

Research Activities



2023



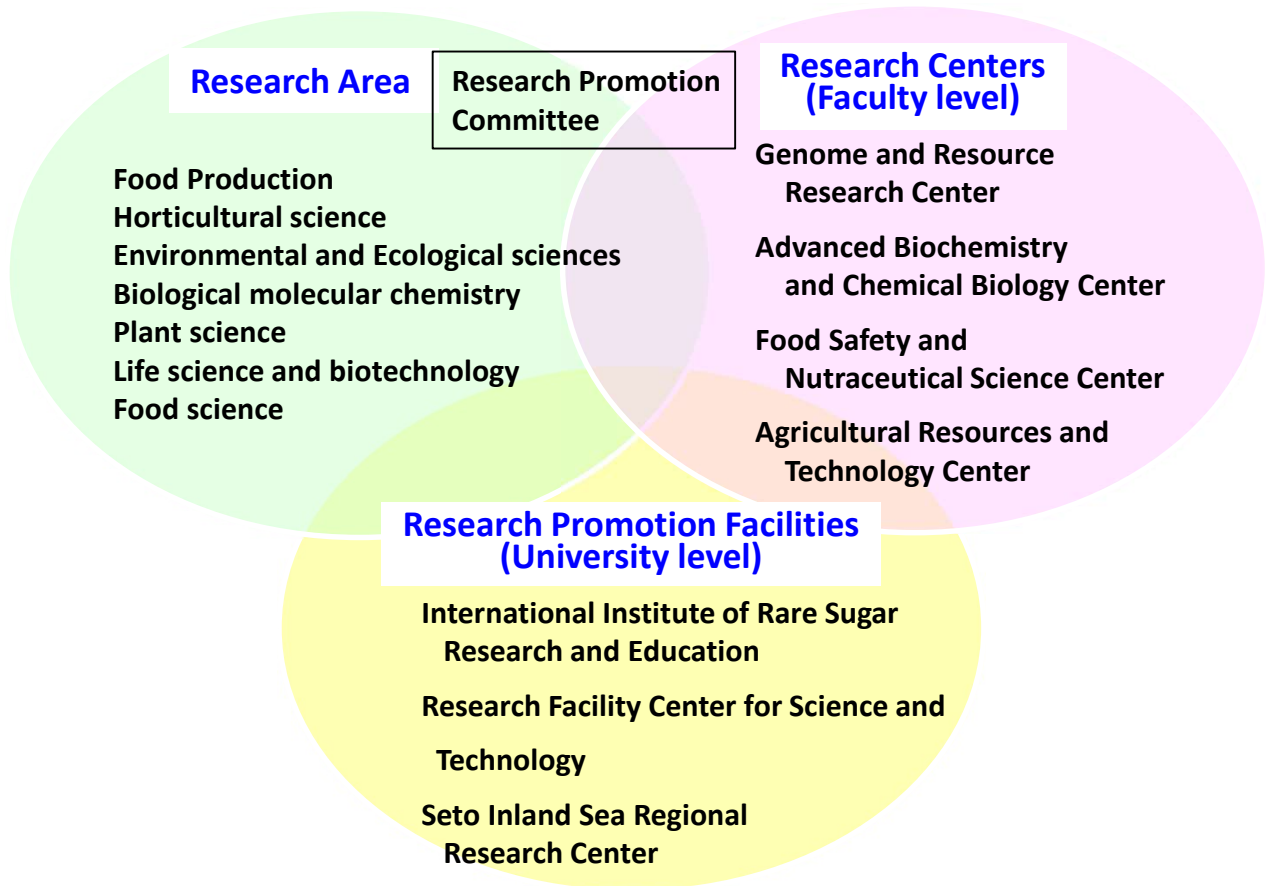
Faculty of Agriculture
Kagawa University

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

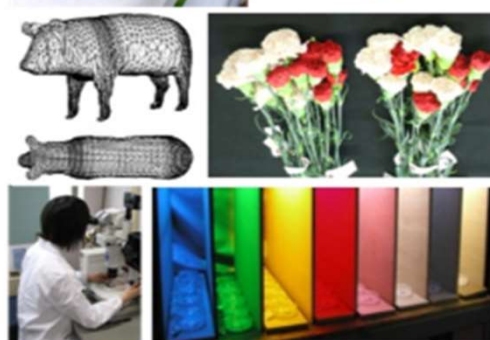
Food Production

- 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
- Genetic improvement and environmental regulation on flower coloration in horticultural plants
- 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
- Physiology for cutting flower for quality and freshness control
- Functional analysis of genes associated with flower shape and flowering in ornamental plants



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
- Evolutionary ecology and environmental adaptation of insects
- Material circulation and biological production environment in coastal area
- Ecosystem dynamics and nutrient cycling in coastal environments
- Behavior of biophilic elements on coastal lower trophic level
- Study on assessment of aquatic ecosystems and biogenic element cycles using natural environmental tracers



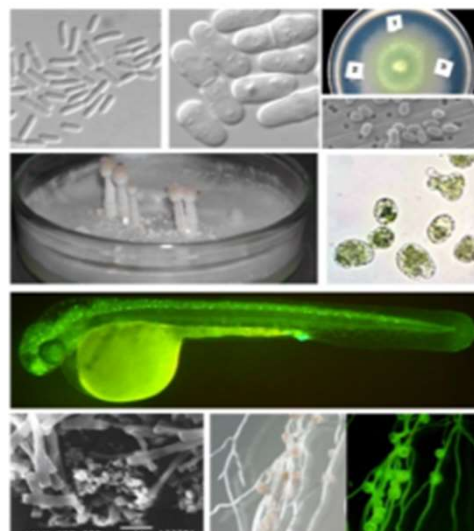
Biological Molecular Chemistry

- 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
- Plant signal transduction for environmental stress and immunity, and plant genomics
- Molecular breeding and molecular genetic studies on valuable traits in plants
- Synthesis of rare sugars and effects of rare sugars on plants
- Molecular mechanisms involved in the establishment of plant-microbe symbiosis



Life Science and Biotechnology

- Analysis and application of secretory pathway for glycoproteins
- 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 genetics
- Functional analysis and application of rare sugar or amino acid metabolizing enzymes
- Analysis of biological characteristics in basidiomycetous mushrooms and their applications
- Analysis of molecular mechanisms of biological phenomena and diseases in animal cells
- Identification and characterization of novel carbohydrate-active enzymes



Food Science

- Analysis and improvement of physical properties of edible dispersion systems (emulsion, foam, etc.)
- Improvement of a protein function in food
- In vitro assessment of food and edible insect functionality and development of processing methods for natural table olives
- Research on functional materials such as rare sugar, oligosaccharide and fermentation food
- Rare sugar synthesis using enzymes from microbes
- Development of immunological detection methods using monoclonal antibodies against mycotoxins for food safety and risk management
- 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

Genome and Gene Resource Research Center

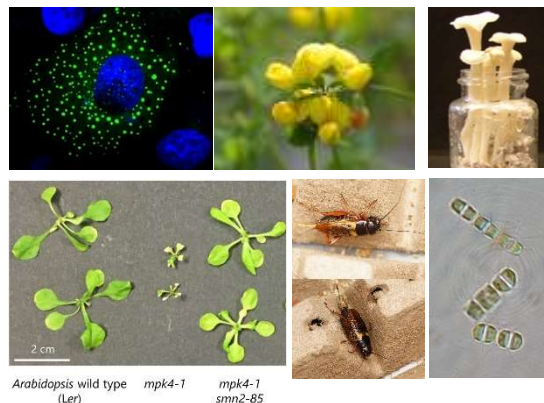
**Advanced research genome and gene resources of organisms
in the field of medicine, agriculture and engineering**

The Genome and Gene Resource Research Center promotes the analysis of huge information of genomes obtained by next-generation sequencing from higher plants and animals to microorganisms in the fields of medicine, agriculture and engineering. The purpose of this research center is to establish a research and educational foundation for genome analysis technology at the University, and furthermore, to form a regional bioinformatics center and contribute to the regional problems through genome analysis technology.

Facility for Bioinformatics analysis server



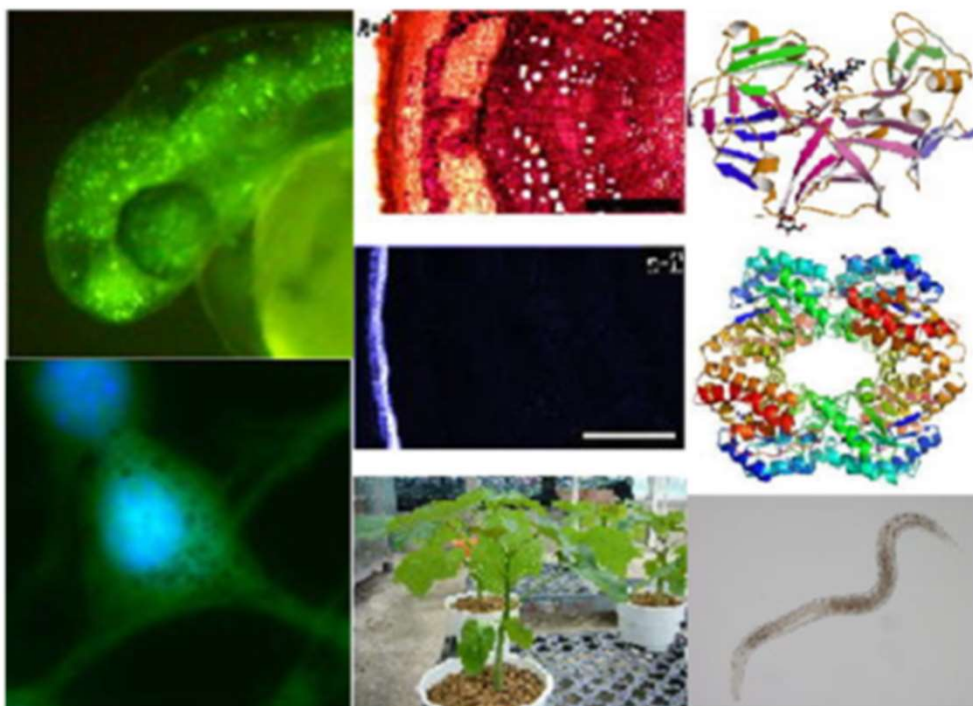
International Symposium



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

Based in the Faculty of Agriculture, the Food Safety and Nutraceutical Science Center conducts joint research with local, national and overseas institutions. The center focuses on food safety topics, such as detection of pathogenic microorganisms and mycotoxins, reduction of agrochemical usage, and pesticide residue analysis, as well as nutritional evaluation of foods, texture and bioactive compound analysis, aimed at developing functional and safe foods. We support the development of food industry through continuous efforts to solve contemporary problems related to health and food safety. Our mission is to contribute to human health and wellbeing by the development of foods with improved safety and function.



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.

