



## **PhD Studentship in Life Cycle Sustainability Assessment of Innovative Gluten-free Food Solutions**

School of Biosystems & Food Engineering

<http://www.ucd.ie/biosystems/>

GFreeE - Gluten-free innovation for novel, sustainable food systems: From farm gate to consumer plate

The EU's Food 2030 strategy highlights the need for strategies to narrow the innovation gap and to increase market take-up and societal relevance of food products. Horizon Europe's Farm to Fork strategy has as its core principal, the provision of solutions for sustainable and healthy food systems, and devising tailored solutions for SME food processors. Current concerns raised by the Coeliac Society of Ireland (which have been supported by international studies) highlight that, unlike wheat products, gluten-free staples are predominantly not fortified with iron and micronutrients, resulting in a significant lack of these nutrients in the gluten-free diet. Pulse crops, such as faba beans, are high-yielding crops in Ireland. They naturally gluten-free are an rich source of protein, fibre, vitamins and minerals such as iron, magnesium, potassium, and folate. Pulse crops are beneficial for the environment and soil health, as they have the ability to fix atmospheric nitrogen, thus reducing the need for synthetic fertilizers. However such crops are underutilized for food processing in Ireland. GFreeE will take a transformative systems approach to agri-food innovation, from farm gate to consumer plate, by applying Irish faba beans, coupled with pseudocereals (which also have excellent nutritional profiles) to deliver safe, nutritious and appealing innovative gluten-free food solutions that are environmentally, socially and economically beneficial.

This PhD project will focus on applying a full life cycle sustainability analysis, considering environmental, economic and social impacts, to assess the sustainability of the GFreeE approach of gluten-free breads and breakfast cereals based on Irish faba beans. The life cycle sustainability assessment will focus on engaging with consumers to assess the potential social benefits. The sustainability of the processes for production of novel gluten-free bread and cereal based products will be explored through life cycle assessment (LCA) using data collected from project partners which will produce the faba bean ingredient) and which will produce the gluten-free products. The LCA research will ensure that the environmental performance and related impacts of the products developed in GFreeE will be taken into account throughout the project, focusing on appropriate environmental, economic and social methods in the context of LCA.

The PhD student will work under the primary supervision of Dr Fionnuala Murphy in the UCD School of Biosystems & Food Engineering and co-supervision of Dr Egle Gusciute in the UCD School of Sociology. There will be a specific focus on interacting with project partners in Teagasc and University College Cork during all of these stages of the project to best understand the value chain and for on-site data collection. The PhD student will have a unique opportunity to develop interdisciplinary skills in applying a full life cycle sustainability analysis which considers environmental, economic and social impacts, which are in high demand and sought after in academia, research, policy and industry settings.

The ideal candidate will have an excellent degree in a quantitative science-based discipline such as biosystems and food engineering, food science, agricultural science, environmental science, industrial ecology or similar. The candidate will be expected to broaden their knowledge to include economic and social sustainability in the life cycle assessment and it is expected that the candidate will have an interest in a holistic approach (environmental, economic and social) to sustainability. Some knowledge or experience of the food industry and life cycle assessment would be helpful. Some knowledge of survey research would be helpful but not necessary.

Excellent scientific, organisational and project management skills, a commitment to research, excellent problem-solving skills, the ability to work independently and as part of a multi-disciplinary team and excellent interpersonal and communications skills will all be necessary.

**Stipend:** €25,000 tax-free per annum (+ contribution to fees of €6,000 per annum)

**PhD Duration:** up to 4 years

Informal requests for further details can be made to Dr Fionnuala Murphy (fionnuala.murphy@ucd.ie).

Closing date: 17<sup>th</sup> May 2024

Interviews: June 2024

Expected start date: September 2024

To apply please follow the instructions in the following link <https://forms.gle/4XM61LWXx1JCc6to6>. Applicants must include their CV, detailed academic transcripts in the form of certified copies of all undergraduate and postgraduate level certificates, a motivation letter and a reference letter from previous professors or mentors. Candidates must have excellent proficiency in written and spoken English (CEFR Level C1) and provide evidence that they fulfil the specific UCD language criteria.

This PhD is funded by the Department of Agriculture, Food and the Marine