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2023 年 4 月本学大学院統合生命科学研究科（博士課程後期）に入学の学生を次のとおり募集します。

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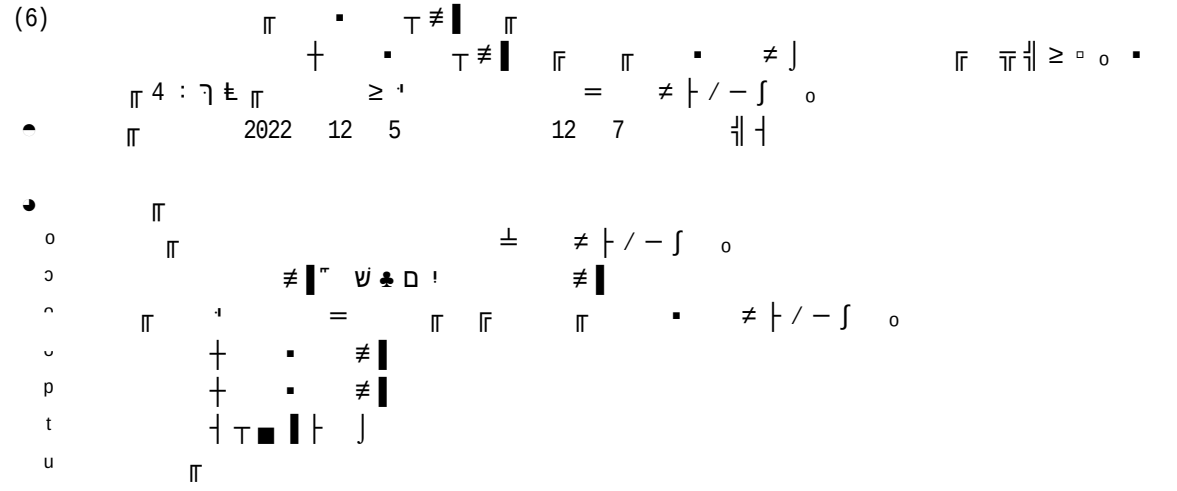

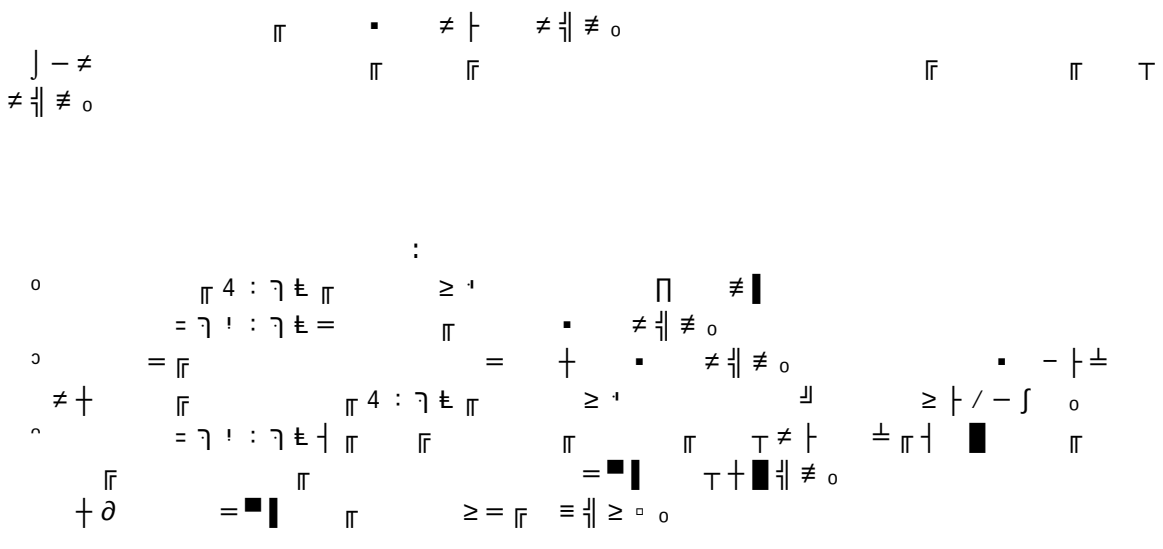

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List of Academic Supervisors

Program of Biotechnology 1/4

Academic Staff		Research Fields	Keywords
Professor	Tsunehiro AKI	Genomic breeding of oleaginous microorganisms for provision of new health foods, pharmaceuticals, chemicals and sustainable bioenergy.	Lipid engineering, Microbial biotechnology, Biorefinery
Professor	Yoshiko OKAMURA	Marine Biotechnology: Development of new technologies using marine bacterial metagenome to produce useful materials. Biomineralization: Recovery of heavy and minor metals and rare earth elements, and nanoparticle formation.	Marine iotechnology, Biomineralization, Biofuel production
Professor	Junichi KATO	Environmental Biotechnology: Development of new biotechnology for bio-remediation, bioprevention, and biomonitoring. Chemical Biotechnology: Development of bioprocess for production of fine and commodity chemicals using solvent tolerant bacteria.	Environmental biotechnology,Molecular microbial ecological engineering,Biocatalyst
Professor	Seiji KAWAMOTO	We are interested in the molecular mechanisms underlying the pathogenesis of allergic disorders. We are also searching for anti-inflammatory foodstuffs, which are useful to prevent atopic and proinflammatory disorders. Another ongoing project is to elucidate mechanisms involved in the establishment of immune tolerance, and its application to the development of novel immunosuppressants and anti-inflammatory drugs.	Allergy/Immunology,Animal cell technology,Functional foods
Professor	Akio KURODA	Creation of new proteins/peptides by evolutionary molecular engineering. For example, we created an asbestos-binding protein in order to analyze asbestos. We also created a membrane-binding peptide in order to isolate extracellular membrane vesicle (exosome, microvesicle) that have great potential as diagnostic tools and biomarkers for many kinds of diseases such as cancers.	Protein engineering, Evolution engineering, Biosensing
Professor	Yutaka NAKASHIMADA	The subject of research in a field of energy metabolic engineering for production of bio-fuels such as methane, hydrogen and alcohols, and bio-materials from renewable feedstocks such as biomass based on fermentation technology and genetic engineering of microorganisms.	Fermentation technology, Biochemical engineering, Metabolic engineering

List of Academic Supervisors

Program of Biotechnology 2/4

Academic Staff		Research Fields	Keywords
		Ca2+ Ca2+	
Professor	Masaki MIZUNUMA	We focus on mechanisms of Ca2+-dependent signaling using the unicellular eukaryote, Saccharomyces cerevisiae, as a model system. In particular, we are currently investigating aspects of calcium-dependent signal transduction in yeast, including cell-cycle, life span, and apoptosis. We also study on aging and life span in Caenorhabditis elegans.	Yeast, C. elegans, Lifespan
Visiting Professor	Takeshi AKAO	Applied genomics of sake yeast and the related industrial strains: Utilization of the genome information for exploration of unique DNA markers in each lineage, genetical study on characteristic features of valuable sake yeast strains and development of efficient breeding method.	Sake yeast, Applied genomics, Genetics of brewing characteristics
Visiting Professor	Atsuko ISOGAI	Studies on the aroma compounds in sake and shochu, aiming at identification of components responsible for their characteristics, elucidation of their formation mechanism, and development of control techniques.	Sake, Shochu, Aroma compounds
Visiting Professor	Kazuhiro IWASHITA	The genomics and metabolomics study of industrial microorganisms (especially Japanese national fungi of Aspergillus oryzae) to illustrate the primitive molecular mechanisms. The outcome of our researches should be applied to the design for new industrial strains and new process to produce beneficial metabolite and fermentation products.	Fermentation microorganism, Multiomics analysis, Innovation
Visiting Professor	Dai KITAMOTO	We aim to develop new functional bio-based materials such as biopolymers and biosurfactants. Especially, we are promoting the microbial production, functional evaluation, and industrial application of bio-based materials.	Bio-based materials, Biosurfactants, Biopolymers
Associate Professor	Yoshiteru AOI	Our research goals are (i) bringing innovation to microbial cultivation, by development of radically new cultivation technology; (ii) isolation of environmentally important or potentially useful but yet-to-be cultured microorganisms; (iii) puzzling out the reason as to why most of the environmental microorganisms are recalcitrant for cultivation.	Unknown microbes, Unculturable microbes, Dormancy and resuscitation

List of Academic Supervisors

Program of Biotechnology 3/4

Academic Staff		Research Fields	Keywords
Associate Professor	Kenji ARAKAWA	We aim to characterize the mechanism for the biosynthesis of bioactive compounds and their regulatory system in Streptomyces species. Isolation of new metabolites and characterization of biosynthetic enzymes are also studied in our laboratory.	Bioactive compounds Biosynthesis Secondary metabolism
Associate Professor	Takeshi IKEDA	Our research focuses on the interaction between biomolecules and inorganic materials. We are developing biointegrated devices/materials using solid-binding proteins/peptides as an interface.	Biomineralization Solid-binding proteins/peptides Biointegrated devices/materials
Associate Professor	Masaru UENO	DNA Study on molecular mechanisms of telomere maintenance and DNA repair and their applications for development of anti-cancer and anti-ageing agents.	Telomere, Cancer, Aging
Associate Professor	Setsu KATO	1 We analyze how microbial cells adapt and survive under various conditions using the single cell quantitative method. We are also interested in the process of cell death to identify the weakness of cellular homeostasis. These analyses will help us to find the principles of life and to create useful host cells for bioprocess.	1 Cellular homeostasis, Life and death, Single cell analysis
Associate Professor	Kenji KITAMURA	( ) ( ) Studies on modulation of cellular physiology in yeast by nutrients via regulation of peptide transporters. Searching for their non-peptide substrates, and exploration of novel bioactivities of dipeptides. Development of high-functioning yeast strains.	Yeast, Transporter, Amino acid/dipeptide
Associate Professor	Kazunori KUME	We would like to understand mechanisms of global cellular systems which are fundamental to cellular growth, development and reproduction of eukaryotic cells. Especially we are interested in cell polarity and organelle size and shape. For this research, we use the genetically amenable model organism, yeasts.	Cell sturucture, Organelle, Cell polarity
Associate Professor	Takahisa TAJIMA	Development of biocatalysts for efficient bio-conversion processes by using solvent tolerance microorganisms and psychrophile. Bioinformatic analyses of genome information and metabolites, and their utilization for metabolic engineering.	Bioproduction, Psychrophile, Metabolic engineering

List of Academic Supervisors

Program of Biotechnology 4/4

Academic Staff		Research Fields	Keywords
Associate Professor	Miyako NAKANO	1 Glycosylation, which is one of the posttranslational modifications of proteins, is involved in infection by pathogens such as bacteria and viruses, cancer and acquisition of drug-resistance. We investigate these biological mechanisms with detailed analysis of glycan structures by mass spectrometry.	Glycan, Mass spectromery, Biomarker
Associate Professor	Ryuichi HIROTA	Basic studies on the phosphorus metabolism in microorganisms, and its applications to biotechnology such as phosphorus removal using phosphate-accumulating organisms, phosphorus recycling from activated sludge, biosafety strategy, and the construction of bioprocesses.	Phosphorus metabolism, Bacteria, Biotechnology
Associate Professor	Makoto FUJIE	, We focus on the interaction between microorganisms and higher plants. We also study biomass production using photosynthetic microorganism by molecular biological methods, such as genome editing.	- Plant-microbe interaction, Biomass production, Genome editing
Associate Professor	Hisakage FUNABASHI	Our research focuses on using biomolecules and living cells as functional materials. We are developing novel functional molecules such as biosensing molecules with proteins and nucleic acids. We are also exploring new methods to create, evaluate, and manipulate functional living cells.	Biofunctional materials, Biodevices, Biosensing

List of Academic Supervisors

Program of Food and AgriLife Science 1/2

Academic Staff		Research Fields	Keywords
Professor	Satoru UENO	Characterization of Physical properties and Clarification of kinetics for edible lipids.	, , Lipid, Crystallization, Polymorphic transfoemation
Professor	Shinji OHTA	Studies on structures and functions of biologically active natural compounds.	Bioactive compound, Structure elucidation, Instrumental analysis
Professor	Kiyoshi KAWAI	Food processing, preservation, and texture analysis.	Food processing, Preservation, Texture analysis
Professor	Yoshihiro SAMBONGI	Studies on structure and function of microbial energy metabolism proteins.	Energy metabolism Extremophiles Protein structure
Professor	Masayuki SHIMADA	The study for understanding molecular and endocrine mechanisms of reproductive functions and developing novel reproductive technologies.	Reproductive biology, Molecular endocrinology, Reproductive technology
Professor	Tadashi SHIMAMOTO	Analysis of pathogenicity-related genes and drug resistance genes of foodborne pathogenic bacteria and development of norovirus inactivation method.	Foodborne pathogenic bacteria, Drug-resistant bacteria, Norovirus
Professor	Takuya SUZUKI	Physiological functions of nutrients and food factors.	Functional foods, Nutrition, Human health
Professor	Susumu NAKAE	Studies of pathogenesis of allergic and autoimmune disorders.	chronic inflammation, cytokines, mouse models for human diseases
Professor	Takeshi NAGANUMA	Study on applications of environmental biological resources.	, , Extreme environments, Extremophiles, Biodiversity
Professor	Masahide NISHIBORI	Studies on Mammalian and Avian Molecular Evolution, Phylogenetics and Geography using Their Information of Animal Genome, and Their Application to Agricultural Sciences.	, , Animal genetics, Molecular evolution, Molecular phylogenetic study
Professor	Yoshio HAGURA	Analysis of mechanical and electrical properties of the food, and development of food processing and measurement techniques using those properties.	, , Mechanical properties, Electrical properties, Food processing
Professor	Kenji HOSONO	Socio-economic Agricultural Study about Sustainable Food Resource and Supply Chain.	Food production management, Food market, Sustainable development
Professor	Hiroyuki HORIUCHI	Basic and applied study using avian stem cells and genome editing technology in the agriculture field.	Avian, Stem cells, Genome editing
Professor	Noriyuki YANAKA	Molecular mechanisms of lifestyle-related diseases and nutritional science.	Lifestyle-related diseases, Food factor, Molecular nutrition

List of Academic Supervisors

Program of Food and AgriLife Science 2/2

Academic Staff		Research Fields	Keywords
Visiting Professor	Masaki OKUDA	Research for production and utilization of high quality rice for sake making.	Alcoholic beverage, Sake rice, Properties of rice used for sake
Associate Professor	Hisashi OMURA	Studies on chemical interactions between plants and insects.	Chemical ecology, Semiochemical, Pheromone
Associate Professor	Yasushi OKINAKA	Studies on the interactions between aquatic organisms and their pathogens.	Pathogen, Fish, Infection mechanism
Associate Professor	Thanutchaporn KUMRUNGSEE	Food factors with muscle and brain disease prevention.	, , Food factors, Muscle, Brain
Associate Professor	Hisato KUNIYOSHI	Biochemical studies on metamorphosis and reproduction in aquatic animals.	Proteins, Bioactive substances, Instrumental analyses
Associate Professor	Haruhiko KOIZUMI	Clarification of the physical behavior of crystallization in food components, including pharmaceuticals.	Electric field, Crystal growth, Biopolymer
Associate Professor	Yosuke CHOMEI	Studies on resources using for sustainable development of food production and communities.	Farm management,Consumer ,Community
Associate Professor	Tatsuya NAKAYAMA	Studies on the pathogenicity of foodborne bacteria and the spread and prevention of antibiotic-resistant bacteria.	Foodbrone bacteria, Pathogenicity, Antibiotic-resistant bacteria
Associate Professor	Kouichi FUNATO	Molecular genetic studies of lipid dynamics and functions.	, , Lipid, Yeast, Molecular genetics
Visiting Associate		Development of microorganisms for the brewing, and enzymatic research for its aplications.	Enzyme, Brewing, Microorganism
Lecturer	Makoto HIRAYAMA	Studies on function and application of bioactive compounds from marine organisms.	Lectin, Glycan, Anti-virus agent
Lecturer	Yukichi FUJIKAWA	Biochemical studies on gene expression and function of stress-responsible enzymes in higher plants.	Enzyme, Gene expression, Biochemistry

List of Academic Supervisors

Program of Bioresource Science 1/2

Academic Staff		Research Fields	Keywords
Professor	Naoki ISOBE	Immunology and endocrinology in mammary gland of ruminants.	Mastitis, Antimicrobial peptide, Innate immunity
Professor	Akihiro UEDA	Improvement of environmental stress tolerance in higher plants and development of utilization technologies of plant growth promoting microbes.	, , Plant nutrition, Environmental stress, Plang growth promoting microbes
Professor	Tetsuya UMINO	Stock enhancement and conservation resources of aquatic animal.	Aquaculture, Stock enhancemnet, Aquatic animal
Professor	Susumu OHTSUKA	Biodiversity, phylogeny, evolutionary biology and conservation ecology of marine invertebrates.	Marine invertebrate, Biodiversity, Conservation
Professor	Taketo OBITSU	Nutrition and feed utilization in ruminants.	Digestion, Protein metabolism, Energy metabolism
Professor	Koichiro KAWAI	Study on utilization of valuable information from aquatic animal ecology.	Aquatic animal, Ecology, Human life
Professor	Kazuhiko KOIKE	Coastal biological processes of Seto-Inland Sea, coral reefs and mangrove swamps based on primary producers (various microalgae).	Microalgae, Phytoplankton, Photosynthesis
Professor	Yoichi SAKAI	Behavioral ecology of fish reproduction.	, , Social structure, Mating tactics, Field survey
Professor	Masayuki SHIMADA	The study for understanding molecular and endocrine mechanisms of reproductive functions and developing novel reproductive technologies.	Reproductive biology, Molecular endocrinology, Reproductive technology
Professor	Toshihisa SUGINO	Effects of Feeding management on dairy cattle health and performance.	, , Dairy cattle, Nutrition and feeding, Metabolism
Professor	Rumi TOMINAGA	Studies on cell differentiation and development in plants.	Epidermal cell, Root hair, Transcription factor
Professor	Jun WASAKI	– Plant-microbial interactions in the vicinity of root and nutrient dynamics.	Rhizosphere, Plant physiology, Nutrient dynamics
Associate Professor	Satoshi ASAOKA	Assessment and restoration of aquatic environments using the tools of analytical chemistry.	Environmental analytical chemistry, Environmental remediation, Aquatic environment
Associate Professor	Aki KATO	Aquaculture and conservation of algal resources.	Coralline algae, Edible seaweeds, Climate change
Associate Professor	Shin-ichi KAWAKAMI	Research of the brain mechanisms of feeding, drinking, and aggressive behavior in avians.	Animal behavior, Hypothalamus, Chicken

List of Academic Supervisors

Program of Bioresource Science 2/2

		Research Fields	Keywords
Associate Professor	Yuzo KUROKAWA	Research on healthy life cycle of dairy cows.	Dairy cow, Life cycle, Antioxidant capacity, Milk production
Associate Professor	Hidetoshi SAITOU	Researches on population ecology of macrobenthos in freshwater and shallow seawater zones.	Ecology, Benthos, Alien species
Associate Professor	Takeshi TOMIYAMA	Fish life history and stock dynamics.	Fisheries ecology, Early life history, Estuaries and coastal waters
Associate Professor	Toshinori NAGAOKA	Studies on soil functions in plant production.	, , Soil, Nutrient dynamics, Organic matter
Associate Professor	Yoshiaki NAKAMURA	Preservation of mammalian and avian genetic resources on the basis of germ cell manipulation.	, , Germ cells, Cryopreservation, Genetic modification
Associate Professor	Toshiya HASHIMOTO	Understanding of the marine environment using the filed observation and numerical simulation model.	Marine environment, Data analysis, Ecosystem model
Associate Professor	Masayuki YOSHIDA	Biological basis of emotion, learning, and mind in animals.	Animal psychology, Emotion, Neuroscience
Associate Professor			

List of Academic Supervisors

Program of Life and Environmental Sciences 1/2

Academic Staff		Research Fields	Keywords
Professor	Atsuhiko ISHIDA	Biochemistry on enzymes and proteins which mediate protein phosphorylation and dephosphorylation.	Enzyme, Neuron
Professor	Kazuyoshi UKENA	Study on the physiological functions of neuronal substances regulating appetite and energy homeostasis.	Neuroendocrinology, Neuropeptide, Appetite
Professor	Yukari KUGA	Plant and microbe symbioses in soil ecosystem.	Mycorrhiza, Soil-borne disease, Cellular-ecological functions
Professor	Akiko SATOH	The mechanism of the polarized vesicle trafficking in neurons.	Golgi units, Photoreceptors, Drosophila melanogaster
Professor	Kazuhiko TAKEDA	Environmental dynamics and analysis of trace compounds and reactive oxygen species in the atmosphere and hydrosphere.	Environmental Analytical Chemistry, Reactive Oxygen Species, Trace Pollutants
Professor	Takayuki NAKATSUBO	Roles of plants, animals and microorganisms in terrestrial ecosystems.	Ecosystem ecology, Plant ecology, Environmental coservation
Professor	Yasuo FURUKAWA	Structure and function of ion channels and receptors Plasticity of neuronal excitability and synaptic transmission.	Neurophysiology, Ion channels, Receptors
Professor	Takeshi YAMAZAKI	Synthetic mechanisms and physiological functions of neurosteroids.	Basic endocrinology, Steroid hormone, Brain science
Professor	Toshihiro YAMADA	Conservation of organisms based on ecology.	Biodiversity conservation, Population dynamics, Tropical forests
Professor	Jun WASAKI	Plant-microbial interactions in the vicinity of root and nutrient dynamics.	Rhizosphere, Plant physiology, Nutrient dynamics
Professor	Masumi VILLENEUVE	Thermodynamic studies on interfacial behavior of bio-related substances using model cell membranes, basic science related to drug delivery.	Interface Chemistry, Thermodynamics, Membranes
Associate Professor	Yasuhiro ISHIHARA	Glial function in health and disease.	Neuropharma-toxicology, Glia, Model animals
Associate Professor	Yoko IWAMOTO	Biogeochemical cycles between the atmosphere and ocean, and their impact on climate.	Aerosol, Cloud, Biogeochemistry
Associate Professor	Akio TSUCHIYA	Climate change caused by deforestation of rainforests in Amazonia.	Small climatology, Biometeorology, Dendro-climatology

List of Academic Supervisors

Program of Life and Environmental Sciences 2/2

Academic Staff		Research Fields	Keywords
Associate Professor	Tatsuo NEHIRA	Research of structural organic chemistry in life science.	Analytical organic chemistry, Natural product chemistry, Circular dichroism
Associate Professor	Akira HIKOSAKA	Genomic, symbiotic and embryonic studies on metazoan evolution.	, , Evolutionary Zoology, Acoelomorpha, Metazoa
Associate Professor	Miyabi NAKABAYASHI	Behavior and ecology of wildlife	Tropical rainforest, Ecology, Mammalogy
Lecturer	Motomu TODA	Energy, water and carbon exchange between atmosphere and forest ecosystems.	Flux, Modelling, Climate change

List of Academic Supervisors

Program of Basic Biology 1/2

Academic Staff		Research Fields	Keywords
Professor	Takuya IMAMURA	Understanding epigenomic mechanisms that underlie the development of primate brain.	, , RNA primate, brain, non-coding RNA
Professor	Hajime OGINO	Genomic and epigenetic regulation of development and regeneration (sensory organs and central nervous system) in vertebrates. Molecular mechanisms of genome evolution and environmental adaptation in amphibians.	Development, Regeneration, Evolution
Professor	Yutaka KIKUCHI	Studies on tumor microenvironment network. Construction of musculoskeletal systems and molecular mechanisms of their breakdown.	Tumor microenvironment, Nerves, Musculoskeletal systems
Professor	Makoto KUSABA	Molecular mechanism of leaf senescence, Molecular genetics in the genus Chrysanthemum, Genetic resources of chrysanthemum and cycad.	Molecular genetics, Leaf senescence, Chrysanthemum
Professor	Takahiro CHIHARA	(Molecular mechanism underlying neural network formation, maturation and maintenance. Genetic studies to reveal molecular mechanism for the interaction between environment (nutrition, odor and various stress etc.) and individual condition (longevity and behavior etc.).	Neural network, Olfaction, Longevity
Professor	Toshinori HAYASHI	Study of organ regeneration and development using urodele amphibian. Regulatory mechanism of cell proliferation in organ regeneration.	Iberian ribbed newt, Organ regeneration, Development
Professor	Tomio YAMAGUCHI	Phylogeny, taxonomy and ecology of bryophytes.	Bryophytes, Taxonomy, Ecology
Associate Professor	Takeshi IGAWA	Genome evolution underlying speciation and environmental adaptation of amphibians.	Amphibians, Adaptive evolution, Genomics
Associate Professor	Tatsuya UEKI	Study on the mechanism of metal ion accumulation and adhesion by marine invertebrate animals.	, Physiology, Metal ion, Adhesion
Associate Professor	Misako OKUMURA	. Molecular mechanism of phototransduction. Molecular mechanism of phenotypic plasticity.	, , Nematode, Photoreceptor, Phenotypic plasticity
Associate Professor	Masaki SHIMAMURA	Phylogeny, taxonomy morphology and ecology of bryophytes. Diversity and evolution of cell division system of land plants.	Bryophytes, Plant taxonomy, Morphology
Associate Professor	Atsushi SUZUKI	Molecular mechanisms of vertebrate early development, maintenance/differentiation of stem cells, and tissue regeneration.	Early development, Stem cell, Regeneration

List of Academic Supervisors

Program of Basic Biology 2/2

Academic Staff		Research Fields	Keywords
Associate Professor	Kunifumi TAGAWA	Study to elucidate the origin and evolution of Deuterostomia and Bilateria by analysing molecular developmental biology and comparative genomics of marine organisms such as Enteropneust hemichordate and Acoel flatworms.	Marine Organisms, EvoDevo, Comparative genomics
Associate Professor	Hiromi TSUBOTA	Studies of plants and vegetation focusing on the ecology, evolutionary biology, biogeography, phytosociology, and conservation of biotas on islands surrounded by ocean and its related area.	Biodiversity, Phytogeography, Molecular phylogeny
Associate Professor	Kozue HAMAO	Molecular mechanisms of cytoskeletal regulation and cell division in animal cells.	Cytoskeleton, Mitosis, Cytokinesis
Associate Professor	Nobuaki FURUNO	Molecular mechanism of oogenesis and analyses of the unique cell cycle mechanism of oocyte maturation(meiosis) and early development. Study of the molecular mechanism of regeneration and development of the limb formation.	Oogenesis,Oocyte maturation,Cell cycle,Morphogenesis,Limbdevelopment
Associate Professor	Ikuo MIURA	Studies on Evolutionary Genetics of amphibians (genome and phenotypic evolution and biodiversity), and sex and reproduction.	Phyletic evolution, Sex, Genome recognition
Lecturer	Kazuki MORIGUCHI	Molecular mechanisms of bacteria-eukaryotes interactions. Molecular mechanisms at horizontal gene transfer, and the spread and diversity of genes caused by it.	Bacteria, Horizontal gene transfer, Interaction, Gene introduction

List of Academic Supervisors

Program of Mathematical and Life Sciences 1/3

Academic Staff		Research Fields	Keywords
Professor	Makoto IIMA	Theoretical and experimental study of complex flows and models such as swimming/flying problems based on mathematical science.	Fluid mechanics, Swimming/Flying, Vortex dynamics
Professor	Shunsuke IZUMI	MALDI SALDI-IMS Development of MALDI matrix for protein analysis and search for chemical repellents using SALDI-IMS method.	, , SALDI-IMS MALDI matrix, Proteomics, SALDI-IMS method
Professor	Atsushi SAKAMOTO	(1) ; (2) ; (3) ( ) (1) Molecular mechanisms for stress responses and adaptation in plants; (2) Metabolic plasticity-based strategies for plant growth and survival; (3) Basic and applied research on plant function towards its agricultural and industrial applications (improved performance under stress; algal bioenergy innovation, etc.).	Plant molecular function, Stress response, Metabolism and molecular physiology
Professor	Shin-ichi TATE	NMR Exploring functional mechanisms of intrinsically disordered proteins mainly with NMR. Studies on protein droplet formation within cells. Three-dimensional structure analysis of chromatins inside the cell nucleus.	NMR NMR, Intrinsically disordered proteins, The three-dimensional structure of chromatin in a cell nucleus
Professor	Satoshi NAKATA	Research on phenomena which exhibit spatio-temporal development under nonequiliburim conditions, e.g., chemical oscillation, rhythm and pattern formation, self-organization, nonlinear phenomena (synchronization, bifurcation, hysteresis), and self-propulsion.	Self-organization, Pattern formation, Oscillation
Professor	Naoki HONDA	/ Data-driven mathematical modeling of various biological phenomena. Development of data analysis methods based on machine learning (statistical learning theory). Gene expression, cytoskeleton, immune systems, embryonic development, neural circuits, decision making, emotion/conflict.	Data-driven biology, Theoretical biology, Mathematical modeling, Machine learning
Professor	Takashi YAMAMOTO	Development of genome editing technology for various organisms. Generation of disease model cells and animals. Development of biofuel using microalgae. Analysis of molecular mechanisms during animal development.	Genome editing, Disease model, Animal development
Professor (Sp.Appt.)	Hidemasa BONO	Development of database technologies for genome editing and functional genomics by bioinformatic approach.	Genome editing, Bioinformatics, Functional genomics
Visiting Professor	Tomonobu M WATANABE	Stem cell researches with development of optical measurement technologies to quantify biological phenomena, and medical/industrial applications of them.	Optical spetcroscopy, quantitative biology, biophysics, stem cell

List of Academic Supervisors

Program of Mathematical and Life Sciences 2/3

Academic Staff		Research Fields	Keywords
Associate Professor	Akinori AWAZU	Theoretical molecular and cell biology : Theoretical and experimental studies of genome dynamics, gene regulation, development, and morphogenesis.	Phenomenal mathematical modeling, Experiment data driven modeling, Experiments for modeling
Associate Professor	Isamu OHNISHI	In my laboratory, as research of a nonlinear evolution equation and as research of a stochastic process theory with nonlinear terms,inspired by wonders of cyanobacteria and plants as hints, I make a mathematically regorous analysis about the convergence between them and a bifurcation structure. Student should be required of comprehension about fundamental EVOLUTION equations and about basic stochastic processes with nonlinear effects.	Dynamical system, Pattern formation, Bifurcation theory
Associate Professor	Katsuo KATAYANAGI	DNA HIV X Three dimensional structure and function of Protein by protein X-ray-crystallography, and, Molecular evolution of protein derived from X-ray structure of artificial proteins.	X 3D structure of protein, X-ray crystallography, Synchrotron radiation
Associate Professor	Nen Saito	From the viewpoints of biophysics and mathematical biology, we aim to understand various biological phenomena by performing mathematical modeling , large-scale numerical computation and machine learning analysis, etc.	mathematical modeling, biophysics, theoretical biology
Associate Professor	Naoaki SAKAMOTO	Research for transcriptional regulation of morphogenetic genes, nuclear dynamics of gene, chromatin and chromosome during development, and mechanism of insulator activity, using the sea urchin development as a model.	Sea urchin development, Transcription, Nuclear dynamics
Associate Professor	Tetsushi SAKUMA	Development of new technology of genome editing using mammalian cultured cells; Development and application of artificial transcriptional control and epigenome editing systems repurposed from genome editing.	Genome editing, Epigenome editing, Systems genomics
Associate Professor	Hiroshi SHIMADA	Analysis of photosynthesis, and improving photosynthetic efficiency for greater yield by gene modification and chemical biology. Analysis of chloroplast biogenesis.	Photosynthesis, Chloroplast, Chemical biology

List of Academic Supervisors

Program of Mathematical and Life Sciences 3/3

Academic Staff		Research Fields	Keywords
Associate Professor	Takuma SUGI	Behavioral systems biology and neural network aging.	Behavior, Imaging, Neural network aging
Associate Professor	Yoshihisa FUJIWARA	Effects of environmental factors of light, magnetic field, and gravity (microgravity and hypergravity) on biological phenomena and reactions of micro-organism such as Aspergillus oryzae. Influence of their factors on reactions, micro-structure, and function of chemical functional nano-materials.	Effecs of light, Magnetic field and gravity Photochemistry Aspergillus oryzae

List of Academic Supervisors

Program of Biomedical Science 1/2

Academic Staff		Research Fields	Keywords
Professor	Atsuhiko ISHIDA	Biochemistry on enzymes and proteins which mediate protein phosphorylation and dephosphorylation.	Enzyme, Neuron
Professor	Takuya IMAMURA	Understanding epigenomic mechanisms that underlie the development of primate brain.	, , RNA primate, brain, non-coding RNA
Professor	Kazuyoshi UKENA	Study on the physiological functions of neuronal substances regulating appetite and energy homeostasis.	Appetite, Obesity, Metabolic disease
Professor	Hajime OGINO	Genomic and epigenetic regulation of development and regeneration in vertebrates. Molecular mechanisms of genome evolution and environmental adaptation in amphibians.	Development, Regeneration, Evolution
Professor	Yutaka KIKUCHI	Construction of musculoskeletal systems and molecular mechanisms of their breakdown.	Musculoskeletal systems
Professor	Shinichi TATE	Exploreing the structure dynamics and functions associtaed with intrinsically disordered proteins (IDPs).	NMR, NMR, Intrinsically disordered protein, Protein struture dynamics
Professor	Takahiro CHIHARA	Molecular mechanism underlying neural network formation, maturation and maintenance. Genetic studies to reveal molecular mechanism for the interaction between environment (nutrition, odor and various stresses etc.) and physiological condition (longevity and behavior etc.).	Neural network, Olfaction, Longevity
Professor	Toshinori HAYASHI	Study of organ regeneration and development using urodele amphibian. Regulatory mechanism of cell proliferation in organ regeneration.	Iberian ribbed newt, Organ regeneration, Development
Professor	Yasuo FURUKAWA	Structure and function of ion channels and receptors Plasticity of neuronal excitability and synaptic transmission.	Neurophysiology, Ion channels, Receptors
Professor	Takeshi YAMAZAKI	Synthetic mechanisms and physiological functions of neurosteroids.	Basic endocrinology, Steroid hormone, Brain science
Professor	Takashi YAMAMOTO	Development of genome editing technology and generation of disease model cells and animals.	Genome editing, Disease model
Professor (Sp.Appt.)	Hidemasa BONO	Development of database technologies for genome editing and functional genomics by bioinformatic approach.	Genome editing, Bioinformatics, Functional genomics

List of Academic Supervisors

Program of Biomedical Science 2/2

Research Fields