

Research Activities



2022



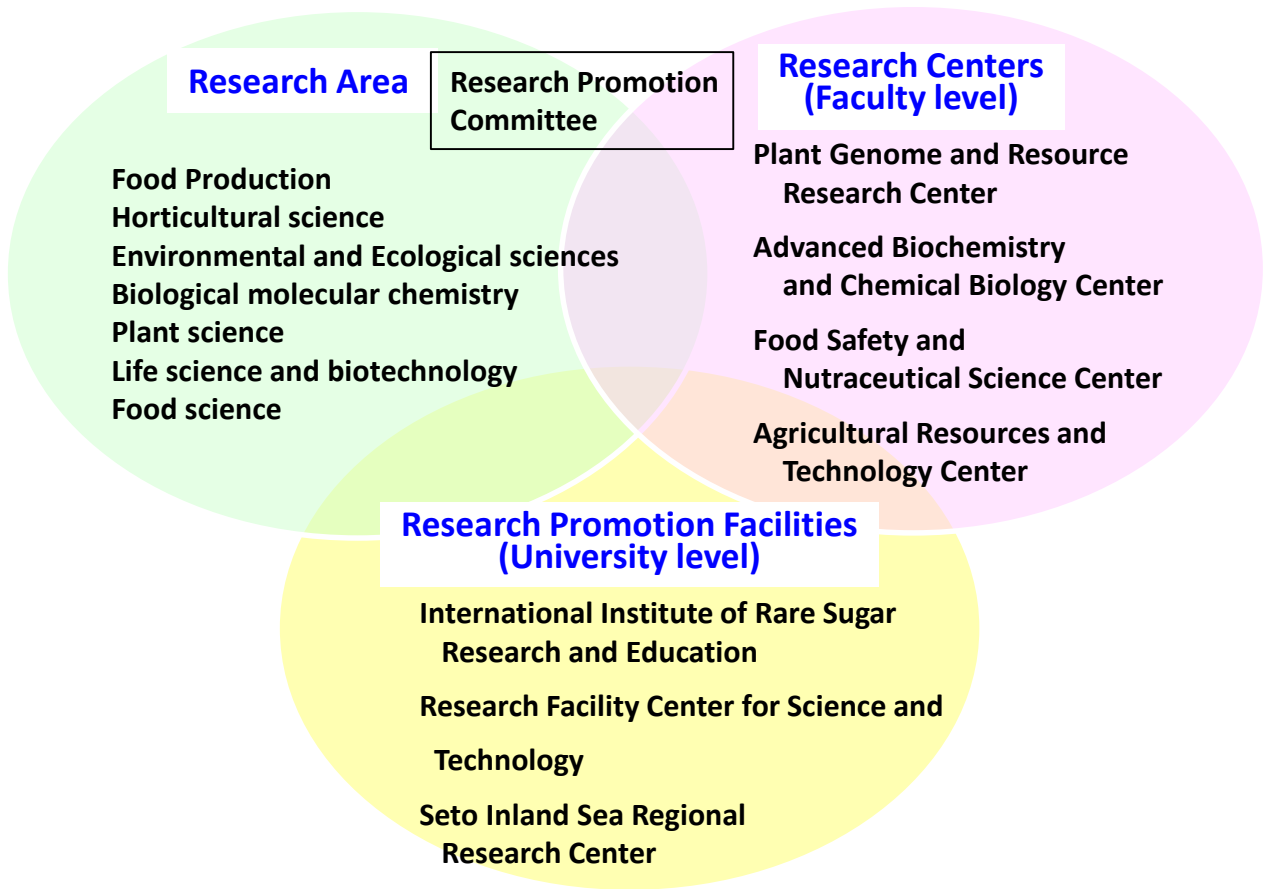
Faculty of Agriculture
Kagawa University

Kagawa University, Faculty of Agriculture, is promoting distinctive world class research activities toward harmonious coexistence of people and environment, to achieve a safe and comfortable life, by cooperation with domestic and foreign research institutes.

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Research Promotion System in Faculty of Agriculture, Kagawa University



Research Area

Faculty organization having the same disciplines

Research Centers (Faculty level)

Research groups with cross-disciplinary of multiple research area

Research Promotion Facilities (University level)

Research organizations established in the University-wide level

Research Promotion Committee

Research Support Office

Major Topics in Respective Research Area

Food Production

- Plant physiology and environmental stress-resistant mechanism for agricultural usage
- Growth morphology and ecological physiology study on crop yield
- Elucidation of neural control in animal digestive system and feed development with evaluation of feed environment
- Unused feed resource and new eligible meat resources
- Agronomical study on rice high yield
- Analysis on mechanism of meteorological disasters
- Economy on agricultural protection policy and environmental protection technology
- Business management on development of local agriculture



Horticultural Science

- Growth regulation and breeding of vegetables
- Breeding of Kiwifruit and anti-global warming fruit trees
- Evaluations of breeding trait of wild fruit tree resources and horticultural new materials
- Studies on fertility of fruit trees
- Mechanism of flowering and GMO for ornamental plants
- Genetic resource and regulation on flower color of garden plants
- Breeding and cultivation technique of strawberry
- Physiology for cutting flower for quality and freshness control
- Color pattern regulation by controlling petal epidermal cell trait



Environmental and Ecological Sciences

- Physiological ecology and life history of terrestrial higher plants
- Carbon, nitrogen, phosphorus cycle in forest and farmland soils
- Behavior and Ecology of Social Insects
- Behavioral-ecology and environmental adaptation of insects
- Material circulation and biological production environment in coastal area
- Material and energy circulation via livings in environment of coastal area
- Movement of law elements in the process of biological production by lower livings in coastal area
- Environmental assessment and raw material circulation element in aquatic ecosystems



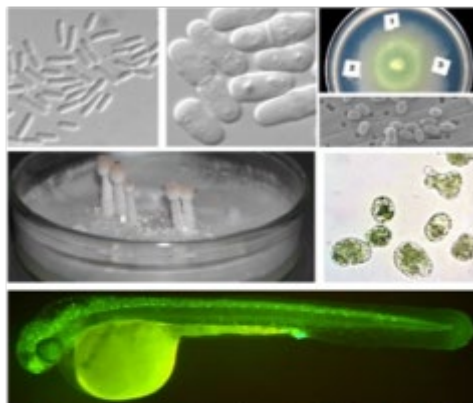
Biological Molecular Chemistry

- Binding property of algae-derived anti-cancer compound and the target protein
- Chemistry, biosynthesis, biological activity of tree components
- Biosynthesis, stereo chemistry, chemical synthesis of lignin-related compounds in trees
- Biochemistry and molecular biology of plant development and differentiation
- Search of functional compounds including rare sugar with antiaging
- Physical chemistry and function of amphiphiles
- Organic chemistry of functional natural compounds
- Chemical studies on search, application, and synthesis of plant functional components
- Sugar including rare sugar organic chemistry



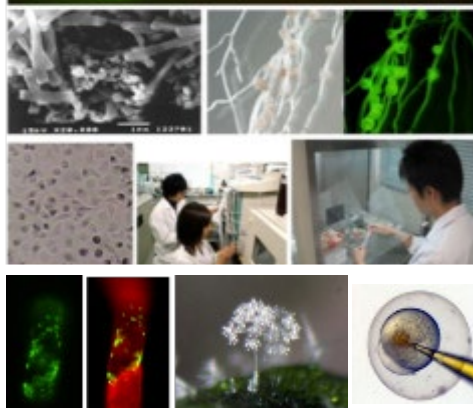
Plant Science

- Molecular elucidation of gene and gene regulation in plant-microbe interactions
- Biochemistry and molecular biology of plant-microbe interactions
- Molecular biology of plant-insect-microbe interactions
- Physiology and biochemistry of plant cell regeneration for application
- Mechanism of somatic cell mutation of higher plants
- Mechanisms of tolerant and response against environmental stresses in higher plants
- Plant signal transduction for environmental stress and immunity and plant genomics
- Molecular breeding and functional analysis of useful genes in grasses
- Synthesis of rare sugars and effects of rare sugars on plants



Life Science and Biotechnology

- Function and biosynthesis of glycoproteins and sugar chain
- Structure and function of enzymes from extremophiles
- Regulation of signal transduction by protein phosphorylation
- Mechanism of bacterial adaptation for environmental changes
- Elucidation and application of life phenomena using yeast and animal cell culture
- Enzymatic function and mass production technology using sugar synthesis enzymes
- Characterization of Basidiomycete mushroom for application
- Breeding, cultivation, searching for biological properties and useful enzymes of microorganisms and edible mushrooms
- Life phenomena of animal cells and elucidation of the mechanism of disease control by phosphorylation signal



Food Science

- Energy-saving emulsion adjustment and physical properties of food
- Improvement of a protein function in food
- Production and analysis of functional powdered food and crystallization of sugars
- Production of functional food products using anti-allergy components from olive fruits
- Biosynthetic enzyme of rare sugar and cellulose degradation enzyme from microbes
- Rare sugar synthesis using enzymes from microbes
- Immunological detection using monoclonal antibodies of mycotoxins for food safety and risk management
- Chemical analysis of food flavor and physiological properties
- Evaluation of single and mutual effects of diet and exercise for metabolisms in animal
- Discovery of new enzymes for rare sugar synthesis from nature and rare sugar manufacturing
- Applied linguistic study of English



Overview of research centers

Plant Genome and Resource Research Center

Advanced research of plant genes responsible for environmental stress tolerance and useful properties for the plant

In Kagawa University Faculty of Agriculture, multiple types of genetic researches of plant genes (phytogenes) responsible for various types of substances including rare sugars and environmental stress tolerance and useful properties for the plant are in progress. In our center, we are providing research infrastructures for the promotion of these studies, as well as mutual supports among center members for research skills and technology. As a research center of plant genome and gene source analysis, our goal is to contribute to ensuring and educating the research personnel, and to try to propose the basic research results as a form of useful innovation to society.

Quarantine green house for transgenic plants



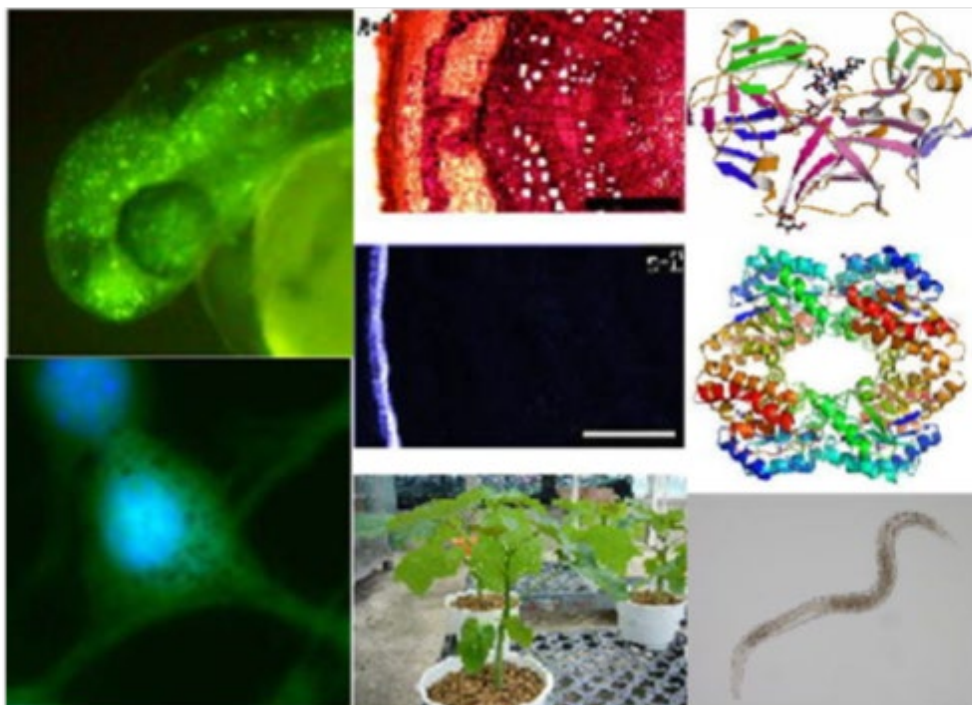
International Symposium

Regular monthly seminar series

Advanced Biochemistry and Chemical Biology Center

Advanced research with a merge of biochemistry, chemistry and chemical biology

In Kagawa University Faculty of Agriculture, biochemistry research of life science, chemistry and chemical biology of natural products are in progress. In our center, we are providing research infrastructures such as NMR or X-ray crystal structure analysis apparatus for the promotion of these studies, as well as mutual supports among center members for research skills and technology. Our goal is to contribute to providing drug lead compounds, health functional materials, and agrichemicals by various joint researches for such as search of functional natural compounds, synthesis and mode action analyses, elucidation of drug target protein or gene expression analyses.



Food Safety and Nutraceutical Science Center

Advanced research for food safety and functional food

In Kagawa University Faculty of Agriculture, food safety research such as detection of infectious microbes and mycotoxins, reduction of agrochemical usage, and pesticide residue examination, and functional food research such as examinations of nutritional characterization, texture, and functional components are in progress by joint researches with institutions outside or inside of Kagawa prefecture including oversea. We support the development of food industry by achievement of continuous efforts to solve problems related to health and food safety. We contribute to maintain a safe and comfortable life for human health by development of secure foods.



Agricultural Resources and Technology Center

Advanced research for development of new agro-technology and resources

In Kagawa University Faculty of Agriculture, various types of researches are in progress for promoting a technological development of new production, usage and breeding of field and horticultural crops with regional characteristics fitting with environment of Kagawa prefecture. Our achievements have been widely used and contributed in society; such as development of strawberry bed cultivation system, floral induction technology of house mandarin orange, development and dissemination of sake rice new varieties, development of brewing grape varieties following commercialization of University-brand wine, and new variety development through breeding of wild chrysanthemum native to Shikoku island. We will continue these achievements and aim to promote development of new agro-technology and resources for the next generation by unity of our research personnel with international, national and regional collaborators.

