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**Speaker’s Abstract**

**New Pathways to Metabolic Health: Perspectives from Down Under**

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In this lecture I will explore three main research themes we have pursued in our quest to understand the causes of chronic metabolic diseases, and ways to prevent them.

I will begin by discussing a well-established line of research about long-term health consequences of maternal nutrition during pregnancy. A considerable body of clinical and experimental evidence supports the essential biological plausibility that the early-life environment causes epigenetic changes in offspring. This environment, in particular exposure to poor maternal nutrition, influences susceptibility to future health problems, including metabolic and cardiovascular disease. I will explore how new knowledge is developed through basic research and illustrate important public health implications.

Secondly, I will describe how our current enquiries into the sensory world of food investigate the influences of sweet and fat taste perception on dietary intake and eating behaviour. Fascinating new insights about sweet intensity perception and sweet hedonic liking describe the link with energy and carbohydrate intake. Furthermore, fatty acid taste and olfaction sensitivity appear to be linked and may influence eating behaviour. Given that both sweetness and fat have a powerful hedonic appeal, preferences for sweet and fatty foods are important contributors to increases in body weight and metabolic disease risk.

Completing this lecture, I will discuss examples of our current research of the gut microbiome, exploring a new pathway to obesity prevention and metabolic health. We characterise the gut microbiome in two populations with markedly different metabolic disease risk (Pacific and European women) and different body fat profiles (normal and obese). We test whether taste perception, diet, sleep and physical activity are key pathways that modify the gut microbiome and its impact on metabolic health.

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