



## PhD position – Evolutionary biology



HR EXCELLENCE IN RESEARCH

La Rochelle University is recruiting within the LIENSs Laboratory for a 3-year doctoral contract on the following thesis subject:

### Evolution of anticancer defenses in wild animals.

**Supervisors:** Drs. Mathieu Giraudeau (LIENSs), Orsolya Vincze (LIENSs) and Fabrice Bertile (IPHC, Strasbourg).

### Employer description

In a higher education and research landscape that has been profoundly reshaped for more than a decade, **La Rochelle Université** has chosen to structure its research around a thematic by positioning its scientific and academic strengths on societal and environmental issues. This approach has led to the creation of a teaching and research institute called the LUDI Institute, SmUCS in English (Smart Urban Coastal sustainability), operational since the 1<sup>st</sup> September 2021.

Bringing together all the laboratories, all the PhD students and most of the institution's masters programmes. This institute aims to address the many scientific issues raised by the anthropisation of the coastal area by facilitating decompartmentalised and interdisciplinary approaches, based on a proactive policy of innovation and dissemination of results, without forgetting the fundamental principles of ethics and scientific integrity.

The creation of the LUDI Institute is surrounded by two other important projects, namely the EU-CONEXUS European university, a network of European partner universities sharing a common speciality, and the CampusInnov site initiative, intended to establish a culture of innovation in both training and research.

Website to consult: [click here](#)

### Research context

Cancer is recognized as a pathology that affects almost every member of the animal kingdom. Yet while some species are highly susceptible to cancer (e.g humans), others are highly resistant (e.g. naked mole rats). Variation in cancer resistance across wildlife taxa is an extremely valuable source of information on oncogenic processes and resistance mechanisms. The limited research conducted on non-standard model organisms in this respect has already provided tremendous insights into the natural mechanisms of cancer resistance. **Within this PhD project, we propose to use a multidisciplinary approach at the interface of oncology, physiology, cellular evolutionary biology, and analytical chemistry to characterize the prevalence of cancer in wildlife and identify the genetic, physiological and life-history predictors of the cross-species pattern of cancer susceptibility.**

Our project proposes to use new databases on cancer prevalence, life history traits and physiology of hundreds of vertebrate species in order to run large-scale comparative analyses to study the variability of cancer resistance across vertebrates. We propose to assess genomic tumor-suppressor mechanisms in vertebrate species through analyses of already published genomes. Finally, using primary cell cultures from cancer-resistant species exposed to carcinogenic experimental conditions, we will evaluate oncogenic susceptibility and the efficacy of putative tumor-suppressive mechanisms using a number of validated in vitro assays. This last approach might involve large-scale proteomic analyses of exposed cells. The ultimate goal of this research program is to identify natural mechanisms of resistance against cancer that might be translated to human medicine. The selected student will have the opportunity to work more specifically on some aspects of this research program, based on his background and interests.

See <https://wicane.recherche.univ-lr.fr/> for a full description of our research program.

Our studies are well grounded, partly being based on pre-existent data or already available cell cultures. We hope to unravel the cross-species diversity of cancer resistance, and highlight future avenues in the identification of efficient tumor-suppressor mechanisms.

Representative publications :

- Vincze, O., Colchero, F., Lemaitre, J. F., Conde, D. A., Pavard, S., Bieuville, M., ... & Giraudeau, M. (2022). Cancer risk across mammals. *Nature*, 601(7892), 263-267.
- Giraudeau, M., Sepp, T., Ujvari, B., Ewald, P. W., & Thomas, F. (2018). Human activities might influence oncogenic processes in wild animal populations. *Nature Ecology & Evolution*, 2(7), 1065-1070.
- Firsanov, D., Zacher, M., Tian, X., Sformo, T. L., Zhao, Y., Tomblin, G., ... & Gorbunova, V. (2024). DNA repair and anti-cancer mechanisms in the long-lived bowhead whale. *BioRxiv*, 2023-05.
- Abegglen, L. M., Caulin, A. F., Chan, A., Lee, K., Robinson, R., Campbell, M. S., ... & Schiffman, J. D. (2015). Potential mechanisms for cancer resistance in elephants and comparative cellular response to DNA damage in humans. *Jama*, 314(17), 1850-1860.

## Skills required

We are looking for a student with relevant background in evolutionary biology and/or cancer biology, with enthusiasm to learn advanced statistical analyses (experience with R is a strong asset), but also people interested in performing wetlab experiments using cell cultures.

The candidate will have to hold a master's degree (or an equivalent degree) at the time of enrollment in the PhD program.

Experience with genomic analyses and/or cell cultures is also an asset for this position.

## How to apply:

If you are interested in the job, please send by e-mail ([giraudeau.mathieu@gmail.com](mailto:giraudeau.mathieu@gmail.com), [orsolyaaa@gmail.com](mailto:orsolyaaa@gmail.com), [fbertile@unistra.fr](mailto:fbertile@unistra.fr)) **a letter describing your motivation, CV, and e-mail addresses of two academic referees, by 10th of May 2025.**

If you have any further questions, don't hesitate to contact me ([giraudeau.mathieu@gmail.com](mailto:giraudeau.mathieu@gmail.com)).

## Type of recruitment

36-month doctoral contract based in La Rochelle (17) at the [LIENSs](#).

Salary: €2200 gross per month, rising to €2300 gross per month from 01/01/2026.

You are registered with the [Doctoral School](#) for the duration of your contract and benefit from the doctoral training, in particular cross-disciplinary activities such as MT180, the doctoral students' colloquium, etc.

Recruitment open to anyone with RQTH status