Director of CREMOGH: Pierre Julien, Faculty of Medicine

CENTRE DESCRIPTION

CREMOGH is a multi-department research centre that brings together professors from the faculties of Medicine, Agricultural and Food Sciences, and Pharmacy. Together, they supervise over 100 students and some 50 research professionals and support staff.

Research groups at the centre study the interactions between genetic factors and other epigenetic, hormonal, and environmental factors involved in complex diseases. Researchers draw on multiple approaches including genomics, proteomics, metabolomics, bioanalysis, bioinformatics, structural and cellular biology, transgenesis, cell and tissue therapy, and combinatorial chemistry for medicinal chemistry purposes.

For over 40 years, the centre’s original and creative research program has advanced our understanding of the mechanisms involved in the physiopathology of various hormone-dependant diseases.

CREMOGH provides graduate and postdoctoral training in the following areas:

- Structural and functional biology of enzymes involved in the biosynthesis and inactivation of steroidal hormones
- Medicinal chemistry and pharmacogenomic
- Identification of genetic, endogenous, and environmental risk factors in hormone-dependent diseases
- Neuroimmunoendocrinology and cell signalling

The goal of this mission is to accelerate the development of new diagnostic, prevention and treatment approaches for hormone-dependant diseases.

Imagination is more important than knowledge (Albert Einstein | Sur la science)

For over 40 years, the centre’s original and creative research program has advanced our understanding of the mechanisms involved in the physiopathology of various hormone-dependant diseases.
Through their expertise and innovative approaches, CREMOGH scientists have contributed to major advances in biomedical research and clinical applications, as well as in genetic epidemiology.

Here are some of their main achievements:

1) Identification of the mechanisms of steroid action in the etiology of hormone-dependant cancers
2) Discovery and clinical development of medical castration with GnRH agonists
3) Characterization of new enzymes involved in the formation and inactivation of sex steroids
4) Development of new steroid inhibitors
5) Demonstration of the inductor effect of fibrates on hepatic bile acid detoxification
6) Discovery of predisposing genes to hormone-dependent cancers (breast, ovarian and prostate)
7) Identification of genetic and environmental factors modifying the risk of breast and endometrial cancer

Many investigators at CREMOGH have also researched the influence of steroid hormones on brain activity. Their work has helped elucidate how steroids affect signalization, gene expression, and neuroinflammation in different cell classes in the brain.

1) The role of estrogenic and androgenic metabolism in the regulation of adiposity
2) The role of stem cells in adipogenesis
3) The role of omega-3 fatty acids in the reduction of oxidative stress and in the regulation of insulin sensitivity and the control of muscle protein synthesis
4) The relationship between gene expression, ingestion of fat, and cardiovascular risk factors
5) The impact of lipid mediators such as LTB4 on innate immunity and the role of environmental factors in chronic autoimmune disease
6) The identification and distribution of genetic determinants specific to the French-Canadian population in relation to several complex diseases such as ocular disease, breast cancer and dyslipidemia