



### Faculty Research Committee Undergraduate Summer Research Internship Scheme 2019

**Project Title:** The development of PCR-based diagnostic assays to detect common contaminants affecting the brewing industry. In collaboration with The Wicklow Hops Company

**Principal Investigator:** Dr Anne Parle-McDermott

**School/Research Centre:** School of Biotechnology

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**Project:** This project is forging a new collaboration with *The Wicklow Hops Company* to aid in the development of new diagnostic assays to allow early detection of contaminant species that affect the brewing industry. One such contaminant is *Saccharomyces cerevisiae* variant *diastaticus*; a wild yeast strain that is often considered a spoilage micro-organism in beer brewing as it can cause an unwanted increase in carbon dioxide production leading to beer gushing, potential bottle explosion along with changes in the flavour, sedimentation and increased turbidity of the beer. A DNA based approach allows the specific identification of contaminating strains that are often difficult to distinguish from closely related species. Given the financial and reputational risk to breweries for non-detection of contaminating *diastaticus* yeast strains, this project will focus on the development of a PCR based diagnostic assay to detect *diastaticus* varieties in DNA extracted from samples at all appropriate stages of the brewing and bottling process. The successful student will gain experience in genomic database mining, DNA clean room standard operating procedures, the design and execution of PCR-based assays on the Lightcycler 480® instrument, current micro-organism testing practices and the interpretation of Sanger sequencing data.

**Supervision & Mentorship:** The student will integrate fully with the current Parle-McDermott Research Team which consists of 5 Ph.D students, 1 Intern and 1 Postdoctoral researcher (to be recruited during 2019) and the opportunity to liaise with our industry partner.

**Environment:** The research team has extensive experience in cellular and molecular biology/genetic techniques that they are applying to a number of projects including this one plus projects involving the characterisation of a novel human gene (SFI-BBSRC), mitochondria DNA and ageing (WT-NIH) and the development of biosensors for the detection of specific species in environmental DNA (BEYOND 2020-Marine Institute).

**Future Opportunities:** The data and experience arising from this project will position the student to apply to the IRC Enterprise Partnership scheme for a postgraduate scholarship under the supervision of Dr. Parle-McDermott (DCU) and Philip Woodnutt (*The Wicklow Hops Company*).