

Bioveterinary Research



Biomedical and veterinary research to
safeguard public and animal health

Top level veterinary and biomedical research for animal and public health



WAGENINGEN
UNIVERSITY & RESEARCH

Veterinary research

to safeguard public and animal health

Wageningen Bioveterinary Research (WBVR), collaborates with public and private partners to safeguard public and animal health. WBVR contributes to the prevention, eradication and control of animal infectious diseases through research, diagnostics and consultancy. By doing so, WBVR helps to guarantee international trade and to preserve the international top position of the Dutch livestock industry.

Animal diseases

WBVR's animal disease research has many aspects:

- Prevention, eradication and control
- Pathogens (bacteria, viruses, prions, parasites)
- Host – pathogen interaction
- Pathology and pathogenesis
- Transmission, where and how
- Intervention methods



Innovation

WBVR invests in innovative research and participates in both national and international scientific networks, symposia and congresses. Thanks to the international contacts, WBVR's experts can assess accurately the risk that animal diseases (re)emerge in the Netherlands. In collaboration with fellow scientists from other research institutes, in the Netherlands and abroad, WBVR carries out research to study emerging animal diseases in detail.

WBVR focuses especially on the health of livestock and on other animal species that play a role in animal and public health.

- Cattle
- Poultry
- Pigs
- Fish, shellfish and crustaceans
- Small ruminants
- Horses
- Wildlife

Prevention and control

Prevention of introduction of (re)emerging animal diseases is the most effective strategy in safeguarding the livestock industry and therefore of public and animal health in the Netherlands. For this, WBVR is involved in the following areas:

- Epidemiology and scenario development
- Risk analysis & risk management
- Strengthen the animals immune system
- Development of vaccines and diagnostics
- Information exchange with neighbouring countries



Disease confirmation or exclusion

WBVR works with validated and ISO 17025 accredited laboratory tests to confirm or exclude infection with pathogens. Not only is this important in case of a possible outbreak of a notifiable animal disease, but also to maintain the disease-free status of the Netherlands, and for the issue of export certificates.

Facilities

WBVR has laboratories and animal facilities, where research can be done with infectious pathogens in a safe way for humans and animals.

The High Containment Unit is a highly secured, fully contained laboratory building (human biosafety level 3; veterinary biosafety level 4) connected to animal facilities, also suitable for large livestock. This unit is unique in the Netherlands.



Diagnostic tests

Existing diagnostic tests are constantly updated in order to detect all relevant pathogens fast and reliably. In case of a newly emerging disease (in the Netherlands), WBVR develops and implements new diagnostic tests immediately necessary for the detection of that disease. In case of animal disease outbreaks WBVR has proven to be able to scale up its testing capacity quickly.



Contract research

WBVR has excellent possibilities for clinical, pre-clinical and pre-competitive (laboratory) studies. WBVR can investigate animal diseases, treatments and animal drugs, such as vaccines, in the actual animal. WBVR has specially bio-secure facilities for research with (highly) contagious pathogens in animals.

Moreover, WBVR has well equipped operating rooms. In combination with the biotechnical expertise WBVR can offer a wide range of techniques for surgery, automatic administration, sampling and gathering of data.

Contingency – 24/7 availability

In case of suspicion of certain animal diseases, WBVR operates on a 24 hours a day – 7 days a week basis for diagnostic testing. As soon as an outbreak of a notifiable contagious disease is confirmed, WBVR operates at contingency level. The institute plays both an executive as advisory role towards the Dutch authorities.

WBVR is capable of carrying out large quantities of diagnostic tests by taking advantage of large capacity robotic testing equipment. WBVR has extensive experience with scaling up of test capacities during outbreaks.



Reference Laboratory

WBVR is the national reference institute for notifiable animal diseases. For these diseases WBVR has an important and decisive task to determine the final diagnosis.

For the OIE (World Organisation for Animal Health) WBVR is international reference laboratory for Aujeszky's disease, CEM (Contagious Equine Metritis) and (together with Utrecht University) Campylobacter.

Particular areas of research

Zoonoses

Approximately 70% of the newly emerging infectious diseases are zoonotic (diseases and infections which are naturally transmitted between vertebrate animals and humans). Several zoonoses have been controlled effectively in the Netherlands. However, zoonoses need to be closely monitored, because new zoonoses are arising. WBVR contributes to the eradication and control of zoonoses through diagnosis and research on livestock and wildlife. This work is done in close collaboration with partners in the field of public health following the One Health principle.



Antimicrobial resistance

Many bacteria in livestock have become resistant to antibiotics. This makes it increasingly difficult to treat bacterial infections, which results in risks to public health. WBVR monitors antimicrobial resistance in animals in the Netherlands. WBVR also investigates antibiotic resistance mechanisms and the spread of these mechanisms in bacteria in different animal species.

WBVR is the National Reference Laboratory (NRL) for antimicrobial resistance in animals and fulfils a pioneering role, not only in the Netherlands but also internationally.

Vector-borne diseases

These are diseases that are transmitted via a vector, e.g. insects, and not directly from one animal to the other or to a person. Recently, vector-borne diseases are seen more frequently and more northwards in Europe. Some of these diseases are zoonoses.

Pathogens that are transmitted by insects, such as Schmallenberg virus, Rift Valley Fever virus and Bluetongue virus, require a specific control strategy. WBVR monitors the spread of these vector borne diseases. The institute is dedicated to increase its knowledge about these diseases and validate the acquired knowledge. This knowledge is important for the development and use of diagnostic tests and vaccines.

Gut health

Optimal intestinal functioning and a healthy gut not only determine good food processing and absorption of feed, but are also important for a good functioning immune system. Animals with a healthy immune system perform better, are less susceptible for diseases and therefore need less treatment with antibiotics. WBVR investigates the biological processes that influence gut health and studies the different factors (feed/management) that can improve the functioning of the gut.

Clients

Wageningen Bioveterinary Research (WBVR) is commissioned by the Dutch authorities, veterinary and human pharmaceutical industry, meat and dairy industry, as well as start-up companies in biotechnology to do research. For the government, research activities consist among others of statutory tasks and other tasks related to animal health. For the private-public sector WBVR carries out research related to vaccine development, diagnostics and animal health in general.

Animal diseases in the Netherlands

Thanks to veterinary research and well-organised eradication campaigns, many animal diseases are eradicated from the Netherlands. Examples are BSE, bovine tuberculosis, brucellosis, foot and mouth disease, classical swine fever and highly pathogenic avian influenza. Worldwide only one animal disease is eradicated: rinderpest. All other animal diseases still occur somewhere in the world and could strike (again) in the Netherlands. Also, every year new animal diseases are discovered; in 2012 for example the Schmallenberg virus was discovered.

Most animal diseases in the Netherlands are transmitted directly between animals. But diseases that are transmitted indirectly via e.g. insects are emerging. Also, diseases and insects previously known only in tropical and subtropical climates, are moving in a northern direction and getting closer to the Netherlands. This can be caused by climate change, but also through import of living animals, animal products and plants and via tourists. Vector-borne diseases, such as Schmallenberg and Bluetongue require their very own strategic control measures.



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