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DOSSIER DE PRESSE

Le Laboratoire
de Ploufragan-Plouzané-Niort
fête ses **60 ans**
le **29 novembre 2018**

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Ploufragan, 29 November 2018

Press release

ANSES celebrates the 60th anniversary of its laboratory in Ploufragan-Plouzané-Niort

“One Health, One Welfare”

ANSES’s Ploufragan-Plouzané-Niort laboratory is celebrating the 60th anniversary of its establishment in Ploufragan in Western France, the most important French livestock region. On this occasion, the laboratory will be reviewing the highlights of its history and the major scientific milestones that have marked more than half a century of research and reference. Optimising the health and welfare of livestock and the occupational health of livestock farmers, monitoring microbial contaminants in food, proposing innovative livestock systems in a "One Health" and "One Welfare" approach¹ – the laboratory teams are fully involved in all these public health issues.

Based in the Bretagne and Nouvelle-Aquitaine Regions, the Ploufragan-Plouzané-Niort laboratory specialises in animal health and welfare as well as food safety. It works on all species of farm animals, such as poultry, pigs and rabbits in Ploufragan, farmed fish in Plouzané and ruminants in Niort.

A key player in health and safety issues

The emergence of new pathogens and the re-emergence of old ones threaten the health of farm animals and sometimes consumers. For sixty years, the laboratory's teams have been working on a daily basis to better understand the complex interactions between these pathogens, animals, and farming and agri-food production practices in order to meet the needs of the sectors and contribute to public policy.

The recent avian influenza and African swine fever crises have shown that the re-emergence of these scourges is still possible even within a well-organised health system. The laboratory validates and deploys reliable and innovative methods via a network of laboratories accredited to detect these major contaminants, thus increasing the responsiveness of our veterinary public health system. Conducting high-level research while being able to redeploy its scientific teams to help in the management of a health crisis is one of the strong points of the Ploufragan-Plouzané-Niort laboratory's activity.

Helping to build tomorrow’s livestock sector

By placing livestock systems at the heart of its research activities, the laboratory contributes to the control and prevention of diseases affecting these various sectors as well as the safety

¹ The concept of "One Health" is an international approach that strengthens collaboration between human health, animal health and environmental management (WHO/OIE/FAO). The concept of "One Welfare" is an approach that encourages the recognition that animal welfare, biodiversity and the environment are connected to human welfare.

of their products. The laboratory also studies new breeding methods to resolve animal welfare and worker health issues, while controlling risks to consumer health and the environmental impact. The laboratory's work, focused on animal welfare, leads to proposals for innovative livestock systems that are part of a "One Health, One Welfare" approach, for both humans and animals.

Partnerships for research and scientific innovation

The laboratory benefits from the long-term support of local authorities, namely the Bretagne and Nouvelle-Aquitaine Regions, the Côtes d'Armor *département*, and the Saint-Brieuc Armor Agglomeration. In partnership with the animal production sectors, particularly within the Saint-Brieuc Armor Technopole, the laboratory works with many French institutions (INRA, IFREMER, CIRAD, INSERM, IRSTEA, CNRS, universities, etc.) and international organisations, such as the World Organisation for Animal Health. Thanks to the vitality of its scientific work, the laboratory is also a partner in many research projects funded by the European Union.

These many partnerships have enabled the laboratory to acquire state-of-the-art high-throughput sequencing facilities, in laboratory and livestock buildings with advanced technical and biosecurity facilities where it carries out its research and reference work. The new building dedicated to improving poultry farming conditions that is being inaugurated today is an illustration of the innovative infrastructure that will enable the laboratory to build its future research.

ANSES will also today be formalising its cooperation with the French Atomic Energy and Alternative Energy Commission (CEA), which is designed to combine the technologies developed by CEA Tech and the biological systems developed by ANSES, to contribute to innovations for the detection, control and prevention of health risks.

With sixty years of significant scientific partnerships, discoveries and results, the ANSES laboratory thus contributes to generating the knowledge essential for the appraisal, assessment and management of health risks.

From the prevention of animal diseases to optimised surveillance

Historically, the laboratory's purpose has always been to control diseases affecting farm animals and to improve food safety. After first specialising in the poultry sector, the laboratory extended its research scope to include the pig sector, then fish farming and more recently ruminants, thus covering the main livestock production sectors.



The laboratory's research units study the pathogens responsible for diseases that affect the immune potential of animals and can lead to significant losses on livestock holdings. These diseases are real threats to animal and public health.

Research conducted at the laboratory focuses on the major viral infections responsible for

animal epidemics, such as swine fever, avian influenza, porcine reproductive & respiratory syndrome, infectious bovine rhinotracheitis and viral haemorrhagic septicaemia in fish.

The teams work on a daily basis to define methods for detecting and modelling the spread of these diseases, the causes, mechanisms controlling the virulence of pathogens, their modes of transmission and factors likely to restrict their spread in livestock, but also how they interact and evolve.

With the support of veterinarians, laboratories and breeders, the laboratory runs epidemiological surveillance networks, including the National Poultry Epidemiological Observation Network, the oldest epidemiological surveillance network for animal diseases in France.

Optimising diagnosis in animal husbandry

The early diagnosis of infectious agents in livestock is one of the major challenges in animal health research.

The laboratory focuses its efforts on this area with the aim of characterising the emergence of pathogens on production sites as early as possible. It is therefore studying new diagnostic methods for targeted treatment of identified pathogens and the first affected animals.

Alongside these activities, the laboratory pursues major work on ways to prevent and control these diseases. In particular, the teams are currently studying the effectiveness of vaccine solutions and non-antibiotic prevention, as well as how best to administer them in the livestock production sectors.

In addition, the laboratory monitors antibiotic resistance and contributes to the development of alternatives to reduce their use. In this context, and in collaboration with the ANSES laboratory in Lyon, it coordinates Resapath, the network for monitoring the antibiotic resistance of pathogenic animal bacteria in France, for the poultry, pig and fish sectors.

A key player in health and safety issues

As the reference laboratory (EURL) for the main diseases of pigs, poultry, fish and ruminants, at national and international level, the laboratory develops high-performance analytical methods and collects samples and epidemiological information that contribute to the effectiveness of the French health system.

The analysis of these samples enables the laboratory to confirm or refute the emergence or re-emergence of a pathogen and to feed this information into the animal health epidemiological surveillance networks. The laboratory is able to quickly detect the appearance of pathogens, providing quality data to the Agency's risk assessment teams and scientific and technical support to risk managers.

The role of a reference laboratory is to develop high-performance analytical methods and disseminate them to a network of accredited field laboratories. The reference laboratory ensures the reliability of the analyses carried out by all the accredited laboratories.

During recent outbreaks of avian influenza, the ANSES laboratory in Ploufragan was able to quickly confirm the highly pathogenic nature of these viruses for poultry, but also that they were non-zoonotic.

Avian influenza is a highly contagious infectious disease caused by Influenza A viruses that affect many domestic and wild bird species. Some of these viruses have zoonotic potential (possible transmission to humans).

All this different work on animal health demonstrates the laboratory's ability to produce applied research whose results can be directly used by livestock stakeholders, risk assessors and veterinary public health managers.

Helping tomorrow's livestock sector

Since its creation, the laboratory has placed the living conditions of livestock at the heart of its activities.

Since the 1970s, it has implemented an innovative epidemiological approach: ecopathology.

This new approach is only possible if it is supported by a real knowledge of conditions in the field, which can only be acquired right on the farms. To this end, the research teams conduct epidemiological surveys in close collaboration with professionals, in both livestock farms and food processing plants.

Ecopathology is an approach that aims to include the different components of the livestock system in an analysis of the circumstances that enable a disease to develop.

This work, as close to the production sectors as possible, allows a systemic approach to diseases and food contaminants “*from stable to table*” using a wide variety of technological approaches “*from dungarees to DNA sequencers*”.

Developing innovative livestock farming methods

The teams study the impact of different animal husbandry practices on animal welfare, health and product quality, but also on the health of consumers and farm personnel. It is indeed essential that advances in animal husbandry practices include the notion of the health of agricultural workers while taking into account the needs and expectations of animals.

For more than ten years, the laboratory has been working on the respiratory health of poultry workers in particular. The results of this multidisciplinary work have made it possible to characterise the risk situations of workers exposed to pollutants in the air of poultry buildings, in hatcheries and slaughterhouses and thus to recommend preventive measures adapted to working conditions.

Definition of animal welfare proposed by ANSES:

“The welfare of an animal is its positive mental and physical state as related to the fulfilment of its physiological and behavioural needs in addition to its expectations. This state can vary depending on the animal's perception of a given situation.”

(Opinion of 16 February 2018)

The animal welfare and breeding conditions component is a cross-cutting theme within the research projects run by the laboratory. Its work includes studying innovative breeding systems in the poultry and pig sectors, mainly to ensure a high level of animal health and welfare, but also to preserve the environment and meet consumer expectations.



The teams carry out research work on improving prenatal conditions and enhancing the environment for animals from an early age. They also study the improvement of hygiene and biosafety measures.

The Goatwell Project aims to define the conditions of welfare and biosecurity and to set up a protocol for evaluating goat welfare on farms.

As part of its work, the laboratory has state-of-the-art facilities and equipment capable of reproducing optimal breeding conditions and measuring these different methods scientifically. All this research on animal welfare thus contributes to developing and proposing major changes to the livestock production system. These factors all enable the laboratory to pursue a **“One Health, One Welfare”** approach.

“One Welfare” is an approach that encourages the recognition that animal welfare, biodiversity and the environment are connected to human welfare.



Product safety: scientific excellence “from farm to fork”

The laboratory's work aims to identify, monitor, evaluate and control health risk factors at different stages of the food chain, from primary production to the consumer's table. Thus, in terms of food safety, the work contributes to identifying the sources of bacteriological contamination of products of animal origin, in particular from poultry and swine, as well as to preventing potential risks related to their consumption.

Monitoring the sources of foodborne illness

In addition, the laboratory develops new tools for the surveillance of diseases potentially transmissible to humans through food. In order to control the risk of these zoonotic bacteria in the food chain, the laboratory carries out hazard characterisation studies to understand the host-pathogen relationship through the behaviour of these bacteria in animals, in the environment, or in derived products.

The laboratory has been a pioneer in research on Salmonella, Campylobacter, Listeria and Yersinia, the four leading causes of foodborne bacterial infections in Europe. Over time, the laboratory has contributed to the development of methods for the sampling, detection and enumeration of these microorganisms, allowing a better characterisation of the associated risks. It is also working to define and develop methods to prevent such contamination, in order to reduce the risk of foodborne illness.



To generate this data, the laboratory is continuing to develop and improve genetic characterisation techniques, which include sequencing the entire genome through ANSES's national high-throughput sequencing platform, located at the Ploufragan site.

High-throughput sequencing platform

In order to develop its high-throughput molecular analysis capabilities, ANSES acquired a high-throughput nucleic acid sequencer in 2013, which has been installed at the Ploufragan site. Thanks to the skills of scientists in bioinformatics (the processing of biological data), Next Generation Sequencing (NGS) can lead to the systematic analysis of complex DNA or RNA samples for the detection and identification of infectious agents.

The acquisition of this NGS sequencer augments ANSES's capacity for the rapid detection and identification of pathogens throughout the food chain. The device achieves very high accuracy in the characterisation of pathogens in a limited time and thus meets the need for rapid analyses required in emergency situations.

The laboratory's research work is therefore part of an integrated approach to health hazards, combining microbiology, parasitology, epidemiology, biotechnology, vaccinology and animal science. The Agency's multidisciplinary teams combine these various skills in a holistic approach to animal health and welfare and food safety issues.



A new building dedicated to improving poultry farming conditions

ANSES takes a comprehensive approach to studying the impact of different animal husbandry practices on animal welfare, health, productivity and product quality, but also on the health of consumers and farm personnel (in line with the concepts of One Health and One Welfare). While offering conditions close to those of real farms, this new 1,400 m² building will enable the teams of the Ploufragan-Plouzané-Niort Laboratory to determine the rearing conditions that ensure optimal health and welfare of broiler poultry, through a number of innovations.

The laboratory: a brief description

Six independent rooms with a total of 48 compartments are connected to a management and data monitoring system enabling precise control of food and beverage distribution, ventilation and heating for each livestock room, the low-energy electric lighting, exterior shutters and hatches giving access to outdoor runs.

The continuous recording of all the data generated by the various probes installed (measuring food and water, air and temperature, with automatic weighing of chicks) will allow accurate monitoring of animal behaviour and determine the best rearing conditions.

Key dates for the laboratory

- 1958** Creation of the first experimental poultry farm.
- 1961** First studies on the effectiveness of anticoccidial agents.
- 1963** Creation of the vocational training and social promotion centre to provide specialist training for livestock workers and their supervisors, and creation of the Parasitology Unit.
- 1965** First studies on the effect of diet and genetics on poultry performance.
- 1966** Creation of the research laboratory on the quality of poultry products.
- 1968** Establishment of the State Laboratory for the Study of Avian Infectious Diseases, the Marek's Disease Genetic Prophylaxis Unit and the Product Hygiene and Quality Unit.
- 1970** Identification of *Pseudomonas* as responsible for spoilage in poultry meat. First evaluations of attenuated Marek's disease vaccines (first anti-cancer vaccines).
- 1972** First hens raised with a controlled Specific Pathogen Free (SPF) microbism.
- 1974** Opening of the national laboratory for avian pathology with the creation of the swine pathology station. All the entities are grouped within the Institute for Poultry and Pig Farming and Diseases.
- 1975** First investigations into multifactorial causes with a new methodology: ecopathology.
- 1976** Creation of the rabbit research unit.
- 1985** First studies on *Campylobacter* in poultry and on *Listeria* in delicatessen meats.
- 1986** World's first isolation of an avian metapneumovirus and its attenuation for development of the first turkey rhinotracheitis vaccine.
- 1987** Creation of the National Network for Epidemiological Observations in Poultry (RNOEA).
- 1989** Development of the first PCR techniques in animal health (Newcastle disease, mycoplasma). Development of the first gut flora as a barrier to *Salmonella* contamination in poultry.
- 1990** The institute became the poultry and pig research laboratory within the National Centre for Veterinary and Food Studies (CNEVA).
- 1992** First detection of porcine reproductive & respiratory syndrome. First studies on animal welfare, lameness of cattle.
- 1994** Invention of the *pedichiffonette* shoe-based sampling system in chicken farms in Europe.
- 1998** Discovery of the worldwide virus responsible for piglet wasting disease.
- 1999** The laboratory joins the French Food Safety Agency (AFSSA).
- 2006** First identification of the Asian zoonotic H5N1 virus. The Plouzané laboratory joined the Ploufragan laboratory.
- 2010** The laboratory becomes a part of ANSES (resulting from the merger of AFSSA and AFSSET). First identification in France of the H1N1 pandemic virus in swine.
- 2015** Discovery and characterisation of a new H5N1 virus in ducks.
- 2017** Development of the first candidate vaccine against *Campylobacter*. Identification of a new virus in sturgeon.
- 2018** The Niort Laboratory joins the Ploufragan-Plouzané Laboratory, together becoming the Ploufragan-Plouzané-Niort Laboratory. Demonstration of a transgenerational effect of a pesticide on trout.

Women and men dedicated to "One Health"

The structure, which consisted of only about ten people in the early 1960s, has grown to keep pace with the expansion of its missions.

In its new configuration, the laboratory has over 210 staff members, working at two sites in Brittany and a third in Niort, specialising in the study of poultry, rabbits, pigs, ruminants and farmed fish.

A few figures

210 staff

64% women

36% men

Average age: 45.5 years

22 different specialisations

Today, the laboratory can count on its scientific and technical staff and high-level support functions, which all contribute to the construction of a world-class research, reference and monitoring activity.

A total of 5 directors have served as head of the laboratory

Claude Meurier 1957-1978

Georges Bennejean 1978-1993

Philippe Vannier 1993-2004

Gilles Salvat 2004-2018

Nicolas Eterradosi 2018

Reference mandates for plant health concerning animal health and food safety

Analytical reference is a fundamental component of the activities of the Ploufragan-Plouzané-Niort laboratory, whether for the national and international communities or in partnership with professionals.

As the reference laboratory for the main diseases of pigs, poultry, fish and ruminants, as well as in food safety, the laboratory coordinates 20 national and international reference mandates.

International Reference Mandates (OIE)

Gumboro disease
Aujeszky's disease
Avian metapneumovirus
Ruminant paratuberculosis

Mandates within the framework of partnership agreements with professional production sectors

Bovine viral diarrhoea
Bovine paratuberculosis
Porcine reproductive and respiratory syndrome
Viral haemorrhagic disease and caliciviruses of rabbits

National Reference Mandates

Newcastle disease
Avian influenza
Swine influenza
Salmonella spp.
Avian salmonellosis
Campylobacter spp.
Antimicrobial resistance (as an associate NRL)
Avian mycoplasmoses
Classical swine fever
African swine fever
Aujeszky's disease
Avian botulism
Fish viruses
Notifiable fish diseases
Infectious bovine rhinotracheitis
Enzootic bovine leucosis
Bovine hypodermosis

ANSES, the French Agency for Food, Environmental and Occupational Health & Safety

The French Agency for Food, Environmental and Occupational Health & Safety (ANSES) is a scientific body working in the areas of food, the environment, work, animal health and welfare, and plant health.

Collective and independent expert appraisals

Through its monitoring, expert appraisal, research and reference activities, ANSES assesses all the risks (microbiological, physical or chemical) to which a person may be exposed, intentionally or otherwise, at all ages and times of their life, including at work, while travelling, while engaging in leisure activities or via their food.

This activity is based on the implementation of independent scientific appraisals by groups of experts from different horizons, taking socio-economic dimensions of risk into account. To carry out its various missions, the Agency relies on a network of nine reference and research laboratories, spread out across the country, that contribute to health surveillance. In addition, it works in partnership with many external agencies, both national and international.

ANSES assesses the effectiveness and risks of veterinary medicinal products (conducted by the French Agency for Veterinary Medicinal Products), plant protection products, fertilisers, growing media and their adjuvants, as well as biocides, in order to issue marketing authorisations. It also carries out the assessment of chemical products in the framework of the REACH Regulation.

An agency open to society

The Agency is committed to openness to society and works closely with its stakeholders (public authorities, professional bodies, trade unions, consumer associations, environmental associations, associations representing occupational accident victims, elected officials, qualified individuals).

Its Board of Directors, which represents the five Colleges of the *Grenelle* environmental round table, sets up thematic steering committees that help to define directions and priorities for the ANSES work programme, and informs the Agency of the concerns of civil society.

Lastly, on subjects that are key issues for society, the Agency is also able to set up specific dialogue committees with stakeholders, whose mission is to inform the Agency about society's expectations in terms of risk assessment and research.

ANSES systematically publishes its work on its website www.anses.fr and organises or participates in about twenty scientific events per year.