PhD student position
4 years grant (2 years renewable), starting October 2019

Our laboratory is located on the medical campus (Erasme) of Université Libre de Bruxelles (Belgium) and is headed by Prof. Cédric Blanpain. This project will be performed under supervision of Dr. Alexandra Van Keymeulen and in close collaboration with Dr.Christel Pequeux at Université de Liege.

Research Project

Approximatively 75% of breast cancers are estrogen dependent and estrogen receptor-positive (ER+). Despite the large efficacy of anti-estrogen treatments, relapse occurs in 30% of cases. In addition, estrogens remain the most powerful treatment to circumvent menopause symptoms. However, their use as menopause hormone treatment (MHT) remains controversial since MHT is associated to an increased risk of breast cancer. A better understanding of the ER signaling upon estrogen or anti-estrogen treatment in mammary gland and during breast tumorigenesis is thus crucial to develop new tools to target these cancers and to develop a new generation of MHT.

In this context, we aim at answering the following questions:
Aim 1: What is the impact of estrogen signaling on the transcriptional and chromatin landscapes of the ER+ and ER- epithelial cells during tumorigenesis?
Aim 2: Which mechanisms are promoting breast cancer upon MHT treatment during menopause?
Aim 3: How come estetrol treatment during menopause does not promote breast cancer, while it prevents side effects of menopause?

These experiments will constitute a novel and comprehensive definition of the transcriptional and chromatin landscapes of purified individual cell lineages during tumorigenesis and upon MHT. Our results will constitute the basis to highlight new potential targets to treat luminal-like breast cancer and will also provide precious information to assess how estetrol could safely replace estradiol use as MHT, without increasing breast cancer risk. Finally, they will open new avenues to prevent hormone-dependent tumorigenesis.

Methods: in vivo models of mammary gland and breast cancer (MMTV-PyMT, PDX, cell line xenografts), FACS cell sorting, RNAseq, ATACseq, Chipseq, qPCR, 3D cultures.

Skills: Master degree in Biomedical science, molecular biology, biochemistry or equivalent, FELASA certification. High motivation, enthusiasm and scientific curiosity are mandatory. Ability to learn fast, to work independently, meticulous, good communication would be appreciated.

Contact: To apply, send a motivation letter, a C.V. and two references with their email address to Alexandra Van Keymeulen (avkeymeu@ulb.ac.be)