

# List of Supervisors and Research Fields

As of November 1, 2023

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 <a href="https://altair.sci.hokudai.ac.jp/g6new/">https://altair.sci.hokudai.ac.jp/g6new/</a>
	Associate Professor	UEHARA Ryota	Cell division, ploidy dynamics, chromosome abnormality, cytoskeleton, cancer, microscope, photocontrol, cell culture, zebrafish <a href="https://altair.sci.hokudai.ac.jp/uehara_lab/">https://altair.sci.hokudai.ac.jp/uehara_lab/</a>
	Associate Professor	NAKAOKA Shinji	mathematical biology, systems biology, bioinformatics, microbial ecology, precision medicine, multi-omics, mathematical modeling, machine learning, big data analysis <a href="https://altair.sci.hokudai.ac.jp/infmcb/index-e.html">https://altair.sci.hokudai.ac.jp/infmcb/index-e.html</a>
Biomaterials Science	Professor	MONDE Kenji	Chemical Biology, Chirality, Organic Synthesis, Inhibitors, Vibrational Circular Dichroism, Helix, Lipid Mediator, Glycoconjugate, Medicinal Chemistry, Organic Probe Synthesis, Deep Tissue Imaging <a href="https://altair.sci.hokudai.ac.jp/infchb/">https://altair.sci.hokudai.ac.jp/infchb/</a>
	Associate Professor	TANIGUCHI Tohru	
	Professor	TAMAOKI Nobuyuki	molecular machine, motor protein, photochromic compound, azobenzene, liquid crystal, self-organization, inter-molecular interaction, organic synthesis, nano bio-machine, single molecular measurement, chirality <a href="http://tamaoki.es.hokudai.ac.jp/english/index.html">http://tamaoki.es.hokudai.ac.jp/english/index.html</a>
	Assistant Professor	PADINHARE KAYAKALI Hashim	
	Assistant Professor	AMMATHNADU SUDHAKAR Amrutha	

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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 <a href="https://altair.sci.hokudai.ac.jp/infsig/english/">https://altair.sci.hokudai.ac.jp/infsig/english/</a>
	Lecturer	KITAMURA Akira	Proteostasis, Molecular Chaperones, Protein aggregation, Protein folding, Fluorescence measurement, Bioimaging, Fluorescence Correlation Spectroscopy, Biomolecular Interaction, C. elegans <a href="https://altair.sci.hokudai.ac.jp/infmcd/English/top_eng.html">https://altair.sci.hokudai.ac.jp/infmcd/English/top_eng.html</a>
Functional and Regulatory Life Science	Professor Professor	NISHIMURA Shin-Ichiro HINOUE Hiroshi	Chemical biology, Medicinal chemistry, Glycomedicine, Automated glycosynthesis, Glycomics, Glycotyping, Glycobiology, Biomarker discovery, Dynamic epitope, Glycopeptide, Antibody drug, Glycoconjugates probe, Microarray, Mass Spectrometry <a href="https://altair.sci.hokudai.ac.jp/g4/index.html">https://altair.sci.hokudai.ac.jp/g4/index.html</a>
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 <a href="https://altair.sci.hokudai.ac.jp/g_renkei/top_e.html">https://altair.sci.hokudai.ac.jp/g_renkei/top_e.html</a> <a href="https://unit.aist.go.jp/bpri/bpri-bimo/research1.html">https://unit.aist.go.jp/bpri/bpri-bimo/research1.html</a>
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 <a href="https://life.sci.hokudai.ac.jp/en/tl/lab/frontier-biomaterials-science">https://life.sci.hokudai.ac.jp/en/tl/lab/frontier-biomaterials-science</a> <a href="https://www.nims.go.jp/eng/research/group/medical-soft-matter/index.html">https://www.nims.go.jp/eng/research/group/medical-soft-matter/index.html</a> <a href="https://www.nims.go.jp/hokudai/en/">https://www.nims.go.jp/hokudai/en/</a>

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### 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, abscisic acid, auxin, gene regulation, live imaging, moss, space utilization science, <i>Physcomitrium patens</i> , <i>Marchantia polymorpha</i> , <i>Arabidopsis thaliana</i> <a href="https://keitai1.sci.hokudai.ac.jp/en.html/">https://keitai1.sci.hokudai.ac.jp/en.html/</a>
	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 <a href="https://keitai1.sci.hokudai.ac.jp/en.html/">https://keitai1.sci.hokudai.ac.jp/en.html/</a>
	Associate Professor	WATAHIKI Masaaki	auxin, feedback gene regulation, live imaging, plant morphogenesis <a href="http://www.sci.hokudai.ac.jp/watahiki/mkwhp/index.html">http://www.sci.hokudai.ac.jp/watahiki/mkwhp/index.html</a>
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, <i>Arabidopsis thaliana</i> , multi-omics, advanced bioinformatics. <a href="https://rtnakanolab.com/">https://rtnakanolab.com/</a>
	Associate Professor	ITO Hidetaka	plants, epigenetics, transposon, environmental stress <a href="https://www.sci.hokudai.ac.jp/Cellfunction_Structure3/">https://www.sci.hokudai.ac.jp/Cellfunction_Structure3/</a>
	Associate Professor	CHIBA Yukako	mRNA stability, stress response, arabidopsis <a href="https://www.sci.hokudai.ac.jp/~yukako/">https://www.sci.hokudai.ac.jp/~yukako/</a>
	Associate Professor	SATO Takeo	environmental adaptation, ubiquitin signal, nutrient metabolism, signal transduction, nutrient stress, plant immunity, proteomics <a href="http://www.sci.hokudai.ac.jp/CSF2-web/en">http://www.sci.hokudai.ac.jp/CSF2-web/en</a>

## 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 <a href="https://www.sci.hokudai.ac.jp/~hogawa/index2.html">https://www.sci.hokudai.ac.jp/~hogawa/index2.html</a>
	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 <a href="http://www.wada-lab.org/">http://www.wada-lab.org/</a> <a href="https://www2.sci.hokudai.ac.jp/faculty/en/researcher/tomomi-tsunematsu">https://www2.sci.hokudai.ac.jp/faculty/en/researcher/tomomi-tsunematsu</a>
	Associate Professor	SOMA Masayo	behavior, cognition, communication, bird song, learning, life history <a href="http://www.lfsci.hokudai.ac.jp/search/system/soma.html">http://www.lfsci.hokudai.ac.jp/search/system/soma.html</a>
	Associate Professor	TAKEUCHI Yuichi	Laterality, Intraspecific polymorphism, Learning, Phenotypic plasticity, Neural circuits, Development of behavior, Evolution, Gene expression <a href="http://www.neuroecology-takeuchi.com/english.html">http://www.neuroecology-takeuchi.com/english.html</a>
	Associate Professor	TANAKA Nobuaki	sensory processing, neuroendocrine system, Drosophila genetics, pygmy squid <a href="https://www.sci.hokudai.ac.jp/grp/tanaka/lab/index.html">https://www.sci.hokudai.ac.jp/grp/tanaka/lab/index.html</a>
Reproductive and Developmental Sciences	Professor	KATSU Yoshinao	endocrinology, steroid hormone, nuclear receptor, evolution, endocrine disruptor <a href="https://www.repdev-katsu.jp/index.html">https://www.repdev-katsu.jp/index.html</a>
	Professor	KUROIWA Asato	sex determination, sex chromosome, X chromosome inactivation, fertilization, evolution, the spiny rat, chicken, quail, mouse <a href="https://sites.google.com/site/kuroiwagroup/home">https://sites.google.com/site/kuroiwagroup/home</a>
	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 <a href="https://www.sci.hokudai.ac.jp/~akimura/Molecular/Welcome.APK.html">https://www.sci.hokudai.ac.jp/~akimura/Molecular/Welcome.APK.html</a> <a href="https://sites.google.com/site/kitadalab/">https://sites.google.com/site/kitadalab/</a>
	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 <a href="https://www.sci.hokudai.ac.jp/~kogi/Reproductive2/Welcome.html">https://www.sci.hokudai.ac.jp/~kogi/Reproductive2/Welcome.html</a>

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# List of Supervisors and Research Fields

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## Biomedical and Pharmaceutical Science Course, Division of Science

Laboratory	Supervisors		Research Topics
Biochemistry	Professor Associate Professor	KIHARA Akio SASSA Takayuki	lipid, barrier function, ceramide, metabolism <a href="http://www.pharm.hokudai.ac.jp/seika/index.html">http://www.pharm.hokudai.ac.jp/seika/index.html</a>
RNA Biology	Professor Lecturer	NAKAGAWA Shinichi MAITA Hiroshi	noncoding RNA, epigenetics, nuclear structures, RNA processing <a href="https://sites.google.com/site/hokudairnabioj/home">https://sites.google.com/site/hokudairnabioj/home</a>
Immunology	Professor Associate Professor	MATSUDA Tadashi MUROMOTO Ryuta	host defense, immunity, inflammation, infection, cytokine, oncogenesis, signal transduction <a href="http://www.pharm.hokudai.ac.jp/eisei/">http://www.pharm.hokudai.ac.jp/eisei/</a>
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 <a href="http://convallaria.pharm.hokudai.ac.jp/bunshi/">http://convallaria.pharm.hokudai.ac.jp/bunshi/</a>
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 <a href="http://www.pharm.hokudai.ac.jp/tennen/index.html">http://www.pharm.hokudai.ac.jp/tennen/index.html</a>
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 <a href="http://gouka.pharm.hokudai.ac.jp/">http://gouka.pharm.hokudai.ac.jp/</a>
Synthetic Natural Products Chemistry	Professor Associate Professor Associate Professor	NAGATOMO Masanori YOSHINO Tatsuhiko 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

## 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 TAKEUCHI Yuichi	neuropharmacology, electrophysiology, emotion, pain, addiction, BBB <a href="http://www.pharm.hokudai.ac.jp/yakuri/index.html">http://www.pharm.hokudai.ac.jp/yakuri/index.html</a>
Molecular Design of Pharmaceutics	(Professor)	(YAMADA Yuma)*	drug delivery system, organelle-targeting, nanomedicine, gene delivery, siRNA delivery, intracellular trafficking, imaging, vaccine, cancer therapy <a href="http://www.pharm.hokudai.ac.jp/yakusetu/index.html">http://www.pharm.hokudai.ac.jp/yakusetu/index.html</a>
(Innovative Nanomedicine)	Professor	Harashima Hideyoshi	vascular-targeted drug delivery, nanomedicine, active targeting, tumor, liver, adipose tissue, specific ligand <a href="http://www.pharm.hokudai.ac.jp/mirai/">http://www.pharm.hokudai.ac.jp/mirai/</a>
Molecular Imaging	(Professor)	(OGAWA Mikako)*	molecular imaging, imaging probe, PET, optical imaging, MRI
Advanced Prevention and Research Laboratory for Dementia	Associate Professor Visiting Associate Professor	TARU Hidenori HATA Saori	neuroscience, cell biology, genetics, synapse, protein trafficking, vesicular trafficking, neurodegenerative diseases

## 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 <a href="https://japanese-apricot.pharm.hokudai.ac.jp/gouseiyaku/index.php">https://japanese-apricot.pharm.hokudai.ac.jp/gouseiyaku/index.php</a>
Center for Research and Education on Drug Discovery (Biologics and Drug Development)	Professor	MAENAKA Katsumi	biologics, drug discovery, chemical library screening, in silico screening, intractable disease, <a href="http://japanese-apricot.pharm.hokudai.ac.jp/">http://japanese-apricot.pharm.hokudai.ac.jp/</a>
Genome Biology	Associate Professor	OHTA Shinya	genome, chromatin, aging, cellular senescence, cancer, human, yeast model, genomics, proteomics, microscopy, biochemistry <a href="https://www.igm.hokudai.ac.jp/3dgenome/ja/index.html">https://www.igm.hokudai.ac.jp/3dgenome/ja/index.html</a>
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. <a href="https://www.igm.hokudai.ac.jp/molcell/en/">https://www.igm.hokudai.ac.jp/molcell/en/</a>

※ Specialized Professor of Division of Clinical Pharmacy

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# List of Supervisors and Research Fields

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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 <a href="https://altair.sci.hokudai.ac.jp/g2/en/">https://altair.sci.hokudai.ac.jp/g2/en/</a>
	Professor	KUROKAWA Takayuki	Polymer gel, Double network gel, Friction of gel, Artificial cartilage, Cell culture substrate, Soft composite material, Adsorption and adhesion, Donnan potential <a href="https://altair.sci.hokudai.ac.jp/tsl/">https://altair.sci.hokudai.ac.jp/tsl/</a>
	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 <a href="https://chem.es.hokudai.ac.jp/en/">https://chem.es.hokudai.ac.jp/en/</a>
	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 <a href="https://www.xiangli-lab.com/en/">https://www.xiangli-lab.com/en/</a>
Biomolecular Soft Matter	Professor Associate Professor	DEMURA Makoto KIKUKAWA Takashi	Photoactive proteins, photobiology, rhodopsin, optogenetics, laboratory evolution, membrane protein, ion pump, membrane transport, transporter, flash photolysis <a href="https://altair.sci.hokudai.ac.jp/infana/">https://altair.sci.hokudai.ac.jp/infana/</a>
	Professor	AIZAWA Tomoyasu	protein science, structural biology, protein engineering, NMR, metabolome, biomarker research, biological defense, innate immunity, antimicrobial peptides, allergen, cytokines, microbiological control <a href="https://altair.sci.hokudai.ac.jp/g5/english.php">https://altair.sci.hokudai.ac.jp/g5/english.php</a>



## 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 <a href="https://altair.sci.hokudai.ac.jp/g3/">https://altair.sci.hokudai.ac.jp/g3/</a>
	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 <a href="http://pel.es.hokudai.ac.jp/index-en.html">http://pel.es.hokudai.ac.jp/index-en.html</a>
Soft Matter Medical Science	Associate Professor	TSUDA Masumi	biomaterial, cancer stem cell, molecular targeted therapy, regenerative medicine, cartilage regeneration, neuroregeneration <a href="http://patho2.med.hokudai.ac.jp">http://patho2.med.hokudai.ac.jp</a>
	Lecturer	ONODERA Tomohiro	Orthopaedic Surgery, Joint Surgery, Regenerative Medicine, Musculoskeletal System, Animal Model, Scaffold, Cartilage, Bone, Meniscus, Biomaterials, Soft Matter, Clinical Application, Translational Research <a href="http://www.hokudaiseikei.jp/">http://www.hokudaiseikei.jp/</a>
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 <a href="https://www.nims.go.jp/funct_mol_g/en/index.html">https://www.nims.go.jp/funct_mol_g/en/index.html</a>

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