

List of Supervisors and Research Fields

As of May 1, 2025

Doctoral Course

Transdisciplinary Life Science Course, Division of Life Science

| Fields | Supervisors | | Research Topics |
|--------------------------------------|---|--|--|
| Bioinformation and Molecular Science | Professor | OSE Toyoyuki | Protein, nucleic acid, enzyme, signal transduction, infection regulation, disease related factor, X-ray/neutron structural biology, cryo-EM, NMR, quantum biology, protein crystallography, computer science, protein science, biophysics https://altair.sci.hokudai.ac.jp/g6new/ |
| | Associate Professor | UEHARA Ryota | Cell division, ploidy dynamics, chromosome abnormality, cytoskeleton, cancer, microscope, photocontrol, cell culture, zebrafish https://altair.sci.hokudai.ac.jp/uehara_lab/ |
| | Professor | NAKAOKA Shinji | mathematical biology, systems biology, bioinformatics, microbial ecology, precision medicine, multi-omics, mathematical modeling, machine learning, big data analysis https://altair.sci.hokudai.ac.jp/infmcb/index-e.html |
| Biomaterials Science | Professor Associate Professor Specially Appointed Associate Professor | MONDE Kenji TANIGUCHI Tohru YUYAMA Kohei | Chemical Biology, Chirality, Organic Synthesis, Inhibitors, Vibrational Circular Dichroism, Helix, Lipid Mediator, Glycoconjugate, Medicinal Chemistry, Organic Probe Synthesis, Deep Tissue Imaging, Extracellular vesicle https://altair.sci.hokudai.ac.jp/infchb/ |
| | Professor | FUJIWARA Koichi | Machine Learning, Biosignal Processing, Medical Device and Medical AI Development https://life.sci.hokudai.ac.jp/en/tl/lab/biomedical-data-science |

Transdisciplinary Life Science Course, Division of Life Science

| Fields | Supervisors | | Research Topics |
|---|--|--|--|
| Functional Cellular Science | Professor | NAKAMURA Kiminori | innate immunity, antimicrobial peptide, mucosal immunity, intestinal epithelial cell, Paneth cell, alpha-defensin, stem cell, intestinal microbiota, intestinal environment, inflammatory bowel disease, lifestyle diseases, mental health, aging, cancer, allergy, food and medicine, preventive medicine, therapeutics https://altair.sci.hokudai.ac.jp/infsig/english/ |
| | Associate Professor | KITAMURA Akira | Proteostasis, Molecular Chaperones, Protein aggregation, Protein folding, Fluorescence measurement, Bioimaging, Fluorescence Correlation Spectroscopy, Biomolecular Interaction, C. elegans https://altair.sci.hokudai.ac.jp/infmcd/English/top_eng.html |
| | Associate Professor | ADACHI Hiroaki | Plant-microbe interaction, Plant pathology, Plant immunity, Pathogen infection, Immune receptor, Effector, Signaling, Genome, Genetics, Protein-protein interaction, Biochemistry, Cell biology, Molecular biology, Plant physiology, Cell development, Live cell imaging, Structural biology, Structure modeling, Gene editing https://life.sci.hokudai.ac.jp/en/fa/lab/plant-immunity |
| Functional and Regulatory Life Science | Professor | HINOUE Hiroshi | Chemical biology, Medicinal chemistry, Glycomedicine, Automated glycosynthesis, Glycoblotting, Glycomics, Glycotyping, Glycobiology, Biomarker discovery, Dynamic epitope, Glycopeptide, Antibody drug, Glycoconjugates probe, Microarray, Glycoionization, Mass Spectrometry https://altair.sci.hokudai.ac.jp/g4/index.html |
| Biomolecular Adaptation Science (Inter-field Cooperation with AIST) | Visiting Professor Visiting Professor Visiting Associate Professor | KOMATSU Yasuo KONDO Hidemasa HIRANO Yu | Biotechnology, Structural biology, Nucleic acid engineering, Electrochemistry Molecular structure, Protein, Cell, Antifreeze protein, Functional DNA/RNA, microRNA (miRNA), Regulation of gene expression, Oligonucleotide therapeutics, Scanning electrochemical microscopy, Cell evaluation, Cryobiology, Biosensor https://altair.sci.hokudai.ac.jp/g_renkei/English/index.html |
| Frontier Biomaterials Science Inter-Field Cooperation with National Institute for Material Science (NIMS) | Visiting Associate Professor Visiting Associate Professor | YAMAZAKI Tomohiko YOSHIKAWA Chiaki | Nanomedicine, nanobiotechnology, protein engineering, nucleic acid-based drug, adjuvant, DNA aptamer, biosensor, immune system, nanoparticle, DNA delivery, Living radical polymerization, polymer brush, nanofiber, biointerface, biomaterials https://life.sci.hokudai.ac.jp/en/tl/lab/frontier-biomaterials-science https://www.nims.go.jp/group/frontierbiomaterials/en/ https://www.nims.go.jp/hokudai/en/ |

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List of Supervisors and Research Fields

As of April 1, 2025

Doctoral Course

Biosystems Science Course, Division of Life Science

| Fields | Supervisors | | Research Topics |
|---------------------------------|---------------------|----------------------|---|
| Higher Order Cellular Functions | Professor | FUJITA Tomomichi | plant, evolutionary development, stem cell, cell polarity, cell cycle, cell proliferation and differentiation, environmental stress, mechanical stress, abscisic acid, moss, space utilization science, terraforming, Physcomitrium patens, Arabidopsis thaliana https://keitai1.sci.hokudai.ac.jp/en.html/ |
| | Associate Professor | NARAMOTO Satoshi | (1) Molecular mechanisms of polar auxin transport, (2) Evolutionary process of polar auxin transport, (3) Roles of auxin in the morphological diversification of land plants, (4) Adaptation to environmental stress, (5) Evolution of symbiosis and leaf morphology https://keitai1.sci.hokudai.ac.jp/en.html/ |
| | Associate Professor | WATAHIKI Masaaki | auxin, feedback gene regulation, live imaging, plant morphogenesis http://www.sci.hokudai.ac.jp/watahiki/mkwhp/index.html |
| Environmental Life Science | Professor | NAKANO Ryohei Thomas | Plant and Microbial Molecular Ecology. Plant microbiota, plant-microbe interactions, growth-defense tradeoff. Plant and microbial molecular genetics, biochemistry, microbiota profiling, metagenomics, Arabidopsis thaliana, multi-omics, advanced bioinformatics. https://rtnakanolab.com/ |
| | Associate Professor | ITO Hidetaka | plants, epigenetics, transposon, environmental stress https://sgd.sci.hokudai.ac.jp/ |
| | Professor | CHIBA Yukako | mRNA stability, stress response, arabidopsis https://chibalab.main.jp/lab/ |
| | Associate Professor | SATO Takeo | environmental adaptation, ubiquitin signal, nutrient metabolism, signal transduction, nutrient stress, plant immunity, proteomics https://biol.sci.hokudai.ac.jp/en/ |

Biosystems Science Course, Division of Life Science

| Fields | Supervisors | | Research Topics |
|---|----------------------------------|------------------------------------|---|
| Animal Behavior and System Control | Professor | OGAWA Hiroto | brain, neuroscience, electrophysiology, imaging, information processing, neural circuit, coding, sensorimotor integration, insect https://ogawalab.sci.hokudai.ac.jp/English/ |
| | Professor Lecturer | WADA Kazuhiro TSUNEMATSU Tomomi | vocal learning, critical period, epigenetics, neural activated gene, songbird, neuroethology, genome, behaviour, DNA methylation, stuttering, dreaming, sleeping, genetically engineered mice http://www.wada-lab.org/ https://www2.sci.hokudai.ac.jp/faculty/en/researcher/tomomi-tsunematsu |
| | Professor | SOMA Masayo | behavior, cognition, communication, bird song, learning, life history http://www.lfsci.hokudai.ac.jp/search/system/soma.html |
| | Associate Professor | TAKEUCHI Yuichi | Laterality, Intraspecific polymorphism, Learning, Phenotypic plasticity, Neural circuits, Development of behavior, Evolution, Gene expression http://www.neuroecology-takeuchi.com/english.html |
| | Associate Professor | TANAKA Nobuaki | sensory processing, neuroendocrine system, Drosophila genetics, pygmy squid https://sites.google.com/view/nktanakalab |
| Reproductive and Developmental Sciences | Professor | KATSU Yoshinao | endocrinology, steroid hormone, nuclear receptor, evolution, endocrine disruptor https://www.repdev-katsu.jp/index.html |
| | Professor | KUROIWA Asato | sex determination, sex chromosome, X chromosome inactivation, evolution, the spiny rat, mouse, chicken, emu https://sites.google.com/site/kuroiwaagroup/home |
| | Professor Associate Professor | KIMURA Atsushi KITADA Kazuhiro | transcription, epigenetics, gene regulation, long noncoding RNA, multifunctional genome, reproduction, spermatogenesis, protease, model animals, human diseases, genome modification, gene function, mouse, rat https://apkimuralab.com/ https://www2.sci.hokudai.ac.jp/dept/bio/teacher/kitada-kazuhiro |
| | Associate Professor | KOTANI Tomoya | oocyte, embryonic development, maternal factor, real-time imaging, zebrafish, mouse |
| | Associate Professor | OGIWARA Katsueki | ovary, ovulation, follicle selection, endocrine regulation, mouse, zebrafish, medaka https://sites.google.com/view/hokudai-ogiwaralab-eng/home |
| | Associate Professor | MIZUSHIMA Shusei | birds, early development, fertilization, molecular biology, primordial germ cell |

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List of Supervisors and Research Fields

As of June 1, 2025

Doctoral Course

Biomedical and Pharmaceutical Science Course, Division of Science

| Laboratory | Supervisors | | Research Topics |
|--------------------------------------|---|---|---|
| Biochemistry | Professor Lecturer | KIHARA Akio NAGANUMA Tatsuro | lipid, barrier function, ceramide, metabolism https://www.pharm.hokudai.ac.jp/seika/en/ |
| RNA Biology | Professor Associate Professor | NAKAGAWA Shinichi MAITA Hiroshi | noncoding RNA, epigenetics, nuclear structures, RNA processing https://sites.google.com/rnabiol.com/home |
| Immunology | Professor | KIMURA Shunsuke | Epithelial cells, Mucosal immunology, immunity, inflammation, infection, oncogenesis, signal transduction |
| Biomolecular Science | Professor Professor Associate Professor | MAENAKA Katsumi KUROKI Kimiko KITA Shunsuke | immunology, infectious disease, cell surface receptor, X-ray crystallography, cryo electron microscopy, protein engineering, biologics, drug discovery, chemical library screening, in silico screening, virology, microbiology https://convallaria.pharm.hokudai.ac.jp/bunshi/en/index.php |
| Natural Products Chemistry | Professor Associate Professor | WAKIMOTO Toshiyuki MATSUDA Kenichi | bioactive natural products, isolation, structure elucidation, stereochemistry, structure-activity relationship, molecular targets, biosynthesis, drug leads, bioprobes https://www.pharm.hokudai.ac.jp/tennen/en/ |
| Fine Synthetic Chemistry | Professor Associate Professor | SATO Yoshihiro OONISHI Yoshihiro | organic synthesis, organometallic chemistry, transition-metal-catalysis, asymmetric catalysis, natural product synthesis, utilization of gaseous molecules, green chemistry https://hokudaigouka.main.jp/engl/ |
| Synthetic Natural Products Chemistry | Professor Associate Professor | NAGATOMO Masanori WATANABE Mizuki | total synthesis, functional analysis, biologically active natural products, synthetic chemistry, organic synthesis, organic chemistry, structure-activity relationship, ion channel, anticancer, antimicrobial, densely functionalized molecules, drug leads, computational chemistry, flow reaction, radical reaction https://www.pharm.hokudai.ac.jp/tengo_105/home-en/ |

Biomedical and Pharmaceutical Science Course, Division of Science

| Laboratory | Supervisors | | Research Topics |
|--|--|--|---|
| Molecular Catalysis | Professor Associate Professor | URAGUCHI Daisuke ASANO Keisuke | Molecular Catalysis, Organic Synthesis, Mechanistic Analysis |
| Pharmacology | Professor Associate Professor Associate Professor | MINAMI Masabumi AMANO Taiju KIMURA Iku | neuropharmacology, electrophysiology, emotion, pain, addiction, BBB https://www.pharm.hokudai.ac.jp/yakuri/ |
| Molecular Design of Pharmaceutics | (Professor) | (YAMADA Yuma) [※] | drug delivery system, organelle-targeting, nanomedicine, gene delivery, siRNA delivery, intracellular trafficking, imaging, vaccine, cancer therapy https://www.pharm.hokudai.ac.jp/yakusetu/en |
| (Innovative Nanomedicine) | Professor | HARASHIMA Hideyoshi | vascular-targeted drug delivery, nanomedicine, active targeting, tumor, liver, adipose tissue, specific ligand https://www.pharm.hokudai.ac.jp/mirai/ |
| Molecular Imaging | (Professor) Associate Professor | (OGAWA Mikako) [※] IEDA Naoya | molecular imaging, imaging probe, PET, optical imaging, MRI https://www.pharm.hokudai.ac.jp/bunseki/en/index.html |
| Center for Research and Education on Drug Discovery (Synthetic Drug Discovery) | Professor Lecturer | ICHIKAWA Satoshi KATSUYAMA Akira | organic synthesis, natural products, drug discovery, chemical library screening, in silico screening, intractable disease, chemical biology https://www.pharm.hokudai.ac.jp/gouseiyaku/en/index.php |
| Center for Research and Education on Drug Discovery (Biologics and Drug Development) | Professor Associate Professor Specially Appointed Lecturer | MAENAKA Katsumi TARU Hidenori NOMURA Takao | biologics, middle molecules, drug discovery, chemical library screening, cryo electron microscopy, disease models, in silico screening, intractable disease, https://www.pharm.hokudai.ac.jp/soyaku/en/laboratory_o2.html |

Biomedical and Pharmaceutical Science Course, Division of Science

| Laboratory | Supervisors | | Research Topics |
|------------------------|---------------------|------------------|--|
| Genome Biology | Associate Professor | OHTA Shinya | genome, chromatin, aging, cellular senescence, cancer, human, yeast model, genomics, proteomics, microscopy, biochemistry https://www.igm.hokudai.ac.jp/3dgenome/en/index.html |
| Microbial Oncology | Associate Professor | KAMIYA Naoko | <i>Helicobacter pylori</i> , <i>cagA</i> , gastric carcinogenesis |
| Molecular Cell Biology | Associate Professor | OKAZAKI Tomohiko | Our research goal is to understand how cells integrate numerous external and internal signals into meaningful biological outputs by focusing on (1) post-translational modifications and logistics of proteins, or (2) inter-organelle communications. In addition, we are also studying (3) the interactions between immune and nervous systems and (4) neuroethology using <i>Drosophila</i> . Through these studies, we wish to discover the sophisticated (crazy cool) systems of living organisms for surviving in a complex world. https://www.igm.hokudai.ac.jp/molcell/en/ |

※ Specialized Professor of Division of Clinical Pharmacy

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List of Supervisors and Research Fields

As of May 1, 2025

Doctoral Course

Division of Soft Matter, Graduate School of Life Science

| Fields | Supervisors | | Research Topics |
|----------------------------------|---------------------|-------------------|---|
| Soft Matter Materials Science | Professor | GONG Jian Ping | Soft & wet matter, polymer gel, double network gel, gel more durable than metal, self-healing gel, self-growing gel, bonding gel, thermal toughening gel, low friction gel, super lubricating gel, color changing gel, Sea glue gel, artificial cartilage, cell scaffold gel https://altair.sci.hokudai.ac.jp/g2/en/ |
| | Associate Professor | NAKAJIMA Tasuku | |
| | Associate Professor | NONOYAMA Takayuki | |
| | Associate Professor | INDEI Tsutomu | |
| Soft Matter Materials Science | Professor | KUROKAWA Takayuki | Polymer gel, Double network gel, Friction of gel, Artificial cartilage, Cell culture substrate, Soft composite material, Adsorption and adhesion, Donnan potential https://altair.sci.hokudai.ac.jp/tsl/en/ |
| | Professor | LI Xiang | Polymer solution, polymer gel, rubber, nanostructure, molecular dynamics, light scattering, X-ray scattering, neutron scattering, Raman spectroscopy, rheology, polymer synthesis, polymer physics https://www.xiangli-lab.com/en/ |
| Biomolecular Soft Matter | Associate Professor | KIKUKAWA Takashi | Photoactive proteins, photobiology, rhodopsin, optogenetics, directed molecular evolution, membrane protein, ion pump, membrane transport, transporter https://altair.sci.hokudai.ac.jp/infana/ |
| | Professor | AIZAWA Tomoyasu | protein science, structural biology, protein engineering, nuclear magnetic resonance (NMR), metabolome, biomarker research, gut microbiota, biological defense, innate immunity, antimicrobial peptides, allergen, cytokines, microbiological control https://altair.sci.hokudai.ac.jp/g5/english.php |

Division of Soft Matter, Graduate School of Life Science

| Fields | Supervisors | | Research Topics |
|---|--|--|--|
| Soft Matter Biophysics | Professor | HAGA Hisashi | Cell Mechanics, Collective Cell Behavior, 3D Morphogenesis, Cancer Invasion, Atomic Force Microscopy https://altair.sci.hokudai.ac.jp/g3/ |
| | Professor Associate Professor | NAKAGAKI Toshiyuki NISHIGAMI Yukinori | ciliate, amoeba, slime mold, protozoa, nematode, live cell imaging, field work, evolutionary ecology, biomechanics, locomotion, memory and learning, mathematical modeling, computer simulation, nonlinear dynamics, active soft matter, Belousov-Zhabotinski reaction, pattern formation, scaling theory, network of biochemical reactions https://pel.es.hokudai.ac.jp/ |
| Soft Matter Medical Science | Associate Professor | TSUDA Masumi | biomaterial, cancer stem cell, molecular targeted therapy, regenerative medicine, cartilage regeneration, neuroregeneration http://patho2.med.hokudai.ac.jp |
| | Associate Professor | ONODERA Tomohiro | Orthopaedic Surgery, Joint Surgery, Regenerative Medicine, Musculoskeletal System, Animal Model, Scaffold, Cartilage, Bone, Meniscus, Biomaterials, Soft Matter, Clinical Application, Translational Research http://www.hokudaiseikei.jp/ |
| Functional Soft Matter Inter-Field Cooperation with National Institute for Materials Science (NIMS) | Visiting Professor Visiting Associate Professor | NAKANISHI Takashi UEKI Takeshi | molecular liquid, ionic liquid, polymer gel, block copolymer, stimuli-responsive materials, optoelectronic function, self-assembly, dynamic biomimetics, sensor, actuator https://life.sci.hokudai.ac.jp/en/sm/lab/functional-soft-matter https://www.nims.go.jp/funct_mol_g/en/index.html https://life.sci.hokudai.ac.jp/en/sm/staff/ueki-takeshi |

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