Risk analysis of Salmonella contamination on poultry farms incorporating novel biosecurity

Walsh Scholars Reference: 2023297 **Research Institution:** Teagasc
University: University College Dublin (UCD) **Location:** Teagasc Food Research Centre, Ashtown, Dublin
Funding: Department of Agriculture, Food and the Marine (DAFM)
Start Date: October 2026

Project Summary
Salmonella remains a persistent challenge on poultry farms, with particular difficulties in controlling infection in duck egg and meat systems, as well as free-range hen production. While the Salmonella Control Programme has significantly reduced the risk of infection and product contamination in commercial layer and broiler systems, ongoing challenges remain in fully understanding and managing the sources and spread of infection across different production systems.

Despite progress in control measures, there is still limited understanding of how Salmonella is introduced and disseminated within poultry farms, and how it spreads within flocks over time. In particular, gaps remain in identifying transmission pathways, understanding timelines of infection within layer flocks, and improving detection in relation to egg contamination. These limitations restrict the effectiveness of current control strategies.

This PhD will provide the student with comprehensive training in modern molecular biology approaches, including Next-Generation Sequencing and bioinformatics, alongside experience in both laboratory-based and farm-based research. The student will focus on:

- Investigating the sources and dissemination of Salmonella on poultry farms
- Examining timelines for Salmonella spread within layer flocks, egg contamination, and detection
- Assessing strategies to enhance Salmonella control

The project will provide the student with a strong understanding of Salmonella transmission dynamics and control within poultry systems. The outcomes will support the development of improved control strategies and will be relevant to poultry producers, regulators, and the wider food safety sector.

Supervision
The successful candidate will be supervised by Professor Paul Whyte from the School of Veterinary Medicine at University College Dublin (UCD), and Professor Declan Bolton at the Teagasc Food Research Centre, Ashtown.

Professor Whyte provides academic supervision with expertise in food safety, microbiology, and the control of foodborne pathogens, particularly within poultry production systems. Professor Bolton has extensive experience in food microbiology and food safety research, with a focus on pathogen control and its application within the agri-food sector.

Research Environment
You will be registered at University College Dublin (UCD) and based at the Teagasc Food Research Centre, Ashtown, for the duration of your studies.

Teagasc Ashtown is a national centre of excellence for food science and agri-food research, providing access to state-of-the-art laboratory facilities and expertise in food safety, microbiology, and food systems. Walsh Scholars benefit from a dynamic research environment, an active postgraduate community, and opportunities to engage with national and international research networks.

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

Ideal candidates will:

- Hold a 2.1 Honours degree or Master's in in an appropriate discipline (Microbiology, Molecular Biology, Biotechnology, Agricultural Science or similar)
- Have a basic knowledge of statistics, with strong data handling skills
- Show the ability to apply multidisciplinary techniques to hypothesis-driven research
- Demonstrate excellent communication and teamwork skills
- Be willing to travel for fieldwork and engage with farmers
- A full driving licence is also an advantage but is not essential.
- Meet UCD's postgraduate entry and English language requirements, available at: www.ucd.ie/registry/prospectivestudents/admissions/policiesandgeneralregulations/generalrequirements/minimumenglishlanguagerequirements/

Funding Details

Fully funded 3-year PhD funded by the DAFM, including

- €25,000 annual stipend
- University fees covered up to €6,000 per annum

How to Apply

Applicants should submit the following to Professor Declan Bolton (declan.bolton@teagasc.ie) with the subject line: **"PhD Application – Walsh Scholars Reference: 2023297"**

Application deadline: 5 pm, Tuesday 5th May 2026

Required documents:

- CV (including two referees)
- 1–2 page personal statement outlining:
    - Why you are interested in this project
    - Why you are a strong candidate for this PhD

Further Information

Informal queries are welcome and can be directed to Professor Declan Bolton at:

declan.bolton@teagasc.ie

Learn more at: www.teagasc.ie/walshscholarships