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Integration of metabolomic and other OMIC datasets to gain insights in human health and disease

Systems biology combines information from different molecular layers to provide a holistic view of a biological system and unravel its complexities. Integration of data across these layers requires methods that include multivariate approaches, Bayesian methods and network analyses. Although metabolomic analysis can provide a valuable 'snapshot' of biochemical processes at a high level, it is the functional relationships among various additional elements including genes, proteins and cells that will provide a deeper understanding of the biology. Indeed, any single OMICs approach is unlikely to suffice to characterize the complexity of biological processes in health and disease. We are developing innovative OMIC integration via functional bioinformatics and data-driven statistical approaches and computational modeling to identify signals in complex OMICs datasets regarding mechanisms that drive biological processes in a variety of human health and disease conditions.

Biography

Scott J Tebbutt is an Associate Professor in the Department of Medicine, University of British Columbia and Principal Investigator at the Centre for Heart Lung Innovation, St. Paul's Hospital, Vancouver, Canada. His research program is focused on molecular signatures of complex respiratory disease, including the early and late reactions in atopic asthma and allergic rhinitis. He is also the Chief Scientific Officer of the Prevention of Organ Failure (PROOF) Centre of Excellence. His responsibilities include evaluating new, high-performance technologies to improve biomarker discovery, as well as computational biology approaches to better deal with cell type heterogeneity and integration of OMIC datasets. He holds BA in Biochemistry from the University of Oxford and PhD in Molecular Genetics from the University of East Anglia, Cambridge Laboratory at John Innes Centre.

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