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Research Areas:

- Molecular biology of reproduction, with an emphasis on male meiosis
- PhD in Cellular and Molecular Biology
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How can we detect conditions and changes on the fundamental bases of our bodies? How do these conditions differ between cultures?

During spermatogenesis (the development of male gametes), a specialized cell division named meiosis takes place. Homologous chromosome pairing and recombination (crossing-over: genetic interchange of parental genes) are distinctive traits of meiosis. Crossing-over constitutes one of the main sources of biodiversity in sexually reproducing organisms; it produces genetic changes that can be perpetuated, thus contributing to adaptation to changing environments through natural selection.

How can we identify and prevent maladaptating changes in early stages of our biological development?

Our main interest is to study the molecular basis of spermatogenesis in mammals, mainly focused on early meiotic stages, i.e. the stages where most genes coding for homologous pairing- and crossing-over-related products are expressed. We have recently developed a method for isolating highly pure stage-specific spermatogenic cell populations including early meiocytes, and analyzed their differential gene expression patterns through transcriptomic studies using next generation sequencing. We are committed to the identification and characterization of meiotic-specific products. Besides, we have addressed the study of long non-coding RNAs in an attempt to shed light on the molecular mechanisms underlying meiotic pairing and recombination.