



**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

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) Role of growth factors of the IGF family in mediating testis development and function

In Western societies, infertility rates are exceptionally high as about 1 couple 7 has problems conceiving. In this perspective, a better understanding of male fertility and spermatogenesis is essential. Continuous sperm production is a biological process finely regulated, among other by a multitude of local factors such as growth factors of the IGF family. We study the key role of IGFs in training, development and testicular functions such as spermatogenesis and androgen synthesis. However, the importance of the IGF system in the testis is highly underestimated. This is caused by redundancies at the IGFs and their receptors but also to early mortality invalidated these IGFs mice prevents a study of testicular function performed in the adult animal. In this context, we initiated a project using functional mouse genetics to bypass this lethality and precisely characterize the role of IGFs in each cell type of the testis. And we plan to identify the intra-testicular source of IGFs and determine their functions in Sertoli cells and Leydig cells.

Interested students should contact:

Prof. Serge Nef, PhD
Department of Genetic Medicine and Development
University of Geneva Medical School
1, rue Michel-Servet
CH 1211 Geneva 4
E-mail : Serge.Nef@unige.ch
Tel :+4122 379 51 93