

## List of Supervisors and Research Fields

Doctoral Course

### Transdisciplinary Life Science Course, Division of Life Science

Laboratory	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 <a href="https://altair.sci.hokudai.ac.jp/g6/index-e.html">https://altair.sci.hokudai.ac.jp/g6/index-e.html</a>
	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 <a href="https://tenure-track.cris.hokudai.ac.jp/lab/uehara/">https://tenure-track.cris.hokudai.ac.jp/lab/uehara/</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/infmc/b/index-e.html">https://altair.sci.hokudai.ac.jp/infmc/b/index-e.html</a>
Biomaterials Science	Professor  Lecturer	MONDE Kenji  TANIGUCHI Tohru	Chemical Biology, Chirality, Organic Synthesis, Inhibitors, Vibrational Circular Dichroism, Helix, Lipid Mediator, Glycoconjugate, Medicinal Chemistry <a href="https://altair.sci.hokudai.ac.jp/infchb/">https://altair.sci.hokudai.ac.jp/infchb/</a>
	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 <a href="http://tamaoki.es.hokudai.ac.jp/english/index.html">http://tamaoki.es.hokudai.ac.jp/english/index.html</a>

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Laboratory	Supervisors		Research Topics
Functional Cellular Science	Professor Associate Professor	AYABE Tokiyoshi 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 <a href="https://altair.sci.hokudai.ac.jp/insig/english/">https://altair.sci.hokudai.ac.jp/insig/english/</a>
	Lecturer	KITAMURA Akira	Fluorescence Correlation Spectroscopy, Fluorescence Cross Correlation Spectroscopy, single molecule detection, ALS, molecular interaction, Live cell imaging, FCS, FCCS, 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, Glycobiology, Biomarker discovery, Dynamic epitope, Glycopeptide, Antibody drug, Glycoconjugates probe, Microarray <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 Visiting Associate Professor	TSUDA Sakae 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 <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/research_kakusan.html">https://unit.aist.go.jp/bpri/bpri-bimo/research_kakusan.html</a>
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 <a href="https://www.nims.go.jp/hokudai/index_en.html">https://www.nims.go.jp/hokudai/index_en.html</a> <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="http://www.nims.go.jp/group/nanomedicine/english/index.html">http://www.nims.go.jp/group/nanomedicine/english/index.html</a>

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### Biosystems Science Course, Division of Life Science

Laboratory	Supervisors		Research Topics
Higher Order Cellular Functions	Professor	TANAKA Kazuma	cell polarity, phospholipid asymmetry, membrane traffic, flippase, yeast <a href="http://www.igm.hokudai.ac.jp/molint/index.html">http://www.igm.hokudai.ac.jp/molint/index.html</a>
	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> <a href="https://www.sci.hokudai.ac.jp/PlantSUGOIne_en/">https://www.sci.hokudai.ac.jp/PlantSUGOIne_en/</a> <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	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	TANAKA Ryouichi	photosynthesis, chlorophyll, cyanobacteria, algae, higher plants, arabidopsis, plant molecular biology, plant biochemistry <a href="http://www.lowtem.hokudai.ac.jp/plantadapt/ayumi/">http://www.lowtem.hokudai.ac.jp/plantadapt/ayumi/</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

Laboratory	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>
	Associate Professor	WADA Kazuhiro	vocal learning, critical period, epigenetics, neural activated gene, songbird, neuroethology, genome, behaviour, DNA methylation, stuttering <a href="http://www.wada-lab.org/">http://www.wada-lab.org/</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	AONUMA Hitoshi	Synthetic neuroethology, neurobiology, electrophysiology, biomechanics, robotics inspired biology, neurogenetics, neuromodulation, social behavior, aggression, ultra fast movement, insect <a href="http://ncmac2.es.hokudai.ac.jp/index.html">http://ncmac2.es.hokudai.ac.jp/index.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>

## Biosystems Science Course, Division of Life Science

Laboratory	Supervisors		Research Topics
Reproductive and Developmental Sciences	Professor	KATSU Yoshinao	endocrinology, steroid hormone, nuclear receptor, thermoreceptor, 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>
	Associate Professor	KITADA Kazuhiro	model animals, human diseases, genome modification, gene function, mouse, rat <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	KIMURA Atsushi	transcription, epigenetics, gene regulation, long noncoding RNA, dual promoter-enhancer, reproduction, spermatogenesis, protease <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>
	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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### 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 <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/hokudairnabiologyj/home">https://sites.google.com/site/hokudairnabiologyj/home</a>
Neuroscience	Specially Appointed Professor Associate Professor Visiting Associate Professor	SUZUKI Toshiharu TARU Hidenori HATA Saori	neuroscience, cell biology, genetics, synapse, aging, protein trafficking, synaptopathy, neurodegenerative diseases <a href="http://www.pharm.hokudai.ac.jp/shinkei/index.html">http://www.pharm.hokudai.ac.jp/shinkei/index.html</a>
Immunology	Professor Lecturer Lecturer	MATSUDA Tadashi MUROMOTO Ryuta KASHIWAKURA Junichi	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	WAKIMOTO Toshiyuki	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 and Industrial Chemistry	Professor Lecturer	MATSUNAGA Shigeki YOSHINO Tatsuhiko	synthetic organic chemistry, asymmetric catalysis, bimetallic cooperative catalysis, natural product synthesis, oligosaccharide synthesis based on new glycosidation method <a href="http://www.pharm.hokudai.ac.jp/yakuzou/">http://www.pharm.hokudai.ac.jp/yakuzou/</a>

## Biomedical and Pharmaceutical Science Course, Division of Science

Laboratory	Supervisors		Research Topics
Organic Chemistry for Drug Development	Professor Lecturer	SHUTO Satoshi WATANABE Mizuki	medicinal chemistry: drug design <a href="http://www.pharm.hokudai.ac.jp/youki/index.html">http://www.pharm.hokudai.ac.jp/youki/index.html</a>
Pharmacology	Professor Lecturer Lecturer	MINAMI Masabumi AMANO Taiju (NOMURA Hiroshi) ※	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 (Associate Professor)	HARASHIMA Hideyoshi (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) Lecturer	(OGAWA Mikako) ※ TAKAKURA Hideo	molecular imaging, imaging probe, PET, optical imaging, MRI
Center for Research and Education on Drug Discovery (Synthetic Drug Discovery)	Professor Lecturer	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 Associate Professor Specially Appointed Associate Professor	MAENAKA Katsumi FUKUHARA Hideo MAEDA Naoyoshi	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>

※ Specialized Professor of Division of Clinical Pharmacy

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Doctoral Course

### Division of Soft Matter, Graduate School of Life Science

Laboratory	Supervisors		Research Topics
Soft Matter Materials Science	Professor Professor	Jian Ping Gong KUROKAWA Takayuki	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/index_e.html">https://altair.sci.hokudai.ac.jp/g2/index_e.html</a>
	Associate Professor Specially Appointed Associate Professor	NAKAJIMA Tasuku  NONOYAMA Takayuki	
Biomolecular Soft Matter	Professor  Lecturer	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>
	Professor	DEMURA Makoto  KIKUKAWA Takashi	
Soft Matter Biophysics	Professor	AIZAWA Tomoyasu	photoactive proteins, photobiology, rhodopsin, membrane protein, ion pump, membrane transport, transporter, NMR, biomimicry <a href="https://altair.sci.hokudai.ac.jp/infana/">https://altair.sci.hokudai.ac.jp/infana/</a>
	Professor	HAGA Hisashi	
Soft Matter Biophysics	Professor	NAKAGAKI Toshiyuki	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/">https://altair.sci.hokudai.ac.jp/g5/</a>
	Associate Professor	SATO Katsuhiko	
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>
	Associate Professor	SATO Katsuhiko	
Soft Matter Biophysics	Professor	NAKAGAKI Toshiyuki	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>
	Associate Professor	SATO Katsuhiko	



## Division of Soft Matter, Graduate School of Life Science

Laboratory	Supervisors		Research Topics
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/hokudai/en/">https://www.nims.go.jp/hokudai/en/</a> <a href="https://life.sci.hokudai.ac.jp/en/sm/lab/functional-soft-matter">https://life.sci.hokudai.ac.jp/en/sm/lab/functional-soft-matter</a>

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