October 1, 2026

Outline of the Laboratory, Graduate School of Pharmaceutical Sciences, Kyushu University

Clinical Pharmacokinetics

Teaching staff	Professor Naoya Matsunaga, Ph.D. Lecturer Kengo Hamamura, Ph.D. Assistant Professor Yuya Yoshida, Ph.D.
Research	The following topics are currently under investigation in our laboratory: ・ Pathological analysis focusing on pharmacokinetics-related genes (Cytochrome P450, Transporter) ・ Analysis of organ or cell linkage mechanism under pathological conditions ・ Investigation of new therapeutic agents and pharmacodynamic and pharmacokinetic analysis ・ Drug development based on structural analysis of proteins by cryo-electron microscopy ・ Development of technology for the treatment of various diseases using DDS and lipid nanoparticle formulations

Pharmaceutics

Teaching staff	Professor Satoru Koyanagi, Ph.D. Lecturer Akito Tsuruta, Ph.D. Assistant Professor Tomoaki Yamauchi, Ph.D.
Research	・ Development of time-dependent drug delivery strategies for anticancer agents based on the molecular mechanisms of the circadian clock ・ Elucidation of the circadian mechanisms underlying pharmacodynamics (target enzymes and receptors) and pharmacokinetics (CYP activity and transporters), and development of time-dependent drug delivery systems ・ Pathophysiological analysis of pain and inflammation based on circadian clock mechanisms and identification of therapeutic target molecules ・ Chrono-drug discovery research based on clinical data

Clinical Pharmacy and Pharmaceutical Care

Teaching staff	Associate Professor Daisuke Kobayashi, Ph.D. Assistant Professor Shunsuke Fujita, Ph.D. Assistant Professor Takashi Ogino, Ph.D. Assistant Professor Ryosuke Matsukane, Ph.D.
Research	・Research on improving medication adherence and quality of life ・Study on development of simultaneous determination of clinically used drugs for therapeutic drug monitoring ・Studies on mechanisms and prevention of chemotherapy-induced peripheral neuropathy ・Drug repositioning research for cancer and sarcopenia therapies ・Establishment of pharmaceutical education system

Molecular and System Pharmacology

Teaching staff	Professor Makoto Tsuda, Ph.D. Assistant Professor Keita Kohno, Ph.D. Assistant Professor Kazuki Fujimori, Ph.D.
Research	Work in my laboratory is primarily directed to elucidating glia-neuron interactions in the spinal cord and brain and to understanding the cellular and molecular mechanisms of pain and itch signaling (in particular pathological chronic pain and itch) with the goal of counteracting these mechanisms in order to devise strategies for new types of pain and itch relieving medications.

Physiology

Teaching staff	Professor Motohiro Nishida, Ph.D. Lecturer Yuri Kato, Ph.D. Assistant Professor Tomoya Ito, Ph.D. Assistant Professor Mi Xinya, Ph.D. Assistant Professor Yara Mohamed Atef Ahmed Sayed Ahmed, Ph.D.
Research	1. Comprehensive understanding the diversity of heart failure and its application for precision medicine 2. Elucidation of the physiological role of reactive sulfur species and its therapeutic application 3. Establishment of therapeutic strategies for curing intractable diseases targeting mitochondrial quality control 4. Promotion of Green-Pharma research by collaborating with National Institutes

Pathophysiology

Teaching staff	Associate Professor　Yuta Kohro, Ph.D.
Research	Our laboratory focuses on understanding the role of astrocytes, a type of glial cell that is distributed throughout the brain and spinal cord, to uncover the mechanisms that maintain homeostasis and the pathogenesis of nervous system disorders. Our goal is to identify molecules and cell populations that contribute to the novel therapeutic targets and drug development for neurological diseases.

Global Pharmacy

Teaching staff	Professor　Katsumi Maenaka, Ph.D.
Research	The research is focused on follows (1)　Structural analysis of drug target proteins (2)　Interaction analysis between disease-specific molecules and drugs (3)　Design and development of next-generation biopharmaceuticals (e.g. antibodies and vaccines)

Protein Drug Discovery

Teaching staff	Professor　Jose Caaveiro, Ph.D. Assistant Professor　Akinobu Senoo, Ph.D. Assistant Professor　Keisuke Kasahara, Ph.D.
Research	・Protein Drug Discovery (PDD) ・Novel therapeutic approaches to fight human disease (infectious diseases, neurodegeneration, cancer, etc…) ・Antibody engineering: Novel antibody modalities and molecular mechanisms. ・Vaccines: Characterization of antibodies and antigen design. ・Biomolecular recognition between proteins and drugs. ・Drug discovery in challenging targets: membrane proteins and protein-protein interaction. ・Drug discovery for pain and itch. ・Fundamental Protein Science in Pharmacy. ・Elucidation of the molecular dynamics and new design of proteins through computational analysis.

Molecular Biology

Teaching staff	Professor　Tsutomu Katayama, Ph.D. ※will retire on March, 2027 Associate Professor　Shogo Ozaki, Ph.D. Assistant Professor　Kazutoshi Kasho, PhD.
Research	In the cell cycle progression, chromosomal DNA is replicated only once at a specific time by the carefully controlled molecular switch for replicational initiation. If this regulation is interfered with, various cell defects occur, such as abnormal chromosomes, inhibition of cell division, and growth of abnormal cells. Thus, a study on this regulatory mechanism is of significance as a basis for the developments of antibiotics and anticancer drugs. We have shown that a protein (DnaA) initiating E. coli chromosomal replication is inactivated by timely and direct interaction with a subunit of chromosomal replicase (DNA polymerase III holoenzyme). This interaction depends on loading the subunit onto DNA. This conformational change occurs for the nucleotide-polymerizing action of the replicase after the initiation reaction by DnaA. Thus, during the cell cycle, the initiation protein is most likely inactivated just after initiation of chromosomal replication in this manner. We have termed this regulatory system RIDA (Regulatory inactivation of DnaA). Reactivation of DnaA will occur before the next round of the replication cycle. We are investigating the molecular mechanisms in this DnaA-activity cycle including timely inactivation and activation.

Molecular Life Sciences

Teaching staff	Professor　Yuji Ishii, Ph.D. Assistant Professor　Yuko Hirota, Ph.D.
Research	Our research interests: 1. Environmental toxicology and drug metabolism ・Mechanisms of sexual immaturity fixation in offspring by maternal exposure to environmental chemicals. ・Mechanisms by which environmental chemicals attenuate dams' nursing. ・Functional interaction of drug-metabolizing enzymes. ・Alteration of the function of xenobiotic detoxifying enzymes in response to changes in physiological mechanisms. ・Metabolisms and analysis of illicit drugs. 2. Biology of lysosomes ・Cellular and molecular mechanisms regulating lysosomal biogenesis and functions by comprehensive functional analysis of lysosomal membrane proteins. ・Molecular regulatory mechanisms of intracellular protein degradation. ・Molecular mechanisms for ageing and neurodegenerative diseases.

Cellular Biochemistry

Teaching staff	Professor　Masatoshi Fujita, M.D., Ph.D. ※will retire on March, 2028 Assistant Professor　Yoko Katsuki, Ph.D. Assistant Professor　Miyako Shiraishi, Ph.D.
Research	We have been clarifying molecular mechanisms of chromosomal DNA regulations, deregulation of which would lead to chromosomal instability and eventually cancer. Now, we have been especially focusing on: 1. Function and cell cycle regulation of DNA replication initiation proteins, ORC, CDC6, Cdt1, MCM and related factors. 2. Molecular mechanisms for SLX4-mediated cellular responses to replication stress. 3. Relationship between chromatin regulations and regulations of replication initiation and replication stress response. 4. Development of MCM8-9 inhibitors as novel anti-neoplastic agents.

Pharmacognosy

Teaching staff	Associate Professor　Seiichi Sakamoto, Ph.D. Assistant Professor　Poomraphie Nuntawong, Ph.D.
Research	・Research on allelopathy ・Evaluation of doping risks of crude drugs and Kampo products ・Quality control and standardization of crude drugs and Kampo products ・Plant tissue culture for medicinal plant breeding

Drug Discovery Structural Biology

Teaching staff	Lecturer　Kouta Mayanagi, Ph.D. Lecturer　Tomohiro Yamashita, Ph.D. Assistant Professor　Tomohito Tanihara, Ph.D.
Research	・Structural biology ・Cryo-electron microscopy of macromolecular assemblies ・Structural analysis of DNA-Protein complexes ・Structural study of intrinsically disordered region (IDR) ・Drug discovery research to alleviate pain or itch by strategy of Green Pharma ・Discovery of new target molecules related to sensation

Molecular Pathobiology

Teaching staff	Professor　Ken-ichi Yamada, Ph.D. Assistant Professor　Mirinthorn Jutanom, Ph.D. Assistant Professor　Masami Abe, Ph.D. Assistant Professor　Lerksaipheng Pakawit, Ph.D. Assistant Professor　Eisho Kozakura, Ph.D.
Research	・Identification of Bioactive Oxidized Lipids and Elucidation of the Molecular Targets ・Molecular Mechanisms of Cell Death Caused by Lipid Peroxidation ・Molecular Mechanisms of Oxidized Lipids-related Diseases such as AMD, Dementia, and NASH ・Structural Analysis of Oxidized Lipids Produced in Pathological Conditions ・Drug Discovery Research Targeting Lipid Peroxidation

Analytical Chemistry

Teaching staff	Professor　Kenji Hamase, Ph.D. Associate Professor　Takeyuki Akita, Ph.D. Assistant Professor　Manabu Nakazono, Ph.D. Assistant Professor　Chiharu Ishii, Ph.D. Assistant Professor　Abedin Nuren, Ph.D.
Research	Drug discovery and diagnosis using chiral amino acid analysis. Anti-aging research focusing on isomerization of proteins. Industrial-academic-government cooperation research on heart, renal and metabolic disorders. Development of analytical reagents, materials and instruments. Development of novel functional foods, beverages and cosmetics including D-amino acids.

Medicinal Chemistry & Chemical Biology

Teaching staff	Professor　Akio Ojida, Ph.D. Assistant Professor　Shohei Uchinomiya, Ph.D.
Research	1) Development of Covalent Drug We are challenging drug discovery from chemical biology point of the view. We consider that drug discovery is research that creates a superior molecule for treatment of disease. In particular, we are actively promoting medicinal chemistry of covalent drug, which exert its function by forming covalent bond with targeted proteins. Throughout the covalent drug research, we explore new organic chemistry that robustly operates in biological systems. 2) Development of Fluorescent Probe We are promoting chemical biology research to elucidate biological functions by utilizing the developed molecule as chemical tool. We particularly focus on cell metabolism, and are thus developing a new fluorescent probe that can detect activity of intracellular metabolism. Throughout this research, we try to open the new way of cell metabolism analysis based on chemical biology approach.

Green Pharmaceutical Chemistry

Teaching staff	Professor　Takashi Ohshima, Ph.D. Assistant Professor　Takuma Tagami, Ph.D. Assistant Professor　Keitaro Umeno, Ph.D.
Research	The following topics are currently under investigation in our laboratories: 1. Digitalization-driven Transformative Organic Synthesis (Digi-TOS) 2. Development of New Environmentally Benign Catalytic Processes 3. Development of New Chemoselective Catalyses 4. Synthesis of Biologically Active Natural Products Using One-Pot Multistep Catalysis 5. Development of New Molecularly-Targeted Anticancer Drugs 6. Promotion of “Green Pharma”

Pharmaceutical Synthetic Chemistry

Teaching staff	Professor　Go Hirai, Ph.D. Lecturer　Makoto Yoritate, Ph.D. Assistant Professor　Hiroaki Matoba, Ph.D.
Research	In our group, several research projects based on synthetic organic chemistry are in progress: 1. To develop fields of pseudo-natural product chemistry and pseudo-glycoconjugates with new biological functions 2. Creation of biologically active and functional molecules based on lipids 3. Development of synthetic methods for novel natural product-like molecular scaffolds 4. Drug discovery research based on glycans or glycoconjugates

Molecular Transformation Chemistry

Teaching staff	Professor　Takashi Niwa, Ph.D. Assistant Professor　Satoshi Kurumada, Ph.D. Assistant Professor　Kazuki Terashima, Ph.D.
Research	Our group aims for developing novel reaction chemistry to create new transformation methodologies and molecular structures that can contribute to promoting interdisciplinary fields, such as life and medicinal sciences. For this purpose, we focus on synthetic organic and organometallic chemistry, functional molecule synthesis, and mechanistic studies. The research themes can be summarized below: 1. Exploring reaction chemistry that enables novel transformations 2. Developing late-stage modification methods with various external stimuli 3. Developing practical synthetic methods for functional molecules

International Chemical and Physical Pharmacy

Teaching staff	Associate Professor　Mariko Aso, Ph.D.　※will retire on March, 2027
Research	The research activities of our laboratory have focused on the following topics: 1. Design of artificial nucleic acids with useful functions 2. Site specific protein modification for development of biodrugs 3. Development of reactive molecules for protein functionalization

Reaction-Driven Drug Discovery

Teaching staff	Lecturer　Ayumi Osawa, Ph.D.
Research	Through the exploration of novel chemical reactions, we are dedicated to creating new molecules that no one has ever laid hands on before, with the vision of making a transformative impact on drug discovery and process chemistry. Our group particularly focus on the followings: 1. Development of catalytic methodologies for the generation of highly reactive species 2. Development of direct transformations of biomolecules 3. Drug discovery based on unexplored molecular scaffolds

Clinical Pharmacology and Biopharmaceutics

Teaching staff	Professor　Mayako Uchida, Ph.D. Associate Professor　Takehiro Kawashiri, Ph.D.
Research	The landmark of our research is to establish the rational and efficient personalized pharmacotherapy with sufficient safeness. The efficacy and safety of drug therapy is closely related to each pharmacokinetics, pharmacodynamics and toxicology. Therefore, we developed the various research techniques and intelligences as follows: 1. Clinical pharmacology research to optimize cancer chemotherapy 2. Research on drug safety evaluation using medical databases 3. Clinical application of biomarkers reflecting pharmacological and toxicological responses in pharmacotherapy. 4. Establishment of countermeasures against drug-induced neurotoxicity and nephrotoxicity based on clarification of their molecular mechanisms. 5. Pharmacogenomics in personalized immunosuppressive therapy in organ transplant patients. 6. Clarification of pathophysiological role of renal drug transporters in patients with acute kidney injury and/or chronic kidney disease. 7. Establishment of personalized anticancer chemotherapy by pharmacokinetic, pharmacodynamics and pharmacogenomic analyses. 8. Pharmaceutical informatics to improve pharmaceutical practice by epidemiological approach.

Molecular Synthetic Pharmaceutical Chemistry

Teaching staff	Associate Professor　Ryo Yazaki, Ph.D. Lecturer　Ayumi Osawa, Ph.D.
Research	We aim to develop synthetic methods for previously inaccessible molecules, thereby revealing new functions and properties. 1. Development of catalytic reaction for the synthesis of unique molecules 2. Creation of functional molecules utilizing catalytic reactions 3. Drug discovery research on medium-sized peptides

Information Analytics in Pharmacology

Teaching staff	Associate Professor　Hiroaki Hamano, Ph.D.
Research	・Elucidation of the mechanisms underlying adverse effects and exploration of therapeutic target molecules through the utilization of real-world data. ・Prediction of drug efficacy and adverse effects using real-world data and machine learning and their application to healthcare. ・Establishment of personalized medicine and disease risk evaluation by leveraging genetic information in community healthcare.

Drug Delivery System

Teaching staff	Professor　Yasunari Michinaka , Ph.D. Associate Professor　Hiroyuki Kojima, Ph.D. Associate Professor　Kenji Hyodo, Ph.D.
Research	The role of drug delivery system (DDS) is to provide optimized drug therapy for patients, enhancing the efficacy and safety by controlling drug release rate and the amount to be absorbed in body. Together with this, recent research effort is targeted at making drugs easier to administer to patients. Further role of employing DDS for companies is product value maximization, including life cycle management.

Translational Pharmaceutical Sciences

Teaching staff	Professor　Yoshiro Saito, Ph.D Professor　Susumu Nakade, Ph.D. Professor　Junko Kurokawa, Ph.D.
Research	・Regulatory science research to promote the development of radiopharmaceuticals (Prof. Saito) ・Research on the discovery and validation of biomarkers for adverse effects and their regulatory application (Prof. Saito) ・Clinical pharmacology research in drug development (Prof. Nakade) ・Advances in sex-difference pharmacology in the cardiovascular diseases (Prof. Kurokawa) ・Applications of human iPS cells in drug discovery (Prof. Kurokawa)

R&D Laboratory for Innovative Biotherapeutics Science

Teaching staff	Professor　Yoshikazu Yonemitsu, M.D., Ph.D. Associate Professor　Yosuke Morodomi, M.D., Ph.D. Assistant Professor　Noriko Yasuda, Ph.D.
Research	・Basic and clinical research and development in collaboration with Kyushu University spin-off ventures and pharmaceutical companies ・Development and clinical translation of innovative immune cell-based therapies for malignant tumors (NK-like cells) ・Functional analysis of genomic abnormalities in neuroblastoma and identification of candidate therapeutic targets ・Elucidation of the mechanisms underlying cancer progression and development of novel therapeutic approaches based on these mechanisms ・Elucidation of the role of platelets in the regulation of inflammatory responses ・Elucidation of the mechanisms of tumor progression mediated by platelet interactions ・Development of novel therapeutic strategies utilizing immune cells to overcome highly fibrotic cancers ・Targeting senescent cells using immune cells

For further information, please visit the following website.
http://www.phar.kyushu-u.ac.jp/eng/index.php