Universitat Pompeu Fabra Barcelona

Master in Bioinformatics for Health Sciences

Master project 2021-2022

Personal Information

Supervisor	Josep F. Abril
Email	jabril@ub.edu
Institution	Universitat de Barcelona
Website	https://compgen.bio.ub.edu/
Group	Computational Genomics Lab

Project

Computational genomics

Project Title:

Improving planarian interaction network with transcriptomes meta-analysis

Keywords:

planarian, transcriptomics, gene and protein networks, k-mer analysis, genome re-annotation

Summary:

In collaboration with the Barcelona Planarian Lab (UB), we are integrating transcriptomic data from different sequencing technologies into PlanNet/PlanEXP interaction network browser, as well as performing differential gene expression (DGE) analyses for planarian species to understand regeneration and developmental biological processes. With the advent of Single-Cell sequencing protocols, we have to improve the means by which molecular biologists can manage, analyze and interpret new gene expression data, as it has been done in PlanEXP. Up to the date, many RNA-seq experiments in planarian have been described and published, in which different transcripts may have been only expressed under specific conditions. We want to gather as much sequence information as possible from those data sets in order to distill an improved reference transcriptome sequence set, together with the latest genome assembly, which will have an impact on future DGE based on traditional RNA-seq or single-cell approaches, by improving gene structure resolution and better modeling genic features.

References:

PlanNet/PlanEXP (https://compgen.bio.ub.edu/PlanNET/)

Expected skills::

Candidate should have computational analysis skills using bash, unix tools, and scripting languages (perl, python, R). Further skills in database management or web development will be taken into consideration.

Possibility of funding::

To be discussed

Possible continuity with PhD: :

To be discussed

Comments:

Depending on candidate curriculum and interests, there will be possibilities to apply for pre-doctoral fellowship to follow up with the project.