

Scientific strategy of the Arbo-France network

The Arbo-France network was created in February 2019 to improve preparedness and response to epidemics/epizootics of human and animal arboviruses in metropolitan France and its overseas territories. It is placed under the aegis of ANRS - Emerging Infectious Diseases (ANRS-MIE).

The objectives of the network are to:

1. Provide an alert function to the ANRS-MIE
2. Contribute to scientific excellence by promoting an integrated One Health approach
3. Strengthen the structuring and integration of arbovirology projects in France
4. Contribute to the preparedness plan for French research in arbovirology
5. Actively promote behavioral and social dimensions in research projects

Since its creation, Arbo-France has successfully initiated and supported numerous initiatives, notably via the animation of a multidisciplinary network currently made up of more than 150 experts in metropolitan France, in the overseas territories, and elsewhere.

The Strategic Orientation Committee of Arbo-France began by assessing the strengths and weaknesses of French surveillance and research in arbovirology (metropolitan France & overseas territories), followed by an in-depth assessment of needs and future strategy. Seven priorities were identified:

1. **Create a network of clinical cohorts** (infected patients) linked by a virtual platform for the collection, analysis and sharing of data and biological samples and by a governance for the use of data and samples.
2. **Establish a French federation of prospective longitudinal cohorts** (overseas territories and metropolitan France) to: (i) improve detection of arboviruses and other emerging pathogens, (ii) facilitate the evaluation of diagnostic tests and immune response and (iii) promote clinical research and facilitate the implementation of therapeutic and vaccine trials. Different common cohorts (children, blood donors, general population...) or specific cohorts (sickle cell disease, diabetes...) will be considered.
3. **Establish a platform to monitor arbovirus seroprevalence** in the blood supply. Eventually, this could include a cohort of regular blood donors, leading to studies of the prevalence of other emerging viruses.
4. **Establish a platform to improve diagnostics of human and animal arboviral infections.** This will improve preparedness to the risk of emergence and re-emergence of arboviruses, facilitate the preparation and distribution of large-scale tests, and strengthen research on innovation

5. **Strengthen entomological research** by (i) improved connectivity between medical entomologists, vector control operators, clinicians and researchers, (ii) improved infrastructure (e.g. establish insectarium, promote trained personnel etc. (iii) targeted novel approaches to vector control integrating the social dimension, in order to build a multi-center research program for the testing and evaluation of new approaches.
6. **Improve surveillance and research on zoonotic and non-zoonotic arboviroses** by promoting interdisciplinary projects involving human, animal and environmental health issues. Implement systematic and organized surveillance of the vectors involved, especially in times of low transmission
7. **Improve research on response to epidemics/epizootics**, particularly in the framework of the PEPR Emerging Infectious Diseases and PREZODE programs. Three lines of research should be privileged: (i) the initial phenomenon of emergence, considered in ecology and globality; (ii) epidemic diffusion, and (iii) epidemic mitigation measures which cover patient care and innovative strategies for control

More specifically:

- Encourage consideration of links between biodiversity and emergence, and promote interactions between human and animal health specialists, including specialists in ecosystems and the environment;
- Support national funding for research on non-zoonotic animal arboviroses;
- Strengthen long-term support for "orphan" e.g. crossing the species barrier, vectorial capacity, consequences of cross-immunity, etc;
- Promote research in regions at risk of emergence, particularly where there is a risk of contact between humans and/or domestic animals and wildlife.

Arbo-France, with the support of ANRS-MIE, is in a privileged position to implement this scientific strategy.