

Main partners

Regional

French Health Products Safety Agency (ANSM), BioMérieux, French National Centre for Scientific Research (CNRS), School of Science - University of Lyon (ENS Lyon), National Veterinary College of Lyon, Federation of Breeders and Veterinarians by Convention (FEVEC), Lyon Neurological Hospital, Institute of Biology and Chemistry of Proteins, French National Institute of Health and Medical Research, National Centre of Reference for Staphylococci (Lyon), Claude Bernard university Lyon I

National

French Atomic Energy Commission (CEA), Agricultural Research Centre for International Development (CIRAD), French National Centre for Scientific Research (CNRS), National Veterinary Colleges of Alfort, Lyon, Nantes and Toulouse, Directorate General for Health (DGS), French National Institute for Agricultural Research (INRA), French National Institute for Health and Medical Research (INSERM), French Livestock Institute, Institut Pasteur, French National Observatory for the Epidemiology of Bacterial Resistance to Antimicrobials, French National Society of Technical Veterinary Groups (SNGTV)

International

Institute for Disease Control (CIDC, Netherlands), Animal Health Research Centre (CISA, Spain), Department of Fundamental Microbiology (University of Lausanne, Switzerland), Institute for Animal Breeding (FAL, Germany), Friedrich Loeffler Institute (FLI, Germany), Central Public Health Institute (ISS, Italy), Experimental Zooprophyllaxis Institute (IZS, Italy), National Microbiology Laboratory - Public Health Agency of Canada (NML, Canada), National Veterinary Institute (NVI, Norway), National Veterinary Institute (SVA, Sweden), United States Department of Agriculture (USDA), Veterinary Laboratories Agency (VLA, United Kingdom), National Institute for Agricultural and Food Research (INIA, Spain)

Lyon Laboratory

The Lyon laboratory, with 75 staff members, contributes to improving the health of ruminants and humans, and to the surveillance of resistance to plant protection products.

It specialises in the study of neurodegenerative diseases, antimicrobial resistance in animals, mycoplasmoses and certain emerging viral diseases

- It studies the agents responsible for emerging diseases such as the Rift Valley fever virus.
- It studies pathogenic bacteria in ruminants (mycoplasma, antimicrobial resistance of bacteria isolated from animals)
- It develops and studies epidemiological surveillance methods
- It studies the resistance of cultivated plant pests to phytopathogens
- It studies the effects of pesticides in the development of certain neurodegenerative diseases



As the National Reference Laboratory (NRL) for several diseases, it provides scientific and technical support for veterinary inspections carried out by authorities (validation of data and analytical methods, training of regional and departmental laboratory staff, management of epidemiological monitoring data, etc.).

Reference activities

- National Reference Laboratory for animal TSEs (bovine spongiform encephalopathy [BSE] and scrapie)
- World Organisation for Animal Health (OIE) Reference Laboratory for Contagious Bovine Peripneumonia (CBPP), mandate shared with CIRAD
- National Reference Laboratory for antimicrobial resistance (with the laboratories in Fougères, Maisons-Alfort and Ploufragan-Plouzané), coordinator of ANSES's antimicrobial resistance activity
- National Reference Laboratory for Rift Valley Fever (serology)
- Affiliated OIE Reference Laboratory for Rift Valley Fever (with the Institut Pasteur)

Types of analysis

- TSEs: implementation of reference techniques for confirming first line diagnoses conducted in a decentralised manner for various BSE and scrapie surveillance channels (clinical network, rendering and slaughtering tests) and for the molecular typing of the prions involved in these diseases (discrimination between classical and atypical BSE, classical and atypical scrapie)
- Mycoplasmosis: CBPP serology, identification of ruminant mycoplasma species, antimicrobial resistance, mycoplasma PCR
- Bacteriology: first-line confirmation of resistance phenotypes conducted by the member laboratories of the RESAPATH national network for the epidemiological surveillance of antimicrobial resistance in animals, molecular characterisation of antimicrobial resistance

Inter-laboratory aptitude tests (ILATs)

- Transmissible spongiform encephalopathies
- Antimicrobial resistance
- Mycoplasmas

Epidemiological surveillance

- BSE and scrapie monitoring programmes and networks
- RESAPATH (network for the surveillance of antimicrobial resistance in pathogenic bacteria of animal origin)
- VIGIMYC (network for the surveillance of pathogenic mycoplasmas in ruminants)
- Programmes for the surveillance of plant pest resistance to plant protection products

Main research programmes

- Characterisation of atypical forms of BSE and scrapie using bioassays and biochemical methods
- Characterisation of pesticide-induced protein folding abnormalities (alpha-synuclein) in human neurodegenerative diseases
- Descriptive epidemiology of antimicrobial resistance in bacteria from ruminants
- Mechanisms of resistance to antimicrobials in bacteria from diseased animals
- Virulence factors in animal bacteria and link with antimicrobial resistance
- Molecular markers and genetic tools for the epidemiological study and diagnosis of mycoplasmoses in ruminants
- Pathogenicity factors and markers associated with the virulence of pathogenic mycoplasmas of ruminants
- Antimicrobial resistance of animal mycoplasmas
- Epidemiology of *Mycoplasma bovis* infections
- Syndromic surveillance (mortality in production livestock, pathological phenomena in wildlife, post-mortem inspections in slaughterhouses)
- Population genetics of *Mysus persicae*
- Pathophysiology and circulation of haemorrhagic fevers (Rift Valley fever, hantavirus)

