



## **Food for health: complex equation with multiple components. Is Systems Biology a major upcoming approach for food R&D?**

Christian Chervaux

Danone RESEARCH, Life Sciences Department

<http://www.danone.com/fr/pour-tous/recherche-innovation/notre-recherche-en-bref/>

Danone's mission is to bring health through food to as many people as possible. Danone Nutricia Research and Development aim to constantly improve understanding of how food can impact consumer's health and to propose new valuable food concepts. Dairy fermented products are generally recognized as healthy products including yogurt and products containing bacterial species associated to probiotics effects. However, despite some observations describing beneficial effects in clinical and preclinical study models and research reports describing potential of probiotic bacteria, little is known about the potential mode of actions. Several levels of complexity can be invoked. Actually, our products are only a part of the daily diet of consumers and the "other part" is likely to play a major role introducing confounding factors. As food company, the role of such products is on health maintenance. The host parameters relevant for health status evaluation are not fully determined and targeting global equilibrium of host systems (homeostasis) would probably be more relevant than following usual disease parameters. Gut microbiota is revealing since few years as a major actor of our health but still very complex to analyze and its functionality difficult to address. Finally, our products are generally complex mix of fermented food matrix and bacteria. Associated molecular effectors are therefore potentially very diverse and multiple and hence difficult to describe. Targeted approaches have been used since now to select suitable strains and food components and to follow impact of products consumption. However due to its holistic nature, systems biology is becoming a very attractive approach that can help understanding and evaluating importance of alimentation on health.