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AARHUS UNIVERSITY • DEPARTMENT OF ANIMAL AND VETERINARY SCIENCES

ANIVET 2030

THE FUTURE OF ANIMALS IN HUMAN CARE

Resilient, sustainable and welfare-driven animal production and handling through knowledge and innovation

AARHUS
UNIVERSITY
DEPARTMENT OF ANIMAL AND VETERINARY SCIENCES

VISION

To be an internationally recognised animal and veterinary science department, with major focus on nutrition, health, welfare and diseases as a contribution to an overall sustainable keeping of animals in human care for food production, nature management, therapy, sport and companionship.

AMBITION

We stand at a turning point for the global animal food system, at a time when the welfare of animals kept by humans is a high priority. ANIVET has a strong focus on conducting fundamental and applied research to generate research-based knowledge that contributes to the green transition and a sustainable keeping of all animals in human care. We will achieve this by emphasising resilient, sustainable and welfare-driven animal care through research and development, generating knowledge and innovation while providing a solid foundation for science-based education and policy advice. ANIVET will communicate broadly and openly about our activities and results to be known as a source of knowledge-based information in our field.

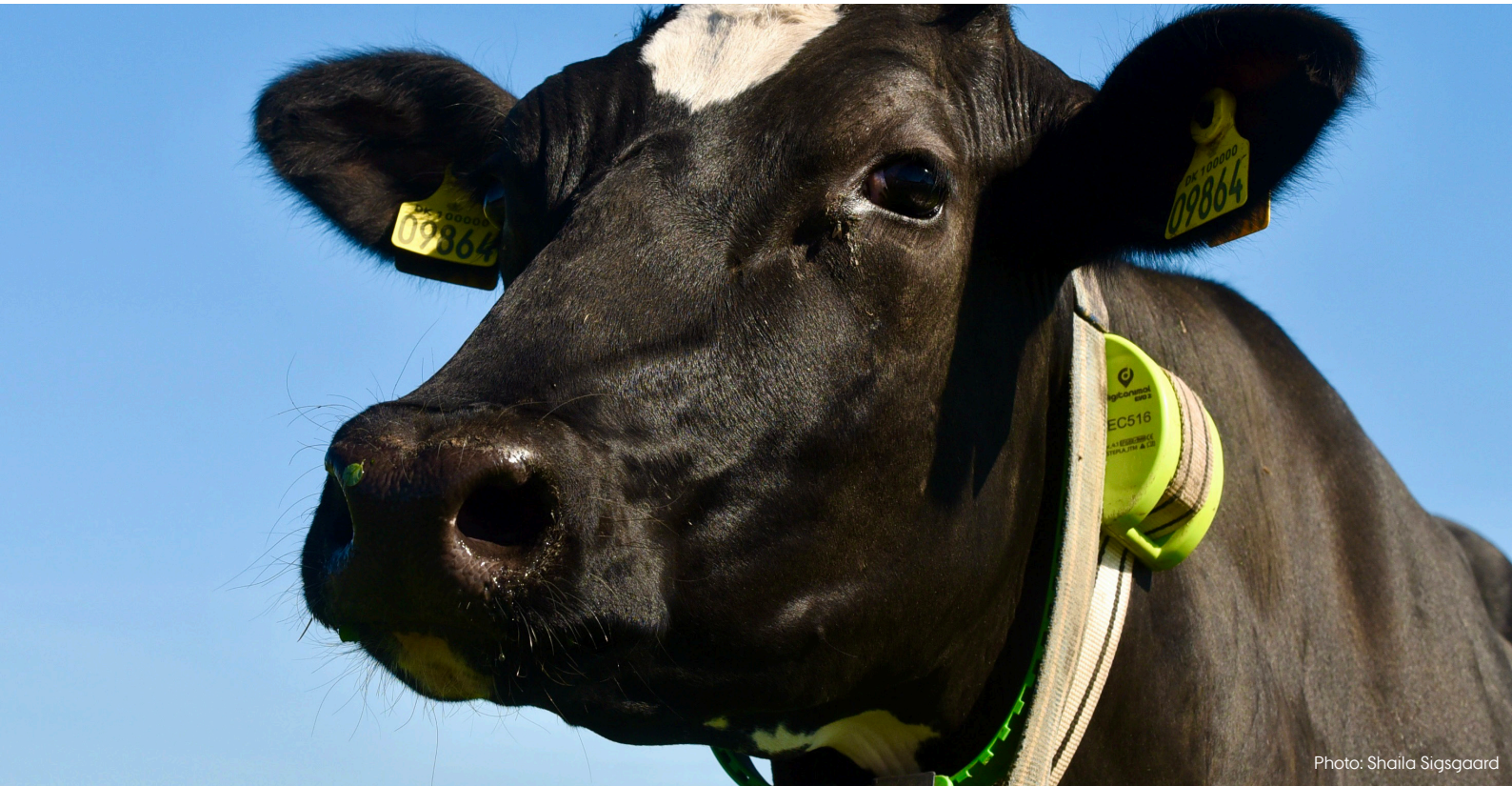


Photo: Shaila Sigsgaard

IMPACT

ANIVET creates impact through four activity areas and transforms our science-based knowledge, resources and expertise into meaningful changes for society. ANIVET generates impact in food production and increasingly contributes to the understanding of animal health and diseases across all animals in human care.

Research

Our well-known track record of research activities delivers new fundamental and applied knowledge, methods and technologies. We combine science-based knowledge with interdisciplinarity and collaboration, working across academia and industry. Through this we create knowledge and solutions that advance sustainability, quality, health, welfare and circularity across the livestock system. In addition, we apply our scientific knowledge to the health care of animals in sports, horses and companion animals. Our scientific foundation is the solid basis for innovation, policy advice as well as the education of all kinds of students that drive long-term transformation.

Innovation

Through our well-established industry collaborations, we foster, facilitate and bridge new ideas from the barn and the laboratory into practice to be upscaled and available for veterinary practices, farmers and other practitioners where animals are kept by humans. By emphasising the entire value-chain, our research output is translated into practical solutions that accelerate the introduction of e.g. new production methods, technologies and innovations that support a more sustainable and competitive livestock sector. Our growing educational activities will form the basis for the integration of students into new areas of innovation and entrepreneurship in our research fields and in the advancing veterinary service.

Public engagement

We provide independent, science-based and ISO-certified policy advice nationally and internationally through high-quality research analyses, assessments and insights to enable the shaping of regulatory frameworks as well as societal choices and decisions. ANIVET's scientific knowledge is disseminated through a wide variety of channels such as social media and public events, contributing directly to public value and long-term societal benefit.

Education

Our educational programmes are scientifically based and oriented towards those who recruit our candidates, e.g. industry, veterinary practices and hospitals, ministries and policy makers as well as agricultural schools. We provide training for researchers and develop long-lasting talents for the global community in animal and veterinary science. Our students are close to animals from the very beginning of their studies, and our Master's degree programme in veterinary medicine is conducted in close partnership with veterinary clinics in Denmark.



Photo: Shaila Sigsgaard

STRENGTHS

RESEARCH BASIS

Our strengths lie in our core scientific areas of nutrition, health, welfare and animal diseases. We conduct research ranging from basic to applied science, spanning from a fundamental understanding of individual animals or herds to their environments and daily lives with humans, with a strong focus on the animal's productivity and well-being. ANIVET will continue to focus on livestock used to produce animal-based foods, but we will expand our focus to all animals in human care. With the recent establishment of the veterinary degree programme, ANIVET's research activities will be further expanded to address the prevention and management of animal diseases and to include several other species, with a growing focus on horses, companion and exotic animals as well as animals used in nature management.

DISCIPLINE-ORIENTED RESEARCH

ANIVET works in a discipline-oriented manner across the different animal species. The scientific disciplines and research areas of ANIVET are strategically organised into different research sections (link) in which scientists and technicians work closely together, making use of state-of-the-art equipped laboratories and experimental settings covering everything from cells and organoids to individual animals, livestock herds, animals in nature and animals living in close companionship with humans, supported by highly sophisticated analytical tools and data modelling. ANIVET will continue our discipline-orientated approach to research, also during the process of establishing the new veterinary research areas that will be developed over the coming years.

INFRASTRUCTURE

ANIVET has access to state-of-the-art infrastructure at campus AU Viborg and is supported by the secretarial administration (link). Our animal experimental facilities are organised within the Center for Animal Facilities (CAF, link) which houses living animal species (cattle, pigs, poultry and horses). With several highly specialised research stables and rooms for educational activities and training, CAF is tightly linked to the ongoing impact-driven activities. In addition, CAF houses specialised platforms for performing organic research, infection experiments and a high-technology-driven feed-processing plant. ANIVET will maintain this organisation to house our on-going research and educational work.

FUNDING AND COLLABORATION

Our research activities are primarily externally funded and mission-driven, and we form collaborative partnerships with several actors to contribute to national and international scientific communities within the agri-food value chain. This gives us a strong basis for education and policy advice. ANIVET will further strengthen this approach to research funding by establishing solid partnerships with national and international research and private organisations as well as Danish private veterinary businesses.


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FIVE RESEARCH FLAGSHIPS

ANIVET has identified the following five flagships, which characterise our research excellence and strengths across research sections and disciplines, and the adherent infrastructure. The flagships will be used strategically to create a more impact-oriented research portfolio towards 2030.

01 Animals in nature management

02 Green transition of livestock production

03 Welfare of animals in human care

04 Antimicrobial resistance and animal health

05 Future protein and feeding supply

01 Animals in nature management

Nature management with grazing animals in large enclosures is rapidly expanding not only in Denmark, but also in the EU. When livestock interact with wild animals or humans in the landscape, several challenges arise that requires further understanding and research.

With this flagship ANIVET contributes research on the following four focal points:

1. Disease transmission and sustainable prevention strategies.
2. Animal welfare in nature management
3. Animal-human interaction and safe co-existence.
4. Supplementary feed and management for improved biodiversity.



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02 Green transition of livestock production

The overall goal is to support the further development of science-based solutions, promoting efficient and sustainable livestock production in all aspects. A central area is the development of nutritional and management strategies/technologies that not only fulfil animals' nutrient requirements, but also support resource-efficient production systems.

The four key scientific pillars are:

1. Nutritional strategies and technologies for feed efficiency.
2. Multifactorial interactions, i.e. studying rumen/gut microbiology, genetics, welfare, product quality, biodiversity and economics when technologies are in play to avoid negative side effects.
3. Life-cycle assessment and nutrient-flow models to prevent sub-optimisation along the chain from feed production to manure management.
4. Land use for livestock with an emphasis on its interaction with climate and its impact on biodiversity.

03 Welfare of animals in human care

The main focus is on fundamental and applied research to understand how current and future husbandry practices affect One Health and One Welfare, including innovation in husbandry practices to re-design animal production systems so that they align with societal expectations for high welfare and reduced use of antibiotics.

The flagship embraces:

1. One Welfare, with a focus on the interactions between animals, humans and the environment.
2. Welfare-promoting husbandry practices, including socio-economic resilience and the adoption of sustainable practices.
3. Welfare of animals beyond livestock, i.e. companion animals and sport animals.
4. Precision livestock farming and digitalisation that promote animal welfare and enable the monitoring of animal behaviour and health.



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04 Antimicrobial resistance and animal health

This flagship addresses the role of animals in the prevention of antimicrobial resistance (AMR) mitigation and has the following four focal points:

1. Prevention of diseases (feed-, water- or air-borne) that require antimicrobial treatment through improved health management and early intervention strategies.
2. Alternative treatment strategies and interventions that lower antimicrobial use and reduce the overall risk of AMR development.
3. Enhanced diagnostic tools for antimicrobial resistance, including detecting and monitoring antiparasitic resistance.
4. Resistance genetics and epidemiology investigated within a comprehensive One Health framework.



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05 Future protein and feeding supply

There is an urgent demand for research on robust, localised feed and water supply chains to secure animal-based food production systems.

ANIVET's focus points are centered around four core areas:

1. Resilient resources emphasising green proteins, novel protein feed sources and alternative fibre biomasses as well as micronutrient and feed additives.
2. Crop and system development, with a strong focus on applying animal physiology and biomarkers to obtain new local crops and alternative systems.
3. 'One Nutrition', i.e., linking health, welfare and nutrition of animals.
4. Alternative proteins (insects, marine and other biomasses) and resource efficiency emphasising technological solutions for resilient production and use in animal feed.

STAFF AND CULTURE

We want to make ANIVET an attractive and inclusive workplace for people who wish to contribute to a future with thriving animals in human care.

A diverse and inspiring workplace

Our staff come from a variety of educational backgrounds and from all over the world, bringing international experience and cultural perspectives. We work with several animal species across various scientific disciplines, highlighting interdisciplinarity and complementarity. This diversity should be recognised and valued.

Friendly and accommodating culture

There is a well-developed tradition for social interactions both within and between the various groups, celebrating both special events and occasions with high focus on recognition. There is departmental commitment to promoting a positive and constructive atmosphere in the relations between all ANIVET employees, and no one should be uncertain of how to react if negative situations are experienced.

A workplace where staff develop

Mentorship and career progression for all staff groups are in focus in the leadership and management of employees. There is an active process for supporting career progression for all staff groups. For younger scientists and scientists in temporary positions there are mentoring, support, and annual follow-up dialogues.

An attractive place to start working

Recruitment is a priority area at ANIVET, and considerable efforts are made to attract numerous applications for our positions through a thorough process of
evaluation and prioritisation, ensuring that recruitment is a positive experience for both employee and employer. A detailed onboarding process is offered to all newcomers at ANIVET.

Communicating and transparent management

The management group works to promote an open and transparent way of working, and information is communicated to ANIVET employees through social media, an extensive intranet as well as regular ANIVET info meetings held by the department head



TOWARDS 2030

ANIVET's leadership is developing a detailed activity and action plan that reinforces our upcoming initiatives and paves the way for the prioritisation of efforts to support our research sections, our flagships and our infrastructure.

In addition, we have identified the following opportunities through our research, education, innovation and policy advice that will require special attention in the coming years to support the long-term changes we seek to create:

INTEGRATION OF VETERINARY CLINICAL SCIENCE

New employees, new research areas and new animal species are brought into ANIVET due to the department's key role in the veterinary degree programme. Furthermore, new facilities are required to provide appropriate conditions for this work, and part of the educational activities in clinical science will take place off campus. This will be a significant addition to the previous ANIVET profile, and efforts will be made to ensure the progressive and positive integration of students and teachers into ANIVET, so that complementarity and interdisciplinarity can be utilised to the greatest extent possible.

DIGITALISATION, DATA SCIENCE AND BIOINFORMATICS

Precision Livestock Farming and digitalisation are already significant focus areas at ANIVET. Therefore, ANIVET is in possession of and is continuously collecting large amounts of data from our livestock and our research facilities with automatic feed registrations, sensors, cameras and various other devices, as well as data from our research laboratories including omics data. Our produced data is already being used for several research projects and in advisory reports within agriculture, but the area will be strengthened so that ANIVET becomes a national and international key player across the continuum from data collection and statistics/bioinformatics to biological interpretation, understanding and application, with the purpose of establishing new research and innovation projects.

ANIMAL MODELS AND CELLULAR SYSTEMS IN THE CROSS-FIELD OF HUMAN AND ANIMALS

ANIVET has participated in several research projects in which we have served as the key animal experimental scientists carrying out collaborative projects with researchers in human medicine and nutrition. This approach will be continued, first by using our well-established experience with this kind of work in pigs, supplemented by rodent models. Parallel to this, we will advance our animal experimental models to bridge the gene-cell-organoid-tissue and whole animal, with an overall active focus on the 3R principles in research.

LIVING LAB FOR FUTURE ANIMAL HUSBANDRY

At AU Viborg Campus, the TECH Faculty has strategically brought together all its animal-related activities across production, family and sport animals. To visualise and strengthen opportunities for external collaboration, ANIVET will support animal activities to be established as Living Labs, which embrace research and innovation with livestock animals on campus, activities in animal and veterinary science and in herds off campus.

ESTABLISHMENT OF OUR DEGREE PROGRAMMES

As a key milestone in this establishment of our degree programmes, the first students will complete their degrees in June 2029 (Animal Science, link) and in January 2030 (Veterinary Science, link).
In parallel, ANIVET is actively developing new industry-oriented degree programmes in Animal Science and has already been granted with the Master's degree programme in Animal Welfare (link). By 2030 it is thus estimated that ANIVET will host educational activities for around 800 students, meaning that ANIVET will continue to integrate and embrace students as a significant part of our daily research life, both as scientists, technicians and administrative personnel.







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ABOUT ANIVET

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