Project Supervisor	Project Title	Brief Decsription	Contact e-mail
Dr Aine Fanning	Epithelial cell responses to dietary emulsifiers	To study the effects of 2 commonly used emulsifiers on the proliferation of intestinal epithelial cells and to examine how these agents can influence the inflammatory response in theses cells.	A.fanning@ucc.ie
Prof Noel Caplice	An Investigation into the role of the gut microbiome in cardiovascular complications of metabolic syndrome	Our hypothesis is that cardiomyocyte death and the resulting inflammatory response underly stiffening of cardiac tissue and development of diastolic heart failure in patients with metabolic syndrome. In support of this, our group has confirmed that apoptosis is taking place in the hearts of pigs with metabolic syndrome and that this in part related to changes in gut microbiome. So, the aim of this study is to investigate whether a similar microbiome axis impacts cardiac tissue changes in human subjects with metabolic syndrome.	N.Caplice@ucc.ie
Dr David Clarke	The role of glycine lipids in *Bacteroides*	We have shown that *Bacteroides* , an important human gut commensal, produces a novel acylated glycine molecule (called glycine lipid). We have also shown that the GL have an important role in the adaptation of *Bacteroides* to a number of environmental stresses. In this project the student will investigate the role of these lipids by replacing the glycine with other amino acids. This will be achieved by cloning and expression of heterologous genes in *Bacteroides* .	david.clarke@ucc.ie
Susan JOyce	Bile acid metabolising ability: examining enzymes from the microbiome.	The hypothesis is that athletes contain altered bile acid metabolism compared to weight matched counterparts. We have shown that bile acids are altered in these athletes. However, we have not identified and matched strains and genetics with activity. This project will examine a selection of fosmid (large plasmid) harbouring DNA encoding bile acid altering enzymes for specific activity against a range of bile acids. We will delimit activity of 227 bile active fosmids isolated from a single athlete. In collaboration with Dr Paul Cotter and Dr. Orla O'Sullivan fosmids of interest will be end sequenced an the corresponding bile altering enzymes identified will be assigned to taxa	s.joyce@ucc.ie
Dervla O'Malley	Microbes signalling to the brain	The cellular and molecular mechanisms of *how* gut microbes signal across an intact epithelial barrier to modify host neural physiology is not understood but signalling molecules, such as cytokines, hormones and even modified bile acids have been proposed as intermediaries. This project will use calcium imaging and immunofluorescence of distal colonic submucosal neurons to investigate if bile acids activate host enteric neurons and what cellular and molecular mechanisms underlie this process. These studies will confirm local signalling by luminal moieties to the intrinsic nervous system.	d.omalley@ucc.ie
Andrey Shkoporov	Transcriptional control in bacteriophage	Transcriptional control in bacteriophage phiAPC-LOC110, a novel crAss-like virus infecting human gut symbiont Bacteroides intestinalis. The project will involve establishing of the growth curve of phage phiAPC-LOC110 and performing time-series RNAseq experiment with synchronized cultures to identify genes expressed in early, middle and late stages of phage infecton.	andrey.shkoporov@ucc.ie
Dr Maria del Mar Esteban-Torres	Fucose metabolism	Metabolism of the sugar fucose is typical of infant-derived bifidobacteria, although the precise pathway and enzymatic players are not fully elucidated. This project will use a combination of cloning, enzyme production and biochemical reactions to determine the individual steps of fucose utilisation by *Bifidobacterium breve* UCC2003.	maria.estebantorres@ucc.ie