

Post-doc/Research Engineer (18 months)

Integration of multi-omic data to investigate the eco-evolutionary causes of diversification in insect-mimicking orchids (genus *Ophrys*)

Scientific background

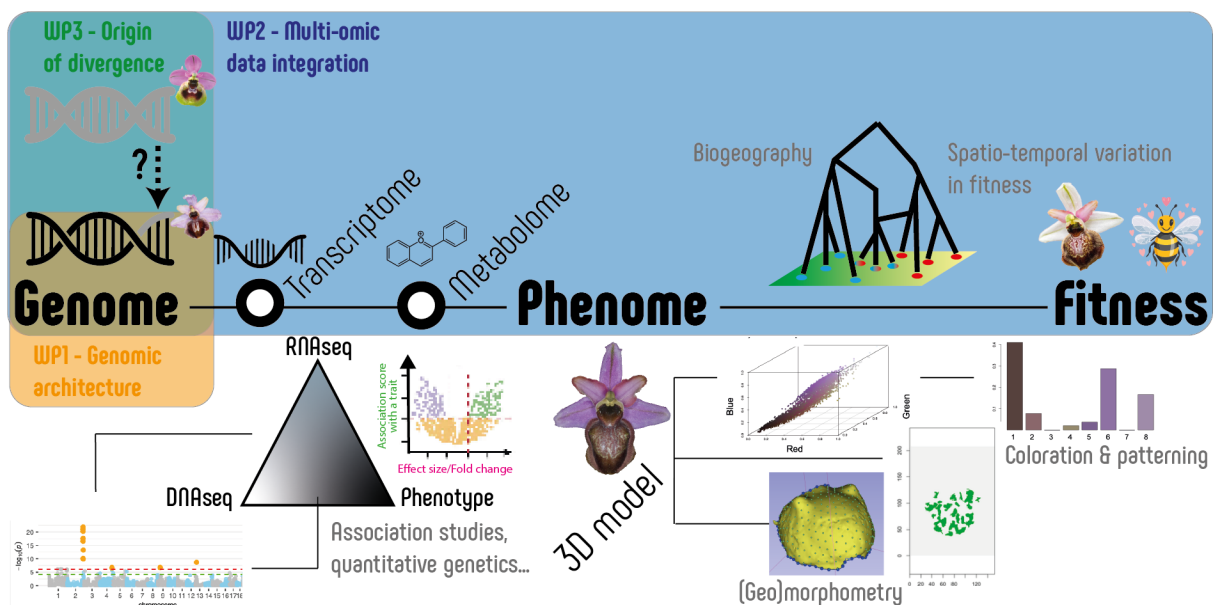


Ophrys orchid flowers mimic visual, olfactory and tactile characteristics of their pollinator insects and are pollinated through sexual swindling. The *Ophrys* flower forms a 'magic trait' that plays a key role in the speciation process, and the high degree of specialisation in this interaction is thought to be partly responsible for the genus's high rate of diversification.

The still incomplete reproductive barriers between most species allow gene flow between lineages which is thought to be at the origin of the acquisition of adaptive variation. *Ophrys* spp. also have a large (> 5 Gbp) and complex genome (>70% of repeats), which presents a challenge, but also provide raw material for biological innovation.

Project

In the project **ANR PRC ORIGAMIS 2026-2029** (funded by the French Agence Nationale pour la Recherche), we propose to implement a highly integrative multi-omic approach (genomics, transcriptomics, metabolomics, phenomics) to study the genomic architecture of magic traits and the contribution of adaptive introgression in *Ophrys aveyronensis*, a taxon with a disjunct distribution and for which we have been able to highlight genomic islands of divergence at different spatial and taxonomic scales. This system makes it possible to study the consequences of parallel adaptation to different ecological conditions in a 'simplified' geographical context, following a recent vicariance.



Missions

We are recruiting a post-doc/research engineer to i) **co-lead fieldwork sessions** (France and Spain), sample (leaves and/flowers) and data acquisition (e.g. 3D scans of the plant in the field, non-destructive odour sampling with SPME fibers), ii) **process and integrate multi-omic data** (in e.g. floral transcriptomes, GC-MS profiles, 3D models) to investigate the relationships between genotypes, phenotypes and fitness and elucidate the mechanisms underlying divergence at early stages of the speciation process and iii) **valorise the results** through scientific publications and communications.

The ideal candidate has a strong background in **evolutionary biology and ecology** and is familiar with working **on natural populations of non-model organisms**. In particular, we are looking for someone with previous experience in AI-based methods to integrate diverse types of high-throughput biological data. Among others, one challenge of this project compared to previous work of the team is the development of exhaustive and comprehensive 3D phenomics. We expect the candidate to work together with another post-doc more focused on evolutionary and population genomics hosted in the lab of Yann Bourgeois (IRD, UMR DIADE) in Montpellier.

The contracted researcher will be based at the University of Perpignan Via Domitia in the Laboratoire Génome & Développement des Plantes (UMR UPVD/CNRS 5096) in a young and dynamic team (Geno'Mix). The initial duration of the contract is planned for 18 months (ideally starting in April 2026) and salary will depend on experience based on the UPVD salary grids. The city of Perpignan offers a nice environment to live, between sea and mountains at the crossroads between Toulouse, Montpellier and Barcelona.



Applications & information

People interested to apply or looking for addition information shall apply by email to the two scientific leaders of the project joris.bertrand@univ-perp.fr and yann.bourgeois@ird.fr and should include a CV (with publication track) and two reference persons that may be contacted during the process.

References

- Baguette M., Bertrand J.A.M., Stevens V. & Schatz B. (2020) Why are there so many Bee-orchids? Adaptive radiation by intraspecific competition for mnemonic pollinators. *Biological Reviews*, 95, 1630-1663. DOI: 10.1111/brv12633
- Gibert A., Buscail R., Baguette M., Fraïsse C., Roux C., Schatz B. & Bertrand J.A.M. (2024) Holocene climate change promoted allopatric divergence and disjunct geographic distribution in a bee orchid species. *Journal of Biogeography*, 51, 2424-2439. DOI:10.1111/jbi.14998
- Gibert A., Schatz B., Buscail R., Nguyen D., Baguette M., Barthes N. & Bertrand J.A.M. (2025) Floral phenotypic divergence and genomic insights in an *Ophrys* orchid: unraveling early speciation processes. *New Phytologist*, 249, 849-868. DOI:10.1111/nph.20190