

Project 2 - Characterisation of adipose tissue with a focus on the fat depots around the kidney

Background

Adipose tissue is not only a storage site for energy but also an important endocrine organ. Current research indicates that obesity and disturbances in adipose tissue metabolism can be important for the development of various diseases, for example, chronic kidney disease. In addition to visceral and subcutaneous fat, there are other fat depots. An example is the fat deposits around the kidney, which are not well characterised and, therefore, interesting to explore. The perirenal fat is located around the kidneys and contains a mixture of white and brown fat cells. In contrast, paranephric fat is considered a typical white adipose tissue. These two fat depots are anatomically adjacent but separated by the renal fascia (see image below).

Observational studies have suggested that perirenal fat increases the risk of high blood pressure and coronary artery disease and directly affects the kidneys. The fatty tissue that is located in the renal pelvis (renal sinus) is perivascular fat and has been associated with, among other things, high blood pressure and an increased risk of diabetes.

In this project, we want to continue characterising the fat that surrounds the kidneys using gene expression analyses (transcriptomics*).

The project

The adipose tissue biopsies are collected from healthy kidney donors. In addition to adipose tissue from the kidney depots, subcutaneous and visceral adipose tissue samples have also been collected. We have previously investigated fat cell size and glucose transport in the various fat depots. We now want to further characterise the fat depots surrounding the kidney with the help of gene expression analysis (transcriptomics), analyse different metabolic pathways that may be important for the function of the adipose tissue and compare these between the different fat depots.

*Transcriptomics is the study of the transcriptome—the complete set of RNA transcripts produced by the genome, under specific circumstances or in a specific cell—using high-throughput methods, such as microarray analysis.

Are you interested in our work? Looking for a MSc project?

We are always looking for creative and motivated students who want to work in our lab. You will be part of a highly interactive group and profit from the group's experience in experimental and theoretical work. You will get to familiarise yourself with this exciting research area, work experimentally under supervision, learn to handle pre-clinical data in a structured way, make the calculations and present the results in a report and/or article. We hope this independent work leads to a continued interest in metabolism and kidney medicine, patient-related research, and graduate education.

If interested, please contact us for more information:

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