

List of Supervisors and Research Fields

Doctoral Course

Transdisciplinary Life Science Course, Division of Life Science

Laboratory	Supervisors		Research Topics
Bioinformation and Molecular Science	Professor Associate Professor	Min Yao Toyoyuki Ose	structural biology, protein crystallography, protein science, biophysics, nucleic acids, translation, pathogenic bacteria, SBDD http://altair.sci.hokudai.ac.jp/g6/
Biomaterials Science	Professor	Kenji Monde	chemical biology, chirality, vibrational circular dichroism, bio organic chemistry, organic synthesis, chiroptical spectroscopy http://altair.sci.hokudai.ac.jp/infchb/
	Professor	Nobuyuki Tamaoki	motor protein, synthetic molecular machine, organic synthesis, photochemistry, smart molecules, molecular assembly light energy, nano machine http://tamaoki.es.hokudai.ac.jp/
Functional Cellular Science	Professor	Kazushige Kawabata	cell mechanics, mechanosensing, collective cell migration, cancer invasion, anisotropic gel, self-organization, diffusion, polymer physics, biomechanics http://altair.sci.hokudai.ac.jp/g3/
	Professor Associate Professor	Tokiyoshi Ayabe Kiminori Nakamura	mucosal immunity, innate immunity, Paneth cell, antimicrobial peptide, α -defensin, dysbiosis, microbiota, ulcerative colitis, Crohn's disease, lifestyle disease http://altair.sci.hokudai.ac.jp/infsig/
	Professor	Masataka Kinjo	fluorescence correlation spectroscopy, cell biology, live cell imaging, biophysics, protein aggregation, protein misfolding, nuclear receptor, wavefront control http://altair.sci.hokudai.ac.jp/infmcd/

Transdisciplinary Life Science Course, Division of Life Science

Laboratory	Supervisors		Research Topics
Functional and Regulatory Life Science	Professor Associate Professor	Shin-Ichiro Nishimura Hiroshi Hinou	drug discovery, biopharmaceuticals, antibody, glycoconjugates glycomics, biomarkers, chemical biology http://altair.sci.hokudai.ac.jp/g4/
	Professor	Toshiaki Koda	disease model mice, poly-glutamine disease, Huntington's disease embryonic engineering http://altair.sci.hokudai.ac.jp/infemb/index.html
	Associate Professor	Ryota Uehara	cell division, cytoskeleton, motor proteins, mitotic spindle, contractile ring, self-organization, phenotypic plasticity, live cell imaging, cell manipulation http://tenure-track.cris.hokudai.ac.jp/lab/uehara/
Biomolecular Adaptation Science (Inter-field Cooperation with AIST)	Visiting Professor Visiting Professor Visiting Associate Professor Visiting Associate Professor	Sakae Tsuda Yasuo Komatsu Hidemasa Kondo Yu Hirano	antifreeze protein, gene expression analysis, protein structure, oligonucleotide, functional RNA, oligonucleotide therapeutics http://altair.sci.hokudai.ac.jp/g_renkei/top.html https://unit.aist.go.jp/bpri/bpri-bimo/research_kakusan.html
Frontier Biomaterials Science Inter-Field Cooperation with National Institute for Material Science (NIMS)	Visiting Professor Visiting Associate Professor	Nobutaka Hanagata Tomohiko Yamazaki	nanomedicine, DNA drug, toll-like receptors, cytosolic DNA-binding proteins, immune system, nanomaterials, drug delivery http://www.nims.go.jp/hokudai/life/index.html http://www.nims.go.jp/bmc/group/control/GBSCUM/index.html

List of Supervisors and Research Fields

Doctoral Course

Biosystems Science Course, Division of Life Science

Laboratory	Supervisors		Research Topics
Higher Order Cellular Functions	Professor	Kazuma Tanaka	cell polarity, phospholipid asymmetry, membrane traffic, flippase, yeast http://www.igm.hokudai.ac.jp/molint/index.html
	Professor	Tomomichi Fujita	plant, evolutionary development, stem cell, cell polarity, cell cycle, cell proliferation and differentiation, environmental stress, abscisic acid, moss, space utilization science http://www.sci.hokudai.ac.jp/PlantSUGOIne/
	Associate Professor	Masaaki Watahiki	auxin, feedback gene regulation, live imaging, plant morphogenesis http://www.sci.hokudai.ac.jp/watahiki/mkwhp/index.html
	Professor	Sanae M. M. Iguchi-Ariga	protooncogene, mutagen, oxidative stress, cancer, neurodegenerative disease, cellular and molecular biology, proliferation, transformation, apoptosis http://www.agr.hokudai.ac.jp/emolb/index.html
Environmental Life Science	Professor	Atsushi Kato	gene expression, genome evolution, non-coding RNAs, retrotransposon, heat stress, epigenetic effects, plants, arabidopsis http://www.sci.hokudai.ac.jp/grp/keitai/sci.hokudai/KeitaiIII_mail.htm
	Professor	Junji Yamaguchi	environmental adaptation, ubiquitin-proteasome system, nutrient metabolism, signal transduction, nutrient stress, plant immunity, proteomics http://www.sci.hokudai.ac.jp/CSF2-web/
	Associate Professor	Yukako Chiba	mRNA stability, stress response, arabidopsis https://www.sci.hokudai.ac.jp/~yukako/
	Associate Professor	Yasuhiro Takada	psychrophilic bacteria, cold-adapted enzymes, enzyme activity at low temperatures, cold-induced gene expression, regulation of gene expression http://www.sci.hokudai.ac.jp/~ytaka/takada.html
	Professor	Satoshi Naito	<i>Arabidopsis thaliana</i> , translation arrest, mRNA degradation, methionine biosynthesis http://www.agr.hokudai.ac.jp/arabi/
	Associate Professor	Ryouichi Tanaka	photosynthesis, chlorophyll, cyanobacteria, algae, higher plants, arabidopsis, plant molecular biology, plant biochemistry http://www.lowtem.hokudai.ac.jp/plantadapt/ayumi/

Biosystems Science Course, Division of Life Science

Laboratory	Supervisors		Research Topics
Animal Behavior and System Control	Professor	Toshiya Matsushima	neuro-economics and foraging theory, impulsiveness and risk sensitivity, birds, imprinting(Toshiya Matsushima); comparative neuroanatomy, encephalization, large brains of whales and cetaceans, cognitive hypothesis, thermogenesis hypothesis (collaboration with Assist. Prof. Nina Patzke) http://www.sci.hokudai.ac.jp/~matusima/chinou3/Welcome.html
	Professor	Makoto Mizunami	learning, olfaction, memory, insect, microbrain, neuroethology, physiology, genetics, pest control https://www.sci.hokudai.ac.jp/~mizunami/MICROB~2/ http://www.es.hokudai.ac.jp/labo/nishino/
	Professor	Hiroto Ogawa	brain, neuroscience, electrophysiology, imaging, information processing, neural circuit, coding, sensorimotor integration, insect http://www.sci.hokudai.ac.jp/~hogawa/index.html
	Associate Professor	Kazuhiro Wada	vocal learning, critical period, epigenetics, neural activated gene, songbird, neuroethology, genome, behaviour, DNA methylation, stuttering http://www.wada-lab.org/
	Associate Professor	Masayo Soma	behavior, cognition, communication, bird song, learning, life history http://www.lfsci.hokudai.ac.jp/search/system/soma.html
	Associate Professor	Hitoshi Aonuma	Synthetic neuroethology, neurobiology, electrophysiology, neurorobotics, roboticbiology, neurogenetics, neuromodulation, social behavior, aggression, insect http://ncmac2.es.hokudai.ac.jp/index.html
	Associate Professor	Nobuaki Tanaka	sensory processing, neuroendocrine system, Drosophila genetics, pygmy squid http://www.cris.hokudai.ac.jp/tanaka/Lab/index.html

Biosystems Science Course, Division of Life Science

Laboratory	Supervisors		Research Topics
Reproductive and Developmental Sciences	Professor	Masakane Yamashita	oocyte maturation, spermatogenesis, meiosis, translational control, transgenic fish http://www.sci.hokudai.ac.jp/~myama/seitai1/Welcome.html
	Professor	Yoshinao Katsu	endocrinology, steroid hormone, nuclear receptor, thermoreceptor, evolution, endocrine disruptor http://www.repdev-katsu.jp/index.html
	Professor	Asato Kuroiwa	sex determination, sex chromosome, X chromosome inactivation, fertilization, evolution, the spiny rat, chicken, quail, mouse https://sites.google.com/site/kuroiwagroup/home
	Associate Professor	Kazuhiro Kitada	model animals, human diseases, genome modification, gene function, mouse, rat https://sites.google.com/site/kitadalab/
	Associate Professor	Tomoya Kotani	oocyte, embryonic development, maternal factor, real-time imaging, zebrafish, mouse
	Associate Professor	Atsushi Kimura	transcription, epigenetics, gene regulation, long noncoding RNA, dual promoter-enhancer, reproduction, spermatogenesis, protease https://www.sci.hokudai.ac.jp/~akimura/Molecular/Welcome.APK.html
	Associate Professor	Katsueki Ogiwara	ovary, ovulation, follicle selection, endocrine regulation, mouse, zebrafish, medaka https://www.sci.hokudai.ac.jp/~kogi/Reproductive2/Welcome.html

List of Supervisors and Research Fields

Doctoral Course

Biomedical and Pharmaceutical Science Course, Division of Science

Laboratory	Supervisors		Research Topics
Biochemistry	Professor Associate Professor	Akio Kihara Takayuki Sassa	lipid, membrane, biochemistry, metabolism, lipid mediator, barrier formation http://www.pharm.hokudai.ac.jp/seika/index.html
RNA Biology	Professor Lecturer	Shinishi Nakagawa Hiroshi Maita	noncoding RNA, epigenetics, nuclear structures, RNA processing http://www.pharm.hokudai.ac.jp/RNAbio/index.html
Neuroscience	Professor Associate Professor	Toshiharu Suzuki Hidenori Taru	cell biology, alzheimer's disease, synapse formation, vesicular trafficking by kinesin motor, alcadein, X11L, app, als, gene expression. http://www.pharm.hokudai.ac.jp/shinkei/index.html
Immunology	Professor Lecturer Lecturer	Tadashi Matsuda Ryuta Muromoto Junichi Kashiwakura	host defense, immunity, inflammation, infection, cytokine, oncogenesis, signal transduction http://www.pharm.hokudai.ac.jp/eisei/index.html
Biomolecular Science	Professor	Katsumi Maenaka	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	Toshiyuki Wakimoto Takefumi Kuranaga	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	Yoshihiro Sato Yoshihiro Oonishi	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	Shigeki Matsunaga	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 Lecturer	Satoshi Shuto Mizuki Watanabe	medicinal chemistry: drug design http://www.pharm.hokudai.ac.jp/youki/index.html
Catalysis in Organic Synthesis	Professor Associate Professor	Tamotsu Takahashi Zhiyi Song	organometal, catalytic reaction, selective reaction, organic material, asymmetric synthesis http://www.cat.hokudai.ac.jp/takahashi/
Pharmacology	Professor Lecturer Lecturer	Masabumi Minami Taiju Amano Hiroshi Nomura	neuropharmacology, electrophysiology, emotion, pain, addiction, BBB http://www.pharm.hokudai.ac.jp/yakuri/index.html
Molecular Design of Pharmaceutics	Professor (Associate Professor)	Hideyoshi Harashima (Yuma Yamada) [※]	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	Hideyoshi Harashima	vascular-targeted drug delivery, nanomedicine, active targeting, tumor, liver, adipose tissue, specific ligand http://www.pharm.hokudai.ac.jp/mirai/
Molecular Imaging	(Professor) Lecturer	(Mikako Ogawa) [※] Hideo Takakura	molecular imaging, imaging probe, PET, optical imaging, MRI
Center for Research and Education on Drug Discovery (Synthetic Drug Discovery)	Professor Lecturer	Satoshi Ichikawa Fumika Yakushiji	organic synthesis, natural products, drug discovery, chemical library screening, in silico screening, intractable disease http://japanese-apricot.pharm.hokudai.ac.jp/gouseiyaku/
Center for Research and Education on Drug Discovery (Biologics and Drug Development)	Professor Specially Appointed Professor Specially Appointed Associate Professor	Katsumi Maenaka Akira Matsuda Naoyoshi Maeda	biologics, drug discovery, chemical library screening, in silico screening, intractable disease, http://japanese-apricot.pharm.hokudai.ac.jp/

※ Specialized Professor of Division of Clinical Pharmacy

List of Supervisors and Research Fields

Doctoral Course

Division of Soft Matter, Graduate School of Life Science

Laboratory	Supervisors		Research Topics
Soft Matter Materials Science	Professor Professor	Jian Ping Gong Takayuki Kurokawa	Our laboratory deals with soft matter "gel". In addition to soft and large deformation, we aim to create polymer gels with superior functions as like living body, especially mechanical function, elucidate the principle of its function expression, and apply gel to biological substitute soft tissues such as cartilage. We also aim to extend the results of these gel studies to other soft matter materials and apply them to industrial materials. Typical research topics are 1) design and creation of high strength · high toughness gels and elastomers, 2) elucidation of dynamics and fracture mechanism of soft matter, 3) creation of low friction gels, clarification of friction and lubrication mechanism of gels, 4) creation of high-toughness soft composite materials and clarification of fracture mechanism, 4) gel mechanochemistry, 5) biomineralization and soft ceramics, 6) biomaterials and artificial cartilages. URL: http://altair.sci.hokudai.ac.jp/g2/index_e.html
	Professor Associate Professor	Kuniharu Ijro Hideyuki Mitomo	development of DNA-based nanodevices, creation of biotemplated nanoarchitecture for bioapplications, controlled self-assembly of metal nanoparticles for photonics applications, dynamic structure control using soft matters such as hydrogel URL: http://chem.es.hokudai.ac.jp/en/
Biomolecular Soft Matter	Professor Lecturer	Makoto Demura Takashi Kikukawa	Biodesign of protein function and its structural basis to soft materials. - Innovative approach to biomimicry, biodesign and bio-inspired materials based on fundamental sciences. - Molecular mechanism of light-harvesting proteins and its application to active soft matter. URL: http://altair.sci.hokudai.ac.jp/infana/
	Associate Professor	Tomoyasu Aizawa	protein engineering, structural biology, protein, peptide, NMR metabolomics URL: http://altair.sci.hokudai.ac.jp/g5/
Soft Matter Biophysics	Professor	Hisashi Haga	collective cell migration, 3D morphogenesis, cancer invasion, collagen gel, matrigel, anisotropic gel, molecular cell biology, mechanobiology, biomechanics, polymer physics URL: http://altair.sci.hokudai.ac.jp/g3/
	Professor Associate Professor	Toshiyuki Nakagaki Katsuhiko Sato	soft matter physics, active soft mater, cell movement, biomechanics, ethology, behavioral intelligence, contractile protein, rheology, amoeboid movement, ciliary motion, nematoda, peristaltic locomotion, development, morphogenesis, transport network, model simulation, mathematical modeling, slime mold, ciliate, flagellate

Division of Soft Matter, Graduate School of Life Science

Laboratory	Supervisors		Research Topics
Soft Matter Medical Science	Associate Professor	Masumi Tsuda	biomaterial, artificial cartilage, cancer stem cell, molecular targeted therapy, regenerative medicine, neuroregeneration URL: http://patho2.med.hokudai.ac.jp
	Lecturer	Tomohiro Onodera	Orthopaedic Surgery, Tissue Engineering, Cartilage Biology, Glycobiology, Clinical application, Arginate Gel, Human Clinical Trial. URL: http://www.hokudaiseikei.jp/