

For animal health,
for human health

National Institute of Animal Health, NARO

The National Institute of Animal Health conducts a wide range of research from basic to applied science, as well as control and diagnosis of animal diseases, under the slogan "For animal health, for human health."



National Agriculture and Food Research Organization

For animal health, for human health

Animals are deeply involved with human beings and play important roles in our lives. Livestock products such as milk, meat, and eggs are essential to our lives, and healthy animals not only provide us with safe and high-quality products, they also contribute to the progress of science and technology. Improving the health and welfare of animals is vital for them to continue playing important roles in our lives.

As the exclusive research institute for animal health in Japan, we conduct confirmatory diagnosis of contagious animal diseases, produce and provide biological products such as diagnostic reagents and vaccines, and also implement training courses and lectures for domestic and overseas veterinarians.

Along with the current development of logistics and the increase in human trafficking, infectious diseases have rapidly propagated throughout the world. Many countries have also suffered from appallingly contagious animal diseases, which have included emerging and re-emerging infectious diseases. Our institute contributes to the eradication of significant animal diseases as a collaborating center of the World Organisation for Animal Health (OIE).

History

- 1891 Founded as the Epizootics Laboratory, annexed to the Bureau of Agricultural Affairs, the Ministry of Agriculture and Commerce.
- 1921 The Institute for Infectious Disease of Animals, independent organization.
- 1947 Renamed to the National Institute of Animal Health.
- 2001 Reorganized as the National Institute of Animal Health, within the National Agricultural Research Organization.
- 2016 Reorganized as the National Agriculture and Food Research Organization (NARO)



Location Map



Hokkaido Research Station
4 Hitsujigaoka, Toyohira, Sapporo,
Hokkaido 062-0045



National Institute of Animal Health, NARO

3-1-5 Kannondai, Tsukuba,
Ibaraki 305-0856



Kyushu Research Station
2702 Chuzan, Kagoshima,
Kagoshima 891-0105



Exotic Disease Research Station
6-20-1 Josuihoncho, Kodaira,
Tokyo 187-0022

Organization

Director-General, National Institute of Animal Health

Department of Research Promotion

Department of Animal Disease Control and Prevention

Biologicals Production Group
Diagnosis Supporting Group

Division of Viral Disease and Epidemiology

Bovine Viral Disease Unit
Viral Ecology Unit
Molecular Virology Unit
Viral Infection and Immunity Unit
Epidemiology Unit

Division of Transboundary Animal Disease

Animal Influenza Unit
Foot-and-Mouth Disease Unit (Kodaira)
African Swine Fever (Kodaira)
Subtropical Disease Control Unit (Kagoshima)

Division of Bacterial and Parasitic Disease

Intracellular Pathogen Unit
Bacterial Pathogenesis Research Unit
Mycobacterial Disease Unit
Enteric Pathogen Unit
Parasitic Disease Unit

Division of Pathology and Pathophysiology

Clinical Biochemistry Unit
Theriogenology Unit
Toxicology Unit
Pathology Unit
Dairy Hygiene Unit (Sapporo)

Management audits

Biosafety Officer
Biorisk Manager for Exotic Diseases
Director, Exotic Disease Research Station
Senior Coordinator, Hokkaido Research Station
Senior Coordinator, Kyushu Research Station

Department of Technical Support

Technical Support Centers
(Central, Hokkaido, Kyushu-Okinawa)

Division of Viral Disease and Epidemiology

The Division of Viral Disease and Epidemiology conducts virological research on domestic animal diseases as well as epidemiological research on major animal diseases.

The characterization of causative viruses is very important in preventing viral diseases in livestock through the development of diagnostic tools and vaccines. Therefore, our research field includes foundational studies, such as the mechanisms for the pathogenesis, proliferation, and transmission of each causative virus, and the immune response of the host species.

Moreover, owing to the increasing risk of the transmission of pathogenic viruses from wildlife to livestock, we conduct surveillance of pathogenic viruses in wild animals.

Our epidemiology group has been engaged in identifying risk factors, evaluating control measures, and proposing scientifically sound measures to support decision-makers.



Experimental infection of pig with porcine epidemic diarrhea virus (lower right: microscopic and electron micrographs of viruses).

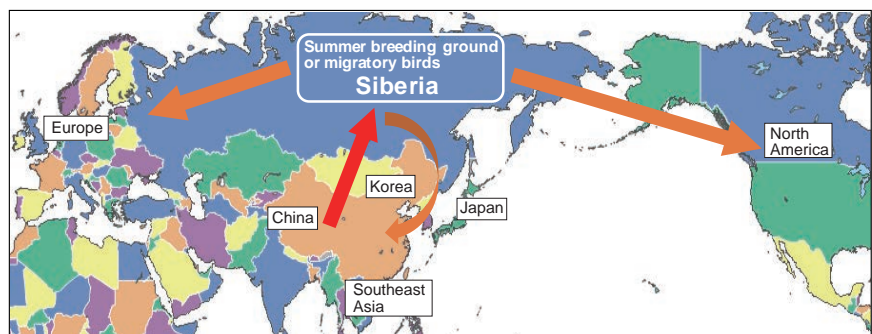
Division of Transboundary Animal Disease

The Division of Transboundary Animal Disease investigates infectious animal diseases that spread beyond national borders. The issues are addressed on the three campuses (Tsukuba, Kodaira, and Kagoshima) that are most suitable for the study of each theme.

At the Tsukuba campus, we are elucidating the molecular biological basis of the pathogenicity and transmission of animal influenza viruses, and developing diagnostic methods and new vaccines that utilize them.

At the Exotic Disease Research station (Kodaira), we are targeting the prevention of such invasive international epidemic diseases as foot-and-mouth disease (FMD) and African swine fever.

The Kyushu Research Station (Kagoshima) is engaged in research on the diagnosis and prevention of arbovirus (arthropod-borne virus) infections in the warm and subtropical regions of southwestern Japan.



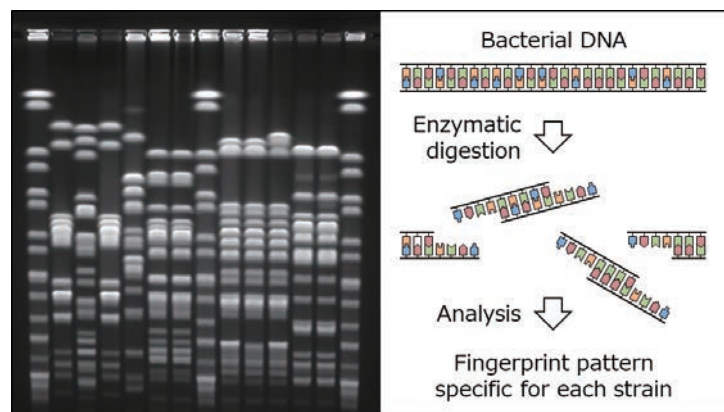
Propagation of highly pathogenic avian influenza viruses between 2013 and 2015.

Division of Bacterial and Parasitic Disease

The Division of Bacterial and Parasitic Disease covers a wide range of bacterial and parasitic diseases of domestic animals, fowl, and honey bees. Basic research aimed at understanding pathogenic mechanisms and host immune responses of bacterial diseases, screening of vaccine molecule candidates, and construction of attenuated recombinant live vaccines with the goal of developing safer and more effective vaccines, is ongoing. Whole genome analysis of pathogenic bacteria enables us to develop novel methods for diagnostic and/or molecular typing. We also deal with field research to block infectious routes or farm invasions of wild animals.

We are additionally attempting to identify novel colonizing factors of foodborne bacterial pathogens in animal intestine. Identified colonizing factors may potentially be utilized as targets for development of novel antimicrobials for elimination of foodborne pathogens in animal intestine.

Concerning research on parasites and fungi, elucidation of pathogenic mechanisms and improvement of diagnostic and preventive methods are ongoing.



PFGE for epidemiological investigation of foodborne illness outbreaks.

Division of Pathology and Pathophysiology

The Division of Pathology and Pathophysiology conducts a variety of rigorous investigations to prevent production diseases such as mastitis following milk production, metabolic disorders resulting from pursuit of high-quality meat production and high milk productivity, and reproductive disorders that impair productivity. Opportunistic infections are targeted as well. Diseases are mainly diagnosed through pathological, biochemical, and toxicological approaches in this division.

The improvement of diagnostic methodology is also targeted. Focusing on IoT/AI technologies, biosensor technologies are applied to determine individual health status for on-site perception of symptoms in the early stages of diseases.

Mucosal vaccines and cytokines are utilized for control and prevention of mastitis in the Dairy Hygiene Unit, Hokkaido Research Station.



Body temperature sensor attached to the ventral tail base.

Highly Secure Biosafety Level 3 (BSL3) Facility

In order to handle infectious agents of human and animals, it is essential to prevent escape of pathogens from research facilities as well as infection of research personnel (Biorisk Management). Severity of biological containment is classified from 1 to 4 in biosafety level (BSL). The level of facilities to handle each infectious agent is determined by its risk to humans and animals.

Two BSL3 facilities: the Advanced Research Facility for Animal Health (Tsukuba, Ibaraki), and the Specialized Experiment Facility (Kodaira, Tokyo), are able to handle pathogens with high risk of causing serious disease in humans and animals.

Infectious pathogens handled at these facilities are rigorously contained by physical conditions such as HEPA filters for controlling intake/exhaust of air, airtight doors to keep negative pressure in experimental areas, and sterilization of drainage through autoclaving. A mandatory employee shower-out procedure minimizes the risk of external pathogen transmission.

Specialized Experiment Facility

This facility in Kodaira was built in 1987 for the study of contagious diseases that have the potential for very serious and rapid proliferation, regardless of national borders (exotic diseases). One example is FMD, which is the most contagious disease of cloven-hoofed animals such as cattle, pigs, sheep, and goats, and causes severe economic damage to the livestock industry.

This is the only facility in Japan for the research and diagnosis of FMD and African swine fever, and complies with "Guideline for Control of Specific Domestic Animal Infectious Diseases" under the auspices of "Act on Domestic Animal Infectious Diseases Control".



Specialized Experiment Facility in Exotic Disease Research Station (Kodaira, Tokyo).



Experimental infection of pigs with FMD virus.

Through this facility, we advance collaborative research with overseas research and diagnostic institutions, and also contribute internationally through the acceptance of trainees.

The Exotic Disease Research Station was approved as a rinderpest virus holding facility by the Food and Agriculture Organization of the United Nations (FAO) and OIE, and supports the activities of the OIE reference laboratory for rinderpest and classical swine fever.

Advanced Research Facility for Animal Health

Constructed in Tsukuba in 2004 for BSE research, this is one of the largest BSL3 animal facilities in Japan, with five BSL3 laboratories and a BSL3 animal experimental area of about 1,900 m².

This facility has enabled BSE transmission experiment, contributing to elucidation of the mechanisms of pathogenesis, as well as to the development of antemortem diagnostic methodology.



Experimental infection of cattle with BSE.



Advanced Research Facility for Animal Health (Tsukuba, Ibaraki).

The facility is currently being used for research on BSE and animal influenza, and supports the activities of OIE reference laboratories for BSE and porcine influenza.

When the occurrence of highly pathogenic avian influenza (HPAI) is suspected in Japan, we promptly perform testing for diagnosis, genetic, and pathogenic characterization of the causative virus. Immediate diagnosis is essential to prevent spread of the infection.



Experimental infection of chickens with avian influenza virus.



We additionally research the mechanisms of disease dissemination and the development of vaccines for HPAI with a variety of experiments that utilize the advantages of the facility scale.

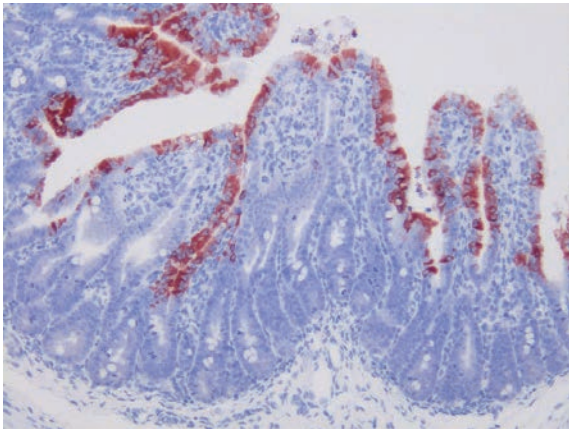
Business and Research Support Necessary for Animal Health Administration

NIAH has developed many kinds of biologicals and, in most of cases, allocated their manufacture and sales to private companies. Currently, NIAH manufactures biologicals that are indispensable, but are not provided by private companies due to the small market.

The Biologicals Production Group is the section that manufactures the biologicals and at present handles 12 kinds of diagnostic reagents for livestock. The group also manufactures and stockpiles the vaccine for rinderpest. Although the virus was effectively eradicated in 2011, our facilities have continued to produce the vaccine under the approval of FAO and OIE.



Rinderpest Vaccine.



Mucosal epithelial cells infected with porcine epidemic diarrhea virus (red pigments).

The Diagnosis Supporting Group supports research activities and diagnostic services through technical support such as preparation of pathological specimens, biochemical and molecular biological analysis, tissue culturing, scientific photography, and the construction and management of scientific databases. We also manage the collection of microorganisms, cells, and sera for research activities and diagnostic services. Moreover, we administrate the acquisition of ISO 17025 at NIAH.

The Research Promotion Office conducts the management of disease appraisal services for diagnoses requested by prefectures, acceptance of trainees, and domestic and overseas tours.

Contact Us



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<https://www.naro.affrc.go.jp/english/laboratory/niah/index.html>