FoodBioSystems DTP - PhD Project Advertisement

Project title:

FBS2021-50-Ahmadi: Are genetic risk scores useful in developing precise public health guidelines that aim to reduce the risks of Vitamin B_{12} deficiency among vegan pregnant women or women of child-bearing age?

Lead supervisor:
Dr Kourosh R Ahmadi, Departments of Nutrition & Metabolism, University of Surrey

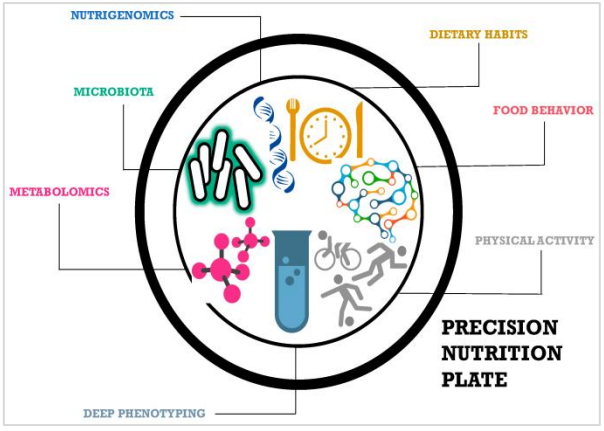
Email:
k.ahmadi@surrey.ac.uk

Co-supervisors:
Prof Michelle McKinley, Queen's University Belfast; Dr Lada Timotijevic, University of Surrey; Dr Vikky O'Neill, Queen's University Belfast.

Project description:
We invite applications for a PhD research programme to test the utility and applicability of **polygenic risk scores** (PRS) (www.genomicsplc.com/) as a tool for formulation and delivery of precise public health nutrition policy. The programme of research will provide a unique opportunity for the successful candidate to engage in cutting-edge cross-disciplinary research that combines training in genomic epidemiology, social psychology, econometrics, and health risk communication in public health policy.

Recent estimates suggest high rates of **vitamin B_{12} deficiency** among the **vegetarian and vegan** populations, particularly in **pregnant women** or **women of child-bearing age** who, for ethical and health reasons, have been shifting towards a higher consumption of **plant-based food**. There is strong evidence showing that vitamin B_{12} deficiency is (1) associated with increased risk of a number of diseases (neuro, vascular, immune, inflammatory); and (2) important during pregnancy and in early development (first 1000 days of life) affecting both the epigenetic machinery and the composition and diversity of the gut microbiome of both mother and child. However, current "recommendations", "policy" and "guidelines" for pregnant or vegan/vegetarian mothers are piecemeal. A targeted approach is needed to formulate precise public health measures for vegan/vegetarian mothers-to-be.

Precision nutrition (PN) is a growing new paradigm for public health nutrition, promising to revolutionise the preventative approaches to human health, through personalised nutritional advice that includes information on genomic or that promises to deliver the right dietary advice to the right population. Aided by the advent of AI technology, PN interventions are becoming increasingly plausible. Their effectiveness however depends on their appropriate utilisation



PRS

Whilst this new technology is being heavily primed for clinical use, its utility in changing **public health** or **preventative practice** remains unclear and under-researched. Many questions about the utility, efficacy and ethics of PRS-based PPH approach remain unanswered, including the way the uncertainties associated with the PRS are understood and communicated by both the experts and lay people, and what possible consequences (ethical, societal, nutritional) that may arise from its practice.

This PhD will explore the utility of PN in the context of the potential nutritional risk of traditional vegan diet in pregnancy in more detail. The aim of our proposal is to provide evidence and analysis of the public health utility of the PRS approach to public health nutrition policy. In particular, we aim to understand the processes of risk governance and communication that need to be in place for this approach to be successful. Through a suite of empirical studies, stakeholder workshops and documentary analyses the student will receive training to explore the utility of PN in the context of nutritional risk of traditional vegan diet in pregnancy.

Training opportunities:
The PhD will provide an interdisciplinary training program through targeted access to in-house MSc modules as well as bespoke external courses covering Statistical Genomic Epidemiology, Nutrition & Public Health communication, Food Policy & Consumer Behaviour, as well as Health Economics.

Student profile:
This project would be suitable for students with a degree in biology, genetics, nutrition, public health epidemiology, psychology or a closely related subject.

Funding Note
This project is part of the FoodBioSystems BBSRC Doctoral Training Partnership (DTP), it will be funded subject to a competition to identify the strongest applicants.
The studentship is open to UK and international students (including EU countries) however due to funding rules, no more than 30% of the projects can be allocated to international students.
The funding will include a tax free stipend (minimum £15, 285 per year), support for tuition fees at the standard UK rate (currently £4,407 per year) and a contribution towards research costs. **Please note** that the host universities have not yet confirmed the level of fees charged to international students funded by the DTP. Fee levels may vary across the institutions. This information will be shared on the FoodBioSystems DTP website as soon as it becomes available.

To apply
Please go to FoodBioSystems DTP website for information on how to apply for this studentship. The closing date for applications will be 8 February 2021.