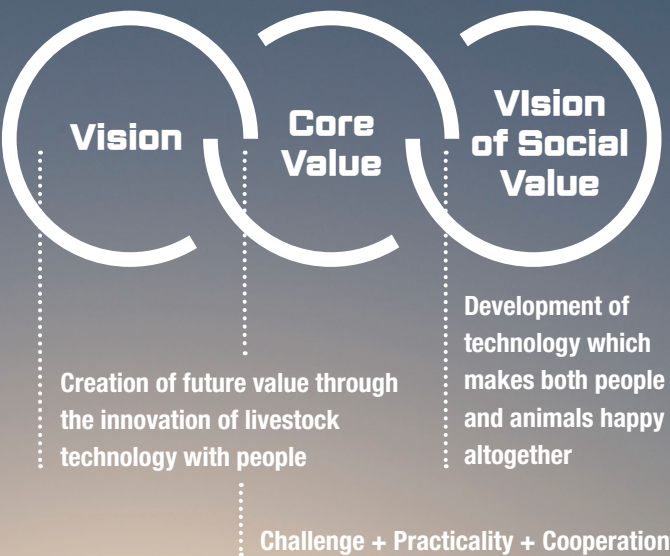




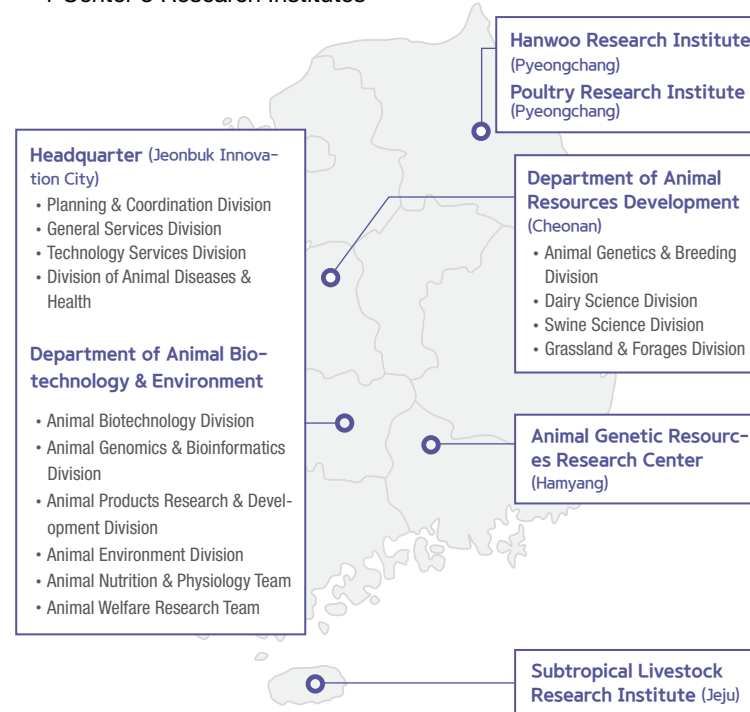
National Institute of Animal Science

Major Tasks

- Securement of the diversity of animal genetic resources and development of breeding techniques
- Development of future livestock technologies responding to climate changes and Development of stable production technology for livestock products
- Development of technologies for feed cost reduction and coarse fodder production and utilization
- Development and quality management of livestock products
- Development of new bio-based materials utilizing animal biotechnology
- Development of value-added technology on livestock products with updated functions
- Recycling of livestock excretions and development of energy saving technology
- Development of technology to promote the welfare of livestock and companion animals
- Dissemination of novel animal breeding techniques and management improvement

Organization

2 Departments (8 Divisions 2 Teams) 4 Divisions
1 Center 3 Research Institutes



- **Headquarter**
Department of Animal Biotechnology & Environment
(55365) 1500, Kongjwipatji-ro, Iseo-myeon, Wanju-gun, Jeollabuk-do, Republic of Korea
☎ +82-63-238-7000 FAX +82-63-238-7148
- **Department of Animal Resources Development**
(31000) 114, Sinbang 1-gil, Seonghwan-eup, Seobuk-gu, Cheonan-si, Chungcheongnam-do, Republic of Korea
☎ +82-41-580-3300
- **Animal Genetic Resources Research Center**
(50000) 224, Deogyuwolseong-ro, Seosang-myeon, Hamyang-gun, Gyeongsangnam-do, Republic of Korea
☎ +82-55-960-3500
- **Hanwoo Research Institute**
(25340) 4937, Gyeonggang-ro, Daegwallyeong-myeon, Pyeongchang-gun, Gangwon-do, Republic of Korea
☎ +82-33-330-0600
- **Poultry Research Institute**
(25342) 321-11, Daegwallyeongmaru-gil, Daegwallyong-myeon, Pyeongchang-gun, Gangwon-do, Republic of Korea
☎ +82-33-330-9500
- **Subtropical Livestock Research Institute**
(63242) 593-50, Sallokbuk-ro, Jeju-si, Jeju-do, Republic of Korea
☎ +82-64-754-5700

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Creation of Future Value through the Innovation of Livestock Technology with People

National Institute of Animal Science



NIAS is...

As a government research institute affiliated with the Rural Development Administration, the National Institute of Animal Science (NIAS) secures diversity of animal genetic resources and carries out necessary research in the field of livestock industry, such as enhancement of productivity per livestock through animal improvement on a national scale, development of high value-added livestock products, creation of clean livestock environment, animal welfare and breeding technology, supports on promotion of companion animal related industries, breeding technique responding to climate change, and so on.

Also, NIAS develops and disseminates convergence and complex breeding technology at an advanced level, which would lead the livestock industry in this era of the Fourth Industrial Revolution.

NIAS will make a new leap forward as a world-class livestock research institute, for the happier future of livestock industry, with people and animals altogether.

History

- 1960** ~
- 1962** Established RDA Livestock Experiment Center
- 1969** Separated into RDA Livestock Experiment Center and MAF National Breeding Stock Center
- 1994** Reorganized the Livestock Sanitation Office by Integrating the Livestock Experiment Center and National Breeding Stock Center
- 2000** ~
- 2001** Designated as executive government agency
- 2004** Reorganized from Livestock Sanitation Office to Livestock Research Institute
- 2007** Reorganized from Livestock Research Institute to Institute of Animal Science
- 2008** Reorganized from Institute of Animal Science to National Institute of Animal Science
- 2010** ~
- 2015** Relocated National Institute of Animal Science (From Suwon to Jeonbuk Innovation City)
- 2016** Established Poultry Research Institute
- 2018** Established the Division of Animal Diseases & Health
- 2019** Relocated Animal Genetic Resources Research Center (Hamyang), and Established Animal Welfare Research Team

Research on Animal Biotechnology

NIAS has expanded the field of research from traditional breeding to state-of-the-art research such as gene edited animal production, organoids with stem cells, and xenotransplantation.

- Genetically Engineered Pig-to-Primate Corneal Xenotransplantation
 - 5 out of 8 transplanted corneas maintained its normal function for more than 6 months longer (3 corneas are still functioning for more than 1 year)



Corneal Xenotransplantation

Research on Animal Genetics

NIAS identifies genes and interprets genetic mechanisms, builds multi-omics database and conducts bioinformatics research.

- Deciphering of the reference genome and discovery of trait-associated genes in Korean native animals
- Discovery of genes and mechanisms adapted to high temperature, in response to climate change in poultry



Genome Analysis

Research on Utilization of Livestock Products

NIAS develops technologies for distribution standard, quality control, safety enhancement and functional improvement of domestic meats and dairy products, and research on technologies for improvement of distribution to promote consumption on livestock products and support on rural convergence industry.

- Establishment of national-scaled standard for carcass and retail cut yields and development of meat prediction system of Hanwoo and LYD pigs
- Development of hygiene management guideline and control technology for farmstead dairy plants



Prediction Program of Hanwoo Beef Production

Research on Nutrition Physiology

NIAS carries out researches on animal metabolic control, feed efficiency improvement, feed safety and quality enhancement, greenhouse gas emission estimation and reduction, climate changes effect prediction and evaluation on livestock.

- Comparison of growth performance and carcass traits in accordance with the feed protein level(12.5/15%) in the late fattening period of Hanwoo steers
- Development and registration of intestinal fermented methane emission factor of dairy cattle by age



Hanwoo Standard Specification Program

Research on Livestock Environment

NIAS develops technologies for recycling and energizing of manure and liquid fertilizer from livestock excretions, reducing odor-causing compounds from livestock production practices, and improving ICT-based precision livestock farming.

- Researches on ammonia emission derived from swine facility during the fattening period
- Development of synthetic gas production technology during the pyrolysis process of fowl droppings



Customized Integrated Management System

Research on Animal Welfare

NIAS develops livestock housing and certification standards, and researches on developing functional food and its quality for health enhancement for companion animals.

- Suggestion on 'Animal Welfare Certification Standards for Broiler'
- Evaluation on the efficacy of fermented oats and black soldier fly larvae to develop functional dog's food for companion dog's health improvement



Behavioral Analysis of Fed Pigs by Stocking Density

Research on Animal Breeding and Genetics

NIAS is in charge of national breeding programs of seedstock selection of Hanwoo, dairy cattle, and pigs. We establish system to evaluate genetic potentials of candidate bulls and boars by using big data. We also conduct research pursuing higher accuracy with genomic information.

- Genetic evaluation of Hanwoo, Holstein dairy cattle, and pigs and implementation on selection of breeding stocks
- Establishment of system for early prediction service on genetic capability of cows, utilizing genomic information of Hanwoo

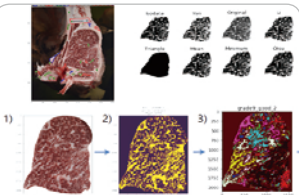


Guaranteed Hanwoo Breeding Bull

Research on Hanwoo

NIAS researches on establishment of Hanwoo line population for improving its genetic diversity. And development of practical technologies to enhance reproductive efficiency, and feeding and management for reducing production cost of high marbled Hanwoo beef.

- Establishment of Hanwoo line population of Hanwoo Research Institute, and development of related technologies, and selection of national candidate sire
- Development cryopreserved semen of Male Hanwoo and technology for strawminiaturization(0.25ml)



Intramuscular Fat Delicacy Indicator of Castrated Hanwoo

Research on Dairy Science

NIAS carries out researches on breeding and improvement for excellent species, creation of new breed base and climate changes coping strategies of dairy cattle, and livestock disease controlling technology, for the improvement of the production efficiency and sustainable development of dairy industry.

- Breeding and improvement on Korean Proven Bull of Holstein cattle, and creation of Jersey breed herds



Guaranteed Dairy Breeding Bull H-623 (Upper) & H-617 (Lower)

Research on Pig Breeding

NIAS develops and industrializes new species, by applying pig breeding technology, and conduct research on nutrition and specification controlling technology and breeding physiology for enhancing pig productivity.

- Research on improving economic traits of breeding pig and promotion of swine industry
 - Supply of 'Wooriheukdon' on a national scale : 7 Provinces, 24 Farmhouses, 346 Heads(2020)



Korean Black Pig 'Woori heukdon'

Research on Poultry

NIAS carries out research on improvement of domestic native poultry species, promotion of poultry industry, improvement on the overall poultry productivity, and bio-friendly safety poultry products.

- Improvement of raising and spawning ability through the genetic ability evaluation of inbred national poultry
- Selection of substances for reducing hightemperature stress of broilers and Investigation of their effects, responding to climate change



Layer Multistage Henhouse

Research on Livestock Genetic Resources

As a national executive agency on livestock bioresources, NIAS establishes safe preservation system for major domestic species and genetic resources and carries out diverse researches for securing international significance and values.

- Procurement of Hanwoo traceability samples and establishment of its application plan
- Securement of genetic resources of natural monument animals and establishment of dispersive preservation system



Procurement of Natural Monument Animals' Genetic Resources

Research on Subtropical Livestock

NIAS improves the industrial availability of traditional domestic animals (Jeju horses, Jeju black cattle, Jeju black pigs) and researches on the technologies for breeding management per species and application of environmental resources under the subtropical climate conditions.

- Development of 'contact behavioral tests' for objectification and simplification of estimating temperament of riding horses
 - Contact behavioral tests has less subjective intervention by the Observer, allowing more objective evaluation of temperament

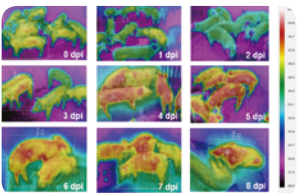


Nurture & Character Evaluation of Domestic Saddle Horses

Research on Prevention and Control of Livestock Disease

NIAS improves their biosecurity system to protect livestock from endemic diseases (ASF, FMD, and HPAI), and researches on technologies for the management of the animal diseases.

- Development of methods for early investigation on pigs that are suspicious of infection of African swine fever
- Disinfection-optimized researches for blocking inflow of animal diseases



Thermographic Images of ASF-infected Pigs

Research on Grassland and Forages

NIAS develops new cultivar of forage crops(grass and legume) which are excellent in quality and domestic climate adaptability, and research for enhancing the quality of forages and developing stale preservation

- Breeding new cultivar of Italian Rye Grass which is winter- hardiness and good adaptability on Southern region of Korea
- Extended cultivation on utilizing new cultivar of salt-tolerant Tall Fescue(TF) and Italian Rye Grass at reclaimed saline land



Field Test and Evaluation on Saemangeum Reclaimed Land

Dissemination of Livestock Technologies

NIAS supports for technologies and promotes demonstration businesses such as supplement and estimation on domestic and foreign stock raising technologies, and provides customized consultation for resolving difficulties in the livestock industry.

- Operation of comprehensive consultation customized for fields
- Operation of comprehensive support system for stock raising farms ('Chuksaro')
- Operation of national certified examination for artificial inseminator of farm animals



Expert Consultation Services on Stock Raising