PhD Postgraduate Research Opportunities

PhD Project Titles:	Molecular analysis of the host-parasite interaction in gill disease of Atlantic salmon.
Project Duration:	48 months funded PhD position
Organisation:	Atlantic Technological University
Location:	ATU Galway City, Old Dublin Road, Galway H91 T8NW
Stipend:	€19,000 per annum
Responsible To:	Project supervisors: Dr Katie O'Dwyer, Dr Orla Slattery

Funding: The PhD position is funded through a Science Foundation Ireland Frontiers for Partnership grant 21/FFP-A/9170.

Overall project description: An exciting opportunity has arisen for the recruitment of suitably qualified and strongly motivated graduate to undertake a PhD in ATU as part of a 5-year large scale interdisciplinary research project: "GIDAS - Gill Disease of Atlantic Salmon".

Aquaculture provides an important food source worldwide and increasingly contributes to the global economy, as well as national research priorities. Complex gill disease (CGD) is a major challenge in finfish aquaculture, leading to substantial reductions in production annually. Treatment using freshwater baths only provides a temporary solution and a better understanding of CGD is needed. CGD involves a range of organisms including parasites, bacteria and viruses, and can be influenced by production practices, such as net washing. Due to this complexity, CGD remains a major obstacle to successful aquaculture production and requires further research. Furthermore, gill-associated diseases in Atlantic salmon (*Salmo salar*) lead to considerable annual losses the Irish aquaculture sector. The overall aim of the GIDAS project is to increase knowledge of CGD, including one of the leading pathogens involved, *Neoparamoeba perurans*, which itself leads to amoebic gill disease but is also a key player in CGD. Key objectives include: reviewing the current epidemiology of CGD in Ireland; testing a CGD model; identifying potential biomarkers and developing preventative and curative measures to minimise disease occurrence. Led by ATU, the project's consortium includes University College Dublin and a diverse team of collaborators from academia and industry to support the project's main aim and objectives.

PhD 2: Molecular analysis of the host-parasite interaction in gill disease of Atlantic salmon

Project description:

The main objectives of this PhD are to:

- Assess the suitability of a range of protein targets for use as recombinant protein vaccine against amoebic gill disease, which is a key component of CGD.
- Develop a recombinant protein product strategy for vaccine(s) as well as evaluate the safety and efficacy of the vaccine *in-vitro* and *in-vivo*
- Evaluate host immune response to CGD using a molecular approach.

The first component of the PhD aims to develop a mitigation therapy against amoebic gill disease in the form of a protein-based vaccine. The second component involves both genetic and proteomic analysis of

Atlantic salmon samples to evaluate the host immune response during CGD development. During this project the successful candidate will be tasked with cloning target genes, recombinantly expressing target proteins and developing a purification and formulation strategy for a recombinant protein vaccine. In addition, the candidate will work closely with the wider research team, including a second PhD candidate on the GIDAS project, to collect and analyse samples from CGD challenge experiments. The PhD project outlined here will generate knowledge on vaccine development against a critical component of CGD, namely amoebic gill disease, as well as measuring any potential changes in host immune response at a molecular level, to identify potential biomarkers for CGD progression.

Requirements/Qualifications: The successful candidate will hold a Bachelor of Science with Honours Degree (minimum 2:2, but 2:1 or higher is desirable) in Biochemistry, Marine/Freshwater Biology, Parasitology, Veterinary Medicine, Genetics, or equivalent. The candidate will have excellent laboratory skills. A basic understanding of biological molecules would be considered important. Previous experience in microbiology and molecular techniques, particularly related to recombinant protein production, would be advantageous, although training will be provided. A demonstrated ability to communicate scientific research by means of peer-reviewed scientific articles and conference presentations will be viewed favourably. Experience in dealing with industry collaborators and running experiments as well as a full clean driver's licence are desirable. The candidate will be expected to work on their own initiative as part of a dynamic team, liaise with project collaborators and relevant industry partners and be willing to acquire the broader skills necessary for the successful completion of a PhD project.

Project Duration: 48 months

Conditions:

- €19,000 stipend per annum.
- Postgraduate fees for EU students (€5,750 per annum) will be covered by the project.
- Any necessary national and international travel, and material costs incurred during the project, will be covered by the project.

Please Note: Candidates from outside the EU are eligible to apply but will be expected to provide evidence of sources of additional funds to cover excesses associated with non-EU fees.

If either English or Irish is not the applicant's first language, evidence of English language proficiency is required for registration. Please refer to web link English Language Requirements | ATU - Atlantic Technological University (gmit.ie) view the minimum English language proficiency standards for entry to ATU

Project Start Date: Currently planned for October 2023.

Application Closing Date: 12 noon, Friday May 19th 2023.

Applicants should submit their:

- Curriculum Vitae (to include contact details of two referees)
- Copy of transcript of results
- Personal Statement

The Personal Statement should not exceed one A4 page and must include an outline of:

- How you meet the requirements of the specific position associated with PhD 2
- Your personal motivation for pursuing PhD 2

Applications must be submitted to researchoffice.galwaymayo@atu.ie ***e-mail address only. Please ensure all documents are emailed as a single MS Word or PDF file.***

For further information on the project, please contact: Dr Orla Slattery orla.slattery@atu.ie or Dr Katie O'Dwyer katie.odwyer@atu.ie

Data Protection Statement

ATU takes very seriously its legal obligations as set out in the General Data Protection Regulation 2016/679 (GDPR) and the Irish Data Protection Act 2018 to safeguard and protect your personal information in our possession. The personal information which you disclose to us in this form will only be used to assess your suitability; administer and register you for this scholarship. We will not keep your personal information for any longer than is necessary for those stated purposes. **For more details, please refer to ATU's Student Privacy Statement:** http://www.gmit.ie/general/student-privacy-statement