Amir Mirzadi Gohari

Technology Centre:	Food for Health Ireland (FHI)
Academic Mentor:	Dr. Angela Feechan
Company Partner:	Origin Enterprises Plc
Company Mentor:	Professor James Burke

Amir graduated from the University of Tehran (UT), Iran, where he studied the Genetic diversity of *Fusarium verticillioides* isolates from maize in Iran based on vegetative compatibility and mating in 2009. Following graduation, he successfully obtained a scholarship to pursue his Ph.D. study at WUR, The Netherlands, which is in the top 2% of universities in the field of agricultural science in Europe (QS rankings). He was at WUR for six years to complete his Ph.D. and conducted his first Postdoc experience.

Dr. Angela Feechan

Dr. Angela Feechan is an associate professor at the UCD School of Agriculture and Food Science. Angela gained her BSc and PhD from the University of Edinburgh, UK and completed postdocs at Copenhagen University, Denmark and CSIRO, Australia. She is a molecular plant pathologist who was awarded a FP7 MC CIG Fellowship in 2014 and subsequently a Science Foundation Ireland (SFI) Career Development award in 2016. Since 2014 she has been awarded €4.3 million in external funding from Funding agencies and Industry including from; SFI (PI), Alltech Plc. (PI), Teagasc (PI), H2020 Marie Skłodowska-Curie Action (MSCA) ITN (CoPI), Dept. Agriculture Food and Marine (PI). Her research group is focussed on fungal pathogens that cause disease in oats, wheat and barley. In particular how fungal pathogens use secreted proteins and antimicrobial factors to cause disease.

Professor James Burke

Prof Burke is Professor of Crop Science and holder of the Agri Chair of Crop Science at University College Dublin. Prior to joining UCD he was Head of the Teagasc, National Crops Research Centre, at Oak Park, Carlow. During his time in Teagasc he also held various other positions such as Chief Crops Scientist, Head of the Crop Science Department, Co-ordinator of sugar beet research, and Programme Leader for Crops, horticulture and forestry. He was also an adjunct Professor at NUI Maynooth, Co Kildare, Ireland, and a research fellow in the School of Botany at Trinity College Dublin. Prof Burke studied at University College Galway and at University College Dublin where he was awarded B.Agr.Sc, M.Agr.Sc and PhD Degrees. He later worked for a number of years at the University of California at Davis, USA, and returned to Ireland to take up a post as a plant physiologist /agronomist with the Agricultural Institute. His major interests include: the agronomy and physiology of arable crops and the development of physiological growth models for the simulation of plant growth and development, plant response to environmental stress and climate change as well as development of new biotechnological approaches for plant improvement and bioenergy. He has published in various scientific journals, written book chapters, and co-authored a textbook on Biotechnology and has written many national reports pertaining to agriculture. He is currently a member of Governing Body of the Carlow Institute of Technology and a member of the Irish Bioindustry Association and the Cereals Association of Ireland. Previously he was the Irish representative on various EU research committees and has also served on many boards and advisory committees relating to agriculture, biotechnology and bioenergy. He has a close working relationship with many national and international research centres and has participated in several collaborative research projects. He has been a member of many international peer review assessment panels and a member of visiting expert groups focusing on research strategy and research prioritisation.

Food for Health Ireland

Food for Health Ireland (FHI) is a center of excellence for the future food innovation, aiming to bring together leaders in industry and research to improve global health through innovation in food. The proposed work is aligned with its objectives of food security. Within the EU, wheat advances from its world position of the second most important food crop (after rice) to the most important cereal. Hence, it is a strategic crop in the EU that needs special attention by making a bridge between academia and industry to design novel tactics to control STB. We will work closely with FHI to raise the awareness of government, industry, and the general public about the risks associated with STB. This active collaboration will bring together academia and industry to invest financially and put effort in to solutions to protect this essential food crop against STB.

Origin Enterprises Plc

Origin is an international Agronomy-Services group, providing specialist advice, inputs, services and digital solutions to growers and professionals in agriculture, amenity, landscaping and ecology markets. The main focus of the Group is to optimise the sustainable use of land through innovation and integrated solutions. The Group has leading market positions in Ireland, the United Kingdom, Brazil, Poland, Romania and Ukraine Origin is listed on the ESM and AIM markets of the Irish and London Stock Exchanges respectively and is headquartered in Dublin, Ireland.

Host Institution - University College Dublin

In 2012, UCD was the first Institution in Ireland to be awarded the "HR Excellence in Research" designation by the European Commission under the Human Resources Strategy for Researchers (HRS4R) process. This designation identifies UCD as a provider of a high standard working environment for researchers. In particular, it recognises UCD's equitable recruitment and appraisal procedures and its commitment to implement the principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers (the Charter and Code, C&C). This means that UCD offers equal opportunities for career development and fair recruitment practices.

Amir's project

Identifying effectors from the fungal pathogen *Zymoseptoria tritici* that can overcome STB resistance in commercial wheat cultivars

Wheat is one of the most important crops worldwide since it provides food for one-third of the World's population. *Zymoseptoria tritici* is a fungal pathogen and the causal agent of septoria tritici blotch (STB), one of the most economically important diseases of bread wheat (*Triticum aestivum*) threatening global food security. STB can cause significant yield losses and reduce grain quality. Disease management is obtained through fungicide application and breeding for resistance. The control of STB by applying fungicides has resulted in development of fungicide-resistant strains, over the last decades. EU legislation requires fungicides to be safe for humans and have no harmful environmental effects. Furthermore, the EU Farm to Fork and Biodiversity strategy 2030 seeks to reduce pesticide use by 50% by 2030. Fortunately, breeding for resistance has become increasingly successful, through the identification of resistance genes such as STB resistance genes and their use in commercial wheat cultivars. In this project, we aim to examine the genome of distinct *Z. tritici* isolates, showing the ability to infect specific wheat cultivars and discover virulence genes employed by this fungus to infect wheat. To do this, we link those wheat cultivars showing disease to specific isolates and their genes using genome data. We will knock-out the identified virulence gene in Z. *tritici* to confirm it is required for STB disease in wheat. Knowing the genes used as biological weapons by *Z. tritici* to overcome wheat STB resistance genes is central to controlling STB efficiently for example, deciding which wheat cultivars to grow.