

## **Parallel Session RTD Line 2 / Nutrigenomics**

### **Lecture 2: Nutrigenetics in a weight loss trial of high-fat versus low-fat diets: Experiences in the Nugenob study**

**Thorkild Sørensen**  
**Institute of Preventive Medicine, Copenhagen, Denmark**

#### **Abstract**

Thorkild IA Sorensen, Katrine Grau, the Nugenob Consortium ([www.Nugenob.com](http://www.Nugenob.com))

Twin studies clearly suggest that the genes influencing levels of body weight are partially different from those making the individuals susceptible to body weight changes. The Nugenob study analysed if genes with common single nucleotide polymorphisms (SNPs) associated with obesity-related phenotypes influence weight loss (WL) in obese individuals treated by a hypo-energetic low-fat or high-fat diet. In a randomised, parallel, two-arm, open-label multi-centre trial, conducted in eight clinical centres in seven European countries, 771 obese adult individuals were allocated to a 10-wk dietary intervention to hypo-energetic (-600 kcal/d) diets with a targeted fat energy of 20%-25% or 40%-45%, completed by 648 participants. The relation between WL during the 10 wk and genotypes of a series of SNPs in candidate genes, the first series of genes selected because they were supposedly associated with hypothalamic regulation of appetite, efficiency of energy expenditure, regulation of adipocyte differentiation and function, lipid and glucose metabolism, or production of adipocytokines, determined in 642 participants, and the second series were genes identified by GWAS (FTO, MC4R and TCF7L2). Considering the multiple testing conducted, none of the associations from the first series was statistically significant. Novel findings on the GWAS identified genes will be presented. The search for the genes determining the weight changes induced by different alterations of the environment or the behaviour may be facilitated by focussing on the specific exposure-phenotype combinations rather than just body weight.