Investigating the Role of Gut Microbiota in Regulating Gut Functions supporting Growth During the Suckling Stage of Life

Walsh Scholars Reference Number: 2025211
University: University College Cork
Funding: Research Ireland
Research Institution: Teagasc
Location: Teagasc Moorepark, Co. Cork.
Start date: October 2026

Project Description
Mother's milk is widely recognised as the optimal source of nutrition for infants. However, breastfeeding is not always possible for a variety of reasons, and infant formula products play an important role in supporting infant nutrition. The infant formula industry primarily uses milk ingredients derived from other mammals, particularly cow's milk, to produce feeds that supplement or replace breast milk. Despite their widespread use, relatively little is known about how these non-native milk ingredients are digested and absorbed in the infant gut compared to human milk. Improving our understanding of these processes could support the development of infant formula products that better promote infant growth and health outcomes.

Our preliminary studies suggest that consumption of non-native milk ingredients can alter the composition and function of gut microbiota. This project therefore aims to investigate how diet-induced changes in gut bacteria influence gut activity, including nutrient absorption, and how these effects may impact infant growth and development.

The research programme will be conducted jointly at Teagasc and University College Cork. Using in vitro approaches, the project will manipulate the genomes of gut microbiota known to respond to non-native milk ingredients and assess whether these changes influence gut activity and nutrient absorption. Advanced analytical techniques will also be used to characterise molecules produced by the altered gut microbiota and determine whether these compounds contribute to observed changes in gut function.

The project will generate new knowledge on how infant formula ingredients interact with the gut microbiota and influence nutrient absorption. The findings could support the development of improved infant formula products and contribute to innovation within the global infant nutrition sector, which is projected to reach a value of 150 billion dollars by 2030. Ultimately, the research aims to support healthier infant development and contribute to improved societal and economic outcomes.

Supervision
The successful candidate will be supervised by Dr. Kanishka Nilaweera at Teagasc and Prof. Douwe van Sinderen and Dr. Silvia Melgar at University College Cork. Dr. Nilaweera's research focuses on understanding how dietary components influence growth and development from early life to adulthood through multidisciplinary approaches spanning nutrition, microbiology, endocrinology, physiology, and neuroscience. Prof. van Sinderen brings expertise in microbiology, comparative genomics, and molecular biology, including the development of genetic tools to study microbial function. Dr. Melgar, based at APC Microbiome Ireland, specialises in host–microbe interactions using in vitro and in vivo systems.

Research Environment
The successful candidate will be registered at the School of Microbiology, University College Cork and will undertake a programme of research both in Teagasc (Department of Food Biosciences) Moorepark Food research Centre, Co. Cork and University College Cork. In the Department of Food Biosciences in Teagasc, the successful candidate will have access to specific laboratories that can accommodate molecular biology and microbiology-related work. The candidate will gain experience in the use of state-of-the-art equipment required to prepare DNA and RNA for sequencing. The 'Van Sinderen' and Melgar' research groups are part

of the APC Microbiome Ireland Research Ireland-funded Research Centres and avails of the administrative and logistical support of the APC operational team as well as the technology platforms, such as the sequencing platform, the BioIT platform and other bioanalytical expertise/platforms as well as cell culture facilities, which will be made available to the successful candidate to progress the research programme.

Career and Training Opportunities
The Teagasc Walsh Scholars Programme provides a structured four-year training and development framework designed to support both academic excellence and long-term career readiness. Scholars develop advanced scientific and analytical expertise alongside transferable skills in communication, project management, and stakeholder engagement through expert-led training, workshops, and tailored professional development.

Opportunities are provided to present research at national and international conferences, supporting professional networking and active engagement with the wider research community. Dedicated final-year career supports focus on preparing scholars for impactful roles across research, industry, advisory services, and policy, in Ireland and internationally.

Through the Teagasc International Training Awards, scholars may undertake an international research placement of up to 12 weeks aligned with their PhD project. Outstanding achievement may also be recognised through the Walsh Scholars of the Year and Gold Medal Awards.

Candidate Profile and Eligibility

- Hold a First or 2.1 Honours degree (or Master's) in Microbiology, Nutrition, Molecular Biology, Biotechnology or related discipline
- Demonstrate strong analytical skills and at least basic knowledge of statistics
- Possess good written and verbal communication skills
- Should be enthusiastic, self-motivated and be able to interact well within a larger research team
- Be willing to travel between University College Cork and Teagasc (Co. Cork) to undertake the programme of research
- Meet UCC postgraduate entry and English language requirements

Funding Details
This is a Research Ireland funded 4-year PhD position, and it includes:

- €25,000 annual stipend
- University fees covered up to €5750 per annum

How to Apply
Applicants should submit a CV and covering letter detailing their qualifications and experience to Dr. Kanishka Nilaweera at **Kanishka.nilaweera@teagasc.ie** quoting "Walsh Scholars PhD Application – Ref 2025211" in the subject line. **Application closing date: 5pm, Friday, 19th June 2026.**

Interviews
Shortlisted candidates will be invited to interview in **late June – early July 2026**. Online interviews can be accommodated.

Further Information
Informal enquiries are welcome and may be directed to: **Kanishka.nilaweera@teagasc.ie**
Learn more about the Walsh Scholars Programme at: https://teagasc.ie/about/research-innovation/the-walsh-scholars-programme/about-the-programme/