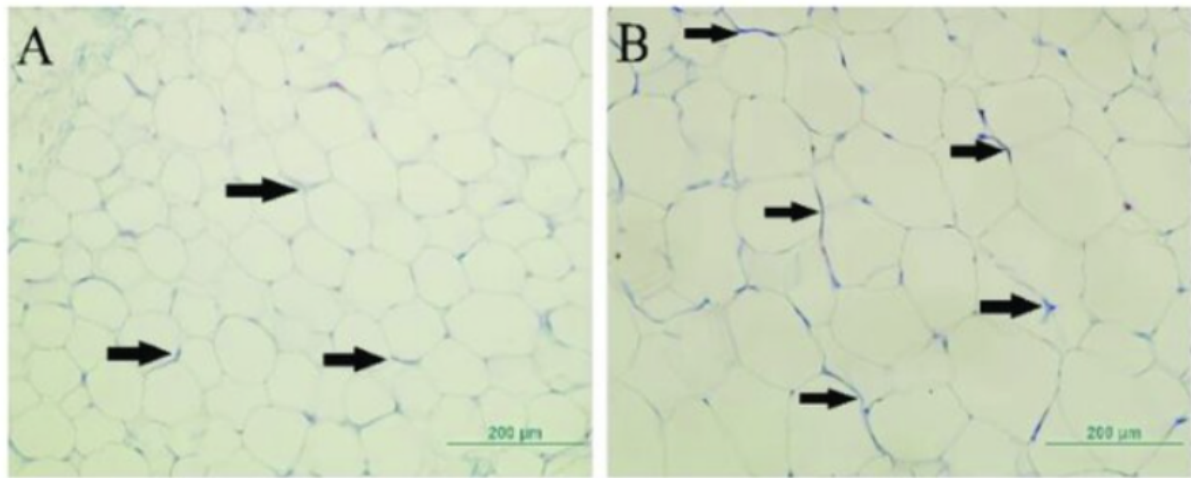


Cell Segmentation of adipose cells tissue by advanced image-analysis techniques



Current epidemiological evidence suggests an increased relative risk for estrogen receptor-positive breast cancer. To gain important insights into the interplay between human breast epithelial cells and the surrounding stroma tissue in response to testosterone, we aim to analyze the cell distribution on the white adipose tissue after staining. In particular, significant alterations in the shape and size of the adipocytes could reveal metabolic changes that promote excessive growth of human epithelial cells.

The goal of the project is to develop an image-analysis method able to identify each adipose cell in the stroma tissue based on its distinctive visual feature—the dim membrane, which is often subtle and difficult to detect locally. Various strategies will be explored, including enhancement filters and deep learning techniques, to facilitate cell segmentation. A global analysis of the whole image will be required to make robust the cell segmentation of the matrix.

The final software package to be developed, preferably in Java / Fiji, should be versatile enough to be applicable in other contexts where images feature membranes that form a tessellation of objects.

This project is a collaboration with the EPFL Center for Imaging and the EPFL Briskin Lab.

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