



Applications are invited from suitably qualified candidates for the following position:

Marie Curie Early Stage Researcher – Break Biofilms

School of Chemical Sciences

Fixed Term Contract Up to 20 Months

Dublin City University www.dcu.ie is a research-intensive, globally-engaged, dynamic institution that is distinguished both by the quality and impact of its graduates and by its focus on the translation of knowledge into societal and economic benefit. Through its mission to transform lives and societies through education, research and innovation, DCU acts as an agent of social, cultural and economic progress. DCU is Ireland's fastest growing university, and now hosts more than 17,000 students across its three academic campuses: DCU Glasnevin Campus, DCU St Patrick's Campus and DCU All Hallows campus.

DCU has a strong track record in attracting both Irish and European Union funding under FP7, Horizon 2020, Marie Curie Actions and Erasmus. We offer a dynamic and internationally focused environment in which to advance your academic career.

School of Chemical Sciences

The School of Chemical Sciences is one of Ireland's most progressive and highest achieving Schools with outstanding facilities, housed within a modern and dynamic city campus. Our goal is to develop graduates with the ability to critically evaluate, and then to solve, chemical and pharmaceutical problems, preparing the highest quality graduates capable of meeting the challenges of modern industry and research. The School is highly successful at attracting large scale research funding, with our researchers having significant roles within nationally significant university/industry collaborative initiatives and European funded Integrated Training Networks. The School of Chemical Sciences is one of the leading academic schools within DCU and is ranked in the top 300 chemistry schools/departments in the world (QS Rankings), a reflection of the School's ambitious research activities and its undergraduate/postgraduate degree programmes.

Background

The BREAK BIOFILMS Training Network "Breaking Bad Biofilms: Innovative Analysis and Design Rules for Next-Generation Antifouling Interfaces" is a consortium of world leaders in sensing, cell imaging, interfacial engineering, microbiology and nanoformulation from 6 universities, 8 companies, a consortium of food industries, a research centre, and a business and innovation centre. BREAK BIOFILMS comprises 15 Early Stage Researchers (ESRs), who have access to state-of-the-art equipment and will obtain a unique technical, industrial, and entrepreneurial training.

Biofilms, i.e. communities of microorganisms that attach and grow on a solid surface, cause about 80% of infections in humans, and disinfectants rarely succeed in destroying them. They cost European economy billions of euros annually. The BREAK BIOFILMS Training Network aims to solve this issue by training the next generation leaders. They will understand the (bio)physicochemical mechanisms of biofilm formation, be able to produce technology for detecting and identifying biofilm formation with

extreme sensitivity, and develop next generation biocides for preventing and destroying biofilms in industrial and biomedical areas. This integrated strategy from biofilm detection to destruction that builds on key innovations from the partner labs, is globally distinctive and promises significant progress. The graduates will be ideally placed to enter and support existing European industry across a number of different sectors (biomedical, food, antimicrobials). Additionally, they will also be capable of creating new businesses thanks to a combination of in depth training in entrepreneurship and direct experience of establishing and running a virtual company as part of the training network. Beyond the trained researchers, this project will produce technologies that will enhance the productivity of European industries, create intellectual property with a strong probability of commercialization and improve the health and well-being of European citizens by minimizing infection rates and the inappropriate use of ineffective biocides that is leading to resistance.

More information on this Project can be found here: <https://cordis.europa.eu/project/rcn/218447/factsheet/en>

The funding for the programme ends on December 31, 2022. All positions will remain open until suitable candidates have been identified. Applicants may register their interest for more than one position and agree to have their details shared within the BREAK BIOFILMS Network. Each project will also include a secondment to a collaborating industrial company and one of the partner universities.

Research Projects at Dublin City University:

ESR11 project

Title: Redox Mediators for High Sensitivity Electrochemical Detection of Biofilms

Overview: The purpose of this project is to create highly sensitive sensors to detect ultralow concentrations of pathogens and to understand their redox properties. The ESR will work with transition metal complex mediators, optimize the performance of redox mediators for electron transfer to/from microbial biofilms, and evaluate the utility of the optimised mediators for the high sensitivity, direct detection of biofilms through redox, and electrochemiluminescence detection. A particular focus will be on wireless or bipolar electrochemical detection.

Duties and Responsibilities

In brief, the PhD student will pursue a PhD programme of research as described above under the direction of the DCU Supervisor, Prof. Robert Forster. The programme is predominantly research-based, and students will be responsible for their own learning and development. As well as the design of experiments, data collection, analysis and interpretation, the researcher is expected to disseminate their findings through publications in journals and presentations at conferences. Full participation in local and Break Biofilms network training and discussion events is an integral part of the programme.

Applicant Requirements

Applications will be welcomed from candidates of any nationality with a proven track record in one of the fields related to the project demonstrated through a Master's degree certificate and appropriate experience. Candidates should also be able to demonstrate extra-academic experience and evidence of creativity and leadership.

Conditions

Applicants at the time of recruitment must be in the first four years (full-time equivalent research experience) of their research careers and have not yet been awarded a doctoral degree. At the time of recruitment, they shall not have resided or carried out their main activity (work, studies etc.) in the country of the host institution (Ireland) for more than 12 months in the 3 years immediately prior to

the reference date. Compulsory national service and/or short stays such as holidays are not taken into account.

Applicants should note that they must be available to start employment on, or before ,1st April 2021.

Mandatory Training

Post holders will be required to undertake the following mandatory compliance training: Orientation, Health and Safety, Data Protection (GDPR). Other training may need to be undertaken when appropriate.