

Doctor Véronique Jestin

Director of Research

*Head of the Avian and Rabbit Virology Immunology and Parasitology Unit
Head of France's National Reference Laboratory for Avian Influenza and
Newcastle Disease*

A graduate of the Maison Alfort Veterinary School and a Doctor of Veterinary Medicine from the University of Lyon, Dr. Véronique Jestin has worked for 30 years in research on animal diseases and, more particularly, on avian viral infections. She also holds accreditation from the University of Rennes to direct research.

In France, she currently heads the Avian and Rabbit Virology Immunology and Parasitology Research and Scientific Support Unit. She is also the head of France's National Reference Laboratory for Avian Influenza and Newcastle Disease (one of the major laboratories in Europe given the scale and diversity of poultry farming in France). These entities are both located in Ploufragan, in Brittany, and are attached to AFSSA, the French Food Safety Agency.

"There is a good reason why these laboratories are located here in Ploufragan," explained the scientist. "This was the outcome of a strategic decision. Traditionally, about 50% of poultry farming in France is concentrated in Brittany."

Lastly, Dr. Véronique Jestin also acts both individually and through several groups as an expert advisor at the international level (OIE, FAO and EFSA) and the national level (AFSSA and the Ministry of Agriculture). For example, at the beginning of 2004, she travelled to Vietnam on an exploratory mission to assess the local epidemiological situation (avian influenza) and control measures. This mission was conducted on behalf of the OIE within the framework of a joint WHO, OIE and FAO mission. She also chairs a working group that gives advice (related to the risks of avian influenza) to French ministries (Agriculture and Health, etc.)

Dr Jestin's varied research career began with research into infectious bronchitis. She then moved on to study Newcastle disease and viral infections in ducks. In fact, this is a major sector in France. Since the late 1990s, her research studies have focused on avian influenza.

The specialist has involved her laboratory in various European research programmes on this subject, including: the AVIFLU project, "which is due to come to an end for all partners in October 2006 but is already over for us"; and FluAID (Flu Avian Influenza Disease) which has just recently been launched. "For the AVIFLU programme, co-ordinated by Great Britain and involving Dutch, German and Italian partners, we worked on the development of new vaccines to prevent avian viruses," she explained. "Our research was based on an original approach, that of pseudo-infectious viral particles."

The objective was to develop effective vaccines by conserving only the immunogenic part of the virus (provoking a protective response). The strategy consisted of obtaining "empty virus particles", in other words, virions that have been stripped of their genome – and are thus deprived of the capacity to replicate – and of all other superfluous parts liable to interfere with screening tests for the disease. Dr. Jestin's research focused on preventing infection through low pathogenicity viruses that spread across Europe and are liable at any time to become highly pathogenic. For the purposes of this study, the

Ploufragan laboratory developed a quantitative M gene fast detection technique, a gene that is highly present in avian influenza viruses. According to Dr. Jestin, it would be preferable to pursue the development of this vaccinal approach in depth, even though the immediate priority is to prevent the spread of the highly pathogenic H5N1 viruses. Still within the framework of the AVIFLU programme, the Ploufragan laboratory has been involved in validating fast detection techniques (particularly in real time) relative to the avian influenza virus genome, either general techniques for all subtypes combined, or specific techniques for subtype H5. This research has helped in standardising new tests at the European level which will serve as new reference tests.

“With FluAid, which was co-ordinated by the Italian partner in the consortium, we will be concentrating our research on a potential transmission route of the virus which has yet to be studied in any depth: vertical transmission,” she told us. Vertical transmission entails the possible transmission of the disease between ‘mother and child’ - in other words, between the female duck (or hen) and her egg. This FluAID programme is particularly interesting in that it includes a group of European laboratories as well as non-European laboratories, including four partners in Asia: Thailand, Vietnam, Indonesia and Pakistan.

Again at the European level and on the subject of avian influenza, Dr. Véronique Jestin’s team is also a member of the EPIZONE network of excellence (relative to major animal diseases) which has recently been established and focuses in particular on three key areas:

- molecular epidemiology
- the development of new vaccines
- the development of new diagnostics tools capable of distinguishing between vaccinated birds and infected birds.

These are all areas in which the specialist’s team has a great deal of experience.

At the same time, she is working – together with her colleagues in Ploufragan – in liaison with the Pasteur Institute in Paris on animal, avian and swine influenza viruses and their possible transmission to humans.

AVIFLU: Pathogenesis and improved diagnosis and control of avian influenza infections

Until recently, little was known about how avian influenza was transmitted in chickens, or how vaccines reduced transmission. The AVIFLU project is seeking to quantify the effects of vaccination on transmission dynamics. Researchers have shown that two commercially available vaccines against H7 subtypes not only protect chickens against mortality and morbidity, but also reduce the spread of the virus within a flock to such an extent that a major outbreak can be prevented, although some slaughtering may still be necessary.

The project has been extended to enable researchers to conduct additional experiments to assess the role that waterfowl may play in the epidemiology of the H5N1 outbreak in Asia. Preliminary results on the efficacy of one commercial vaccine in ducks are encouraging, suggesting that Europe may need to consider implementing prophylactic vaccination programmes to protect against the inevitable arrival of H5N1.

Project Coordinator is Dr. Jill Banks

FLUAID: Generation of information and tools to support the management of the avian influenza crisis in poultry

The main goal of this project, which complements AVIFLU, is the joint development and application of novel diagnostic tools and vaccines to combat avian influenza in poultry. Researchers will conduct pilot studies and trial candidate vaccines and build up a European vaccine bank from which appropriate vaccines can be selected and commercially produced in the event of an avian influenza outbreak in poultry.

On the diagnostic side, the partners will work together on technologies that are able to differentiate between vaccinated birds and those that have been infected with wild-type virus.

The project will also look into routes of virus transmission and its persistence in carcasses. The results of this study will be especially important to decision-makers as they design and implement strategies to manage avian influenza in European poultry.

Project Coordinator is Dr. Ilaria Capua

EPIZONE: Network of excellence for epizootic disease diagnosis and control

The consequences of epizootic infections can be devastating, but research into preparedness, prevention, detection, and control of epizootics is not the task of one laboratory, nor the responsibility of each Member State. The problem has to be tackled across the whole production chain of animal-related food.

The EPIZONE Network of Excellence provides a structure at the European level to facilitate this united effort. It brings together the research of 20 institutions from ten European countries, along with China and Turkey. Its focus is on sharing expertise and spreading excellence between more than 250 associated scientists.

EPIZONE will also manage its own scientific work programmes. Research will cover diagnostics, intervention strategies, surveillance and epidemiology, and risk assessment.

Project Coordinator is Dr. P. A. van Rijn

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