using drug-metabolizing enzymes. 4. Real-time imaging of transcutaneous volatiles for metabolic evaluation 5. Immuno-sensing of biological and environmental molecules	M (BM)
122	4290	Biofunction Research	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 (BM)
123	4300	Genetic Regulation	Under Selection		M (MR)
124	4320	Applied Gene Medicine	MIKI Yoshio <small>Scheduled to retire in March 2022</small>	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 (MR)
125	4330	Molecular Cytogenetics Not recruiting this year	INAZAWA Johji <small>Scheduled to retire in March 2022</small>	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 (MR)
126	4360	Hematology	MORI Takehiko	1. Exploration of tumorigenesis and treatment-refractoriness of hematological malignancies 2. Development of novel diagnostic methods and treaments for complications, including infections, of hematological disorders 3. Development of novel cellular therapy for hematological malignancies	M

No.	Code	Department	Supervisor	Research Subject	Classification
127	4361	Immunotherapy for Hematopoietic Disorders Not recruiting this year	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
128	4370	Molecular Endocrinology and Metabolism	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
129	4380	Hepatobiliary and Pancreatic Surgery	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
130	4390	Orthopaedic and Spinal Surgery	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
131	4400	Diagnostic Radiology and Nuclear Medicine	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 (MH)
132	4410	Genomic Function and Diversity	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 (MR)
133	4420	Human Genetics and Disease Diversity	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
134	4470	Applied Regenerative Medicine	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 (SR)
135	4460	JFCR Cancer Biology	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	※4
136	3070	Frontier Biomaterials	KIMURA Tsuyoshi	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 a cell capture system for immunomodulation	M (BM)
137	4530	Personalized Genomic Medicine for Health	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 (PH)
138	4540	Organogenesis and Neogenesis	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
139	4550	Integrated Analytics	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	M (DS)
140	4560	Biostatistics	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	M (DS)

M : School of Medicine

D : School of Dentistry

MH:Medical Hospital

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

ME:Life Science and Bioethics Research Center

EA:Center for Experimental Animals

SR:Center for Stem Cell and Regenerative Medicine

PH:Center for Personalized Medicine for Healthy Aging

DS:M&D Data Science Center

※ 1 : National Center of Neurology and Psychiatry

※ 2 : National Center for Child Health and Development

※ 3 : Tokyo Metropolitan Institute of Medical Science

※ 4 : Japanese Foundation for Cancer Research