Universitat Pompeu Fabra Barcelona

Master in Bioinformatics for Health Sciences

# Master project 2021-2022

## Personal Information


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## Project

# Computational genomics

**Project Title:**

Dissecting the genetic basis of handling-induced micturition in BXD recombinant inbred mice

**Keywords:**

Genotype to phenotype path; Complex traits genetics; Systems genetics; Animal models

**Summary:**


We have observed significant and strong differences in handling-induced micturition/urination between two inbred strains of mice, C57BL/6J and DBA2/J. We have collected phenotype data (micturition) on a large number of recombinant inbred strains derived from C57BL/6J and DBA2/J (BXD recombinant inbred mice), and a wealth of additional phenotypes as well as sequence data are available for these mice (http://www.genenetwork.org/). The project aims at dissecting the genetic basis of this phenotype, namely quantifying the proportion of phenotypic variation explained by genetics (heritability), mapping the underlying genomic loci (quantitative trait loci), and identifying phenotypes that are genetically correlated with micturition, in order to better understand what this phenotype represents (e.g. Is it a response to stress? Does it instead reflect morphological differences in the urinary system of the mice?).


**References:**


http://www.genenetwork.org/ (database and analysis toolkit to study BXD recombinant inbred mice); https://doi.org/10.1016/j.cels.2020.12.002; DOI 10.1007/978-1-4939-6427-7_4


**Expected skills::**

Experience programming in R would be a plus

**Possibility of funding::**

Yes

**Possible continuity with PhD: :**

Yes