Master 2 Internship

Exploring Odorant-Receptor Interactions in the frame of Human Fertility

Host Laboratory: ChemSenSim Team, Institut de Chimie de Nice - Université Côte d'Azur
Duration: 6 months (Master 2 internship)
Start Date: January 2026
Location: Institut de Chimie de Nice, in collaboration with Institut de Parmacologie Moléculaire et Cellulaire (*Université Côte d'Azur*)
Website: https://lab.chemsensim.fr/

Project Description

We are seeking for a Master 2 student with strong skills in molecular modeling simulations and a background in biology/structural biology to join a collaborative project at the interface of computational and experimental research.

This interdisciplinary project will involve two Master 2 students working in close collaboration: one focusing on the numerical approach through molecular modeling, and the other conducting experimental studies in biology.

The overarching objective of the project is to improve the quality and fertilization potential of human sperm through the activation of olfactory receptors (ORs) expressed on the surface of spermatozoa. These receptors, traditionally studied in the olfactory epithelium, are G-protein-coupled receptors (GPCRs) with a broad physiological distribution and emerging roles outside of smell perception.

In this project, we aim to:

- Design and implement a virtual screening pipeline to identify candidate odorant compounds targeting sperm-expressed ORs.
- Model receptor–ligand interactions using molecular dynamics simulations based on recent advances in structural biology.
- Validate the *in silico* results using video microscopy and sperm motility assays in cell culture.

This integrated approach will allow us to explore how odorant molecules can modulate sperm motility, providing potential breakthroughs in reproductive biology.

Candidate Profile

The candidate should have a training in molecular modeling, computational biology, structural biology, biophysics, or a related field, with hands-on experience in molecular dynamics simulation and docking. The candidate should demonstrate an experience in Linux environments, and be capable of writing data analysis scripts (Python or equivalent). Knowledge of protein structure is required, and a good understanding of GPCR biology will be considered a major asset.

We are looking for a motivated, autonomous student with a strong interest in interdisciplinary research at the interface of computational chemistry, structural biology, and cell biology, and the ability to work effectively in a multidisciplinary team.

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We Offer

- A stimulating scientific environment within the ChemSenSim Team at Université Côte d'Azur with local computational resources to perform the calculations.
- Direct collaboration with an experimental biology laboratory (IPMC), ensuring rapid validation of computational predictions.
- Training in cutting-edge computational tools and exposure to translational research in fertility and GPCR biology.

Application

Applicants should send the following documents in a single PDF file:

- CV (including academic background and technical skills),
- Motivation letter,
- Contact information for one academic referee or a recommendation letter.

Send applications to: Jeremie.topin@univ-cotedazur.fr, and indicate "Application to the *Internship MIMOSA*" in the subject line.

Deadline for applications: November 2025

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