

# Role of Obesity in Breast Cancer Progression and Metastasis

Adrià Prado Baños

Master thesis in Experimental Biomedical Research

Breast cancer is the most common diagnosed cancer and principle cause of cancer-related mortality in women worldwide. It is described as an uncontrolled proliferation of the cells located in the breast tissue. The process is caused by somatic genetic mutations produced in the BCRA1, BCRA and TP53 genes as well as in other key signaling pathways. It has been seen that the main risk factors contributing to the development of the type of cancer are close relatives who suffered from breast or ovarian cancer and obesity.

The main objective is to identify the role of obesity in the progression of breast cancer and generation of metastasis on the lungs. The different steps of the metastatic cascade will be studied in order to determine the modulation of the cell's properties produced by the obesity. A post-menopausal C57Bl6 WT mice model will be used and the Py230 cancer cell line will be inoculated for the study and its characterization.

The results show differences between the in vivo and in vitro assays performed to assess the effects of the obesity on the mice. The mice had an increased body weight due to the obesity, which was accompanied with an increase on the tumor volume and metastasis generated on the lungs. The in vitro assessment of the different steps of the metastatic cascade showed no effects on the cells produced by the induction of the obesity condition.

Supervisor: Dr. Mélanie Bousquenaud  
Director: Prof. Curzio Rüegg