European Partnership on Animal Health and Welfare

Post-doctoral position proposal

Hosting organization	
Organization	INRAE: French National Institute for Agriculture, Food and Environment; Animal Health Division
Research Unit	UMR1300 BIOEPAR (INRAE, Oniris), DYNAMO team
Full Address	Oniris, site de la Chantrerie, rte du Gachet, CS40706, 44307 Nantes, France

Contact persons	
Full names	EZANNO Pauline (DR1, HDR) & BEAUNEE Gaël (CRCN)
Positions	Both are full time INRAE permanent researchers
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Research proposal	
Title	**Large-scale epidemiological modelling for improving animal disease surveillance and monitoring**
Starting date	January 2025
Duration	18 months
Salary	Basic gross salary ~3100-4000 €/month (according to experience)
Expected skills	PhD in epidemiological modelling Excellent programming skills (Python, R, C++) Interest in infectious diseases, epidemiology, interdisciplinary research Strong organizational and written/oral communication skills, fluency in English Be highly motivated towards scientific research
Proposal description	Epidemic mechanistic models are helpful to better understand and anticipate pathogen spread in host populations under contrasted situations, e.g. to target surveillance and rank interventions. In livestock, host populations are heterogeneous with regards to farm spatial distribution, farm structure, and animal types, with various contacts among farms through animal movements and neighboring relationships. This impacts disease spread, and therefore our ability to detect an emergence and to control pathogen spread at a large between-farm scale. You will work at defining optimal surveillance schemes according to territorial specificities (farm size, breed, activity, location, pasture usage) and accounting for limiting resources. You will also highlight the required interventions to be implemented once a new virus introduction has been detected to quickly control the situation and ensure the disease-free status to be kept. This work will be applied to bovine viral diarrhea (BVD), for which a mechanistic stochastic epidemiological model has been developed in C++, fed by observed and comprehensive cattle demographic data. BVD is one of the top enzootic cattle diseases in Europe in terms of economic losses for farmers, also impacting animal welfare, and has become a regulated disease since a few years in Europe. Several areas are currently free from the disease, with a challenge to have effective surveillance schemes to intervene as early as possible in case of virus introduction from other (infected) areas. A focus will be made on external and internal biosecurity measures, in the frame of a European partnership in Animal Health and Welfare. Data, computing and operating resources are available for this project.
How to apply	Please, send to both contact persons: your CV, a cover letter expressing your research experiences and interests, and at least two reference letters. The position is currently available, with flexible starting date. Review of applications starts immediately and will stop as soon as the position is fulfilled.