

FoodBioSystems DTP - PhD Project Advertisement

Project title:

FBS2021-81-Lanham-New: **Vitamin D and immune health in multiple ethnic groups**

Lead supervisor:

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Co-supervisors:

Professor Ian Given, University of Reading

Dr Kathryn Hart, University of Surrey

Professor Julie Lovegrove, University of Reading

Project description:

Detailed Title: Elucidating the link between vitamin D and immune health in multiple ethnic groups: mechanistic & population based studies

Vitamin D deficiency is becoming increasingly common in the UK, EU and worldwide. Ethnic sub-groups with darker skin are considered at a higher risk of vitamin D deficiency than lighter skinned populations, because of the skin pigment melanin and/or clothing coverage required by religious and cultural restrictions which reduces their ability to synthesise endogenous vitamin D. Increasing evidence demonstrates strong associations between vitamin D status and non-musculoskeletal health outcomes, including immune modulation and infectious diseases.

Until now, COVID-19 has caused more than one million deaths worldwide. Ethnic sub-groups with darker skin are disproportionately affected by COVID-19 which has been recognised as an urgent public health research issue. Therefore, this project will investigate whether there is a link between vitamin D (dietary intake and nutritional status) and markers of immune health in ethnic groups using: 1) a population-based approach - (i) systematic review/meta-analysis of globally available data on vitamin D and upper/lower respiratory tract infections/COVID-19; (ii) further analysis of vitamin D and markers of immune health in UK Biobank on white Caucasian and other ethnic groups; 2) a mechanistic approach - to examine the relationship between the cytokine 'storm' and vitamin D deficiency/insufficiency in White European, South Asian, Black Afro-Caribbean and Arabic populations; 3) a randomized controlled trial approach to investigate the effectiveness of Vitamin D Skin Patches in raising vitamin D status in ethnic groups and the concomitant effect on markers of immune health.



Training opportunities:

You will receive a broad and specialized training including in systematic review and meta-analysis, analysis of big data epidemiology (prospective cohort study), clinical analysis techniques, and other transferable skills (e.g. time management and project management). You will co-design elements of the research with both the University of Surrey and the University of Reading enabling you to direct both the direction of your research and personal development. You will have a broad and specialised training programme, aligned to the project aims. These will be provided through the University of Surrey's expertise in nutritional epidemiology (including systematic review and meta-analysis and use of the UK Biobank) and the University of Reading's expertise in conducting human nutrition studies. The work placements in the Food Industry (*Yakult UK*) and Nutritional Sciences Communications and Regulation (*Association for Nutrition*) will provide key experience for the student in the relevancy of their work to the wider nutritional sciences field. Collaboration with the *Institute of Naval Medicine, Ministry of Defence* will provide the student with examples of how scientific research is translated into changing Government policy.

Student profile:

This project would be suitable for students with a degree in nutrition, epidemiology, food science or a closely related subject.

References: (optional)

- Lanham-New Susan A., Webb Ann R., Cashman Kevin et al. Vitamin D and SARS-CoV2 virus/COVID-19 disease (2020). *British Medical Journal (Nutrition, Health & Prevention)*. DOI <http://dx.doi.org/10.1136/bmjnph-2020-000089>
- Darling Andrea L., Blackbourn David J., Ahmadi Kourosh R., Lanham-New Susan A. (2020) Very High Prevalence of 25-hydroxyvitamin D Deficiency in n 6433 UK South Asian adults: analysis of the UK Biobank Cohort. *British Journal of Nutrition* pp. 1-34 Cambridge University Press
DOI: 10.1017/S0007114520002779

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.