Abstracts - Sept 5, 2024

Jeffrey Friedman, Professor, Rockefeller University, USA
Obesity, Causes and Treatment: The End of the Beginning

Over the last several decades there has been a revolution in our understanding of the causes and treatment of obesity. Obesity is caused by defects in an endocrine system that maintains homeostatic control of adipose tissue mass. This system is comprised of the hormone leptin, its receptor and neural targets in hypothalamus and elsewhere in brain. Highly effective new treatments have emerged that target a satiety system primarily in brainstem. These agents have pharmacologic effects to reduce food intake. A fuller understanding of these systems is likely to yield even more effective therapies that may directly target the root cause of this condition.

C Ronald Kahn, Professor, Harvard Medical School, USA
Defining The Molecular Basis for Insulin Resistance in Type 2 Diabetes and Metabolic Syndrome

Obesity and type 2 diabetes are epidemics worldwide (obesity affects over 1 billion and T2D over 500 million people). A central driver of both disorders in insulin resistance, i.e., the inability of insulin to normally stimulate cellular metabolism. I will be presenting new work showing that insulin resistance is present even the stem cells taken from people and studied in cell culture outside the body. We have identified the nature of these signaling defects. This provides the first insight into tracking down the origins of insulin resistance and T2D and developing new ways to treat or even prevent these disorders.

Sir Stephen O'Rahilly, Professor, Cambridge University, UK
Hormones, metabolism and behaviour

In this talk I will describe what we have learned from over 30 years of study of humans with extreme forms of either a) obesity or b) insulin resistance unrelated to obesity and how such discoveries have influenced clinical practice. If time permits, I will briefly discuss some current work on the hormone GDF15, which provides a signal of cell stress to the brain and is implicated in the pathogenesis of a number of previously puzzling disorders.

Nils-Göran Larsson, Professor, Karolinska Institutet
How metabolism is impacted by the organization of the respiratory chain

The oxidative phosphorylation (OXPHOS) system in mammalian mitochondria plays a key role in harvesting energy from different types of ingested nutrients. The connection between beneficial metabolic effects and anti-cancer activity of drugs targeting mitochondria prompted us to investigate whether inhibitors of mitochondrial transcription (IMTs), with well documented anti-tumor effects in mouse, also have beneficial metabolic effects at the organismal level. Remarkedly, IMT-treatment of obese mice on high-fat diet shifted whole animal metabolism towards fatty acid oxidation leading to rapidly normalized body weight, markedly improved insulin resistance and reversed liver steatosis. We thus describe a novel principle for treatment of obesity and diabetes by inhibition of mitochondrial function.