

# Guest lecture

## “Uncovering the regulatory origin of adipocytes using single cell and integrative genomics”

**27 April 2017**

**10.30 AM in D:IAS conference room Ø18-509-1**



### **Professor Bart Deplancke**

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**Abstract:** In this talk, I will present mostly unpublished work, discussing our latest findings regarding the regulatory mechanisms underlying fat cell differentiation. Specifically, following up our large-scale TF overexpression study (Gubelmann et al., eLife, 2013), I will focus on one completely uncharacterized TF, ZFP30, and demonstrate its involvement in adipogenesis by controlling a novel enhancer element within the PPAR $\gamma$  locus. Surprisingly, ZFP30 seems to upregulate PPAR $\gamma$  expression through KAP1, known as a co-repressor. Thus, we demonstrate here for the first time that a KAP1-containing complex can also have activating regulatory properties. In a second part, I will describe our recent efforts characterizing the heterogeneity of adipose stem cells. Using single cell transcriptomics, we were able to identify three distinct and novel subpopulations. One population is thereby of particular interest since these cells are refractory to

fat cell differentiation despite their stem cell-like characteristics and also have repressive capacity. This raises the hypothesis whether a dysbalance in this population may lead to fat cell accumulation and thus obesity. More generally, it reveals the power of single cell genomics in uncovering new, biomedically relevant cell populations.

**Host:** Professor Susanne Mandrup, Department of Biochemistry and Molecular Biology, SDU.