



Institute of Technology

Ciência sem Fronteiras / Science Without Borders

Postgraduate Project Template

Institution:	Waterford Institute of Technology
Title of Postgraduate Opportunity: (include level of study)	The development of new wound dressings impregnated with antimicrobially active seaweed extracts.
PI Name & Contact Details:	Dr Peter McLoughlin and Dr Helen Hughes: pmcloughlin@wit.ie and hhughes@wit.ie Principal Investigator and Head of the Department of Chemical and Life Sciences
Department/School:	Department of Chemical and Life Sciences
Research Centre /Group:	Pharmaceutical and Molecular Biotechnology Research Centre (PMBRC), and the Eco-Innovation Research Centre (EIRC)
Research Centre/Group website:	www.pmbrc.org
Brief Summary of PI research / research group /centre activity The PMBRC and EIRC have been actively involved in the development of new drug delivery solutions and the identification of bioactive extracts from seaweeds for a number of years. This project will involve the development of new antimicrobial wound dressings. Our expertise in polymer science and materials, coupled with new seaweed derived compounds (which have shown exciting potential as new antibacterial agents) will be the key to the success of this project.	
Brief Description of Masters or PhD Project Research data has demonstrated the potential of macroalgae as an important source of bioactive compounds. Research carried out at WIT ^{1,2} has highlighted the potential of these algae as an important source of new antimicrobial compounds. Some of the compounds isolated have demonstrated activity against a number of bacterial strains including MRSA. This PhD research project will involve the incorporation of antimicrobial compounds (extracted from seaweed) into new wound dressing formulations. The polymeric wound dressing composition will be optimized to ensure the controlled release of the antimicrobial active ingredient to the site of application. The efficacy of the dressing will be assessed in conjunction with our partners at Waterford Regional Hospital.	
[1] O'Sullivan L., Murphy B., McLoughlin P., Duggan P., Lawlor P. G., Hughes H., Gardiner G. E., "Prebiotics from Marine Macroalgae for Human and Animal Health Applications", <i>Marine Drugs</i> , 8(7), 2038-2064; (2010) [2] Tan S. P., O'Sullivan L., Prieto M. L., Gardiner G. E., Lawlor P. G., Leonard F., Duggan P., McLoughlin P., and Hughes H., Extraction and Bioautographic-Guided Separation of Antibacterial Compounds from <i>Ulva lactuca</i> , <i>Journal of Phycology</i> , 24, 3, 513-523, (2012)	

Key Attributes of Project for Brazilian Postgraduate Students

The equipment available to facilitate this project is outlined at www.pmbrc.org and includes a wide array of chromatographic, mass spec and NMR resources as well as state of the art research laboratories. The research teams in the PMBRC and EIRC are multi-disciplinary in nature with microbiologists, analytical and material scientists, biochemists and molecular biologists collaborating on a range of research projects. As well as this, research in the centres is informed by extensive collaboration with industrial, academic and end user groups. This project is a great opportunity for a student to study in the exciting area of new bioactive materials with direct application in the clinical setting.

Name and contact details for project queries, if different from PI named above:

Please indicate graduate disciplines which are eligible for application:

Chemistry, material science, biology or related discipline.

Alignment with Science Without Borders Priority Areas:

Please indicate the specific programme priority area under which the proposed postgraduate project fits – choose only one (tick box)

Engineering and other technological areas	
Pure and Natural Sciences (e.g. mathematics, physics, chemistry)	
Health and Biomedical Sciences	x
Information and Communication Technologies (ICTs)	
Aerospace	
Pharmaceuticals	
Oil, Gas and Coal	
Renewable Energy	
Minerals	
Biotechnology	
Nanotechnology and New Materials	x
Technology of prevention and remediation of natural disasters	
Biodiversity and Bioprospection	
Marine Sciences	x
Creative Industry	
New technologies in constructive engineering	