

### **FoodBioSystems DTP - PhD Project Advertisement Text**

**Project Title:** FOODBIOSYSTEMS - The effect of fruit and vegetable intake on health outcomes: does an apple a day still keep the doctor away?

**Lead Supervisor:** Professor Jayne Woodside, Institute for Global Food Security (Centre for Public Health), Queen's University Belfast

**Email:** [j.woodside@qub.ac.uk](mailto:j.woodside@qub.ac.uk)

**Co-Supervisors:**

Professor Julie Lovegrove, University of Reading

Dr Anne Nugent, Queen's University Belfast

Dr Brian Green, Queen's University Belfast

**Project ID:** FBS2020-10

**Research Group:** FOODBIOSYSTEMS BBSRC DTP

**Application Deadline:** 6 March 2020

**Project Description:** Although increased fruit and vegetable intake has been associated with reduced risk of chronic diseases such as cardiovascular disease, this has largely been based on observational evidence, and there are a number of uncertainties regarding these observed links. For example, little is known about what other dietary changes people make when increasing fruit and vegetable intake and whether, to some extent, these concurrent changes also contribute to the known health improvement. Similarly, whether the bioactive content of FV has changed over time, to what extent pesticide exposure is important in terms of overall health benefit, and whether concerns about pesticide exposure contributes to consumer behaviour are also unknown. Finally, dietary assessment methods for fruit and vegetable intake are prone to over-reporting, and objective novel biomarker methods may better allow the accurate assessment of usual dietary intake and relate this intake to health outcomes.

Within this studentship, a series of analyses will be conducted which will address some areas of uncertainty in the area of fruit and vegetables, dietary biomarkers and health research. Therefore, this PhD will explore:

- 1) When people are asked to increase fruit and vegetable intake what changes do they make and how does this increased fruit and vegetable intake affect other food choices?
- 2) How has bioactive content of fruit and vegetables changed over time and how might that affect dietary intake?
- 3) What are the risks/benefits of increasing fruit and vegetable intake? Is pesticide exposure important and what is consumer understanding of the risks of pesticide exposure versus the benefits of fruit and vegetable intake?
- 4) Can metabolomic profiling or measurement of targeted biomarkers help improve the dietary assessment of fruit and vegetable intake?

Researchers in the Institute for Global Food Security (Centre for Public Health) at QUB and the Hugh Sinclair Unit of Human Nutrition in Reading have conducted a series of dietary intervention studies under controlled settings where the effects of increased fruit and vegetable intake on a range of health outcomes have been tested. This

is a rich resource (n=800 participants included over a minimum eight week intervention period) which has been under-utilised to date, and is enhanced by a recently completed dietary assessment method validation study, conducted with a focus on fruit and vegetable intake (n=100). These existing resources will be enhanced with novel data collection conducted within the studentship, e.g. by a consumer attitude survey and qualitative studies.

The proposed PhD will therefore utilise already-collected data (other than consumer-focused data collection), to address a number of research questions highly relevant to our understanding of the link between fruit and vegetable intake and human health outcomes. The project will be supervised by two nutrition researchers with an excellent track record in fruit and vegetable and health research, a third supervisor with strong expertise in dietary assessment and dietary pattern analysis and a fourth supervisor with dietary biomarker and metabolomics expertise.

**Funding Notes:** 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. Due to restrictions on the funding, this studentship is only open to UK students and EU students who have lived in the UK for the past three years.

The FoodBioSystems DTP is a collaboration between the University of Reading, Cranfield University, Queen's University Belfast, Aberystwyth University, Surrey University and Brunel University London. Our vision is to develop the next generation of highly skilled UK Agri-Food bioscientists with expertise spanning the entire food value chain. We have over 60 Associate and Affiliate partners. To find out more about us and the training programme we offer all our postgraduate researchers please visit <https://research.reading.ac.uk/foodbiosystems/>.

**Training opportunities:** Opportunities for two separate work placements in the USA with established collaborators who will actively contribute to the project.

**Student profile:** This project would be suitable for a student with a degree in nutrition or a closely related science who has an interest in diet and health. He/she should have good statistical analysis skills, laboratory experience and be able to write to a high standard.