

List of Supervisors and Research Fields

Doctoral Course

Transdisciplinary Life Science Course, Division of Life Science

Fields	Supervisors		Research Topics
Bioinformation and Molecular Science	Associate Professor	OSE Toyoyuki	Protein, nucleic acid, translational control, signal transduction, infection regulation, disease related factor, X-ray/neutron structural biology, quantum biology, protein crystallography, computer science, protein science, biophysics https://altair.sci.hokudai.ac.jp/g6/index-e.html
	Associate Professor	UEHARA Ryota	Cell division, ploidy, cytoskeleton, motor protein, self organization, cancer, aging, liver disease, microscopic analysis, biochemistry, molecular biology, cell culture, mouse model, transcriptome, mathematical modeling, compound screen https://tenure-track.cris.hokudai.ac.jp/lab/uehara/
	Associate 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 Lecturer	MONDE Kenji TANIGUCHI Tohru	Chemical Biology, Chirality, Organic Synthesis, Inhibitors, Vibrational Circular Dichroism, Helix, Lipid Mediator, Glycoconjugate, Medicinal Chemistry https://altair.sci.hokudai.ac.jp/infchb/
	Professor Associate Professor	TAMAOKI Nobuyuki Yuna Kim	molecular machine, motor protein, photochromic compound, azobenzene, liquid crystal, self-organization, inter-molecular interaction, organic synthesis, nano bio-machine, single molecular measurement, chirality http://tamaoki.es.hokudai.ac.jp/english/index.html

Transdisciplinary Life Science Course, Division of Life Science

Fields	Supervisors		Research Topics
Functional Cellular Science	Associate 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, food and medicine, preventive medicine, therapeutics https://altair.sci.hokudai.ac.jp/infsig/english/
	Lecturer	KITAMURA Akira	Fluorescence Correlation Spectroscopy, Fluorescence Cross Correlation Spectroscopy, single molecule detection, neurodegenerative disease, ALS, glaucoma, molecular interaction, Live cell imaging, proteostasis, protein aggregation, C. elegans https://altair.sci.hokudai.ac.jp/infmcd/English/top_eng.html
Functional and Regulatory Life Science	Professor Professor	NISHIMURA Shin-Ichiro HINOUE Hiroshi	Chemical biology, Medicinal chemistry, Glycomedicine, Automated glycosynthesis, Glycomics, Glycobiology, Biomarker discovery, Dynamic epitope, Glycopeptide, Antibody drug, Glycoconjugates probe, Microarray https://altair.sci.hokudai.ac.jp/g4/index.html
Biomolecular Adaptation Science (Inter-field Cooperation with AIST)	Visiting Professor Visiting Associate Professor Visiting Associate Professor	KOMATSU Yasuo KONDO Hidemasa HIRANO Yu	Antifreeze protein, Ice-binding function, Snow mold fungi, Gene expression, Biomolecular NMR, X-ray structural analysis, Biodiversity, Cell-preservation peptide, Reporter Assay, 3D molecular structure, Gene detection, Nucleic acid drugs, Functional DNA/RNA, Molecular detection, Cell-function evaluation, Electrochemistry https://altair.sci.hokudai.ac.jp/g_renkei/top_e.html https://unit.aist.go.jp/bpri/bpri-bimo/research1.html
Frontier Biomaterials Science Inter-Field Cooperation with National Institute for Material Science (NIMS)	Visiting Professor Visiting Associate Professor	HANAGATA Nobutaka YAMAZAKI Tomohiko	Nanomedicine, nanobiotechnology, protein engineering, nucleic acid-based drug, adjuvant, DNA aptamer, biosensor, immune system, comprehensive gene analysis, nanoparticle, DNA delivery, nanotoxicity https://www.nims.go.jp/hokudai/index_en.html https://life.sci.hokudai.ac.jp/en/tl/lab/frontier-biomaterials-science http://www.nims.go.jp/group/nanomedicine/english/index.html

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List of Supervisors and Research Fields

Doctoral Course

Biosystems Science Course, Division of Life Science

Fields	Supervisors		Research Topics
Higher Order Cellular Functions	Professor Associate Professor	FUJITA Tomomichi WATAHIKI Masaaki	plant, evolutionary development, stem cell, cell polarity, cell cycle, cell proliferation and differentiation, environmental stress, abscisic acid, auxin, gene regulation, live imaging, moss, space utilization science, <i>Physcomitrella patens</i> , <i>Marchantia polymorpha</i> , <i>Arabidopsis thaliana</i> https://www.sci.hokudai.ac.jp/PlantSUGOIne_en/ http://www.sci.hokudai.ac.jp/watahiki/mkwhp/index.html
Environmental Life Science	Associate Professor	ITO Hidetaka	plants, epigenetics, transposon, environmental stress https://www.sci.hokudai.ac.jp/Cellfunction_Structure3/
	Associate Professor	CHIBA Yukako	mRNA stability, stress response, arabidopsis https://www.sci.hokudai.ac.jp/~yukako/
	Associate Professor	SATO Takeo	environmental adaptation, ubiquitin signal, nutrient metabolism, signal transduction, nutrient stress, plant immunity, proteomics http://www.sci.hokudai.ac.jp/CSF2-web/en
Animal Behavior and System Control	Professor	OGAWA Hiroto	brain, neuroscience, electrophysiology, imaging, information processing, neural circuit, coding, sensorimotor integration, insect https://www.sci.hokudai.ac.jp/~hogawa/index2.html
	Professor	WADA Kazuhiro	vocal learning, critical period, epigenetics, neural activated gene, songbird, neuroethology, genome, behaviour, DNA methylation, stuttering http://www.wada-lab.org/
	Associate Professor	SOMA Masayo	behavior, cognition, communication, bird song, learning, life history http://www.lfsci.hokudai.ac.jp/search/system/soma.html
	Associate Professor	TANAKA Nobuaki	sensory processing, neuroendocrine system, Drosophila genetics, pygmy squid https://www.sci.hokudai.ac.jp/grp/tanaka/lab/index.html

Biosystems Science Course, Division of Life Science

Fields	Supervisors		Research Topics
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, fertilization, evolution, the spiny rat, chicken, quail, mouse https://sites.google.com/site/kuroiwagroup/home
	Associate Professor	KITADA Kazuhiro	model animals, human diseases, genome modification, gene function, mouse, rat https://sites.google.com/site/kitadalab/
	Associate Professor	KOTANI Tomoya	oocyte, embryonic development, maternal factor, real-time imaging, zebrafish, mouse
	Associate Professor	KIMURA Atsushi	transcription, epigenetics, gene regulation, long noncoding RNA, multifunctional genome, reproduction, spermatogenesis, protease https://www.sci.hokudai.ac.jp/~akimura/Molecular/Welcome.APK.html
	Associate Professor	OGIWARA Katsueki	ovary, ovulation, follicle selection, endocrine regulation, mouse, zebrafish, medaka https://www.sci.hokudai.ac.jp/~kogi/Reproductive2/Welcome.html

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List of Supervisors and Research Fields

Doctoral Course

Biomedical and Pharmaceutical Science Course, Division of Science

Laboratory	Supervisors		Research Topics
Biochemistry	Professor Associate Professor	KIHARA Akio SASSA Takayuki	lipid, membrane, biochemistry, metabolism, lipid mediator, barrier formation http://www.pharm.hokudai.ac.jp/seika/index.html
RNA Biology	Professor Lecturer	NAKAGAWA Shinichi MAITA Hiroshi	noncoding RNA, epigenetics, nuclear structures, RNA processing https://sites.google.com/site/hokudairnabiologyj/home
Immunology	Professor Lecturer Lecturer	MATSUDA Tadashi MUROMOTO Ryuta KASHIWAKURA Junichi	host defense, immunity, inflammation, infection, cytokine, oncogenesis, signal transduction http://www.pharm.hokudai.ac.jp/eisei/
Biomolecular Science	Professor Associate Professor	MAENAKA Katsumi KUROKI Kimiko	immunology, infectious disease, cell surface receptor, X-ray crystallography, protein engineering, biologics, drug discovery, chemical library screening, in silico screening, virology, microbiology http://convallaria.pharm.hokudai.ac.jp/bunshi/
Natural Products Chemistry	Professor Lecturer	WAKIMOTO Toshiyuki MATSUDA Kenichi	bioactive natural products, isolation, structure elucidation, stereochemistry, structure-activity relationship, molecular targets, biosynthesis, drug leads, bioprobes http://www.pharm.hokudai.ac.jp/tennen/index.html
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 http://gouka.pharm.hokudai.ac.jp/
Synthetic and Industrial Chemistry	Professor Associate Professor	MATSUNAGA Shigeki YOSHINO Tatsuhiko	synthetic organic chemistry, asymmetric catalysis, bimetallic cooperative catalysis, natural product synthesis, oligosaccharide synthesis based on new glycosidation method http://www.pharm.hokudai.ac.jp/yakuzou/

Biomedical and Pharmaceutical Science Course, Division of Science

Laboratory	Supervisors		Research Topics
Organic Chemistry for Drug Development	Professor Associate Professor	SHUTO Satoshi WATANABE Mizuki	medicinal chemistry: drug design http://www.pharm.hokudai.ac.jp/yuuki/index.html
Molecular Catalysis	Professor	URAGUCHI Daisuke	Molecular Catalysis, Organic Synthesis, Mechanistic Analysis
Pharmacology	Professor Associate Professor Associate Professor	MINAMI Masabumi AMANO Taiju TAKEUCHI Yuichi	neuropharmacology, electrophysiology, emotion, pain, addiction, BBB http://www.pharm.hokudai.ac.jp/yakuri/index.html
Molecular Design of Pharmaceuticals	Professor (Associate Professor)	HARASHIMA Hideyoshi (YAMADA Yuma) ^{**}	drug delivery system, organelle-targeting, nanomedicine, gene delivery, siRNA delivery, intracellular trafficking, imaging, vaccine, cancer therapy http://www.pharm.hokudai.ac.jp/yakusetu/index.html
(Innovative Nanomedicine)	Professor	Harashima Hideyoshi	vascular-targeted drug delivery, nanomedicine, active targeting, tumor, liver, adipose tissue, specific ligand http://www.pharm.hokudai.ac.jp/mirai/
Molecular Imaging	(Professor) Lecturer	(OGAWA Mikako) ^{**} TAKAKURA Hideo	molecular imaging, imaging probe, PET, optical imaging, MRI
Molecular and Cellular Medicine	Professor	OHNISHI Shunsuke	Mesenchymal stem cells, Cell therapy, Regenerative medicine, Kampo medicine
Advanced Prevention and Research Laboratory for Dementia	Specially Appointed Professor Visiting Professor Associate Professor Visiting Associate Professor	SUZUKI Toshiharu KOMANO Hiroto TARU Hidenori HATA Saori	neuroscience, cell biology, genetics, synapse, protein trafficking, vesicular trafficking neurodegenerative diseases, Alzheimer's disease, biomarker

Biomedical and Pharmaceutical Science Course, Division of Science

Laboratory	Supervisors		Research Topics
Center for Research and Education on Drug Discovery (Synthetic Drug Discovery)	Professor Associate Professor	ICHIKAWA Satoshi YAKUSHIJI Fumika	organic synthesis, natural products, drug discovery, chemical library screening, in silico screening, intractable disease, chemical biology https://japanese-apricot.pharm.hokudai.ac.jp/gouseiyaku/index.php
Center for Research and Education on Drug Discovery (Biologics and Drug Development)	Professor Associate Professor Specially Appointed Associate Professor	MAENAKA Katsumi FUKUHARA Hideo MAEDA Naoyoshi	biologics, drug discovery, chemical library screening, in silico screening, intractable disease, http://japanese-apricot.pharm.hokudai.ac.jp/
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/ja/index.html
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

Doctoral Course

Division of Soft Matter, Graduate School of Life Science

Fields	Supervisors		Research Topics
Soft Matter Materials Science	Professor Associate Professor Associate Professor Associate Professor	GONG Jian Ping NAKAJIMA Tasuku NONOYAMA Takayuki INDEI Tsutomu	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 (1) https://altair.sci.hokudai.ac.jp/g2/index_e.html (2) https://life.sci.hokudai.ac.jp/fa/lab/soft-matter-collaborative-research-unit
	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/ts/
	Professor Associate Professor	IJIRO Kuniharu MITOMO Hideyuki	Self-organization, self-assembly, functional device, biosensor, DNA, protein, biomolecule, cell, molecular recognition, drug delivery system, vaccine, gold nanoparticle, surface plasmon, stimuli- responsivity, capsule https://chem.es.hokudai.ac.jp/en/
	Associate 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://xianglilabhokkaido.wixsite.com/website?lang=en
Biomolecular Soft Matter	Associate Professor	KIKUKAWA Takashi	photoactive proteins, photobiology, rhodopsin, membrane protein, ion pump, membrane transport, transporter, NMR, biomimicry https://altair.sci.hokudai.ac.jp/infana/
	Professor	AIZAWA Tomoyasu	protein science, structural biology, protein engineering, NMR, metabolome, biomarker research, biological defense, innate immunity, antimicrobial peptides, allergen, cytokines, microbiological control https://altair.sci.hokudai.ac.jp/g5/

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 SATO Katsuhiko	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 http://pel.es.hokudai.ac.jp/index-en.html
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
	Lecturer	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://www.nims.go.jp/hokudai/en/ https://life.sci.hokudai.ac.jp/en/sm/lab/functional-soft-matter

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