

Personalized Nutrition - New Research Perspectives

Biography



Dr. Nathan O'Callaghan is Director of Precision Health Future Science Platform at Commonwealth Scientific and Research Industrial Organisation (CSIRO), Australia. Since 2012, he has held various senior R&D Management roles within CSIRO and accumulated a broad portfolio experience including oversight of the Nutrition and Health Research Clinic located at South Australian Health and Medical Research Institute (SAHMRI) which undertakes industry-funded clinical substantiation trials to demonstrate the health effects of foods, diets and lifestyle programs. He has also developed a broad experience in nutrition and health science, with a focus on developing (bio)markers to improve health through nutrition. A keen focus throughout his career has been developing cutting edge and robust molecular-based assays for assessing (metabolic) health and dietary exposure to better target and personalize the delivery of health advice.

Abstract

The potential for transforming nutritional and health research through the application and implementation of non-invasive markers of metabolic status is profound. Integration of genetics, (epi)genomics, proteins and metabolites from physiological process provides a “window into the body” and are transforming how we measure health, how we identify and monitor people who are most at risk of disease and the way we monitor food intake. Coupled with tools utilizing sensor technology to enable ecological momentary assessment, a new horizon of research in which indicators of metabolic risk and indicators of dietary intake could be collected at a population level with unprecedented simplicity and low cost. Through the validation of state-of-the-art molecular tools for measuring health synergistically identifying how nutrients supplements or dietary patterns impact these markers, we can optimize the health of individuals from diverse genetic backgrounds.

In this symposium, I will present the outcomes from a study designed to understand the influence of amylase copy number (an enzyme involved in starch metabolism, *AMY1*) on weight trajectories and glycaemic control. This study highlights some of the challenges associated with a Personalized Nutrition approach. I will then introduce CSIRO's Precision Health Future Science Platform and discuss how Precision Health will transform the way we manage our health by:

- changing the emphasis from treating illness to keeping people healthy by better predicting, and delaying the onset of chronic disease
- adopting a wider view of health to include other key influencers of health (genomics, gut microbiome, environmental, behavioral and social factors)
- integrating data to deliver insights through predictive data platforms that capture, integrate and analyze data sets to build personal health profiles

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Collaborator



- moving from a 'one-size-fits-all' trial and error to more effective, personalized solutions to keep people healthy
- shifting from a provider-centric to consumer-centric model supported by digital tools to help people track their health status and make better decisions.

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