



Master project 2024-2025

Personal Information

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Project

Computational genomics

Project Title:

HIV vaccine response: GEX and TCR

Keywords:

mice, scRNA-seq, GEX, TCR, HIV

Summary:

The project aims to set up a pipeline for single cell analysis in a proof-of-concept experiment with mice. 4 mice were vaccinated against HIV and vaccine response in animals with and without microbiota was compared. Spleen cells were collected and sequenced for the gene expression and the TCR, which are now ready to analyze. First, a single-cell analysis will be carried out to look for TCRs and the gene expression changes in cells enhancing the response with the state-of-the-art methods (clustering, annotation de novo and with references, differential expression analysis, TCR annotation, ...). The secondary goal will be to setting up an internal website to share the results with the lab.

References:

Vaccines (Basel). 2023 Oct 30;11(11):1663., NPJ Biofilms Microbiomes. 2022 Dec 30;8(1):104.

Expected skills:

R programming skills, gene expression analysis (specially if single-cell); desirable: website development experience; optional: TCR analysis

Possibility of funding:

No

Possible continuity with PhD:

To be discussed

Comments:

IrsiCaixa-TIV lab is in the can Ruti Campus of the HUGTiP, near IJC and IGTP. There are frequent bioinformatician meetings on campus. Hybrid work might be possible depending on IT and tasks. The group is mostly wet lab people doing experiments with infectious agents such as HIV, SARS-COV-2, MPOX. The lab participates in several clinical studies from companies and academia. The work will be co-tutored by Alex Olvera the researcher leading these experiments for his expertise in HIV and immunology.

