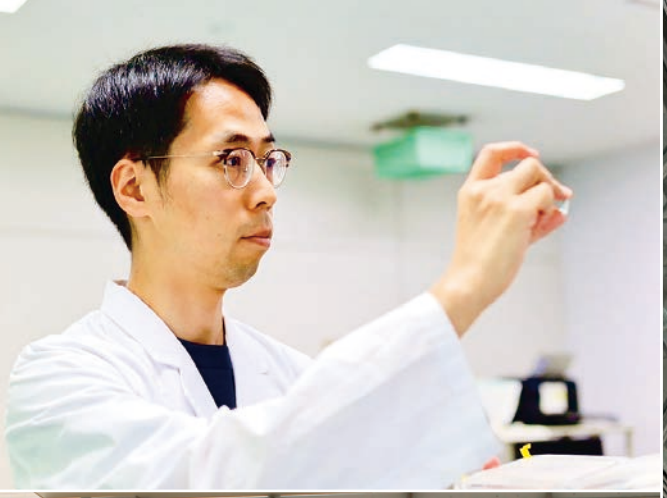
CHIBA UNIVERSITY

Graduate School and Faculty of

Pharmaceutical Sciences



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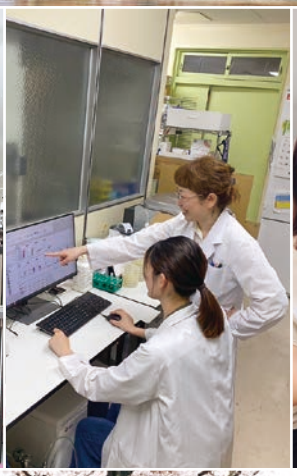
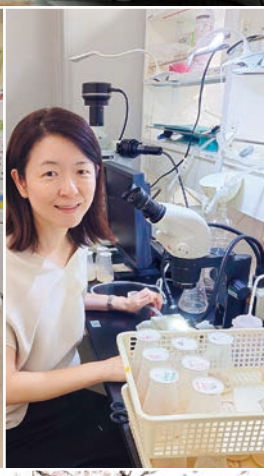




Message from the Dean

Research Director and Dean

Yasumitsu OGRA, PhD

Welcome to the guidebook of the Graduate School of Pharmaceutical Sciences and the Faculty of Pharmaceutical Sciences, Chiba University. The Faculty of Pharmaceutical Sciences at Chiba University has cultivated a long history and tradition since its foundation 130 years ago and, to this day, continues to be one of the preeminent schools of pharmaceutical sciences in Japan. We are genuinely proud of the traditions and values our staff and graduates have collectively passed on and cherished throughout our long history. Our graduates have grown to become national and international leaders in pharmaceutical sciences and related fields and spread their influence worldwide.

The Faculty of Pharmaceutical Sciences at Chiba University offers two courses, a six-year program at the Department of Pharmacy and a four-year program at the Department of Pharmaceutical Sciences, with a capacity of 50 and 40 undergraduate students, respectively. Department of Pharmacy, a six-year program, takes courses that include clinical training in hospitals and community pharmacies. It aims to train global leaders with a research mind and clinical skills as a pharmacist. On the other hand, in the Department of Pharmaceutical Sciences, the four-year mastery of fundamental and applied skills for working as a global leader is expected to cultivate research ability. Most of the graduates in this department go on to the master's course in our graduate school.

Since the inception of our graduate school, an international partnership has been a core component of our mission. Internationalization has been one of the critical strategies for our development. We continuously expand international partnerships with the faculty of pharmacy and/or related fields at overseas universities. Through these partnerships and collaborations, our students and faculty members have excellent opportunities to broaden their knowledge and expertise around their interests. We deeply cherish these education and research collaborations with international partners. Our graduate school, of course, is open to international students. Our global alumni have become leaders in their respective fields and have played essential roles in their home countries. In addition, our graduate school has already launched a double/dual degree program (DDP) with our partner universities. After evaluation qualification, the DDP candidate can receive two Ph.D. degrees issued by her/his home university and Chiba University. For undergraduate students in the faculty of pharmacy at our partner university, we offer an opportunity for a research internship. An internship student stays at each laboratory in our graduate school for several months to learn basic research skills and knowledge. We always try to provide a comprehensive and wide range of student support for internship students.

On behalf of all people in the Graduate School of Pharmaceutical Sciences and the Faculty of Pharmaceutical Sciences at Chiba University, I warmly and sincerely welcome your interest in studying and exploring opportunities for academic or research collaboration with our graduate school and faculty.

1 Outline and History

Outline of the Faculty and Graduate School of Pharmaceutical Sciences

The Faculty of Pharmaceutical Sciences at Chiba University has emerged as a monumental pharmaceutical institute since its inception in 1890 as part of the First Senior High School and is one of the oldest departments of pharmacy in the medical school in Japan. Since then, we have numerous graduated pharmacists and pharmaceutical scientists who have made outstanding contributions in healthcare industries, medical institutions, national regulatory authorities, universities and research institutions. We pride ourselves on these accomplishments.

Nowadays, both highly specialized knowledge and advanced skills are required for pharmacists. In 2006, the six-year program has been formally started for the education of pharmacy student in Japan considering this social demand. We offer a six-year program at the Department of Pharmacy mainly for the education of pharmacy student and also for education of future specialists in clinical development and in regulatory sciences. On the other hand, we offer a four-year program at the Department of Pharmaceutical Sciences primarily for the education of future scientists in life science, drug discovery and environmental science area. The entrance examination is divided for three type: the partition for each department and the same for these two departments. Most of the lectures for the first two years are same, and thus provide enough opportunity to students to choose their desired course in the future. In both departments, we train students to develop global leaderships and responsibilities, and solving problems in rational ways, in addition to learn various knowledge and skills in pharmaceutical sciences.

After graduation, students may further opt for the master or doctor degree course at the Graduate School of Medical and Pharmaceutical Sciences, also offered by our department under the supervision of accomplished scientists and researchers. Graduates of the Faculty of Pharmaceutical Sciences can take a two-year master's course in General Pharmaceutical Sciences. Furthermore, graduates of the six-year program may opt for the doctoral course. The programs at the Graduate School of Medical and Pharmaceutical Sciences are taught by staff belonging to the Graduate School of Pharmaceutical Sciences and the Graduate School of Medicine. In addition, researchers from pharmaceutical companies, the National Institute for Environmental Studies, and the Kazusa DNA Research Institute also participate in teaching at the graduate school as cooperating joint course teaching staff.

We educate students who want to make significant global contributions to human health and welfare under ideal environments.

History of the Faculty and Graduate School of Pharmaceutical Sciences

The Faculty of Pharmaceutical Sciences at Chiba University is located at Inohana campus, an ideal environment for research and education in the healthcare field. We promote and provide close interactions with the School of Medicine, the School of Nursing, Medical Mycology Research Center and the Hospital of Chiba University at Inohana campus.

Established in 1890, the Department of Pharmacy at the Medical School of the First Senior High School is the origin of the present Faculty of Pharmaceutical Sciences, Chiba University. It was inherited by the Pharmacy Department at the Chiba Medical College in 1901. The present faculty was reorganized as a faculty of Chiba University in 1949. The Graduate School of Pharmaceutical Sciences was established for the master's degree in 1964, and for the doctor's degree in 1979, respectively. The faculty included 17 laboratories in 1987, three of them were joined from the former Bioactivity Research Institute including laboratory of the hospital pharmacy. In 1994, four laboratories were joined further from the Faculty of Liberal Arts and from the Medical Plant Garden by a major reorganization of the university. Through reorganizations in 1996 and 2001, the current organization with a total of 25 laboratories (including three cooperative ones) was realized, which is now one of the largest faculties of pharmaceutical sciences in Japan. The reorganization in 2001 included establishment of the Graduate School of Medical and Pharmaceutical Sciences, which promotes collaborations between the Faculty of Pharmaceutical Sciences and the School of Medicine especially in the education. The existing Graduate School of Pharmaceutical Sciences focuses on the research now. We will actively incorporate research areas which are needed to respond to social needs of 21st century. We will pursue new research and enthusiastic education under innovative visions extending more than 130 years history of the faculty.

2 Guide to Entrance

Admission Policy

The Graduate School of Medical and Pharmaceutical Sciences has been established for interdisciplinary education and research of pharmaceutical and medical sciences. The objective of this school is to cultivate specialists with advanced research skills and the rich academic knowledge, cutting-edge life science researchers with knowledge of medical and pharmaceutical sciences, and clinical professionals with holistic perspectives. The certified person who graduated from a 4-year undergraduate course can apply for the Master Course. The certified person who completed a master course can apply for the 3-year or 4-year-Doctoral Course. The certified person who graduated from a 6-year course at the Faculty of Pharmacy can apply for the 4-year-Doctoral Course.

The Graduate School thus seeks applicants who fall into the following categories:

1) Person with a wide perspective and a flexible approach underpinned by a rich fund of basic knowledge.
2) Person with the enthusiasm to serve as responsible leaders of the next generation.
3) Person aiming to become researchers in the fields of medicine and pharmaceutical sciences with foundations in the life sciences and possessing creativity characterized by a fully international outlook.
4) Person possessing advanced specialized skills and research abilities with their sights set on becoming outstanding practitioners of advanced medicine with an integrated perspective that enables them to engage in team-based medical treatment.
5) Person aiming to become researchers and educators in the fields of medicine and pharmaceutical sciences who are able to contribute to the development of pharmaceutical products and to their clinical application.

Educational Courses

The Master Course, the Doctoral Course (4-Year Program) and the Doctoral Course (3-Year Program) of the Graduate School of Medical and Pharmaceutical Sciences consist of the following majors and fields.

Major	Field (Course)	Degree Obtained
Master Course		
General Pharmaceutical Sciences		Master of Pharmaceutical Sciences
Doctoral Course (4-Year Program)		
Frontier Medicine & Pharmacy	Pharmaceutical Sciences	Doctor of Philosophy (Pharmacy)
Doctoral Course (3-Year Program)		
Frontier Pharmaceutical Sciences		Doctor of Philosophy (Pharmaceutical Sciences)

International Partnership

Chiba University has partnerships with universities and educational institutions around the world. Additionally, our graduate school has own Memorandum of Understanding (MOU) for research collaborations and international exchange programs with foreign colleges. This network provides students with opportunities to engage in international exchanges, including exchange programs and overseas training programs. We also provide the double doctoral degree* program with colleges of Pharmacy, Silpakorn, Mahidol, and Chiang Mai Universities, Thailand, and this will be widely established with other colleges.

*Double Doctoral Degree, A double doctoral degree program, sometimes called a dual degree, involves a student's working for two different university degrees in parallel at both Chiba University and a different institution in different countries, completing them in less time than it would take to earn them separately.

"Major partners"

- China Pharmaceutical University (China)
- Shenyang Pharmaceutical University (China)
- Guangdong Pharmaceutical University (China)
- Zhejiang University (China)
- Fudan University (China)
- Hong Kong Baptist University (China)
- Seoul National University (Korea)
- Kaohsiung Medical University (Taiwan)
- University of Santo Tomas (Philippines)
- University of Alberta (Canada)
- Chulalongkorn University (Thailand)
- Mahidol University (Thailand)
- Silpakorn University (Thailand)
- Chiang Mai University (Thailand)
- Srinakharinwirot University (Thailand)
- Chulabhorn Graduate Institute (Thailand)
- Thammasat University (Thailand)
- University of Malaysia (Malaysia)
- Padjajaran University (Indonesia)

▲Visitors from College of Pharmacy, Seoul National University

3 Research Organization

Graduate School of Pharmaceutical Sciences

※ (Division) - (Section) - (Laboratory)

- **Drug Development Sciences**
  - **Pharmaceutical Sciences**
    - Pharmaceutical Chemistry / Synthetic Organic Chemistry / Middle Molecular Chemistry / Pharmaceutical Technology / Physical Chemistry / Molecular Design / Molecular Function
    - Physicochemistry and Preformulation Research (Takeda Pharmaceutical Company Limited)
- **Biopharmaceutical Sciences**
  - **Genomic Sciences in Drug Discovery**
    - Molecular Biology and Biotechnology / Biochemistry / Microbiology and Immunology / Infection Control Science
    - Human Genome Research [Kazusa DNA Research Institute]
  - **Environmental and Bioanalytical Sciences**
    - Molecular Imaging and Radiotherapy / Toxicology and Environmental Health / Forensic Toxicology
    - Center for Environmental Risk [National Institute for Environmental Studies]
- **Clinical Pharmaceutical Sciences**
  - **Molecular Pharmacotherapeutics**
    - Chemical Pharmacology / Pharmacology and Toxicology / Biopharmaceutics / Molecular Cardiovascular Pharmacology
  - **Advanced Practical Pharmacology**
    - Social Pharmacy / Practical Pharmacy / Clinical Pharmacology and Pharmacometrics / Clinical Pharmacy
    - Drug Informatics (sponsored by MatsukiyoCocokara & Co)

Laboratory of Pharmaceutical Chemistry

HP https://www.p.chiba-u.jp/lab/yakka/

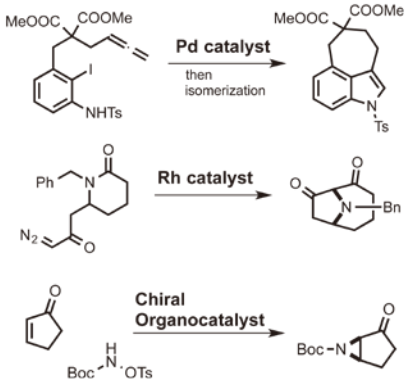
Professor	Lecturer	Assoc. Prof.	Assist. Prof.
Tetsuhiro NEMOTO, PhD	Shingo HARADA, PhD	Shinji HARADA, PhD*	Takahito KURIBARA, PhD*

Pharmaceutical Chemistry based on Catalytic Organic Synthesis

Organic chemistry is one of the most important subjects in pharmaceutical sciences because almost all medicines are organic compounds. Such pharmaceutical molecules are generally produced by the combination of various organic reactions. The research interests of the laboratory of pharmaceutical chemistry lie in the field of organic synthesis. We are investigating the development of highly efficient and selective catalytic synthetic methods applicable to the synthesis of functionalized bioactive molecules and natural products.

*Institute for Advanced Academic Research

Representative Reactions Developed by Our Group



Laboratory of Synthetic Organic Chemistry

HP https://www.p.chiba-u.jp/lab/gousei/

Professor
Kenzo YAMATSUGU, PhD

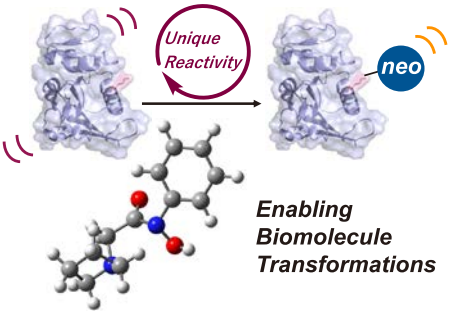
Assoc. Prof.
Shigeru ARAI, PhD

Assist. Prof.
Akitomo KASAHARA, PhD

Chemistry Enabling Biomolecule Transformations

Organic chemistry has been developed mainly for the purpose of producing desired (small) molecules in test tubes. However, when targeting peptides, proteins, or even cells, synthetic organic chemistry is extremely immature.

We are developing new synthetic chemistry that enables *on-demand* chemical transformation of biomolecules such as proteins. By discovering a new reactivity that functions under physiological conditions (i.e., in neutral water at 37 °C), we create methods to chemically modifying proteins and manipulating their functions. We particularly focus on designing unique molecules and finding their unique reactivities.



Laboratory of Middle Molecular Chemistry

HP https://www.p.chiba-u.jp/lab/skb/

Professor
Hayato ISHIKAWA, PhD

Assoc. Prof.
Mariko KITAJIMA, PhD

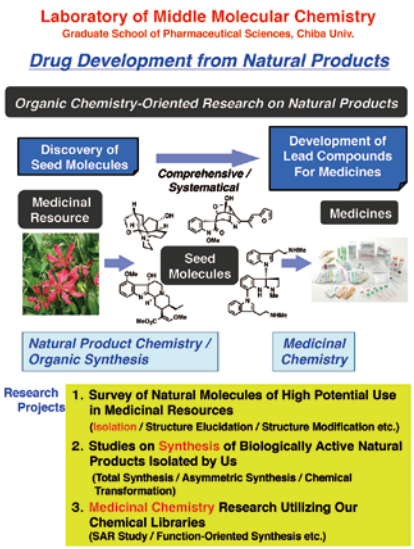
Assist. Prof.
Kenta RAKUMITSU, PhD

Drug Development from Natural Products

Our basic research objective is chemical, synthetic, and medicinal study on biologically active natural organic molecules produced by botanical medicinal resources. Following are three main ways of approach that we employ.

1) Survey of natural molecules of high potential use in medicinal resources (isolation, structure elucidation by means of spectroscopy and chemical reaction of natural molecules, etc.).

2) Studies on synthesis of biologically active natural molecules isolated by our hands (asymmetric total synthesis and chemical conversion of biologically active natural products). 3) Medicinal chemistry research by using our libraries of natural and synthetic compounds.



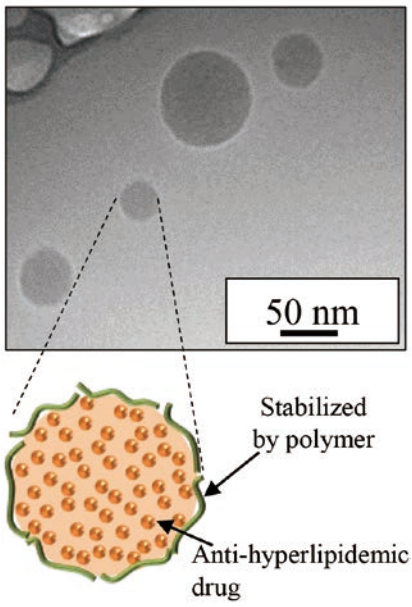
Laboratory of Pharmaceutical Technology

HP https://www.p.chiba-u.jp/lab/seizai/

Professor	Assoc. Prof.	Assist. Prof.
Kunikazu MORIBE, PhD	Kenjirou HIGASHI, PhD	Keisuke UEDA, PhD

Dissolving a Poorly Water-Soluble Drug

Don't you associate a term "medicine" with a tablet or a capsule? When medicines are taken orally, the drug in the medicines is absorbed into a body after dissolution at the stomach and the intestine. However, most of the recent developed drugs are poorly soluble in water, and the absorption into the body is low. In our laboratory, techniques to dissolve poorly water-soluble drugs have been developed. In late years, techniques to reduce the particle size of drugs into nano-level attract attention (Figure shows nanoparticles of anti-hyperlipidemic drug). One nm is a 1/1,000,000 size of one mm! The drug rapidly dissolves from the large surface area of nanoparticles and is effectively absorbed into the body.



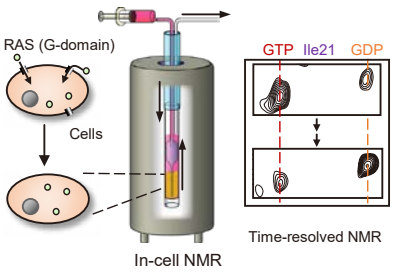
Laboratory of Physical Chemistry

HP https://www.p.chiba-u.jp/lab/bukka/

Professor	Assist. Prof.
Noritaka NISHIDA, PhD	Qingci ZHAO, PhD

Analyzing protein structure dynamics for drug development

Elucidating the three-dimensional structures of proteins provides crucial information for drug development. We utilize Nuclear Magnetic Resonance (NMR) spectroscopy to analyze the three-dimensional structures and dynamics of proteins in solution, thereby elucidating the mechanisms of their functional expression. Specifically, we are focusing on developing techniques for In-cell NMR, which enables NMR observations of the target protein within living cells. This technology will allow us to analyze the functional structures of disease-related proteins within cells and apply this knowledge to drug screening.



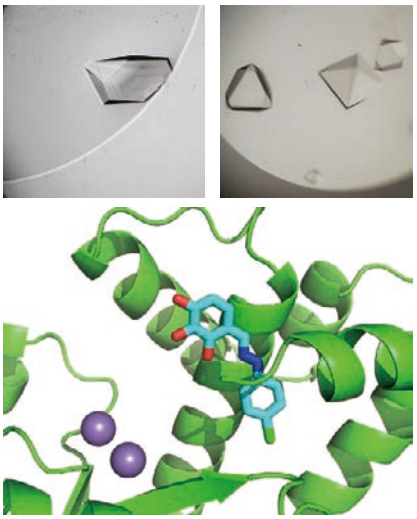
Laboratory of Molecular Design

HP https://www.p.chiba-u.jp/lab/riron/

Assoc. Prof.
Tyuji HOSHINO, PhD

Drug Design with computational and structural analysis

The binding structure between a protein and a drug is essential information in drug discovery and development. We use X-ray crystallography to clarify the molecular interactions between compounds and the target protein. By combining the obtained structural information with computer simulations, we can design new chemicals for drug candidates. The figures show the binding structure of an inhibitor compound to the influenza virus polymerase. We also perform a computational screening with a large chemical database based on the protein X-ray crystal analysis.



Laboratory of Molecular Biology and Biotechnology

HP https://www.p.chiba-u.jp/lab/idenshi/

Professor
Mami YAMAZAKI, PhD

Lecturer
Naoko YOSHIMOTO, PhD

Assist. Prof.
Ryosuke SUGIYAMA, PhD

Phytochemical Genomics of Medicinal Plants

Plant natural products are the most important medicinal resources. The understanding the molecular mechanisms of plant specialized metabolisms producing natural products could be applied for human health science in future. For this aim, genes involved in specialized metabolism in medicinal plants have been isolated and functionally characterized in this laboratory. Genomic function was also studied by using cutting-edge technologies such as transcriptomics, metabolomics and bioinformatics. This knowledge can be applied to innovative biotechnology for new medicinal resources.

Screening of differentially expressed gens by transomics
↓
Identifying biosynthetic genes
↓
Biotechnological application

Laboratory of Biochemistry

HP https://sites.google.com/faculty.gs.chiba-u.jp/pharm-biochem

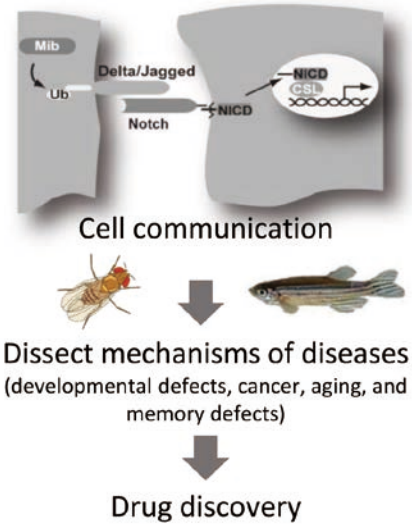
Professor
Motoyuki ITOH, PhD

Assoc. Prof.
Ayako TONOKI, PhD

Assist. Prof.
Takamasa MIZOGUCHI, PhD

Dissecting the Mechanisms of Cell Communication for Drug Discovery

The human body has many different types of cells. The cells communicate each other by sending a signal via proteins and chemicals. Impairment of cell communication causes many diseases. We have been studying these cell communication relating with developmental defects, cancer, aging, and memory defects. We are using zebrafish, Drosophila, and human culture cells as model systems to dissect diseases related with defects in cell communication and to apply the mechanisms of cell communication to drug-discovery.



Laboratory of Microbiology and Immunology

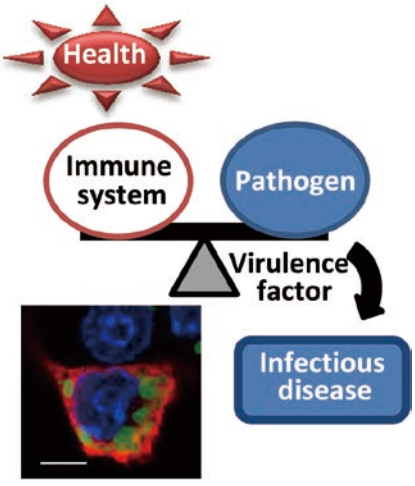
HP https://www.p.chiba-u.jp/lab/bisei/

Professor
Hiroto KAWASHIMA, PhD

Assoc. Prof.
Hiroko NAKATSUKASA, PhD

Drug Discovery Based on Molecular Studies of the Host-Microbe Interactions

Immune system of humans (hosts) rapidly responds to signals from outside and eliminates invaders such as pathogens, which leads to the maintenance of homeostasis. Pathogenic bacteria (pathogens), on the other hand, combat against immune system of the hosts using various virulence factors to cause infectious diseases. The balance between hosts and pathogens is critical for our health; i.e., if the former dominates health should be maintained whereas if the latter dominates infection is established. In our laboratory, we are studying molecular mechanisms of the host immune system by focusing on the role of glycans composed of unique combinations of monosaccharides. We are also studying molecular mechanisms of bacterial infection by focusing on particular virulence factors produced by pathogenic bacteria. We believe that these studies should lead to the development of new vaccines and antibiotics against infectious diseases.



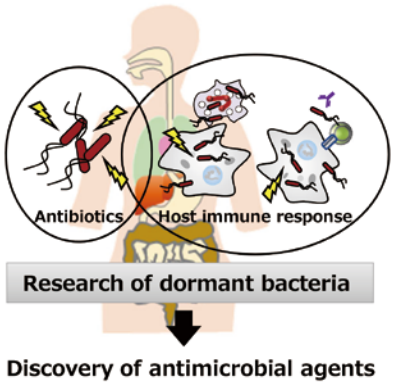
Laboratory of Infection Control Science

HP https://www.p.chiba-u.jp/lab/kassei/

Assoc. Prof.
Akiko TAKAYA, PhD

Research of dormant bacteria for antimicrobial drug discovery

Antibiotics are drugs that act on the pathogenic bacteria that cause bacterial infections. In recent years, the number of bacteria resistant to existing antibiotics has increased, which has become a global clinical problem. It has been found that dormant cells, which are generated in response to antibiotics and host immunity, are one of the factors that cause the emergence of antimicrobial-resistant bacteria. We are conducting research aimed at clarifying the mechanism that regulates dormant cells of pathogenic bacteria, finding new targets for the treatment of infectious diseases that are also effective against resistant bacteria, and screening compounds that can be seeds for drug discovery.



Laboratory of Molecular Imaging and Radiotherapy

HP https://www.p.chiba-u.jp/lab/housha/

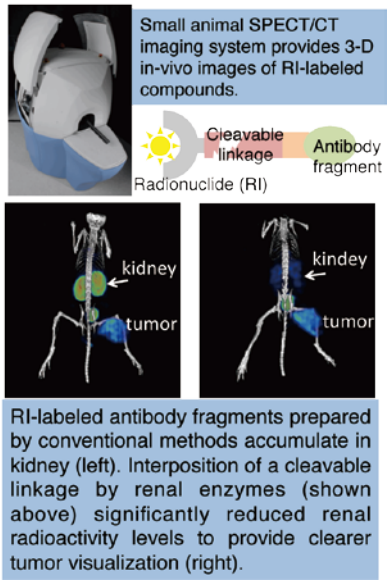
Professor
Tomoya UEHARA, PhD

Assist. Prof.
Hiroyuki SUZUKI, PhD

Assist. Prof.
Kento KANNAKA, PhD

Developing Novel Drug Delivery Systems of Radiation to Target Molecules

Radiopharmaceuticals are unique medical formulations containing radioisotopes used in major clinical areas for diagnosis and radiotherapy. When oncophilic molecules such as antibody fragments or peptides are used as the vehicles to deliver radioactivity to tumors for targeted imaging or radiotherapy, target selective radioactivity is enhanced by reducing the radioactivity accumulated in non-targeted tissues such as the liver or kidney. Thus design of new “bioconjugates” that hold cleavable linkers between the radio metal chelate and the oncophilic molecules is much emphasized in our laboratory.



RI-labeled antibody fragments prepared by conventional methods accumulate in kidney (left). Interposition of a cleavable linkage by renal enzymes (shown above) significantly reduced renal radioactivity levels to provide clearer tumor visualization (right).

Laboratory of Toxicology and Environmental Health

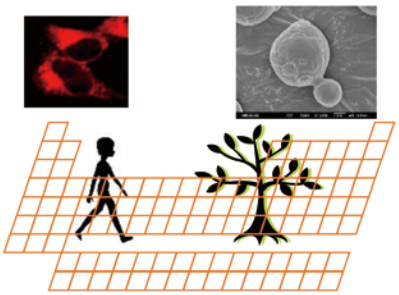
HP https://www.p.chiba-u.jp/lab/yobou/

Professor	Lecturer	Assist. Prof.
Yasumitsu OGRA, PhD	Yasunori FUKUMOTO, PhD	Yu-ki TANAKA, PhD

We are Tackling "Chemistry-Based Health Sciences."

Pharmaceutical students must learn several kinds of chemistry such as organic, inorganic, analytical, physiological and biological chemistry. Based on the Chemistries, the pharmaceutical students furthermore learn nutrition, food chemistry, hygiene, public health, epidemiology, environmental sciences and toxicology. In this faculty, we responsibly lecture these applied subjects. Our research is focusing on the toxicology of metal and metalloid recognized as an environmental contaminant. The biochemistry of essential metal and metalloid is also our interests. Namely, we intend to clarify the interaction between the meal/metalloid and biomolecule(s) at molecular and/or chemical reaction level. The mission of our research and education is to design the strategy for maintenance of healthy life, society and environment.

Metal Toxicology



Laboratory of Forensic Toxicology

Professor*	Lecturer
Yasumitsu OGRA, PhD	Sayaka NAGASAWA, PhD

Forensic analytical toxicology saves the rights of the dead

In recent years, the number of incidents and accidents involving drugs has been increasing. Namely, it is important to analyze the drug associated with the autopsy. The Laboratory of Forensic Toxicology conducts several researches on drugs, such as 1) examination of novel sample pretreatment methods and analytical techniques, 2) elucidation of post-mortem pharmacokinetics of drug in autopsied samples, and 3) development of novel analytical methods for illegal drugs and drugs being relevant with traffic accidents. In addition to the research and the education in Faculty and Graduate School of Pharmaceutical Sciences, we also conduct the analytical service of autopsied samples obtained at autopsy by the Department of Forensic Medicine, School of Medicine.

*Concurrent

The logo of LFT

The balance depicts justice and analysis, two ophidians express collaboration of forensic toxicology and legal medicine

Laboratory of Chemical Pharmacology

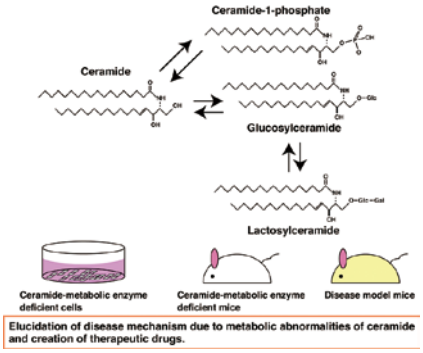
HP https://www.p.chiba-u.jp/lab/hinka/

Professor
Hiroyuki NAKAMURA, PhD

Assist. Prof.
Miaki UZU, PhD

Discovery of Cellular Targets for a New Drug

Pharmacology can be defined as the study of substances/reagents that interact with living systems in whole body, organs, and cells. These substances may be chemical compounds administrated to achieve therapeutic effects on process within the patients. We focus on the lipid signaling molecules such as sphingolipids and prostanoids, and study the pharmacological and/or cellular effects of these lipids. Major projects are a) development of chemicals to treat lipids-accumulating diseases such as Niemann-Pick disease and sphingo-lipidosis, b) changes of receptor-mediated signaling by lipids, c) physiological and patho-physiological roles of sphingoilipids and their intra- and inter-cellular traffic.



Laboratory of Pharmacology and Toxicology

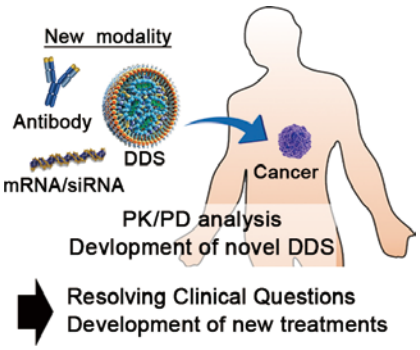
HP https://www.p.chiba-u.jp/lab/yakubutu/

Professor
Hiroto HATAKEYAMA, PhD

Assist. Prof.
Yuta TATEMOTO, PhD

Innovative Technologies for Understanding, Predicting and Controlling Drug Disposition

In recent years, “new modality” drugs have been developed, which are new treatment methods different from conventional drugs, such as cancer immunotherapy including immune checkpoint inhibitors, CAR-T cells, and photoimmunotherapy, nucleic acid drugs represented by mRNA vaccines against new coronaviruses, and drug delivery systems (DDS). In our laboratory, we are developing technologies to “analyze” the mechanism of action and disappearance of drugs and to “control” the pharmacokinetics of drugs in the body, tissues, and cells, as well as DDS for the purpose of maximizing the efficacy of new modality drugs and reducing their side effects. Through these studies, we hope to solve clinical problems and questions, and to pioneer drug discovery and drug development technologies that will contribute to the next generation of medicine.



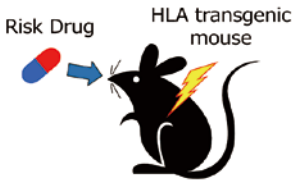
Laboratory of Biopharmaceutics

HP https://www.p.chiba-u.jp/lab/yakuzai/

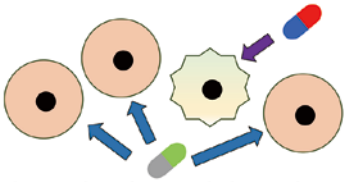
Professor	Lecturer	Assist. Prof.
Kousei ITO, PhD	Shigeki AOKI, PhD	Akinori TAKEMURA, PhD

Safe Drug Development and Efficient Use by Elucidating Underlying Mechanism of Adverse Drug Reactions

Among the side effects caused by drugs, those whose mechanism is unknown and whose incidence is rare are called idiosyncratic drug toxicity. Some of them are serious and fatal, but at present it is extremely difficult to predict the risks during drug development. Among those toxicities, we are particularly focusing on drug hypersensitivity related to HLA genetic polymorphism, and drug-induced liver injury involving multiple factors in a complicated manner. The policy of this research is to elucidate the onset mechanisms using our original animal models, and to construct feasible assay systems at early stage of drug development. We are also conducting cancer-related research aimed at investigating the factors that determine the susceptibility and resistance of anticancer drugs. Ultimately, we would like to contribute to developing highly safe drugs and proposing appropriate drug usage.



Reproduction of idiosyncratic drug toxicity in HLA transgenic mouse


Understanding the metabolic condition of cancer cells for selecting appropriate drugs

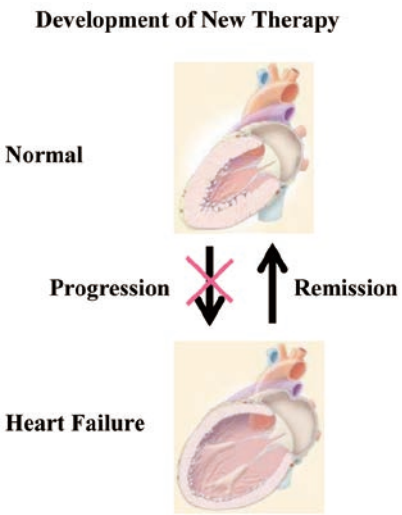
Laboratory of Molecular Cardiovascular Pharmacology

HP https://www.p.chiba-u.jp/lab/mcp/

Professor	Assoc. Prof.
Hiroyuki TAKANO, MD, PhD	Noritaka YAMAGUCHI, PhD

Molecular Mechanisms of Cardiovascular Disease and Development of New Therapy

The main focus of this laboratory is to explore the molecular mechanisms of cardiovascular diseases and develop new therapies for those diseases. Heart failure is a complex clinical syndrome that results from structural and functional disorders of the heart associated with a variety of cardiovascular diseases. The number of patients with heart failure has been increasing and heart failure is becoming a major public health problem. Over the past 20 years, there has been considerable progress in the treatment of heart failure with appearance of angiotensin converting enzyme inhibitors, angiotensin II receptor blockers, ß blockers and aldosterone antagonists. However, the number of deaths due to heart failure has been increasing steadily and further strategies for heart failure are needed.



Laboratory of Social Pharmacy

HP https://www.p.chiba-u.jp/lab/socialpharm/

Professor
Nobunori SATOH, PhD

Lecturer
Tomoya SAKURADA, PhD

Fostering a Medical Professional

The principal of our research and education is to foster a medical professional with a sense of ethics and mission who can play actively in a variety of field. Our research and education is conducted in cooperation with various clinical institutions in order to foster a clinical pharmacist as a researcher with knowledge in clinical pharmacy as well as an ability to think and judge in clinical research.

We also provide children with early exposure educations to foster their understandings on medical practice including pharmaceuticals and clinical pharmacists with professional educations.

Laboratory of Practical Pharmacy

HP https://www.p.chiba-u.jp/lab/jitsuyaku/

Professor
Yuko SEKINE, PhD

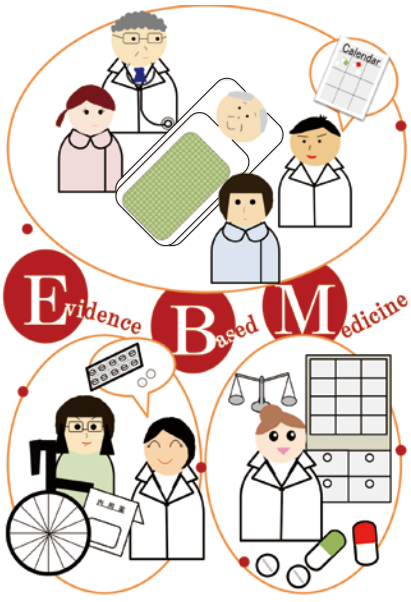
Assist. Prof.
Kazuki NAGASHIMA, PhD

Assist. Prof.
Takao UTSUMI

Pharmaceutical Choice with Based on Evidence

For pharmacists to play a proper role within the healthcare team, it is essential that they are involved in pharmacological treatment as scientists, meaning that they should be involved in evidence-based pharmacological treatment. In clinical practice, however, there are drugs that have been used year after year despite a lack of clear evidence for their use.

We, at the laboratory of Practical Pharmacy, are involved in the clinical research that verifies the use of pharmacological drugs. We are involved in several research themes that will lead to proper evidence-based use of pharmacological drugs by extracting actual problems encountered by pharmacists in the performance of their tasks. Also, by studying how to resolve problems in clinical practice, the laboratory aims to nurture clinical pharmacists who can play a key role in future pharmacological treatment.



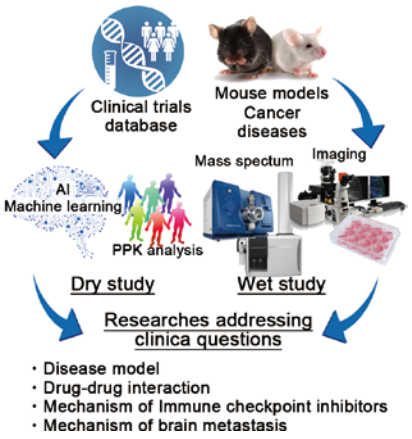
Laboratory of Clinical Pharmacology and Pharmacometrics

HP https://www.p.chiba-u.jp/lab/cpp/

Assoc. Prof.
Hiromi SATO, PhD

Precise understanding of diseases

The Laboratory of Clinical Pharmacology and Pharmacometrics (CPP) is engaged in both dry and wet research to analytically understand diseases and their consequences. Using computer modeling and AI, we are analyzing pharmacokinetics and the long-term progression of various diseases including heart failure, diabetes mellitus, Parkinson's disease, COPD, etc. from information from thousands of individual patients. In this era of diversified modalities, we are conducting basic research on immune checkpoint inhibitors and brain tumors through cell and animal experiments. We also contributed to the development of guidelines for new drug development in collaboration with PMDA and companies in the pharmacokinetics fields including drug interactions and modeling. CPP offers seminars online and supports seminars for post-graduate pharmacists. For more information, please refer to the website.



Department of Clinical Pharmacy

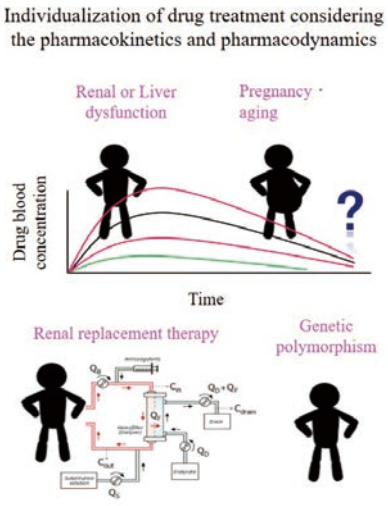
HP https://www.p.chiba-u.jp/lab/byouyaku/

Professor*	Assoc. Prof.*	Assist. Prof.
Itsuko ISHII, PhD	Shingo YAMAZAKI, PhD	Masayuki ISHIKAWA, PhD

Creating the information you need

Do you think that pharmacists need research abilities? We are collaborating with the Division of Pharmacy at Chiba University Hospital to conduct a wide range of research to solve clinical problems. For example, we conduct basic and clinical analysis on drug administration design in patients who is critically ill or with rare diseases. Furthermore, we challenge basic research on the accumulation of cholesterol in macrophages, which are involved in the onset and progression of arteriosclerosis and proliferation and pluripotency of mesenchymal stem cells. We would like to develop professionals who can not only use drug information but also create the medical information they need.

*Concurrent



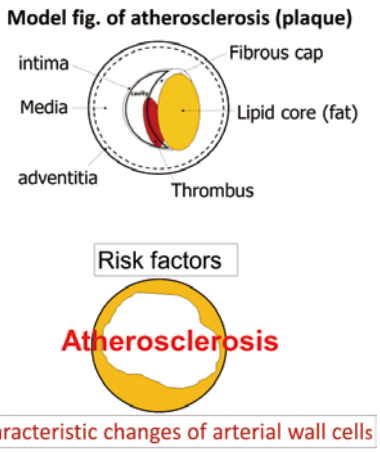
Department of Drug Informatics (sponsored by MatsukiyoCocokara & Co.) HP https://www.p.chiba-u.jp/lab/jyoho/

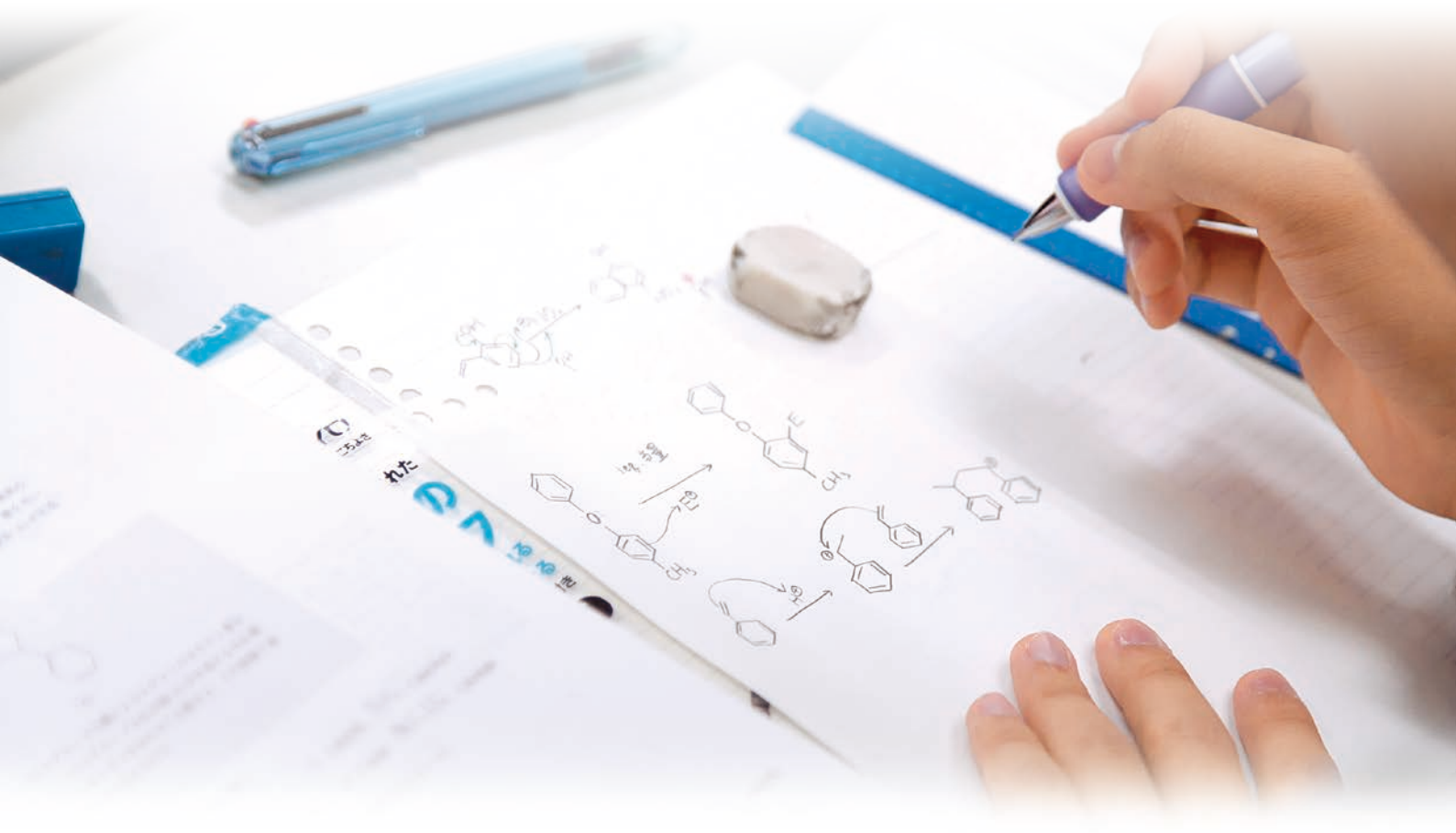
Professor	Assoc. Prof.	Assist. Prof.	Assist. Prof.
Tetsuto KANZAKI, MD, PhD	Satoko SUZUKI, PhD	Daisuke ISHIDA	Shinichi HIROSE

An artery is not only a tube, but is one kind of organs.

Atherosclerotic risk factors cannot explain all of the initiation and development of atherosclerosis. We sometimes experience advanced atherosclerosis with no risk factors. This means that arterial wall cells acted by risk factors have an important role in the formation of atherosclerotic lesions.

Our research purposes are to clarify the mechanism of the development and regression of atherosclerosis and to reduce atherosclerotic diseases by clinical trials. Our first project is to clarify the characteristic changes of arterial wall cells in diabetes. Second is clinical research to clarify the real of atherosclerotic diseases and metabolic changes of lipid and glucose in patients with psychiatric disorders. Thirdly, we try to contribute the proper use of medicine by examining practically the polypharmacy of elderly patients from the viewpoint of drug informatics. We plan to perform these projects with academic-industrial collaboration, a unique character in this research group.





Graduate School and Faculty of Pharmaceutical Sciences Chiba University, 2024

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