

## **TULIP-GS call for offers: PhD Tutorial Assignment**

**Objective:** Allow PhD students from the SEVAB and ED305 Doctoral Schools and based in one of the 6 TULIP Laboratories to have a first tutorial experience by joining one of the two eligible 2023 Junior Lab projects of the Functional Biology and Ecology Master. PhD laureates will join a team of scientific tutors affected to each Junior Lab project for a five-month assignment (mean of 6h of work per month), starting at the end of January 2023. Upon completion, each PhD Tutorial Assignment will lead to the validation of 30h of formation by the SEVAB or ED305 Doctoral Schools. PhD tutors will contribute to guide, on theoretical and practical aspects, master students engaged in Junior Lab projects, in collaboration with the scientific tutors. A short description of each of the two Junior Lab projects is annexed to this document.

**Maximum number of PhD Laureates this year: 2**

**Selection criteria (by order of priority):**

1. Motivation of the candidate
2. Good correspondence between the candidate expertise and the theme of the selected Junior Lab project

Our selection procedure will guarantee equal opportunities to all applicants

**Expected structure of the application (in English):**

1. A short CV (half a page)
2. A letter of motivation indicating which Junior Lab project the candidate wants to integrate **and a statement indicating that he has informed is PhD supervisor**
3. A short description of the adequation between the candidate expertise and the selected junior lab project (250 words)

Applications must be sent as one single pdf file to [jean-marc.deragon@univ-perp.fr](mailto:jean-marc.deragon@univ-perp.fr)

**Calendar:**

1. Publication of the call: November 4, 2022
2. Deadline to respond: December 9, 2022
3. Publication of results: December 16, 2022

**The PhD Tutorial Assignment will start for five months on January 23, 2022**

## Is the microbiota responsible for body odours in birds ?

Recently, the role of the microbiota in the ecology and evolution of the host has aroused great interest, including among chemical ecologists. Bacteria can produce volatile compounds that participate to the odor of the host and therefore may play crucial role in the chemical communication of the host species. However, very few studies have tested this hypothesis, especially in birds, a taxon that has long been thought to have a poor sense of smell. However, for the past 20 years, evidence has been accumulating showing the role of bird odor in various contexts, such as mating preference, olfactory camouflage, vector attraction and defense against parasites.

The objective of this project will be to test the role of the microbiota in the production of odor in birds, by focusing on two biological contexts: the odor used by blue petrels (a sub-Antarctic seabird species) during mate choice and the odor changed by malaria infection in domestic canaries. This project could include chemical analyses by gas-chromatography, metabarcoding genetic analyses, and *in vitro* culture of bacteria.

Supervision: **Sarah Leclaire**, Chargée de recherche CNRS, Laboratoire Evolution et Diversité Biologique, UPS, Toulouse

Collaborations: Sylvain Gandon (CEFE, Montpellier) for canaris and Francesco Bonadonna (CEFE, Montpellier) for blue petrels

Project site : Toulouse



## **High throughput phenotyping of plants infected by pathogens**

Our understanding of how pathogens colonize their hosts and how the plants can defend themselves requires a better description of the dynamics of leaf pathogen symptoms. The setup of automatic phenotyping experiments to generate images of different stages of symptoms development is essential to achieve this goal. Ultimately, fine mapping the symptoms dynamics of a plant diversity collection should lead to the identification of new loci involved in specific infection stages/infection dynamics. Still important questions remain, how to efficiently analyze and annotate the large number of images generated? Could an artificial intelligence/machine learning strategy be used? What pathosystem would be the most appropriate to develop this approach?

**Supervisor:** Nemo Peeters

**Co-supervisors:** Mehdi Khafif, Felicià Maviane-Macia

**Localization:** LIPME ([www.lipme.fr](http://www.lipme.fr)) located on the Auzeville INRAE Campus, team TPMP, Toulouse Plant Microbe Phenotyping