APC PhD Position

Job Posted: 7 July 2016
Closing Date for Applications: 12 August 2016
Department: APC Microbiome Institute
Contract Type: Fixed Term Whole-Time
Job Type: Research
Salary: See description

APC PhD Position

The Alimentary Pharmabiotic Centre (APC) (now APC Microbiome Institute) was formed in 2003 with funding from Science Foundation Ireland and in conjunction with key industry partners. It represents a seamless collaboration between UCC, Teagasc, Moorepark and CIT. It is widely recognised that the gut microbiota plays an important role in human health and has become one of the most dynamic, complex and exciting areas of research in both food and pharmaceutical arenas. Over the last decade the APC has established itself as one of the leading global centres in gut microbiota research. The APC has made several landmark discoveries and has published over 1200 research articles in peer-reviewed journals, generating many journal covers and associated editorials. The APC comprises over 150 individuals, from the scientific PI's (the APC Faculty) funded by the partner Institutions, the management team, and a dedicated group of research scientists, research assistants and postgraduates students. The APC has been successful in securing funding from Science Foundation Ireland and its multiple industry partners for the next phase of the APC Research Centre.

Biophotonics@Tyndall is a newly established collaborative research programme based at the Tyndall National Institute led by Professor Stefan Andersson-Engels. The Group's focus will be to form close collaborations with clinicians, research centres and companies to accelerate biophotonics technology and rapidly deliver breakthrough technologies into the hands of health-care providers. Using photonics as a driver for the faster development and deployment of more accurate, less invasive diagnostic and treatment methods for cancer and other diseases. The new programme has been formed by the Tyndall National Institute, the Irish Photonic Integration Centre (IPIC) and University College Cork, under a €5M award from Science Foundation Ireland (SFI). The projects are divided into application- and fundamental-research driven tasks, and are briefly described at www.ipic.ie/team/stefan-andersson-engels/.

The specific SFI-funded PhD position advertised here is for a collaborative project between the APC and Tyndall's IPIC and the student will be based in the APC with close interactions with Prof. Andersson-Engels at Tyndall National Institute. The position is open to candidates who meet residency requirements in Ireland or the EU. The studentship comprises an annual stipend for four years, in addition to fees at the EU level (approximately €6,000 per year). The current stipend is €18,000 per annum.

PhD position:
The student will be a registered student in the School of Medicine and Department of Physics, University College Cork.The student will be primarily based in the APC Microbiome Institute, UCC, but will need to conduct some of his/her research in IPIC Tyndall Institute at various stages of the studentship.

Unique ref no. Photoacoustic PH1 – Title: Characterisation and development of photoacoustic and UCNPs luminescence imaging for monitoring of bacteria in the pathogenesis of intestinal bowel disease (IBD)
Description: Inflammatory bowel disease (IBD) are chronic debilitating conditions of unknown etiology and without cure. The collected evidence points to significant environmental factors involved in the pathology of IBD and there are numerous reports demonstrating a strong correlation between microbial imbalance and IBD. The aim in this project is to develop techniques to image potential pathogenic bacteria associated with

IBD pathophysiology using *in vitro* systems and *in vivo* preclinical models. To date bioluminescence has mainly been used for this purpose, although only limited number of bacteria have successfully been engineered. Conventional fluorophores do not provide satisfactory results, due to an auto-fluorescence background.

Specifically the project will:

1. Screen and select IBD-associated bacterial strains to be used for phthalocyanin or gold nanoparticle labelling in in vitro assays.
2. Develop and test luminescent imaging of upconverting nanoparticles (UCNP) labelled bacteria (in vitro, ex vivo and in vivo).
3. Investigate the progression of intestinal inflammation using labelled bacteria in preclinical models of IBD.

Principal Investigators – Silvia Melgar (APC/UCC), Fergus Shanahan (APC/UCC), Stefan Andersson-Engels (Tyndall/UCC)

Informal queries to Dr Silvia Melgar at s.melgar@ucc.ie or tel. 021 4901384

Key Duties and Responsibilities

- To conduct a specified programme of research under the supervision and direction of a Principal Investigator.
- To work with the project partner and other partners / collaborators in achieving the research goals.
- To participate in the dissemination of the results of the research (oral and written) in which you are engaged, as directed by the Principal Investigator.
- To contribute and produce high quality peer reviewed publications and other outputs.
- To present research progress and project outcomes at project meetings and relevant conferences.
- To engage in the wider research and scholarly activities and educational and outreach programmes of the APC.

Criteria

- An upper second class or first class honours BSc degree and/or a MSc degree in Microbiology, Physiology, Biomedicine or related discipline
- Experience in microbiology and biochemistry
- Experience in biomedical optics, imaging, and animal models is desirable
- Highly motivated individual with a keen interest in human research, optical systems and working with animal models
- Have excellent laboratory skills, organizational and communication skills, report writing and data analysis
- An ability to work independently to a tight schedule to deliver the milestones and deliverables as set out in the project proposal
- Have the ability to work effectively as part of a team to achieve results within the time frame of the project.

To Apply:

Applications (as a single PDF) should include a covering letter, a detailed CV and the names and contacts of 2 referees and should be sent by email as indicated below, quoting the **Unique reference no: Photoacoustic PH1** Applications will be accepted until 12/08/2016
Applications to apc.administrator@ucc.ie (please cite the unique position ref in the subject of email)

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