Abstract

Biomedical importance of forkhead transcription factors

The ultimate goal of our research is to further the understanding on how transcription factors influence biological events. This group of genes is especially interesting since their primary mission is to regulate the expression of genes, during developing as well as in adult living organisms, by influencing the rate by which genes are transcribed. In many instances transcription factors respond to physiological cues by eliciting an appropriate cellular response. Not surprisingly, mutations in or altered expression levels of genes encoding transcription factors have in many instances been linked to human disease. Thus, the study of transcription factors offers a model system for investigations of molecular mechanisms underlying human disease. In my view our most significant contributions are: (i) The discovery that FOXC2 stimulates formation of brown fat cells in vivo and as a consequence hereof protects against obesity and diabetes (ii) The discovery of metabolically active brown adipose tissue in adult humans – a previously unknown organ (iii) The elucidation of Foxi1 as a master regulator of proton secretion.

Co-workers

Postdocs
Mikael Heglind
Martin Lidel
Matthias Betz
Hiaxia Ma
Valentina Sukonina
Fang Meng

PhD students
Rickard Westergren
Daniel Nilsson
Zahra Arani

Selected publications


Kirsi A. Virtanen, Martin E. Lidel, Janne Orava, Mikael Heglind, Rickard Westergren Tarja Niemi, Markku Taittonen, Jukka Laine, Nina-Johanna Savisto, Sven Enerbäck¹², Pirjo Nuutila¹

¹ Shared last authorship; ² Communicating author.
