

TFM proposal

Genomic Insights into Three Locally Adapted Diatoms from the Albufera Coastal Lagoon

About the project

The Albufera of Valencia is a biodiversity hotspot where microalgae play a fundamental role in sustaining the lagoon's ecological processes as it forms the foundation of its aquatic ecosystem. Climate change and human activities have profound effects on the diversity of microalgae in the Albufera, with rising temperatures, altered hydrology, nutrient loading, and ocean acidification being key drivers of change. Given the critical role that microalgae play in the Albufera's ecosystem, conserving their biodiversity is essential for maintaining the ecological integrity of the lagoon. The integration of genomics into biodiversity conservation programs provides unprecedented opportunities to understand, protect, and restore these species and their ecosystems. Within the fourth call of the Biogenoma of the Institut d'Estudis Catalans, we wish to contribute with the genome sequencing of three diatom species that represent an important microalgal component of the Albufera natural reserve: *Seminavis strigosa*, *Achnantheidium minutissimum* and *Nitzschia palea*. This project is part of the Catalan initiative for the earth Biogenome Project (CBP), which aims to produce a detailed catalogue of the genome of eukaryotic species with an outlook on biodiversity preservation.

The student will apply publicly available genomic packages as well as those developed and maintained by the lab: AEGIS (Annotation Extraction and Genomic Integration Suite) and TITAN (The Integrative Transcript ANnotator). The three diatom species mentioned above have not been sequenced before so both the assembly and the annotation will be the first published genomic resources for these algae. Participating in benchmarking tests and improving their functionality will be of relevance to the project as well as a learning experience. Publications are expected by the end of the Master's project.

We hope to hear from prospective 1st and 2nd year students looking for a lab to carry out a final year master's project. Feel free to contact us with any questions you may have!

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AEGIS



TITAN