Mandrup Group

Functional Genomics and Tissue Plasticity In Obesity and Diabetes

Functional Genomics & Metabolism

Principal Investigator Susanne Mandrup

Main research topics

In the Mandrup Group we are interested in how changes in gene expression at the genome-wide level regulate **cellular differentiation and plasticity** and how this plays a role in disease development of **obesity** and **type II diabetes**.

We are particularly interested in the following research themes:

1. Fundamental understanding of **lineage determination of stem cells** and the mechanisms of transcriptional enhancers.
2. **Adipose tissue plasticity** in obesity and the role of individual cell types.
3. Systems understanding of how **adipocyte signaling states** change in obesity depending on gender, depot and genotype.
4. **Plasticity of the endocrine pancreas** in type II diabetes.

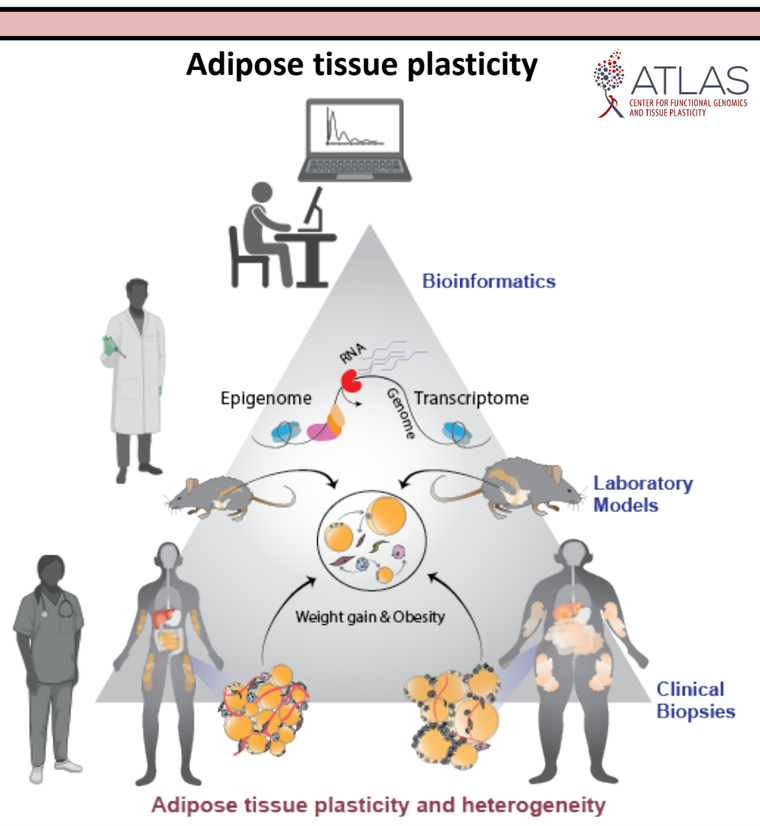
These topics are at the core of ***Center of Excellence in Functional Genomics and Tissue Plasticity (ATLAS)*** and ***Center for Adipocyte Signaling (ADIPOSIGN),*** both directed by Susanne Mandrup.

If you are interested in conducting a project in the group, please contact: s.mandrup@bmb.sdu.dk; Tlf: 6550 2340
www.sdu.dk/mandrupgroup

Examples of student alumni

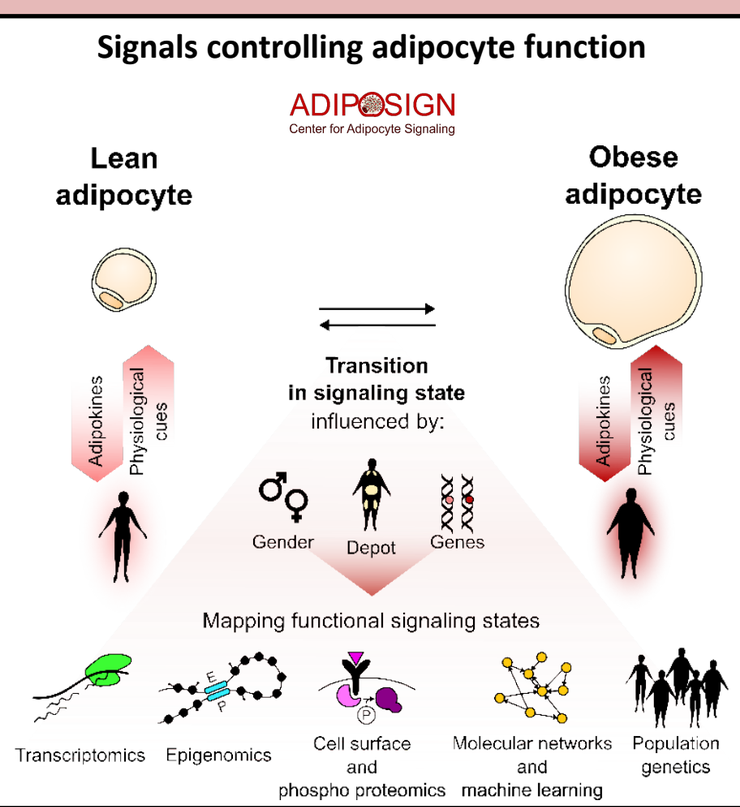
Anne Bugge, Senior Scientist, Novo Nordisk
Lars Grøntved, Assoc. Prof., BMB, SDU
Ronni Nielsen, Lab Manager, BMB, SDU
Martin Rønn Madsen, Bioinformatician, Gubra
Sille Nilsson, High School teacher, Nyborg Gymnasium

Adipose tissue plasticity

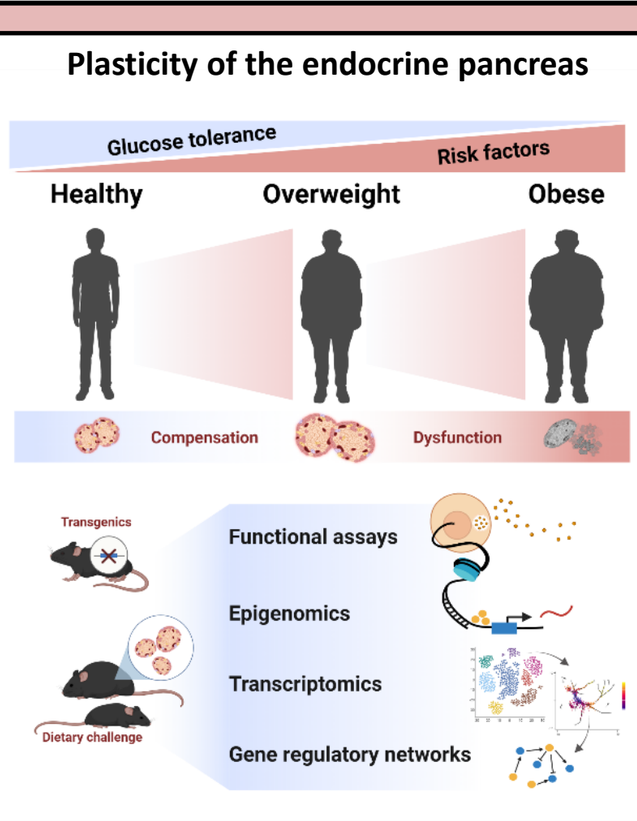


Adipose tissue plasticity and heterogeneity

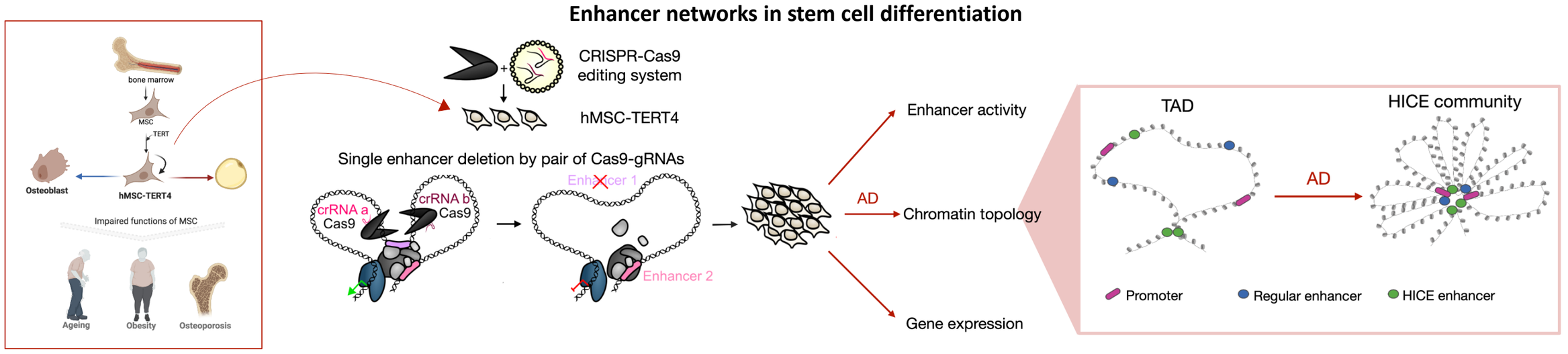
Signals controlling adipocyte function



Plasticity of the endocrine pancreas



Enhancer networks in stem cell differentiation



Projects	Description
Adipose tissue plasticity	We investigate the molecular mechanisms of **adipose tissue plasticity during development and regression of obesity** using single cell analyses of mouse models and human patient biopsies.
Signals controlling adipocyte function	We investigate how fat cells respond to dietary changes and obesity and how these changes depend on depot and gender. We build network models to link genetic variation to obesity-associated diseases.
Plasticity of the endocrine pancreas	We investigate the transcriptional mechanisms underlying the **adaptive responses of β-cells in response to development of insulin resistance and obesity** using different mouse models, and single cell technologies.
Lineage determination of stem cells	We investigate how **enhancer networks and chromatin organization** control lineage commitment and differentiation of mesenchymal stem cells to adipocytes.