EDITH COWAN UNIVERSITY

PROJECT DETAILS

Project Title:

Investigating the vascular and metabolic effects associated with the consumption of plant-based foods using a metabolomics approach

Project Summary:

The metabolome encompasses a diverse array of compounds, including endogenous metabolites, microbiome byproducts, and exogenous chemicals resulting from various exposures, such as pharmaceuticals and toxins. This comprehensive profile offers a remarkably sensitive gauge of an individual's health status and disease progression. Food-derived metabolites interact with genes, proteins, enzymes, and microbiota. These interactions play pivotal roles in cell function modulation, act as signal messenger s, and regulate metabolic or energy pathways. By elucidating the alterations in metabolite profiles triggered by specific dietary components, as well as analysing the corresponding metabolic fingerprints, this research aims to unlock valuable insights. This approach not only serves as a valuable tool for assessing the functionality of a specific food or medicine in vivo but also for establishing a cause effect link between the apparition of risk factors in diseases. The primary aim of this research project is to comprehensively understand the impact of select plant-based foods and their bioactive constituents on vascular health and metabolic processes using an experimental mouse model and a Liquid Chromatography Mass Spectrometry (LC-MS)-based metabolomics approach. This investigation holds significant promise in uncovering the complex interplay between dietary factors and physiological outcomes, particularly in the domain of vascular health and metabolic regulation. By delving into the complex dynamics of food derived metabolites and their interactions with biological systems, this study aims to uncover novel avenues for promoting vascular health and preventing cardiovascular disease. The anticipated outcomes of this research include a deeper understanding of how specific plant-based foods influence vascular health and metabolic homeostasis at the molecular level. By elucidating the underlying mechanisms driving these effects, this study has the potential to inform dietary recommendations and intervention strategies aimed at mitigating cardiovascular risks. Moreover, the insights acquired from this research may contribute to the development of personalised nutrition approaches tailored to individual health needs, thereby promoting improved health outcomes on a broader scale.

Preferred Applicant Skillset:

We seek a highly self-motivated PhD candidate with excellent organisation, problem-solving, time and project management skills. The candidate should have the ability to work in a team or independently across multiple demands while maintaining a high level of accuracy and productivity, as well as strong statistical skills and familiarity with mass spectrometry, particularly Liquid Chromatography Mass Spectrometry.

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