



## Danish National Research Foundation

### Center for Functional Genomics and Tissue Plasticity

#### ATLAS

#### Highlights Summary 2023

*The overarching aim of the Center for Functional Genomics and Tissue Plasticity (ATLAS) is to obtain detailed mechanistic understanding of how the many different cell types in the liver and adipose tissue change their functions during obesity and regression. This is important, as obesity-induced dysfunction in these two tissues can lead to life-threatening diseases such as cardiovascular diseases and diabetes. Our long-term ambition is that this insight can be used to improve diagnosis and treatment of obesity comorbidities.*

#### Granting of the extension of ATLAS, ATLAS 2.0

The major milestone of the year was the granting of the four-year extension of ATLAS by DNRF (DKK 53.1 Mill. 2024-2027). In ATLAS 2.0, we will further strengthen the collaboration between basic science and the clinic and redirect



our focus more towards investigations of human tissue plasticity where mouse models are used mostly for follow-up mechanistic studies. We have also changed the center organization and introduced work package leaders. We are celebrating the extension with a kickoff mini-symposium and reception on April 2.

#### Lundbeck Fellow Grant to Anne Loft

Senior postdoc Anne Loft received the prestigious Lundbeck Fellowship career grant from the Lundbeck Foundation and was appointed Assistant Professor and she has now established her own independent research group. Her independent project is focused on understanding the role of adipose tissue in metabolic-associated liver fibrosis and synergizes very well with her ongoing ATLAS research.

#### Publication of ATLAS-funded single cell studies

In 2023, we published several important papers in the field. These included a single cell-resolved study of liver plasticity in metabolic dysfunction-associated steatohepatitis (MASH), where we identified a signaling module in stellate cells, which is a promising therapeutic target in chronic liver disease. We also published a powerful new computational tool, JOINTLY, for joint clustering of single cell data from different batches, and we demonstrated its usefulness by constructing a reference atlas of white adipose tissue (WATLAS), an expandable and comprehensive community resource. We also published a thorough review on single cell understanding of adipose tissue, the first review article of its kind.



#### The Danish Science Festival (Forskningens Døgn)

The Danish Science Festival continues to be a great opportunity for dissemination of our basic research and for showcasing how it contributes to solving problems in society. The festival was celebrated April 22 at the University of Southern Denmark and together with Center for Adipocyte Signaling (ADIPOSIGN) we organized a very popular minilab where guests could purify DNA from fruit, and a station where people could look at liver biopsies and tissue sections in the microscope. Compared to 2022, we had ~20% more visitors in 2023, and it was a fantastic day with loads of interactions. In 2024, we will expand our activity to include computational biology.



#### 6<sup>th</sup> Annual ATLAS Meeting at Gl. Avernæs

In September 2023 ATLAS once again convened at the beautiful Hotel Sinatur, Gl. Avernæs for our Annual Meeting, held conjunct with the Annual Meeting of ADIPOSIGN. All ATLAS members and several members of the Scientific Advisory Board were present in person. In addition to the thorough review of project status, we held a workshop on the work packages in ATLAS 2.0 with valued input from our SAB. The overlap with the Annual Meeting of ADIPOSIGN was again a huge success offering the opportunity to exchange ideas and progress between the centers, e.g., during poster session and informal “park session” workshops on selected research topics. Furthermore, both centers benefitted from the talks by external speakers and social activities.