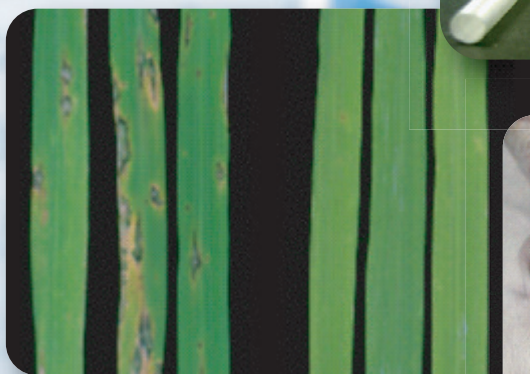




生物研

独立行政法人
農業生物資源研究所

National Institute of Agrobiological Sciences



http://www.nias.affrc.go.jp/index_e.html

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Genetic Resources Center

The long history of agriculture is closely tied to selection of useful organisms from diverse genetic resources and breeding better varieties to satisfy human needs. With current advances in the field of biotechnology, the importance of genetic resources as materials for research and development has become even more evident. The NIAS Genebank Project has been established to collect and introduce valuable genetic resources from domestic and overseas sources, maintain passport and evaluation data, and provide access to these resources for wide utilization in basic and applied research. Extensive research on genetic diversity, development of technology for efficient preservation of genetic resources, and development of new genetic and breeding materials using irradiation mutagenesis and other methods are also being pursued. To date, about 215,000 plant accessions, 28,000 microorganism accessions, and about 1,000 animal accessions are being maintained.



Storage and maintenance of genetic resources

Division of Plant Sciences



Various materials used for plant research

Plant science research focuses on elucidating the mechanisms of how plants produce biomass and respond to the environment, and understanding the interactions between plants and microbes including pathogens and symbionts. The diverse potentials and plant functions are being utilized to develop new technologies that may lead to sustainable production of high quality, high yielding, and safe crops.

Division of Insect Sciences



Insects used for research

Studies on insect science focus on elucidating the function of insect hormones and pheromones, the mechanisms controlling the behavior of insect pests and their natural enemies, the interactions between insect pests and their host plants, and the interactions between insect pests and associated microorganisms. The results of these studies are utilized to develop new insect growth regulators, basic technologies for integrated pest management, and an agricultural system that promotes environmental conservation.

Division of Animal Sciences

We are pursuing integrated approaches on effective improvement and reproduction of livestock through the development of new usage for germ cells and pluripotent stem cells, elucidating the mechanisms by which the brain, ovary and uterus adjust the reproduction, and the development of novel cell culture systems. In addition, we focus on the mechanisms by which livestock react to stress induced by light, temperature, and rearing environment, as well as the cellular and molecular mechanisms involved in innate immune systems in order to facilitate the development of basic technology for rearing and keeping livestock healthier and more productive.



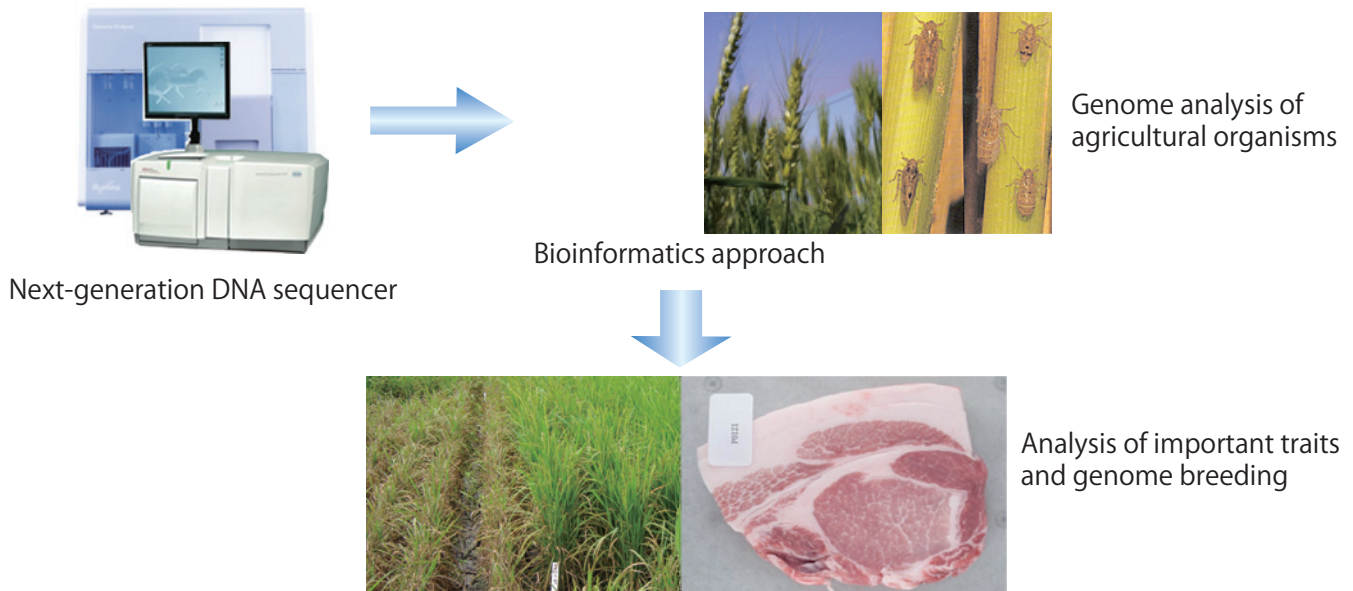
Piglet produced using sperm xenografted in mouse

NIAS Overview

The National Institute of Agrobiological Sciences (NIAS), a core research institute focusing on agricultural biotechnology, was reorganized as an independent administrative institution in April 1, 2001. It aims to create innovative bioindustries while contributing to the development of agricultural biotechnology by furthering research in life sciences with impact in agriculture.

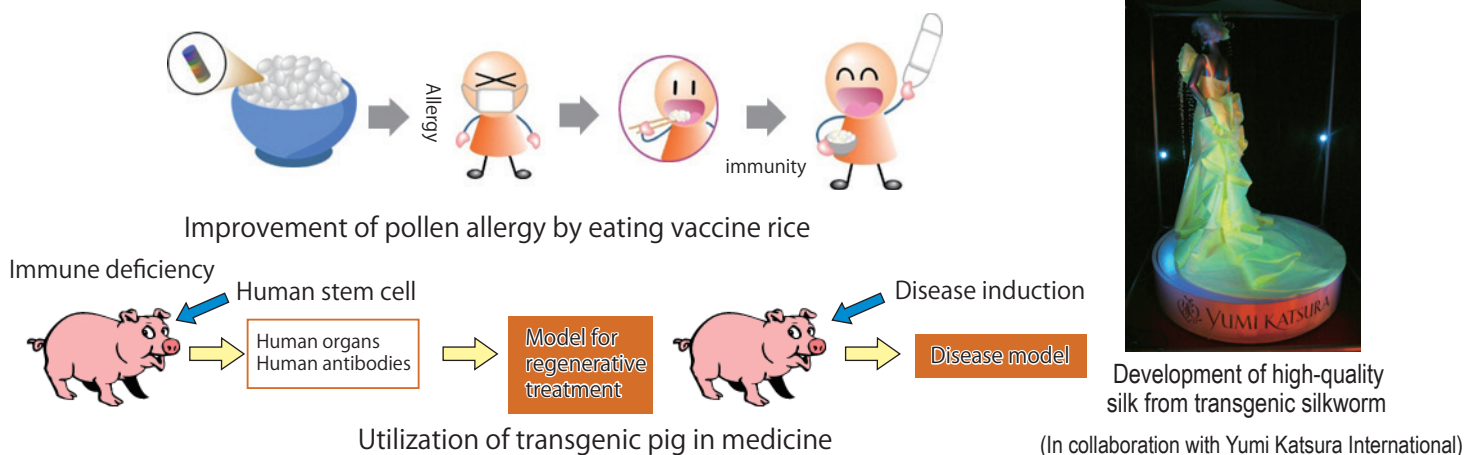
Agrogenomics Research Center

Deciphering the genomic information that defines the basic structure and function of every living organism is indispensable in understanding the biology of agriculturally important organisms at its most fundamental level. The highly advanced next-generation sequencing (NGS) technology is currently being used to decode the genomes of wheat and brown planthopper among others. In addition, cDNA libraries, mutant lines, isogenic populations for genetic analysis, and databases are being maintained and used for research worldwide for genomes which have been sequenced so far including rice, soybean, silkworm and pig. Furthermore, maximum utilization of the genome information and genetic resources is being pursued in order to incorporate agriculturally important traits such as disease resistance, high yield, and better eating qualities in the development of new and novel varieties etc. to establish a basic technology for the genome-based precision breeding.



Genetically Modified Organism Research Center

Genetic engineering technology holds promise as an efficient approach to obtain maximum benefits from agriculturally important organisms. Ongoing researches are focused on exploring the potential of recombinant DNA technology and the development of genetically modified organisms including plants (rice), insects (silkworm etc.) and animals (pig) with the ultimate goal of creating a wide range of new industries and new demands in the field of agriculture and medicine.



Organization



Permanent staff : 348

(Researchers : 234)

Fixed-term staff : 483

(Senior researcher : 1)

(Postdoc fellows : 37)

(As of April 2014)

Research Centers • Divisions

Agrogenomics Research Center

- Advanced Genomics Laboratory
- Bioinformatics Research Unit
- Genome Resource Unit
- Plant Genome Research Unit
- Insect Genome Research Unit
- Animal Genome Research Unit
- Rice Applied Genomics Research Unit
- Soybean Applied Genomics Research Unit
- Plant Genome Engineering Research Unit
- Biomolecular Research Unit

Genetic Resources Center

- International Relations Section for Genetic Resources
- Genebank Project Promotion Section
- Biodiversity Research Unit
- Classification and Evaluation Research Unit
- Genetic Resources Conservation Research Unit
- Institute of Radiation Breeding

Division of Plant Sciences

- Functional Plant Research Unit
- Plant Symbiosis Research Unit
- Plant-Microbe Interactions Research Unit

Genetically Modified Organism Research Center

- Research Promotion Section for Genetically Modified Organisms
- Functional Transgenic Crops Research Unit
- Disease Resistant Crops Research Unit
- Transgenic Silkworm Research Unit
- Transgenic Pig Research Unit
- Silk Materials Research Unit
- Insect Mimetics Research Unit

Division of Insect Sciences

- Insect Growth Regulation Research Unit
- Insect-Plant Interaction Research Unit
- Insect Interactions Research Unit
- Insect-Microbe Research Unit

Division of Animal Sciences

- Animal Development and Differentiation Research Unit
- Animal Physiology Research Unit
- Animal Immune and Cell Biology Research Unit

Access

Tsukuba Campuses (Kannondai, Owashi, Ikenodai):

Accessible by train via Tsukuba Express or JR Joban Line and connections by bus or taxi. By car, take the Joban Expressway and exit at Yatabe IC exit.

Hokuto Campus:

Accessible by train via JR Chuo Line and connection by taxi. By car, take the Chuo Expressway to Kobuchizawa IC exit.

Hitachiomiya Campus:

Accessible by train via JR Suigun Line or by car via Joban Expressway to Naka IC exit.

