

Post-doctoral Fellow

Mechanistic modeling of the dynamics of microbiological and ecotoxicological pressures on transboundary water bodies using active monitoring of sentinel species.

Starting date: May 2026
Funding: INTERREG FWVL
Research program: 0100047 - ORION : https://www.interreg-orion.eu/fr/
Keywords: biomonitoring, caging, modelisation, watercourse viral contamination
Location: UMR-I 02 SEBIO, Reims

Offered post-doctoral position:

The shared use of water resources in the Franco-Belgian Meuse catchment implies coherent and concerted management by all stakeholders. ORION aims to provide a holistic and dynamic characterisation of the pressures affecting Meuse's cross-border aquatic ecosystems to assess their vulnerability and resilience. ORION aims not only to consider the toxic and ecotoxicological effects of chemical stresses on sentinel species naturally present in aquatic environments but also microbiological pressures linked to protozoa, viruses and antibiotic resistance, to develop a predictive scenario component in a context of global change. Based on a multidisciplinary approach combining biology, microbiology, chemistry, ecotoxicology and modelling, ORION aims to improve the prediction of the consequences of certain management actions on ecosystems.

At the end of the project, the results acquired on all the bodies of water on either side of the border will provide information on (i) the presence of chemical and biological contaminants at a given time and place, (ii) the spatio-temporal dynamics of the contaminants and (iii) the environmental and toxic impacts propagated throughout the catchment area, whatever the origin of the contamination. Beyond the holistic consideration of an ecosystem, this project will contribute to the strategy's implementation for the global assessment and prediction of the spatiotemporal dynamics of contaminants and their impacts, through the development of innovative tools.

The objective of the postdoctoral fellowship is to conduct in situ experiments on the caging of aquatic organisms and to participate in the measurement of biomarkers associated with immunotoxicity and reproductive toxicity. In addition, the candidate will contribute to the development of a toxicokinetic (TK) model for this species (if possible, a physiologically based (PBK) model) which will be used to analyze the bioaccumulation data obtained in situ. For this purpose, should historical data prove insufficient, additional kinetic data encompassing multiple time points may need to be generated under controlled conditions. This TK model could be coupled with a toxicodynamic (TD) model to analyze the time–dose–response relationships of biomarkers associated with immunotoxicity.

Required profile:

- Doctorate in biology / ecotoxicology or in environmental contamination
- Good experience and knowledge of bioinformatics and statistical data processing tools will be an important asset
- Knowledge in physiology, ecology and biology of aquatic organisms, especially invertebrates, will be appreciated

- This position requires frequent interactions with colleagues and other partners: communication skills will be essential
- Organized, highly motivated, autonomous and capable of integrating with the multidisciplinary staff of the ORION project

Duration: 24 months and the monthly gross remuneration will be 2866 €.

Deadline for application: March, 13th 2026.

Application:

The application may be written in English or French, and should contain the following elements:

1. CV which includes a brief summary of past scientific achievements and the list of publications;
2. A plan for the research during the postdoctoral fellowship (max 3 pages);
3. Names of two referees, with email-addresses and telephone numbers.

Application should be compiled in one single pdf file and sent by email to:

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Dr Rémy Beaudouin: remy.beaudouin@ineris.fr