

Appendix II

List of Instructors and Areas of Research

Medical Life Science

Department	Director	Areas of Research
Regenerative Medicine	Professor Toshio Nikaïdo	<ul style="list-style-type: none"> • Histological research about tissue regeneration • Molecular biological research about tissue regeneration • Research about cancer stem cells • Histological and developmental research about placenta, amnion membrane and embryo-derived tissues • Tissue engineering using human cells • Research about immune cells related with immune-feedback mechanism- especially about microenvironments • Histological and morphological research using immunohistochemistry and electromicroscopes
Molecular Immunology	Professor Atsushi Muraguchi	<ul style="list-style-type: none"> • Basal immunological research for immune therapy • Development of rapid and highly efficient method for detecting antigen-specific lymphocytes and for isolating their antigen receptors • Development of antibody therapeutics • Development of T-cell receptor gene therapy
Clinical Infectious Diseases	Professor Yoshihiro Yamamoto	<ul style="list-style-type: none"> • Establishing Surveillance System of MRSA with Molecular Microbiology • Exploring Factors for Selection of antimicrobials against Chronic Pseudomonas Infection • Analysis of Prognosticator of Non tuberculous Mycobacteriosis • Study of Drug-Resistance Mechanism of Deep-seated Fungus Infection • Gene Therapy for HIV infection
Clinical Virology	Professor Kimiyasu Shiraki	<ul style="list-style-type: none"> • Pathogenesis of herpes zoster and elucidation of its pain • Latency and neurological diseases caused by human herpesviruses • Development of new anti-influenza drug of T-705 • Mechanism of action of herbal medicines (Kakkon-to)
Epidemiology & Health Policy	Professor Michikazu Sekine	<p>We conduct several longitudinal studies of Japanese adults and children. The Japanese civil servants study is an ongoing follow-up study of Japanese civil servants. This study is an international collaborative study with the British civil servants study (the Whitehall II study) and the Finnish civil servants study (the Helsinki Health Study). The Toyama study is a birth cohort study of Japanese children. Postgraduate students become members of the research units and are involved in each step of epidemiological research (i.e. study planning, and conducting, data analysis, and manuscript writing and publishing). Current research topics are in the following.</p> <ul style="list-style-type: none"> • Socioeconomic and sex inequalities in physical and mental health of Japanese civil servants with international comparisons • Associations of psychosocial stress at work, work-life balances, health behaviours, with health of Japanese civil servants with international comparisons • Associations of social environments, parental factors, and lifestyle factors with health (e.g. QOL, sleep quality, and obesity) of Japanese children
Public Health & Environmental Medicine	Professor Hidekuni Inadera	<ul style="list-style-type: none"> • Epidemiological Study on Children's Environmental Health • Fundamental Study of Environmental Chemicals • Prevention of Life-style related Diseases • Occupational and Environmental Health
Legal Medicine	Professor Naoki Nishida	<ul style="list-style-type: none"> • Pathological and molecular analysis of sudden death in various conditions. • Pathology of cardiovascular and central nervous system by aging or various diseases. • Pathological and epidemiological study for preventing suicide. • Analysis of medical accident.
Cardiology and Nephrology	N/A	

Department	Director	Areas of Research
Pediatric Developmental Medicine	Professor Yuichi Adachi	<ul style="list-style-type: none"> ▪ Mechanisms of immunotherapy for allergic diseases ▪ Association between allergic diseases and environmental factors ▪ Genetic analysis of cardiac sudden death, fatal arrhythmia and cardiomyopathy ▪ Neurodevelopmental outcome following cardiac surgery ▪ Immunological diagnosis and treatment of childhood leukemia ▪ Molecular mechanisms of the relationship between low birth weight and adult metabolic diseases
Cardiothoracic Surgery	Professor Naoki Yoshimura	<ul style="list-style-type: none"> ▪ Surgical approach for arrhythmia ▪ Clinical and biological research of lung cancer ▪ Surgical approach for atherosclerosis ▪ Surgery for ischemic heart disease ▪ Mechanical assist for congestive heart failure ▪ Surgery for congenital heart disease
Orthopaedics and Locomotor System Science	Professor Tomoatsu Kimura	<ul style="list-style-type: none"> ▪ Developmental biology of skeletal tissues ▪ Pathomechanism of joint destruction ▪ Development of therapeutic strategy for arthritic diseases ▪ Genetic analysis of spinal disorders ▪ Differentiation induction for malignant soft tissue tumors
Otorhinolaryngology - Head and Neck Surgery	Professor Hideo Shojaku	<ul style="list-style-type: none"> ▪ Clinical and electrophysiological studies of inner ear disorders ▪ Clinical application of amnion membrane in otolaryngology ▪ Brain imaging in response to auditory, vestibular and olfactory stimulations ▪ Development of minimally invasive examination in vestibular system ▪ Clinical studies of diagnosis and treatment in head and neck cancer
Anesthesiology and management during perioperative period	Professor Mitsuaki Yamazaki	<ul style="list-style-type: none"> ▪ electrophysiological studies of anesthetics on cardiac muscle ▪ electrophysiological studies of anesthetics on central nervous system ▪ research on analgesic actions and side effects in analgesic agents ▪ research on mechanisms and medical treatments of neuropathic pain ▪ effects of anesthetics and cardiovascular agents on septic model
Diagnostic Pathology	Professor Johji Imura	<ul style="list-style-type: none"> ▪ Molecular pathological study about the mechanism on the construction and/or the polarity of neoplastic cells. ▪ Pathobiological study in the spontaneous oncogenic mouse. ▪ Molecular pathological study about the non-steatohepatitis and its carcinogenesis. ▪ Molecular pathological study on the base of the pathological/cytological diagnosis. ▪ Transcriptional mechanism in the neoplastic cells. ▪ Acquiring the molecules in the neoplastic cells, and applying them for the pathological diagnosis.
Radiological Sciences	Professor Takashi Kondo	<ul style="list-style-type: none"> ▪ Free radical formation and DNA damage induced by ionizing radiation and ultrasound. ▪ Molecular mechanisms and modalities of enhancing of apoptosis and cell death induced by ionizing radiation, hyperthermia, ultrasound and novel chemicals. ▪ Regulation of gene expression by ultrasound, optimizational research on ultrasound-mediated gene transfection, and evaluation of the physical and biological characteristics of novel microbubbles. ▪ Development of radiation and ultrasound responsive promoters and its therapeutic applications. ▪ Molecular and cellular responses to environmental stresses.
Gastroenterology, Hematology and Medical Oncology	Professor Toshiro Sugiyama	<ul style="list-style-type: none"> ▪ Carcinogenic mechanism of gastric cancer by H.pylori infection and the chemoprevention ▪ Distribution and function of TRP family in gastrointestinal tract and the related functional diseases ▪ Molecular mechanism of development of GIST ▪ New intensive chemotherapy to GI cancer with RIST or PBSCT ▪ Immuno-pathogenesis of inflammatory bowel diseases and identification of novel therapeutic target molecule ▪ Mechanism from viral hepatitis and NASH to hepatocellular carcinoma ▪ Immunomodulation for successful bone marrow transplantation in hematopoietic malignancy

Department	Director	Areas of Research
Diagnostic and Therapeutic Radiology	Professor Kyo Noguchi	<ul style="list-style-type: none"> • <u>Development of new MR imaging technique for brain diseases</u> • <u>Development of new CT imaging technique for brain diseases</u> • <u>Assessment of brain function by MR imaging</u> • <u>Assessment of therapeutic response of tumor by functional imaging</u>
Department of Surgery & Science	Professor Kazuhiro Tsukada (will be retired on March 2016)	<ul style="list-style-type: none"> • Clinico-pathological analysis of the progression of gastrointestinal cancer • Molecular-biological analysis of human and experimental cancers • Analysis of biological response and its regulation of the surgical stress • Clinical research for gastrointestinal and endocrine cancer • Research for function oriented surgery • Research of cancer stem cells • Tissue engineering by cell culture • Research for cancer profiling by cDNA and cell chip
Urology	N/A	
Comprehensive Oral Sciences	Professor Makoto Noguchi	<ul style="list-style-type: none"> • Bone invasion of oral cancer and local immune system • Immunosuppressive population in oral cancer microenvironment • Novel strategy for management of oral cancer targeting on cancer stem cells • Mechanism of jaw osteonecrosis induced by bone-modifying agents • Regenerative medicine in oral and maxillofacial reconstruction • Rehabilitation of oral functions
Clinical Laboratory and Molecular Pathology	Professor Isao Kitajima	<ul style="list-style-type: none"> • Development of a rapid measurement system for Nuclear factor-kappa B. NF-κB is a transcription factor, which regulates various processes of acute and chronic inflammatory diseases. We reported that NF-κB activity correlated with some of the biomarkers in metabolic syndrome and infectious diseases. To measure the NF-κB activity in lymphocytes isolated from patients, we are developing a rapid measurement system using fluorescence correlation spectroscopy (FCS). This system would provide a new clinical index to monitor inflammatory conditions. • Chromatin remodeling factor, ATRX, and neuronal defects in the mutant mice. Mutations of the ATRX gene are associated with an X-linked mental retardation syndrome often accompanied by alpha-thalassemia. We previously generated ATRX mutant mice and characterized behavioral and electrophysiological abnormalities of the mutant mice. We will further examine the role of ATRX in neuronal development and its molecular function in epigenetic modification.
Crisis Medicine and Patient Safety	Professor Hiroshi Okudera	<ul style="list-style-type: none"> • Fundamental and Applied Research of Crisis Medicine • Basic and Clinical Research of Neurological Resuscitation • Field Study of Mass Gathering Medicine • Investigation of Regional Resource Management on Emergency System in Japan • Development of Japan Triage and Acuity Scale (JTAS) • Education Course of Crisis Medicine • Ethical issues in Patient Safety Research
Diabetes and metabolism, rheumatic and respiratory diseases	Professor Kazuyuki Tobe	<ul style="list-style-type: none"> • Dissection of the pathogenesis of type 2 diabetes and metabolic syndrome. Development of the methods to treat and prevent them. • Dissection of genetic factors of type 2 diabetes, rheumatoid arthritis and asthma. Development of tailor-made therapy. • The role of Sirtuin family proteins, longevity genes, in the development of metabolic syndrome and type 2 diabetes. • Dissection of the pathogenesis of rheumatic diseases, lung and rheumatic diseases. • The development of methods to detect lung cancers at an earlier stage.
Animal Resources and Developments	N/A	
Neurology	Professor Kortaro Tanaka (will be retired on March 2016)	<ul style="list-style-type: none"> • Pathophysiological mechanisms of acute cerebral infarction and development of new therapies • Molecular mechanisms of ischemic injury to brain tissues • Endogenous neuroprotective mechanisms of brain tissues and regeneration mechanisms of nervous system • Epidemiological analysis of stroke and development of prevention strategies • Mechanisms of brain white matter injuries and regeneration mechanisms of myelin

Integrative Oriental and Western Medical Sciences

Department	Director	Areas of Research
Molecular and Medical Pharmacology	Professor Yuichi Hattori	<ul style="list-style-type: none"> • Search for therapeutic agents as treatment of septic syndrome using animal models • Development of prevention and treatment of diabetes targeting endothelial dysfunction • Research on mechanisms and control techniques of intestinal mucosal inflammation • Studies on signal transduction pathways involved in neuroprotection
Dermatology	Professor Tadamichi Shimizu	<ul style="list-style-type: none"> • <u>Mechanism of the inflammatory skin diseases including atopic dermatitis</u> • <u>Mechanism of photoaging and photocarcinogenesis</u> • <u>Pathology of the skin lymphoma</u> • <u>Molecular mechanism of keratinization</u> • <u>Mechanism of the wound healing</u>
Obstetrics and Gynecology	Professor Shigeru Saito	<ul style="list-style-type: none"> • Basic reproductive immunology and clinical reproductive immunology • Reproductive endocrinology and cytokine network • Growth and differentiation of trophoblast • Clinical pathology in gynecological cancer • Preterm labor • Preeclampsia • Recurrent pregnancy loss
Ophthalmology	Professor Atsushi Hayashi	<ul style="list-style-type: none"> • Inhibition of ocular angiogenesis and drug delivery • Ophthalmic application of hyper-dried amniotic membrane • Rapid diagnosis and treatment of ocular infectious diseases • Neuroprotection of retinal degeneration
Japanese Oriental Medicine (Kampo Medicine)	Professor Yutaka Shimada	<ul style="list-style-type: none"> • Clarification of the improving effects of Kampo medicines and their action mechanisms on microcirculation by hemo-rheological, vaso-reactive and arteriosclerotic study, etc. • Clarification of the protective effects of Kampo medicines and their action mechanisms on cell and organ damages induced by neurological, hypertensive and diabetic diseases, etc. • Clarification of the immuno-modulating and defensive effects of Kampo medicines and their action mechanisms on immunological, allergic and infectious diseases, etc.
Biostatistics and Clinical Epidemiology	Professor Hideki Origasa	<ul style="list-style-type: none"> • Statistical analysis of clinical trials data and epidemiological data • Development and evaluation of risk prediction models • Meta-analysis: methods and applications • QOL evaluations: methods and applications • Pharmaco-epidemiological research • Research on statistical education