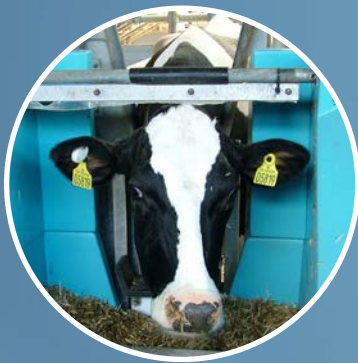


Department of
**ANIMAL AND
VETERINARY SCIENCES**

anivet.au.dk



**Nutrition, health and welfare for
animals and humans**



Welcome to ANIVET

Insights and potential strategies for sustainable livestock production, animal nutrition, health and welfare.

The Department of Animal and Veterinary Sciences (ANIVET) conducts research within sustainable food production; environment and climate as well as health and welfare for animals and humans.

The department is characterised by strong and very active research environments that are working cross-disciplinarily with high international impact. World class research is carried out, which contributes to solving significant societal challenges – both nationally and globally.

These activities form the basis for the research-based policy support as well as teaching that covers bachelor, master and PhD level. From 2024 the department offers degree programmes in Veterinary Medicine and Animal Science.

ANIVET houses unique and advanced experimental facilities and technologies that are not found anywhere else. Our research, policy support and teaching is done as part of a comprehensive national and international research network, as well as in strong collaboration with the agro-business and industries.

The department is part of the Faculty of Technical Sciences at Aarhus University and is located at Campus AU Viborg close to the historical city of Viborg. The department has approximately 200 dedicated employees from all over the world. 50% of the employees are scientific staff organised in five research sections. The educational programmes at AU Viborg are expected to result in a student population of 800-900 students.



Head of Department Charlotte Lauridsen



Research sections at ANIVET

ANIVET generates knowledge at the highest international level within sustainable food production, including animal health and welfare, climate and environment:

Ruminant nutrition

"We create scientifically sound solutions that promote efficient and sustainable ruminant production, thereby contributing to agriculture's green transition in Denmark and around the world" says Head of Research Section Professor Peter Lund. This is accomplished through the development and optimisation of nutritional and management strategies that meet the nutrient needs of ruminant animals, ensure resource-efficient production that considers environmental and climate factors, and improve product quality, feed safety, and animal health and welfare.

Monogastric nutrition

"Our efforts to develop an efficient and environmentally friendly production system are primarily focused on pigs, poultry, and insects" describes Head of Research Section, Associate Professor Jan Værum Nørgaard, and further: "Our nutrition and physiology research aims to ensure resource efficiency, environmental and climate preservation, and the production of nutritious and safe

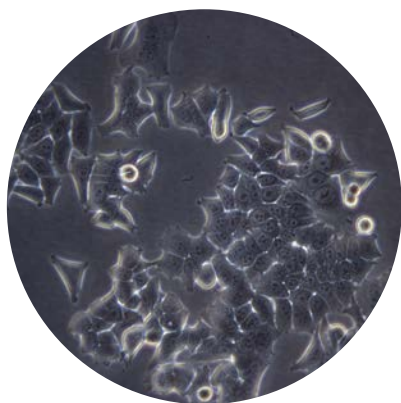
animal feeds to ensure the highest possible standard of welfare and health".

Behaviour, stress, and welfare

"Our research aims to better understand the behavioural needs and affective states of the animals that surround us, among other things, as a critical component for assessing animal welfare and mental health" explains Head of Research Section, Professor Lene Juul Pedersen, and continues "Humans keep the species in question for agricultural, companion and recreational, laboratory, and nature conservation/rewilding purposes. We study how the physical and social environment, as well as nutrition, management, and genetics, influence animal welfare on farms, during transport, and at slaughter".

Gut and host health

"We conduct basic and applied research on how dietary components and additives (carbohydrates, proteins, fatty acids, minerals, bioactive compounds) affect the gut, microbiota, and local and systemic immunity in animals in order to keep them healthy and disease-free" tells Head of Research Section, Professor Knud Erik Bach Knudsen, and continues "We contribute to the green transition by reducing the use of antimicrobials, reducing the environmental and climate footprints of diets by changing the



gut microbiota, and conduct cellular agriculture research by using animal-based cell models for milk production”.

Management and modelling

“For a more sustainable future, we develop herd management methods and tools that promote animal welfare, green transition, and economic viability” describes Head of Research Section, professor Jan Tind Sørensen, and explains further “We integrate, develop, and disseminate knowledge about farm animal management and animal-human interactions. We improve communication within the animal agriculture industry as well as communication between the industry and society”.



Theme groups

The department has a number of theme groups seeking to facilitate interdisciplinary and mission driven research:

- Climate, Environment and Animal-derived food
- Green and blue biomass for feed
- One Welfare
- One Health
- Digital transformation
- Cellular agriculture



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Facilities

ANIVET provides an exceptional range of facilities for laboratory, animal, clinical, and field research. The staff taking care of all animals at the department is organised in the Center for Animal Facilities.

Cattle

The department has a loose housing system for 260 dairy cows with computerized feeding troughs, which automatically collect data for all individual animals regarding feed intake and eating behaviour. There is also a barn with 20 single house units for fistulated cows used in intensive studies and a barn with dynamic and flexible facilities for studies of new barn and management systems. Respiration chambers and GreenFeed units for measuring enteric methane are also available on the farm.

Platform for organic animal science

The platform consists of a 1600 m² facility with inside pens connected to outdoor areas for research studies on organic and out-door farmed pigs and poultry. The platform also includes land areas for pasture, which can be established with specific housing conditions such as farrowing units (covered huts).

Pigs

ANIVET has capacity for 150 sows in flexible facilities, as well as housing capacity for all age groups (sows, piglets, breeding stock, and slaughter pigs, as well as special pig models for human research). Thus, there are housing options for large breeds and mini pigs. Housing options include stalls, single pens, and group housing. In addition, the department has many years of experience in carrying out digestibility experiments involving various age groups of pigs, as well as digestibility studies with ileum-cannulated pigs. Recently, a methane measurement unit has been established.

Poultry

The department has a variety of poultry houses in different sizes and functionality, including cages and floor units, as well as a hatchery. The emphasis is primarily on layers and broilers. Besides, ANIVET has immunological poultry lines on a permanent basis.

Intensive care unit facility

The intensive care unit facility is very dynamic, with two fully equipped surgery rooms with beds, operating tables for larger animals and units for housing newly operated animals. Furthermore, there is a specific unit designed for the work with infectious diseases and pathogens, specialised for experiments with pigs, calves, and poultry. In close connection to the laboratories, units for housing insects and rodents are established.

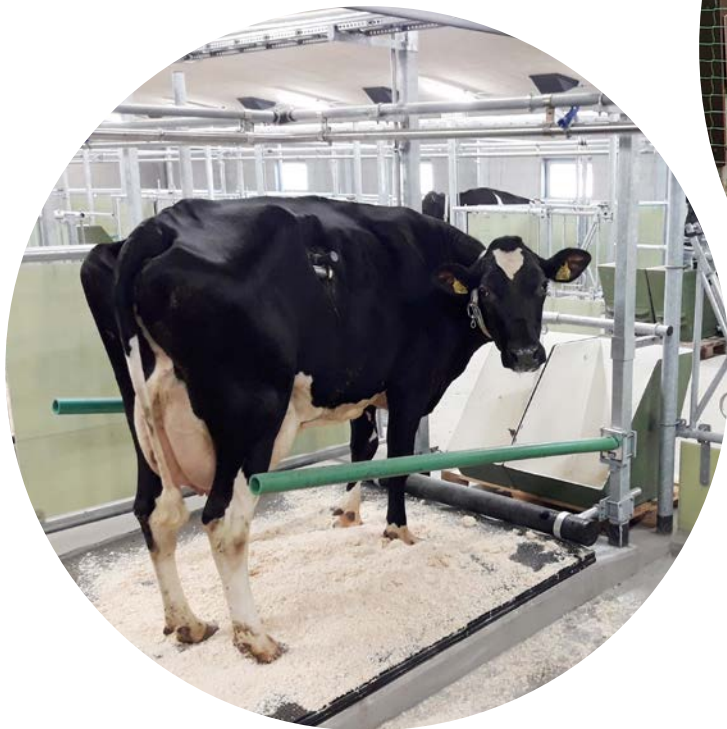
Horses

Studies of horses on nutrition and behavior are performed in the present stables or in collaboration with private studs. Horse facilities for veterinary and training research will be available from 2024/2025.

Laboratory platforms

The department has excellent laboratory platforms equipped with modern analytical technologies for analyses within e.g. physiology, immunology, microbiology, molecular biology, cell- and reproduction biology, metabolomics, nutrition, feed evaluation and biorefining.





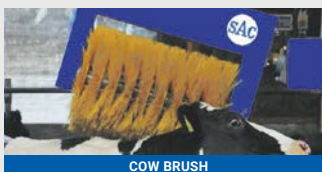
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A HEALTHY DAIRY FARMING LIFE

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Meet two PhD students from the PIG-PARADIGM interdisciplinary research project

Investigating an important global One Health issue

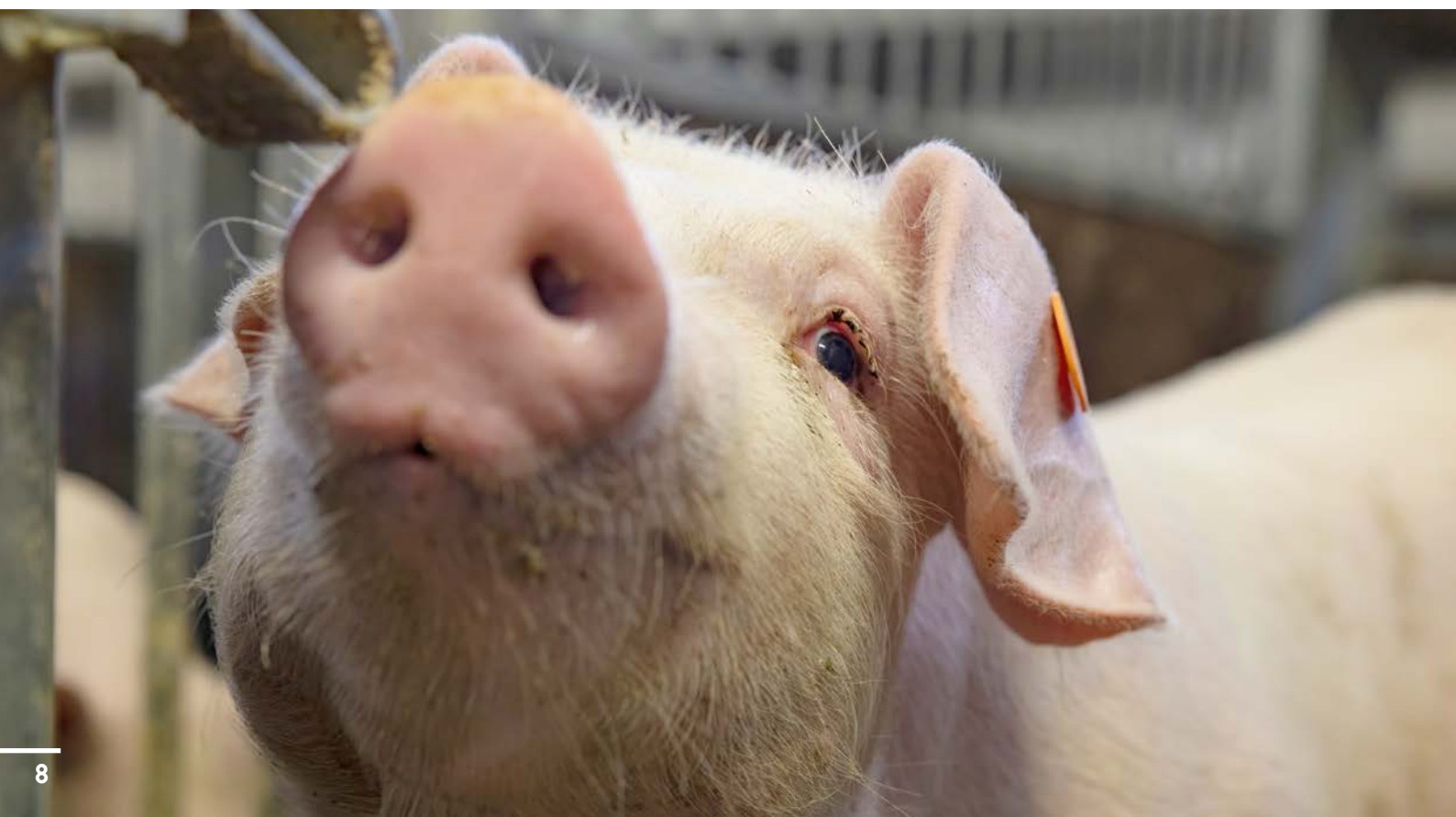
Niloofar Razmgah is a 32-year-old Iranian PhD student at ANIVET.

"My primary research interest is gastrointestinal health in monogastrics. The project I'm working on is part of the PIG-PARADIGM project, which aims at the pig and human health by lowering the use of antibiotics and thereby reducing the risk of antibiotic resistance. The goal of this project is to investigate, evaluate, and compare the efficacy of prebiotics and non-digestible carbohydrates in improving gastrointestinal health and integrity in pigs. The most effective prebiotics and non-digestible carbohydrates will be evaluated in vitro and in vivo," Niloofar says, adding:

"Prebiotics and non-digestible carbohydrates can have a significant impact on both animals' and humans' health, overall performance, immune system, and many more aspects including brain development. Furthermore, the bacterial metabolites are key factors for optimal intestinal health and in finding alternatives

for medical ZnO and antibiotics, thereby reducing the risk for antibiotic resistance, which is an important issue in a One Health perspective."

"At ANIVET, I discovered a professional environment using excellent teaching methods overseen by experienced scientists. I would describe my life at the department as both pleasurable and professional. I feel I'm supported by the permanent staff in a way that enables me to carry out my project at the same time as I'm expanding my professional network."



More about PigParadigm
on the project webpage



PhD-student Pernille Aagaard Madsen conducts research on preventing oxidative stress

As part of the PIG-PARADIGM project, Pernille Aagaard Madsen, a 29-year-old Danish PhD student at ANIVET, studies oxidative stress in pigs.

Pernille's research focuses on the relationship between oxidative stress and pig post-weaning diarrhea, as well as feeding strategies to reduce oxidative stress and prevent diarrhea. Her research is extremely important because oxidative stress is involved in a wide range of disease mechanisms.

"I am conducting my research at ANIVET because I enjoy the environment here. I completed my master's thesis on pig gastric ulcers and metabolomics here,

and continued as a research assistant in ruminant nutrition before I started as a PhD student in the Pig-Paradigm project. The academic environment at ANIVET is excellent; people are friendly and helpful, and I believe that it is a place where you can develop your academic skills," Pernille says.



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Joint ventures

When your company works with ANIVET, you gain access to In-depth theoretical knowledge to supplement your practical experience and requests. We provide access to cutting-edge experimental facilities and equipment. For collaboration, you will find researchers who are not only excellent scientists but understand the challenges in farmed animal production besides being professionals at working with enterprises and businesses.

Knowledge will be the most important indicator of future success.

We can increase your competitiveness and value by collaborating to gain new insights into product development and potentials.

More about collaboration with ANIVET:



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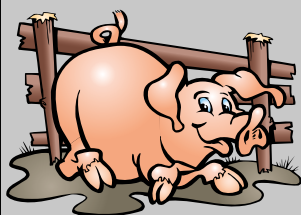
Improving food & health



Research-based policy support

ANIVET performs research-based public consultancy on livestock production, with core areas of nutrition, behavior, welfare and health. The department focuses on sustainable livestock production and plays a central role in relation to the environment and climate.

Link to more information about the policy support at the department:



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DEPARTMENT OF ANIMAL AND VETERINARY SCIENCES



AU Viborg - Research
Centre Foulum
Blichers Alle 20
8830 Tjele, Denmark



E-mail: anivet@au.dk
Tel: +45 8715 0000
Web: anivet.au.dk/en

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