

PhD Fellowship

Predictive modelling: Foods to optimise the ‘metabolic fingerprint’ of the gut microbiota

We are seeking a PhD candidate who is an enthusiastic learner and has demonstrated academic excellence across appropriate disciplines to undertake research on complementary feeding strategies in early and adult human life that support sustained health and wellbeing through modulation of the gut microbiome. The microbes in the human colon collectively can use food components that are less digestible in the upper gut. These are substrates for energy production, micronutrient synthesis and to transform constituent molecules into their respective bio-active forms chemically. These activities can influence digestion, absorption, and metabolism: e.g. microbial organic acids are mediators of host digestive, metabolic and immune responses. Two significant knowledge gaps are what is the optimal ‘metabolic fingerprint’ of the gut microbiota and which food structures can enhance this activity. The PhD candidate will use computational modelling and *in vitro* models of infant and adult digestion to study the effects of foods and food ingredients on colonic microbial fermentation. Modelling provides an opportunity to bridge knowledge from multiple disciplines to explore hypotheses and determine mechanisms of action. The project will complement clinical nutritional studies undertaken at the University of Auckland and the University of Otago.

The 3.5-year scholarship includes an annual tax-free stipend of NZD\$30,000, tuition fees and consumables. It is open to candidates who are currently located in New Zealand only.

The research will be undertaken at the Riddet Institute (www.riddet.ac.nz) and AgResearch Ltd (www.agresearch.co.nz) in Palmerston North. The Riddet Institute is a New Zealand Centre of Research Excellence hosted by Massey University and the student will be enrolled in the College of Science at Massey University.

This project is collaborative and involves researchers from AgResearch Ltd, Riddet Institute, University of Auckland and University of Otago. The project will complement clinical nutritional studies with infants undertaken at the University of Auckland.

The project is funded by the High Value Nutrition National Science Challenge (www.highvaluenutrition.co.nz).

The ideal candidates must have:

- Applicants should have a First-Class Honours or Second-Class Honours (Division I) MSc degree (or equivalent) or BSc degree with Honours (or equivalent) in an area of science (e.g. food science, nutrition, clinical nutrition and/or mathematical modelling).
- Motivation and self-determination to complete a PhD within 3 to 3.5 years.
- Excellent written and oral communication skills.
- Ability to learn and retain information, work independently and collaboratively, adapt to change, and plan, organise and implement projects in a timely manner; and
- Demonstrated high ethical standards, diligence, integrity, professionalism, politeness and courteousness, and be able to effectively work in a diverse team across NZ.

The intended start date for the project is 1 February 2021, or as soon as possible after this date. The closing date for applications is **30 November 2020**.

The application must include:

- Cover letter (1-2 pages), explaining your interest and why you think you are suited to the position.
- CV (summarising education, employment, scientific outputs, names of 3 references)
- Copies of educational certificates and transcript of records.

Your application (relevant documents mentioned above) must be submitted to: riddet.info@massey.ac.nz. Additional information regarding the requirements as a PhD student can be requested by contacting Terri Palmer email t.m.palmer@massey.ac.nz.

If you would like to know more about this opportunity, please contact Prof Warren McNabb by email W.McNabb@massey.ac.nz. Do not submit your application to this email address.