

a PhD-candidate



Students
1200



Staff
500



Teachers
125



Research units
18

• Vétérinaire



Animals welcomed
28000/an

• Ingénierie



Platforms
11

Located in Nantes, within two vast green campuses, **Oniris VetAgroBio Nantes** is a higher education and research establishment on a human scale under the supervision of the Ministry of Agriculture and Food Sovereignty.

The international reputation of its research, its cutting-edge scientific facilities and the variety of its teaching activities create a stimulating and friendly working environment.

The well-being of staff and students, as well as social responsibility, are at the heart of the school's concerns.



Campus

Campus Vétérinaire



Type of recruitment

Catégorie A CDD Duration 36 months



Salary

2300€ (gross)

Degree

Master degree in Analytical Chemistry, Environmental Chemistry, Food Chemistry

Typical job

Research



Working time

Temps complet



Holidays

Jusqu'à 50 jours ouvrés



Teleworking

Possible



Management

Non

Working environment and contact

LABERCA (Laboratoire d'Étude des Résidus et Contaminants dans les Aliments, UMR INRAE/Oniris 1329) is a joint research unit of Oniris and INRAE, based in Nantes, France, and internationally recognized for trace-level analysis of chemical contaminants in food, environmental and biological matrices, in particular persistent organic pollutants (POPs) and per- and polyfluoroalkyl substances (PFAS). The unit is part of Nantes Université's scientific ecosystem and hosts the successful candidate within the Biology-Health Doctoral School (ED-BS, Public Health track). The project is carried out in partnership with the VetAgroSup/INRAE RS2GP unit (Marcy-l'Étoile, pesticide analysis) and the BIOEPAR unit (UMR Oniris/INRAE, landscape ecology and GIS, Dr. Suzanne Bastian), and relies on an operational field network coordinated by POLLENIZ (FREDON Pays de la Loire).

Missions

The PhD candidate will develop and evaluate an innovative biomonitoring approach to the human chemical exposome, using an invasive semi-aquatic rodent, the coypu (*Myocastor coypus*), as a sentinel species. The objective is to better characterize environmental exposure to chemical contaminants (pesticides, persistent organic pollutants, PFAS and other emerging substances) circulating across the Pays de la Loire region, and to assess their potential transfer to the human food chain. The work combines targeted and non-targeted analytical chemistry, spatial/environmental data integration, and the evaluation of non-invasive biological matrices (hair, claws) as alternatives to internal matrices (liver, adipose tissue), within an overall One Health framework linking ecosystem, animal and human health. Two components of the project — the GIS/landscape characterization and the analysis of PFAS in hair/claws — will be mainly carried out through two co-supervised M2 internships, with the PhD candidate coordinating both and integrating their outputs into the overall exposome analysis.

Profile required

How to be

Communication Skills:

- Excellent written and verbal communication skills, with the ability to present research findings effectively.

Collaboration and Teamwork:

- Ability to collaborate with research groups both within Oniris and VetAgro Sup, including

Know how

Interdisciplinary Research:

- Ability to work in an interdisciplinary research environment, bridging the fields of chemistry and informatics.

Specific Requirements

- Mass spectrometry skills, with targeted/non-targeted approaches and data mining.

Skills

Educational Qualifications:

- A master's degree (or equivalent) in a relevant field such as Chemistry, Biochemistry, Biophysics, or a related discipline.

Analytical Chemistry:

- Strong background in analytical chemistry

Main activities

Analytical method development (Years 1–2) :

- Develop, optimize and validate targeted analytical methods based on liquid and gas chromatography coupled to high-resolution mass spectrometry for the quantification of POPs, PFAS and pesticides in environmental, biological and food matrices.
- Implement non-targeted (suspect/exploratory) screening approaches to identify emerging or previously uncharacterized contaminants.
- Carry out this work in collaboration with LABERCA (organohalogenated compounds, PFAS) and the VetAgroSup/INRAE RS2GP unit (pesticides), building on methodological developments from related ongoing projects.
- Apply and adapt these methods to internal matrices (liver, adipose tissue) ; co-supervise, together with LABERCA, a dedicated M2 internship in analytical chemistry focused specifically on the analysis of PFAS in hair and claws, and integrate its results into the overall exposure characterization.

Sampling network coordination and field data (Year 1 onward)

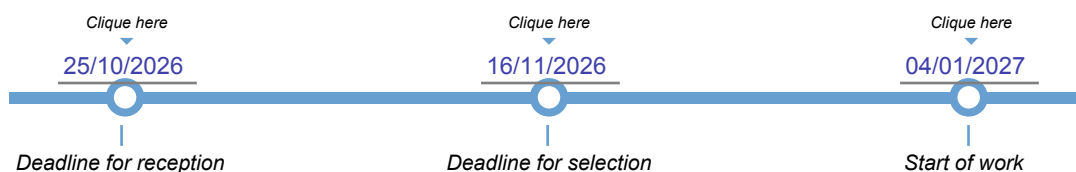
- Contribute to structuring and running the sample collection scheme, in coordination with POLLENIZ (FREDON Pays de la Loire network).
- Draw on an existing, already-constituted sample bank to enable rapid start-up of laboratory analyses.
- Select and characterize sampling sites across contrasted territories (agricultural, industrial, natural and peri-urban zones).
- Co-supervise, together with the BIOEPAR unit, a second M2 internship in ecology/ecophysiology/ecotoxicology, primarily responsible for the GIS-based landscape characterization of sampling sites; coordinate this work and ensure its integration into the overall exposure analysis.

Data integration and exposome modeling (Years 2–3) :

- Compile and statistically analyze chemical contamination data across sites, biological compartments and time points.
- Compare exposure profiles between contrasted sites to identify spatial patterns linked to agricultural, industrial and urban pressures.
- Cross-reference chemical contamination data with GIS/landscape data to link exposure levels to territorial characteristics.
- Cross-validate non-invasive matrices (hair, claws) against internal matrices (liver, adipose tissue) as biomonitoring proxies.
- Contribute to building an operational, transposable biomonitoring model for the chemical exposome.

Project management, valorization and outreach (throughout the thesis) :

- Contribute to data management and project coordination in a spirit of open science.
- Prepare peer-reviewed publications and present findings at national and international conferences.
- Undertake a research stay abroad in a partner laboratory as part of doctoral training (see "International mobility" above).
- Participate in science communication and public engagement activities (Nuit européenne des chercheurs, Fête de la Science, school interventions, "Ma thèse en 180 secondes", Échosciences Pays de la Loire...).



Contact

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