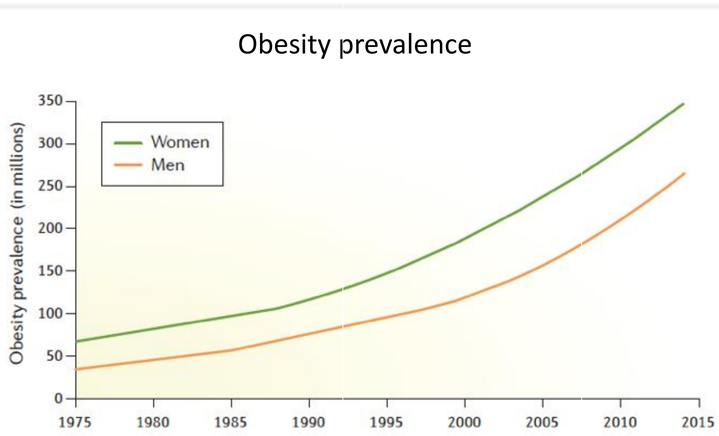
HETEROGENEITY OF ENDOTHELIAL CELLS IN OBESITY - GATEKEEPERS OF ADIPOSE TISSUE INFLAMMATION

Laboratory for Endothelial Cell Biology

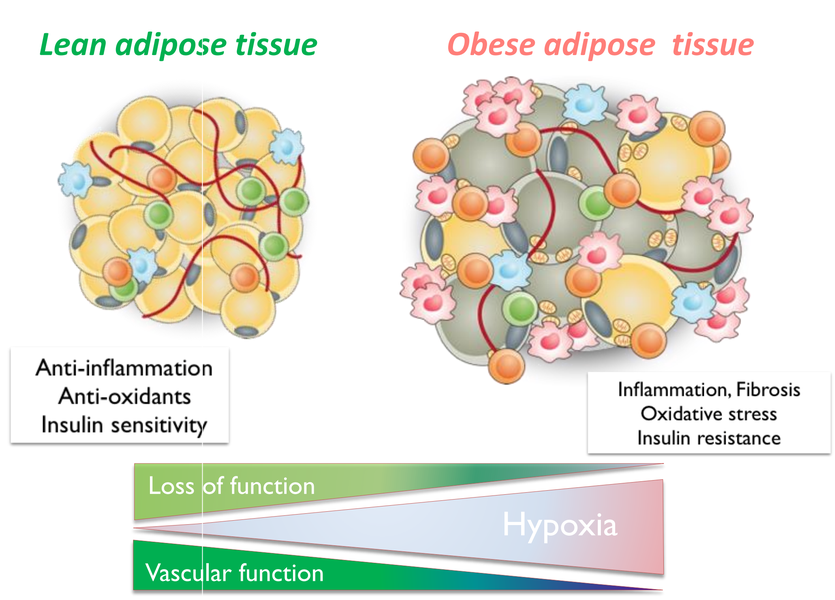
Joanna Kalucka, Assistant Professor, PhD

Aarhus Institute of Advanced Studies (AIAS) and Department of Biomedicine, Skou building, Aarhus University

Background information

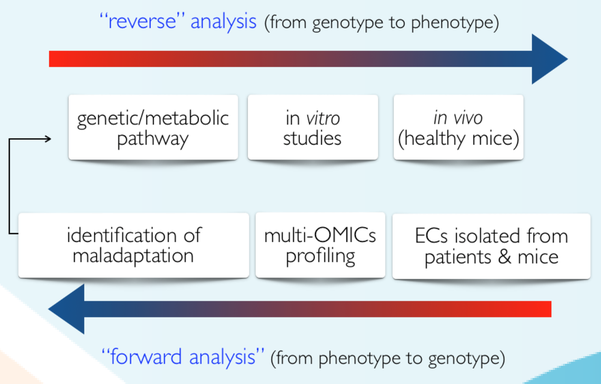


Obesity is a risk factor for **cardiovascular disease, hypertension, stroke,** type 2 diabetes, kidney dysfunction, sleep disorders



Aims of the projects & available methodology

"Forward approach" to profile endothelial cell phenotype (dysfunction) and their metabolic adaptation



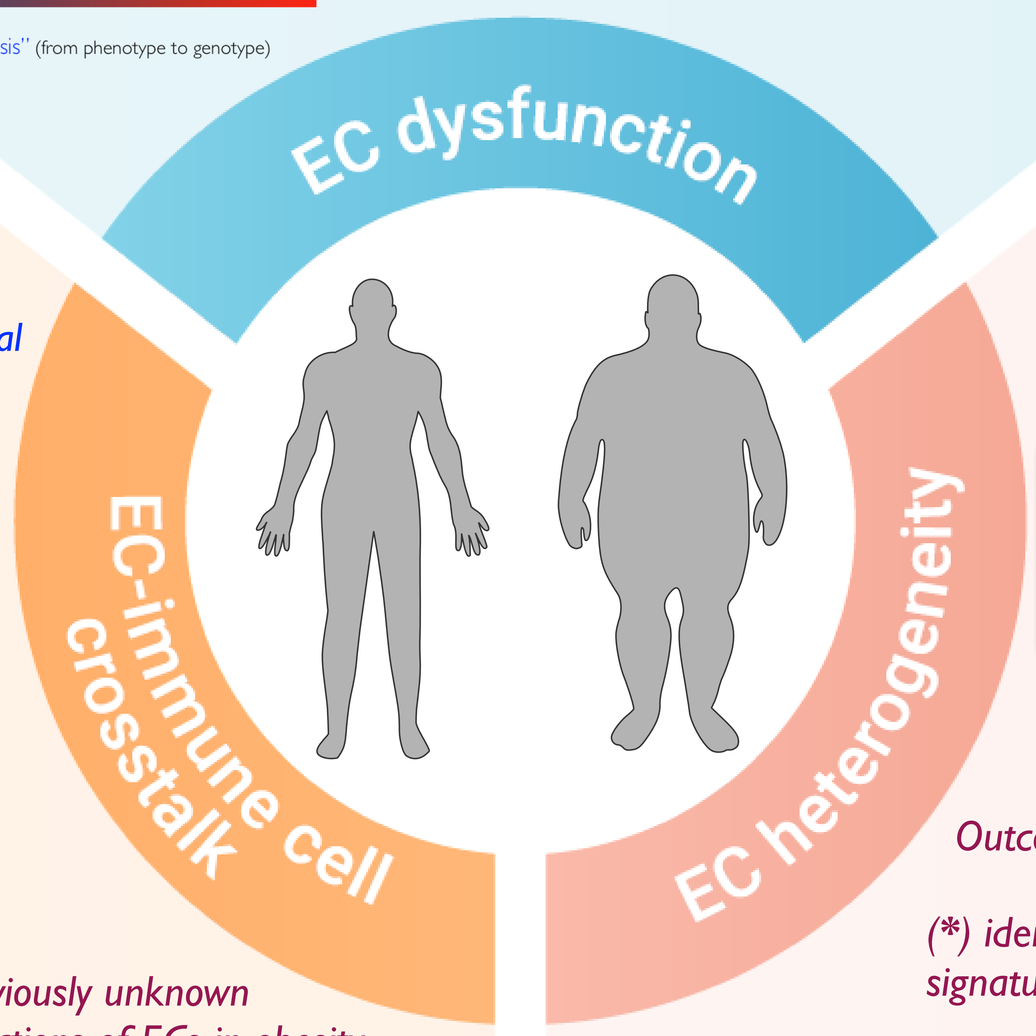
Available OMICS-techniques

(i) transcriptomics (ii) proteomics (iii) metabolomics

Outcome:

(*) correlation between gene/protein and metabolic alterations

(**) candidate regulators of EC dysfunction

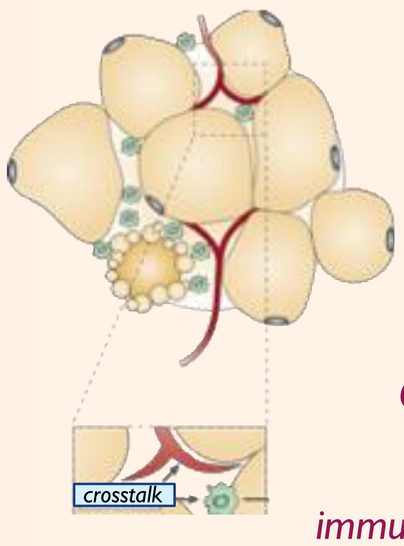


Endothelial cell & immune cell interaction

Available techniques

(i) in vitro assays of immune and endothelial cell co-culture

(ii) functional assays: immune cell requirement, migration, cytokine release



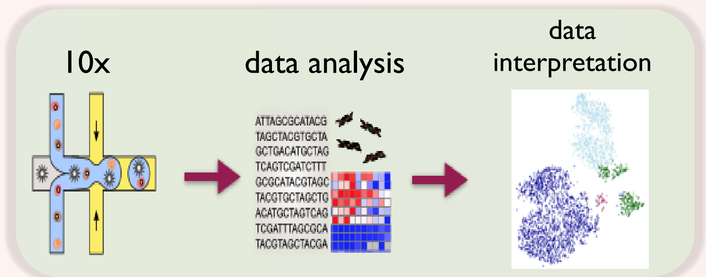
Outcome:

(*) identify previously unknown immunoregulatory functions of ECs in obesity

Adipose tissue & endothelial cell taxonomy

Available techniques

(i) single cell RNA-sequencing



Outcome:

(*) identify subpopulations with distinct gene signatures and their dysfunction

(**) identify immune-signatures

Skills that you can develop by joining this project:

(i) Work with patient material

(ii) Design of the experimental setup and use of all or selected listed above OMICs techniques

(iii) Cell isolation and cell culture (in vitro functional assays)

(iv) Sample preparation for multiOMICs experiments

(v) Data analysis (basic bioinformatics)

(vi) Validation of obtained results

Contact details

Do you like the projects and would like to join our team?

Or would you have more questions and would like to discuss them further? Write me an e-mail and I will be happy to answer!

joanna.kalucka@aias.au.dk