Research Engineer position– Epidemiological Modeler (M/F)

**Where :**- Unité Adaptation Santé des Invertébrés Marins (ASIM), Ifremer, La Tremblade 17390 (<https://asim.ifremer.fr/>)

- Laboratoire Interactions Hôtes-Pathogènes-Environnements (IHPE), UMR5244 Montpellier (<https://ihpe.fr/>)

**Key words :** Mathematical modeling, Infectious disease epidemiology, Immune priming, Magallana gigas

**Period :** 10 months from October 1st of 2025 to July 31st of 2026

**Context :** As part of the fight against the herpesvirus disease (OsHV-1) affecting Magallana gigas oysters, we are seeking to evaluate the effectiveness of innovative prophylactic interventions, in particular immune priming (or antiviral simulation). The objective is to quantify the impact of this approach on the transmission dynamics of the virus at the individual and population levels, using epidemiological modeling tools. This assessment will help to better guide health management strategies in shellfish farming.

**Main mission :** Develop a compartmental epidemiological model and establish simulation scenarios to be tested to assess the impact of immune priming of Pacific oysters on the transmission dynamics of the OsHV-1 virus.

**Task description :**

- Develop epidemiological models (compartmental, individual-based, or spatial) to simulate the transmission dynamics of OsHV-1 in *M. gigas* based on existing models.

- Integrate immune priming into the models, taking into account its effect on susceptibility, infectivity, and disease progression.

- Analyze experimental data, in collaboration with biologists, to parameterize and calibrate the models.

- Perform numerical simulations to explore different intervention scenarios and assess their epidemiological impact at different scales (individual, batch, per oyster farm).

- Validate and evaluate the robustness of the models, including *through* sensitivity and uncertainty analyses.

- Write technical and scientific reports for publication or communication to academic or professional partners.

- Develop visualization tools or interfaces for presenting results to stakeholders.

**Desired skills :**

- Fundamental concepts in infectious disease epidemiology.

- Mathematical and computational modeling methods

- Statistics applied to the analysis of biological and epidemiological data.

- A background in immunology, virology, and aquatic organism pathologies would be an advantage.

- Scientific programming languages and tools: R, Python, or equivalent.

- Model fitting and calibration techniques (e.g., MCMC, ABC, optimization).

- Sensitivity and uncertainty analysis methods.

- Collaborative research environment (e.g., Git, scientific writing, project management).

- Present results clearly to a variety of audiences (scientists, managers, professionals).

- Scientific rigor and critical thinking.

- Independence in organizing work and solving problems.

- Ability to simplify and adapt your speech to your audience.

- Initiative and ability to generate ideas.

- Enjoy working in a team and collaborating with others.

- Adaptable to changing projects and sometimes uncertain data.

**Framework:**The postdoctoral fellow will participate in the ANR Primoyster project, led by Dr. Caroline  
Montagnani (IHPE). She/He will be involved in Work Package 3, titled "Impact of immune priming on disease dynamics”. Mathematical modeling will be performed under the supervision of Maude Jacquot and in collaboration with Marie-Agnès Travers. The research engineer fellow will be primarily based in La Tremblade (ASIM). He/She will need to travel and spend time in Montpellier for exchange with the ANR and IHPE partners.

**Contacts:**Scientific leader of the project -> Caroline Montagnani : [caroline.montagnani@ifremer.fr](mailto:caroline.montagnani@ifremer.fr)   
Scientific responsibles for the WP3 -> Marie-Agnès Travers: [marie.agnes.travers@ifremer.fr](mailto:marie.agnes.travers@ifremer.fr) & Maude Jacquot: [maude.jacquot@ifremer.fr](mailto:maude.jacquot@ifremer.fr)

**How to apply :**CV must be send by email and formal application must be performed on CNRS plateform.