

March 2021



Master's Thesis project at Xlab, Department of Biomedical Sciences, UCPH

Metabolic and mitochondrial effects of Breast Cancer Treatment

Background

Breast cancer is the most common cancer in women. Because of earlier diagnosis and improved treatment, patients treated for breast cancer comprise a large and growing group of cancer survivors. After surgery, adjuvant (additive) treatment is given to most patients to prevent breast cancer from coming back. Most commonly, adjuvant chemotherapy (6 months) and endocrine therapy (five years) is offered the patients. The influence of these treatments on metabolic and inflammatory functions, and the risk of associated diseases such as type 2 diabetes, is largely unknown. The overall aim of this project is to understand metabolism-related molecular mechanisms caused by adjuvant treatment of postmenopausal breast cancer patients.

The project

More than 100 postmenopausal, oestrogen receptor positive breast cancer patients are being recruited at Rigshospitalet and will be followed up for five years as part of the study 'Lev godt efter brystkræft'. In a subpart of the patients and in healthy controls, physiological measures as well as blood samples and tissue biopsies (adipose tissue and skeletal muscle) are collected before and/or after the adjuvant treatment. In these samples, molecular mechanisms will be studied such as mitochondrial function/respirometry (Oroboros instruments), genome-wide expression and DNA methylation, macrophage infiltration and DNA damage.

The student

We are seeking a motivated MSc student in Human Biology, Molecular Biomedicine, Biology or similar. Laboratory experience is advantageous but not necessary. Start date as soon as possible or after summer.

You will

- Be involved in a highly translational research project involving breast cancer patients
- Learn to analyse OXPHOS/respiratory function of human tissues and blood
- Learn to investigate macrophage infiltration in human adipose tissue
- Learn more about human genetics, epigenetics, endocrinology and metabolism
- Work in an inspiring environment with ideal lab facilities in the Mærsk tower

Contact

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The project mainly takes place at Xlab, Department of Biomedical sciences (BMI), with Professor, MD Flemming Dela as main supervisor and postdoc Linn Gillberg as daily supervisor. The project is highly translational and in close collaboration with Professor, MD Peter Schwartz at Department of Endocrinology, who is the main PI of 'Lev godt efter brystkræft', and Department of Oncology at Rigshospitalet.

You can read more about the project here:

<https://www.danishdiabetesacademy.dk/news/first-breast-cancer%E2%80%94then-type-2-diabetes>

For more information about Xlab, please visit: <https://bmi.ku.dk/english/research/xlab/>