

“The role of outcrossing traits and pollination systems on plant diversity: tests at different evolutionary scales”

- Application: September-November 2025
- Start: early 2026
- Duration: 4 years
- Funding: PIX2025 Predoctoral Fellowship (Spanish Ministry of Science). Research project “*SELFHET*: The selfing-outcrossing paradigm in the evolution of heterostylous lineages”
- Advisors: Violeta Simón Porcar and Juan Arroyo Marín

Summary of the PhD project

The PhD project aims to test the evolutionary association of the outcrossing-selfing shifts with genetic diversity and diversification rates in plants, and the role of pollinators in these processes.

This general objective will be assessed at macro- (across all angiosperm genera), meso- (within the yellow-flowered flax species clade (*Linum* sp.)) and microevolutionary (within the species pair *L. tenue* – *L. trigynum*) scales. Our main study system are heterostylous plants, a group of angiosperms in which outbreeding is the most common strategy.

The PhD thesis will be multidisciplinary, including:

- Phylogenetic comparative analyses of trait evolution.
- Field studies on Mediterranean flax species, exploring their pollination system, floral traits, and self-(in)compatibility.
- Natural experimental setups in *L. tenue* and *L. trigynum*, combining pollination trials with fitness estimates, paternity analyses and analyses of genomic diversity.

Hence, the project will combine large-scale evolutionary perspectives with detailed fieldwork, offering opportunities to develop skills in phylogenetics, evolutionary ecology, plant reproductive biology, and genetic and genomic analyses. Further details will be provided after discussions with candidates.

Candidate's profile

- BSc and MSc in Biology, Environmental Sciences, or related fields, with outstanding marks in both degrees.
- Interest in evolutionary biology, ecology, and genomics.
- Knowledge of data analysis in the R environment and willingness to learn molecular laboratory and field techniques.
- English level B2 or higher (spoken and written).

- Type B driver's license and road driving experience.
- Availability to undertake long and intense field trips and experimental field work.
- Detail-oriented and vocational person with a sense of adventure.
- Capacity for autonomous and collaborative team working.
- Some previous experience on research, even in different fields, is valued.

Advisors

- **Dra. Violeta Simón Porcar** – Lecturer of Botany interested in the evolution of plant reproductive systems, from asexual reproduction to sophisticated floral polymorphisms, and including the role of pollinators. She uses multidisciplinary approaches that include experiments, field data and lab work. She has led publications in top-ranked journals and supervised 3 doctoral theses.
- **Dr. Juan Arroyo Marín** – Professor of Botany with extensive experience in evolutionary biology and Mediterranean plant ecology, especially in areas related to biogeography and plant-animal interactions. He has directed several research projects related to this topic, authored more than 150 publications, and supervised 15 doctoral theses.

Working environment and possibilities

- Welcoming and collaborative working environment at the Botany Area of the Plant Biology and Ecology Department of the University of Seville (Spain).
- Collaboration with international researchers in South Africa, Sweden, Türkiye and Morocco.
- Participation at conferences and up to three research stays abroad.
- Collaboration on parallel and closely related research projects.

Postulation

To postulate as a candidate ahead of the official call (expected in **September–October 2025**), please email to violetasp@us.es and arroyo@us.es. Your message should include:

- Your CV
- A motivation letter (1pp.)
- The reference contact of up to two researchers with whom you may have collaborated.