

Dr. Bernard DEGRYSE

Technology Centre:	FHI - Food for Health Ireland
Academic Mentor:	Dr. Ronan Murphy
Company Partner:	Oriel Marine Extracts
Company Mentor:	Mr. Brian Fitzpatrick

Dr. Bernard Degryse defended his thesis in Cell Biology and Microbiology in 1993 at the University of Aix-Marseille II, Marseille, France. Since then, he has been working abroad in Ireland, Italy and the USA gaining experience both in industry and academic research. His main research interests include cell migration, chemoattractants, and membrane receptors investigating the mechanisms of tumour invasion, metastasis and cardiovascular diseases. He recently extended his research interests publishing, in fields as diverse as Marine Biology and Ecology, and Space Physiology. His research experience will be a plus to explore inflammaging with the goal of developing a new line of Nutraceuticals or dietary supplements.

Dr. Ronan Murphy

Dr. Ronan Murphy is a Lecturer of the School of Health & Human Performance at Dublin City University, Dublin, Ireland. He conducted research in Ireland but also in the USA mainly in Cell Biology, Vascular Biology, and Space Physiology working on microparticles, membrane receptors, platelets and haemostasis, and is the author of more than 65 scientific articles. His strong research background allows him to provide the necessary scientific support to clinical research organisations and food companies either during clinical trials or when developing new products, such as pharmaceutical drugs or nutraceuticals.

Mr. Brian Fitzpatrick

Brian Fitzpatrick is a founder and Managing Director of Oriel Marine Extracts. Prior to this Brian has been involved in launching several innovative companies with significant proprietary benefits. A solid interest in intellectual property, patents, licensing, and scientific research has proved of immense benefit in the evolution of Oriel from a Sea Salt company to a Life Science company. Brian has worked with each of the key government agencies on collaborative grants for universities and business partners and with the discoveries witnessed through these partnerships and DCU, has infused his passion for discovery.

Host Institution: Dublin City University

Dublin City University (DCU) is a fastgrowing university with more than 18,000 students from 55 countries. DCU is ranked in the top 1.5% of the universities worldwide, being in the top 300 in the area of Life Sciences. Furthermore, DCU has focused on five Research & Enterprise Priority Areas, amongst the health technologies and the healthy and ageing society, particularly relevant to this project.

Technology Centre/ Technology Gateway: FHI

The technology centre, Food for Health Ireland (FHI) brings together the most innovative science with food companies aiming at generating synergy between partners involved in research or in industry with the goal of improving/creating nutrimentals that will really benefit human health and public wellbeing.

Industry Partner: Oriel

Oriel Marine Extracts is an award-winning Life Sciences company, supplying global leaders in skincare, wound-care, burn-care and nutrition (Functional Food and Nutraceuticals). Oriel has

patents granted across three continents, holds EU Commission PDO status with sustainable and organic credentials. Innovation continues as Oriel works with researchers, clients, universities, government bodies and NGO's on novel applications for their products.

Bernard's project

Investigation of Magnesium Rich Marine Mineral Complex on Inflammaging within the Cardiovascular Compartment - Development of a Novel Nutraceuticals and Functional Food for Health in a Preventative Setting

Inflammaging and chronic inflammation are the cause of a wide number of diseases such as asthma, colitis, rheumatoid arthritis, atherosclerosis, chronic kidney disease, cancer, and autoimmune diseases and provoke more than 50% of the total death in the world. Since the population of the Western world is rapidly aging, other chronic inflammation-related diseases such as type II diabetes; age-related hearing loss; neurodegenerative disorders: Alzheimer's disease; Parkinson's disease; arthritis and cardiovascular diseases are becoming more and more prevalent. Risk factors associated with modern life including obesity, diet, food additives and stress have been identified. One simple way to prevent inflammaging and its related diseases thereby improving human life, is to provide functional food for health or nutraceuticals.

Previous research performed by Dr. Murphy at DCU has suggested that a Magnesium Rich Marine Mineral Complex (MaRiMaMC), proprietary of the company partner, Oriel might be suitable for the development of a new line of nutraceuticals capable of preventing chronic inflammation of the vessel wall, and by that means impeding the development of cardiovascular diseases. The aim of the project is to explore the anti-inflammatory properties of MaRiMaMC using state of the art research. Firstly, we will investigate whether MaRiMaMC prevents the release of early mediators of innate immunity that are damage associated molecular patterns (DAMPs) and unconventional chemokines, the CLF chemokines, which are pro-inflammatory molecules. Recruitment of immune cells is a common characteristic of inflammation. Therefore, the inhibitory effects of MaRiMaMC on cell migration will be explored. Finally, due to sensitivity of microRNA expression, the influence of MaRiMaMC on the expression of microRNA by the vessel wall will be determined.

This project has a dual scope generating new knowledge on chronic inflammation and cardiovascular diseases, and will permit Oriel to produce and commercialise an effective line of new nutraceuticals that will be of benefit to human health.