

TEAGASC PHD WALSH SCHOLARSHIP OPPORTUNITY

Improved Pig Health through the Novel Application of SynBio in Phage Therapy

Walsh Scholarship Ref Number: 2020224

Background

Streptococcus suis is a pig pathobiont that is almost ubiquitously carried in the nasopharynx where infections lead to meningitis, polyarthritis, septicaemia, pneumonia and endocarditis. Consequently, *S. suis* infections are a significant international animal welfare and economic burden in the pig industry. The first line of treatment is antibiotics; however, antibiotic resistance is a major global health issue and alternative strategies are lacking. Vaccination against *S. suis* has a poor success rate and an effective vaccine remains unlikely. Thus, improving animal health against *S. suis* is a key industrial target.

While phages, and phage-derived proteins, have been applied therapeutically in the past, technical limitations remain, including spontaneous host resistance and *in vivo* phage delivery. As part of this international project, the PhD student will isolate and analyse phages infecting *S. suis* and use a rational design approach to generate combinations of these phages for *in vitro* testing. The aim of this design approach is to ensure the combined phages to kill a wide range of infectious *S. suis* strains while circumventing bacterial-mediated phage resistance, a key roadblock to the use of phage therapy. The overall aim for the PhD student is to develop innovative and effective phage therapy solutions to specifically target *S. suis* in pigs.

The student will develop skills in a wide range of techniques including next generation sequencing and analysis, biochemical and biological assays, and bacterial and bacteriophage culturing and propagation. The successful candidate will also be involved in wider Teagasc and APC Microbiome Education and Public Engagement activities.

The doctoral candidate will be jointly supervised by Dr John Kenny (Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork) and Prof Jennifer Mahony (UCC, College Road, Cork). The successful candidate will be principally located at Teagasc, and will be registered as a PhD student at UCC with periods there for course work, supervisory meetings and specialist laboratory work.

Requirements

Applicants should have a good primary degree (First or Upper Second Class Honours) or M.Sc. in Microbiology, Genetics, Biochemistry or related discipline. The successful candidate should be highly self-motivated, interactive and willing to learn new techniques. Preferred candidates have very good teamwork abilities and a high level of oral and written English. A full driving licence is also an advantage but is not essential. Postgraduate applicants whose first language is not English must provide evidence of English language proficiency as per UCC regulations (<https://www.ucc.ie/en/study/comparison/english/postgraduate/>).

We offer a 4-year PhD position starting from October 2021. The PhD student will become part of a team that includes other PhD students, postdocs, and research technicians. The PhD student will also avail of Teagasc and UCC support structures, which offer opportunities for courses for scientific, personal and professional development.

Award

The scholarship funding is €24,000 per annum and includes University fees of up to a maximum of €6,000 per annum and is tenable for 4 years.

Further Information/Applications

For further information about the project, please contact Dr John Kenny (john.kenny@teagasc.ie) or Prof Jennifer Mahony (J.Mahony@ucc.ie).

Application Procedure

Applicants should submit a CV and covering letter detailing their qualifications, experience and contact details for at least two referees simultaneously to Dr John Kenny at john.kenny@teagasc.ie and Prof Jennifer Mahony at J.Mahony@ucc.ie.

Closing date

5.00 pm on Friday September 3rd 2021 with expected interviews in mid-September.