PROPUESTA DE TRABAJO FINAL DE MÁSTER

curso 2020−2021

Grupo de investigación (si procede): Ecology of Marine Microbes (emm.icm.csic.es)

Institución: Institut de Ciències del Mar, CSIC

Director del trabajo: Ramon Massana (emm.icm.csic.es/member/ramon-massana)

Datos de contacto: ramonm@icm.csic.es

Título del proyecto: Unraveling the diversity and genomic information of microbial marine predators

Tareas a desarrollar: Mainly computational work related to:

- assisting in the assembly and functional annotation of single-cell amplified genomes
- performing phylogenetic trees of the 18S rDNA to unravel the taxonomy of the single cells
- diving into specific genes and proteins related to phagocytosis by marine predators

Lugar de trabajo: Institut de Ciències del Mar, CSIC. Passeig Maritim de la Barceloneta 37-49, 08003 Barcelona

Requisitos formativos del estudiante: Interest in microbial genomics; knowledge in UNIX terminal; bash, python or R programming will be a plus.

Resumen del proyecto:

The molecular survey of microbial eukaryotic diversity in the past two decades has unveiled many novel and uncharacterized species that are major components of marine ecosystems. The extent of this novelty is particularly dramatic among the heterotrophic and mostly bacterivorous species. These eukaryotic predators are responsible to transport the carbon from primary producers to upper trophic levels and, even though they play an important role in marine ecosystems, there is little knowledge regarding their ecophysiology and the genomic basis of its bacterivorous activity. In Ramon Massana's lab we address this question by using single-cell genomics, metagenomics and metatranscriptomics on natural microbial communities. In this project, the student will work in the analysis of a large collection of single-cell amplified genomes (SAGs) collected at the Blanes Bay Microbial Observatory, assisting in the assembly and annotation of the genomes and identifying the taxonomical affiliation of the SAGs retrieved. Finally, the student might work in identifying genes involved in bacterivory in these novel uncultured taxa and observe their distribution in the global ocean.

Observaciones: