

Systems Nutrition and Big Data - Impact of Nutrients on Gut Microbiome

Abstract:

Diets provide fundamental components of the body and therefore affect healthy condition. Simultaneous diets influence the composition and function of gut commensal bacteria and, reciprocally, gut commensal bacteria produce either useful or harmful metabolites from the diets. We have obtained big data from animal and human studies and tried to elucidate the complex network among diets, gut commensal bacteria as well as health and diseases. For instance, we studied the immunologic influence of fatty acid composition in dietary oils on the regulation of host immune responses and showed that fatty acid compositions in the dietary oils affect the development of allergic and inflammatory diseases together with identification of anti-allergic lipid metabolites by metabolome analysis. Although large numbers of study focused on the lipid metabolites generated in the body, our studies demonstrated that commensal bacteria are also involved in the generation of lipid metabolites from dietary oils in the intestinal lumen. In this talk, I will describe recent findings regarding the immunologic crosstalk between commensal bacteria and dietary oils in the regulation of host immunity including the development of allergic and inflammatory diseases and application to the development of anti-allergic and anti-inflammatory functional foods and drugs.

Biography:

Prof. Jun Kunisawa is Director of Center for Vaccine and Adjuvant Research (CVAR), National Institutes of Biomedical Innovation, Health and Nutrition (NIBIOHN), Japan. He also serves as Adjunct Professor at Osaka University, Kobe University and The University of Tokyo. After receiving his postdoctoral training at University of California, Berkeley, he was recruited from The University of Tokyo in 2004. He spent 9 years in Tokyo as Assistant and Associate Professor before moving to NIBIOHN to establish a new laboratory at 2013. In 2019, he was promoted to his current position in 2019. Prof. Kunisawa's research focuses on the immune regulation by gut environment (e.g., diets and commensal/pathogenic bacteria) and translational research for the development of vaccines, medicines, and functional foods. He was awarded a Ph.D. from Department of Pharmaceutical Sciences, Osaka University in 2001.