



**UNIVERSITÉ
DE GENÈVE**

FACULTÉ DE MÉDECINE

Laboratoire du Prof. Serge NEF - Travail de Master -CMU/UNIGE

We are looking for motivated biology master students.

The main topic of our research focuses on the study of molecular mechanisms involved in sex determination, differentiation of gonads and testicular function. In particular, we are developing two axes of research:

1) Identification of novel factors involved in disorders of sexual development using Crispr/Cas9 system

Sexual ambiguities and disorders of sexual development are rare diseases affecting about 1 child in 4500. Very heterogeneous congenital diseases, these diseases are associated with ambiguous genitalia and infertility. In addition, these diseases are often sources of secondary complications such as increased risk of cancer of the ovary or testis.

In human genetics, we use genomic analysis techniques such as exome sequencing of patients with diseases such as testicular dysgenesis or the presence of ovotesticules. The goal is to identify new candidate genes involved in sex determination and /or ovarian development / testis. The function of these candidate genes will be then tested in vivo in the mouse model by generating mutant mice using the Crispr/Cas9 system.

2) Revisiting sex determination using single cell transcriptomics and epigenetics.

Understanding how distinct cell populations diverge from multi-potent progenitors is a major goal in developmental biology. The adrenal gland and the gonads represent the two major steroidogenic organs in mammals, and are absolutely central to the regulation of body homeostasis, metabolism, sexual development and reproduction. Both organs share a common developmental origin, the adrenogonadal primordium (AGP). We are combining single-cell RNA sequencing and single seq ATAC seq to investigate how cell-fate decisions are made during testicular, ovarian and adrenal development.

Interested students should contact:

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