

Guest lecture

PPAR γ and the Promise of Insulin Sensitization for Type 2 Diabetes

27 January 2016
10 AM in BMB seminar room



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Abstract: The epidemics of diabetes and obesity represent a major challenge for modern societies. Obesity is a major risk factor for insulin resistance, which is a key component of the pathophysiology of type 2 diabetes. These diseases have a strong genetic basis, yet their inexorable rise has been largely due to environmental factors, including obesogenic diets, insufficient physical activity, and shift work. Nuclear receptors comprise a family of transcription factors that respond to small, lipophilic ligands derived from the environment or internal metabolism. In this context, we are particularly interested in the nuclear receptors PPAR γ , which is highly expressed in adipocytes and is the target of antidiabetic drugs that uniquely prevent and reverse the insulin resistance that is at the mechanistic center of type 2 diabetes. Using genomic approaches, we have uncovered mechanisms by which PPAR γ positively and negatively regulates gene expression in a cell type- and individual-specific manner. Single nucleotide differences in the genomes of individuals within a species are major determinants of PPAR γ binding, function, and response to drugs and the environment. Examples will be presented for each of these, in mice and in humans, and discussed from the perspective of mechanism as well as the potential of harnessing these insights to inform personalized approaches to metabolic disease.

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