

Laboratories, Areas of Research, and Staff

Department	Laboratory	Area of Research	Staff			
			Professor	Associate Professor	Lecturer	Assistant Professor
1. Forest and Environmental Resources Sciences	1. Resources Cycling in Pedosphere	Cycles of carbon, nitrogen, and trace elements in pedosphere and related environments. Chemical structure, function, and dynamics of soil organic matter, in particular humic substances.	WATANABE, Akira			
	2. Plant-Soil Systems	Studies on nutrient dynamics in forest ecosystems. Our specific focus is to evaluate forest health by disentangling tripartite interactions among plant, soil, and microbes.		TANIKAWA, Toko		
	3. Forest Hydrology and Disaster Mitigation Science	Research for elucidating hydrological cycle, sediment dynamics, and disaster vulnerability of local community in regional and watershed scales. Research and its social implementation for sustainable resources management is included.	GOMI, Takashi	KOTANI, Ayumi		
	4. Forest Ecology	Our laboratory covers a wide range of studies related to forest ecology, forest genetics, and forest ecophysiology. Especially structure, dynamics, and functions in tree communities. Also genetic diversity, reproductive ecology, ecophysiology, and dry matter production in tree populations.	TOMARU, Nobuhiro	NAKAGAWA, Michiko		
	5. Forest Protection	Forest entomology focusing on insect-fungus and insect-plant interactions. Forest ecosystem conservation based on the management of biological communities.	KAJIMURA, Hisashi		TOKI, Wataru	
	6. Forest Resource Management	Research on development of cutting edge measurement technology of forest, construction of theory concerning forest resource management, development of future planning and evaluation method of forest management.	YAMAMOTO, Kazukiyo			
	7. Forest Resources and Society	Studies on forest management policy for realizing both forest conservation and improvement of local livelihoods, forest certification, participatory forest management, community forestry and timber procurement strategies of enterprise	HARADA, Kazuhiro	IWANAGA, Seiji		
	8. Forest Chemistry	Organic chemical, biochemical, and analytical chemical studies on the formation process, structure, and advanced utilization of woody biomass.	FUKUSHIMA, Kazuhiko	AOKI, Dan		
	9. Biomass Resource Utilization	Isolation and structural elucidation, biosynthesis, distribution and utilization of wood extractives.		IMAI, Takanori		
	10. Wood Physics	Generation processes of growth stress and wood properties during tree growth, Growth and maturation of tropical plantation species, Analysis of reaction wood formation by molecular approach, Physical and mechanical properties of wood materials.	YAMAMOTO, Hiroyuki	YOSHIDA, Masato		WAN, Hang
	11. Timber Engineering	Mechanical durability in structural use of wood and wood-based materials, Analysis of mechanical behavior in timber structure, Quality-of-material distribution and the plan for demand and supply of forest resources, Wood utilization in urban design.	YAMASAKI, Mariko			ANDO, Kosei
	12. System Engineering for Biology	Studies on nondestructive measurement system and data science for biological resources.	TSUCHIKAWA, Satoru	INAGAKI, Tetsuya		MA, Te

*** Designated Assistant Professor

(as of October 1, 2024)

Laboratories, Areas of Research, and Staff

Department	Laboratory	Area of Research	Staff			
			Professor	Associate Professor	Lecturer	Assistant Professor
2. Plant Production Sciences	13. Plant Physiology and Morphology	Studies from both aspects of structure and function on functional differentiation of plant cells and tissues, and response and tolerance to environmental stresses.	TANIGUCHI, Mitsutaka	MITSUYA, Shiro		
	14. Plant Genetics and Breeding	Breeding, molecular genetical, molecular biological, and physiological researches related to the evolution, morphogenesis, development, and environmental stress tolerance of cultivated plant species.	NAKAZONO, Mikio	TAKAHASHI, Hirokazu		AGATA, Ayumi
	15. Crop Science	Eco-physiological studies and development of novel measurement techniques to improve crop production and sustainability focusing on photosynthesis and nutrient acquisition.	KONDO, Motohiko	YANO, Katsuya	SUGIURA, Daisuke	
	16. Horticultural Science	Physiological, biochemical, and molecular biological approaches to clarify the characteristics and growth of horticultural crops, i.e. flowers, vegetables, and fruit trees, to improve their quality and productivity.		SHIRATAKE, Katsuhiko		
	17. Plant Pathology	Physiological, biochemical and molecular-biological researches on defense mechanisms of plants against plant pathogens, and interactions of plant pathogens and beneficial environmental microorganisms with host plants. Development of biocontrol measures and understanding of its mechanisms.	TAKEMOTO, Daigo	CHIBA, Sotaro		SATO, Ikuro
	18. Plant Immunology	Studies on the molecular mechanisms of plant immune response in plant-pathogen interactions. Development of a plant vaccine based on the mechanisms.		YOSHIOKA, Hirofumi		
	19. Information Sciences in Agricultural Lands	Studies to improve agricultural production by analyzing information from field (crop DNA sequences, morphology, physiological characteristics, yield, soil, environment, etc.) by means of informatics/ data science	MURASE, Jun	DOI, Kazuyuki		NISHIUCHI, Shunsaku SAWADA, Kozue***
	20. Food Economics	Socioeconomic studies on food system, regional resource management and multifunctional roles of agriculture.	TOKUDA, Hiromi	TAKESHITA, Hironobu		MIURA, Satoshi
	21. Plant Gene Function	Studies on plant gene function and its application.	ASHIKARI, Motoyuki	HOB0 Tokunori*		NAGAI, Keisuke
	22. Developmental and Systems Plant Biology	Florigen function in the shoot apical meristem of plants. Root tissue structures that contribute to plant growth and adaptation to abiotic stress.	TSUJI, Hiroyuki	YAMAUCHI, Takaki		
	23. Plant Genomics and Breeding	Studies on plant genomics and breeding to solve various problems of modern society, i.e. environment, energy, food problems, etc.	SAZUKA, Takashi			OKADA, Satoshi
	24. Bioindustry	Studies on plant grafting and systemic signaling in plants to improve plant resources for future sustainability.	NOTAGUCHI, Michitaka	KUROTANI, Kenichi* KASAHARA		
	25. Tropical Bioresources	Exploring and evaluating the traits of tropical plant resources for sustainable agricultural development in the tropics responding to diversification of food demand and climate change (drought, saline stress, flooding).	EHARA, Hiroshi			NAKATA, Mana
	26. Genetic Information for Bioresources	Aiming at stable crop production under climate change, we conduct research on the extraction and utilization of genetic information related to useful traits from bioresources and utilization of low-temperature plasm for agricultural practices.	INUKAI, Yoshiaki			
27. Practical Studies in Africa	Research on environmental response of crop genetic resources and cultivation technology development for improving and stabilizing crop production in Africa.		MAKIHARA, Daigo			
28. Practical Studies in Asia	Studies on agriculture and rural development including natural resources management in Asia for better livelihoods, poverty reduction and food security.		ITO, Kasumi			

* Designated Associate Professor

** Designated Lecturer

*** Designated Assistant Professor

(as of October 1, 2024)

Laboratories, Areas of Research, and Staff

Department	Laboratory	Area of Research	Staff			
			Professor	Associate Professor	Lecturer	Assistant Professor
3. Animal Sciences	29. Animal Genetics and Breeding	Studies on the genetic basis of qualitative and quantitative traits in mammals and birds; evolutionary genetics research of animals using genetic engineering such as genome editing; evaluation, conservation and utilization of animal genetic resources; and development of new laboratory animal models for human disease and biological functions.	SUMIYAMA, Kenta	ISHIKAWA, Akira		YAMAGATA, Takahiro TANABE, Akira
	30. Genome and Epigenome Dynamics	Epigenetic regulatory systems for transposons and genes in vertebrates. Epigenome regulation during germ cell development. Genome-epigenome interactions during evolution. Mechanism of cancer cell growth inhibition by activation of transposons.	ICHIYANAGI Kenji			OHTANI, Hitoshi
	31. Animal Morphology	Formation and deformation of the traits in vertebrates. Viral endogenization and the roles of the viral-derived element in vertebrates. Transgenerational epigenetic inheritance (TEI).	HONDO, Eiichi			IIDA, Atsuo
	32. Animal Integrative Physiology	Understanding the regulatory mechanisms of circadian and seasonal rhythms in vertebrates. Development of transformative bio-molecules that improve animal production and human health. Studies on physiological regulation of gene expression and release of growth factors in birds.	YOSHIMURA, Takashi	OHKAWA, Taeko	KON, Naohiro**	TSUKADA, Akira NAKAYAMA, Tomoya***
	33. Animal Reproduction	Basic studies on the neuroendocrinological mechanism regulating animal reproduction and its application to animal production and drug discovery.		UENOYAMA, Yoshihisa INOUE, Naoko		
	34. Animal Nutrition	Studies on the metabolic properties of nutrients (amino acids and vitamin C etc.) and their physiological functions in avian and mammalian species. Analysis of the uptake mechanism of biomolecules into avian eggs and its application to production of valuable protein.	MURAI, Atsushi			FURUKAWA, Kyohei
	35. Animal Production Science	Studies on regulatory mechanism of physiological and reproductive functions in ruminants and its utilization for animal production.	OHKURA, Satoshi	MATSUYAMA, Shuichi NAKAMURA, Sho*		
	36. Avian Bioscience	Functional genomics-based identification of genes that control useful phenotypes of birds. Production of genetically manipulated birds for model animals and industrial use.	NISHIJIMA, Ken-ichi			OKUZAKI, Yuya
	37. Fish Biology	Morphological, physiological, and behavioral studies of the brain, sensory receptors, motor systems, and peptidergic neurons in aquatic animals.	YAMAMOTO, Naoyuki	ABE, Hideki		GOTO, Maki HAGIO, Hanako***
	38. Sericulture and Entomoresources	Molecular mechanisms of baculovirus infection, baculovirus-host interaction and antiviral responses in insects.	IKEDA, Motoko			HAMAJIMA, Rina
39. Applied Entomology	Studies on ecology and management methodology of insect pests by physiological, molecular, and chemical approaches.		MINAKUCHI, Chieka		MITAKA, Yuki	

* Designated Associate Professor
 ** Designated Lecturer
 *** Designated Assistant Professor

Laboratories, Areas of Research, and Staff

Department	Laboratory	Area of Research	Staff			
			Professor	Associate Professor	Lecturer	Assistant Professor
4. Applied Biosciences	40. Organic Chemistry	Bioorganic studies on naturally occurring organic molecules possessing novel structure and biological activity: development of new synthetic methodologies, total synthesis of natural products, elucidation and control of the biofunctions.	NISHIKAWA, Toshio			MIYASAKA, Tadachika
	41. Bioactive Molecules	Studies on identification, action mechanism, and application of bioactive molecules produced by plants and microorganisms. Mechanistic analysis and application of carbohydrate-binding small molecules.		NAKAGAWA, Yu	KONDO, Tatsuhiko	
	42. Chemical Biology of Natural Products	Isolation, structure determination, synthesis, biosynthesis, and modes of action of bioactive natural products that regulate biologically and physiologically intriguing phenomena. Anesthetic substances from venomous mammals, and key substances for marine symbiotic relationships. Development of new analytical methods for target molecules using fluorescent probes.	KITA, Masaki	TSUNEMATSU, Yuta		INOUE, Takato
	43. Polymer Chemistry	Studies on controlled syntheses and functions of biomaterials and medical polymers including artificial glycoconjugates, bifunctional polymers and environmentally friendly synthetic polymers.	AOI, Keigo	NOMURA, Nobuyoshi		
	44. Applied Enzymology	Mechanistic enzymology of flavin and pyridoxal enzymes. Physiological function of isoprenoid, amino acids, and vitamins. Microbial and enzymatic production of useful substances. Lipid biosynthesis in Archaea.	HEMMI, Hisashi	ITO, Tomokazu		
	45. Molecular Biotechnology	Molecular bioengineering for novel biomolecules, bioprocesses and analytical processes. Currently, novel monoclonal antibody screening, single molecule technology for protein engineering, and the mechanism of translation-enhancing peptide are major research topics.	NAKANO, Hideo	COROVIC Jasmina		KATO, Teruyo
	46. Soil Biology and Chemistry	Studies on the microbial population, and the chemical and biological processes occurring in the paddy field ecosystem.	ASAKAWA, Susumu	WATANABE, Takeshi		SHINJO, Rina
	47. Applied Microbiology	Molecular and chemical genetic studies on gene regulation of agriculturally and industrially important microorganisms, especially filamentous fungi.	KIMURA, Makoto			MAEDA, Kazuyuki
	48. Food and Biodynamics	Chemical biology of electrophilic ligands, such as lipid peroxidation products and functional food molecules.	SHIBATA, Takahiro			NAKASHIMA, Fumie
	49. Molecular and Cellular Regulation	Biochemical and molecular cell biological studies on signal transduction, intracellular traffic, gene expression regulation in animal cell differentiation, growth, proliferation and cell death.	SHIBATA, Hideki		TAKAHARA, Terunao	
	50. Molecular Bioregulation	Biochemistry and molecular cell biology on the biosynthesis and dynamics of proteins, nucleic acids and their complexes in mammals, and on the functions and regulations of these molecules in living organisms, including cell proliferation and tissue differentiation. Specifically, we are studying mammary gland development and milk synthesis, translational control including ribosomes, and the epithelial responses to bioactive factors.		NADANO, Daita		OHSHIMA, Kenji
	51. Glyco-Life Science	Interdisciplinary studies between bioagricultural, medicinal, and pharmaceutical sciences on regulatory mechanisms for glycans-involved phenomena to attain better health, environment, and food	SATO, Chihiro			HANE, Masaya Wu, Di****
	52. Animal Cell Physiology	Studies on functions of extracellular matrix, transporter proteins, and signal transduction.		MATURANA, Andrés Daniel	NIIMI, Tomoaki	
53. Nutritional Biochemistry	Nutritional regulation of enzyme and gene expression in mammals. Molecular mechanisms for hepatocyte differentiation in 3-dimensional culture systems. Physiological significance of liver circadian rhythm.		ODA, Hiroaki			

54. Alimentary Neuroscience	Omnivorous animals including human evaluate and select specific foods among several candidates before consumption. Our goal is the identification of the neural mechanism for food choice.	NAKAJIMA, Ken-ichiro			RATTANAJEARAKU L, Nawarat*** SHIOTANI, Kazuki
55. Plant Signaling	Studies on molecular mechanisms underlying optimization of plant growth and development in response to environmental cues with focusing on phytohormone function.	SAKAKIBARA, Hitoshi	KIBA Takatoshi	HASHIMOTO-SUGIMOTO, Mimi	BELLEGARDE, Fanny***
56. Biochemistry	Biochemical, molecular genetic, and microscopic studies on regulatory mechanisms of development of plant organs such as flowers, pollen grains, and roots. Studies on molecular functions and regulation of membrane proteins that support photosynthesis and inorganic nutrient assimilation in plants and cyanobacteria.		ISHIGURO, Sumie		MAEO, Kenichiro MAEDA, Shin-ichi NAKANISHI, Yoichi
57. Molecular and Functional Genomics	Biochemical, cellular and genetic studies on molecular mechanisms of chlorophyll biosynthesis, nitrogen fixation, circadian rhythm and phytohormone signal transduction in cyanobacteria and plants. Cyanobacterial microevolution.	FUJITA, Yuichi	YAMASHINO, Takafumi		YAMAMOTO, Haruki
58. Plant Cell Function	Molecular mechanisms of plant growth and development, and their regulation in response to environmental signals. Studies on the construction of artificial membrane-less organelles in plant cells.		UEGUCHI, Chiharu TAKEDA, Shin		
59. Plant Integrative Physiology	Understanding plant circadian rhythms and seasonal behaviors with multi-omics approaches. Improvement of plant biomass and productivity by controlling key genes for circadian and seasonal behaviors.	NAKAMICHI, Norihito			MURANAKA, Tomoaki

**Designated Lecturer

***Designated Assistant Professor

****Assistant professor in Bioscience and Biotechnology Center

(as of October 1, 2024)