

PhD Position : Immuno–Virological Mechanisms of Asthma in Organoid Models

Offer Description

The **University of Rouen Normandie**, within the **UMR 1311 INSERM DYNAMICURE** laboratory, is seeking a highly motivated PhD candidate for the **INVITH project** (*Influence des co-infections virales dans l'asthme sévère*).

Asthma is the most common chronic disease in children, with significant seasonal peaks in hospitalizations linked to the circulation of respiratory viruses like **Respiratory Syncytial Viruses (RSV)** and **Rhinoviruses (RV)**. Recent evidence suggests that the sequence of these infections can drastically alter respiratory outcomes. The INVITH project aims to understand how an early RSV infection "reprograms" the asthmatic bronchial epithelium and its immune microenvironment, thereby modifying the response to subsequent RV infections and amplifying Th2-driven inflammation.

Scientific Objectives: The PhD candidate will work on three main Workpackages (WPs):

- **WP1:** Characterizing the inflammatory response and airway remodeling in a novel 3D model of Apical-Out Airway Organoids (AOAO) derived from pediatric asthmatic patients.
- **WP2:** Developing and validating a complex co-culture model integrating bronchial organoids with human dendritic cells (DC) to mimic the Th2 immune environment
- **WP3:** Identifying viral interference patterns and signaling pathways through Single-cell RNA-seq and molecular quantification of viral RNA (qRT-PCR)

Working Environment

The student will be hosted at the **UMR 1311 INSERM DYNAMICURE** lab (Rouen, France) and will benefit from the multimodal HeRacLeS university infrastructure (Organoid platform and bioimaging platform for advanced tissue imaging). This project is conducted in close collaboration with the **University of Lille (CIIL)** with Pre **Stéphanie LEJEUNE, Pediatric pulmonologist as co-supervisor**. The project is also integrated into the **FHU RESPIRE** network, a consortium of researchers from 4 northwestern French cities with complementary expertise in microbiology, pulmonology, toxicology, chemistry, and immunology.

Requirements

- **Education:** A Master's degree (or equivalent) in Biology, Health Sciences, Microbiology, or Immunology
- **Technical Skills:** Experience in cell culture (primary cells or 3D models preferred), molecular biology (RNA extraction, qRT-PCR), and confocal bioimaging
- **Scientific Interest:** Strong interest in respiratory pathologies, virology, immunology and precision medicine
- **Languages:** Proficiency in English (written and oral) is required for international communication
- **Bonus:** Basic knowledge of bioinformatics (e.g., Python, R) or image analysis software (Imaris, ImageJ) is an asset

Additional Informations

- **Type of Contract:** Temporary (PhD Fellowship).
- **Duration:** 36 months
- **Start Date:** 01/10/2026
- **Training:** The candidate will have access to the EdNBISE Doctoral School's training program at Rouen Normandy University, including specialized modules in ethics, integrity, and advanced laboratory techniques

How to Apply: Interested candidates should submit the following documents to

Dr. Elodie Alessandri-Gradt elodie.alessandri@chu-rouen.fr **by 17/05/2026**

1. A detailed *Curriculum Vitae*
2. A motivation letter outlining research interests and suitability for the project
3. Transcripts of Master's degree results
4. Contact details for at least one academic references

Selection Process: Applications will be reviewed by the project supervisors. Shortlisted candidates will be invited for an interview