HONOURS PROJECT 2017

Project Title: Environmental control of cell growth and cell division: relevance to cancer

Supervisor's Name: Janni Petersen
Supervisor's Email: Janni.Petersen@flinders.edu.au

CNS Lab: Environmental control of cell growth and division
Location of Project: FCIC

Brief Outline of Project:
Cancer is a disease of inappropriate cell growth and cell division. In addition, cancer cells migrate to colonise new parts of the body, here they undergo cell division in environments with limited nutrient supply and therefore cancer cells are frequently nutritionally stressed. The Target of Rapamycin (TOR) signalling pathway co-ordinates cell division with available nutrients and importantly altered TOR signalling has been linked to 80% of cancers. We exploit the simplicity of a single celled lifestyle and strong genetics in yeast to understand the principles of TOR signalling and identify key conserved regulations of this pathway, which we then subsequently study in human cells. In shedding light on the mechanisms behind environmental and TOR pathway control of cell division we will aim to target these in human cancers.

The student will gain experience with a range of techniques including mammalian tissue cultures, yeast cell biology and genetics, Biochemistry including: SDS-PAGE, western blotting immuno-precipitations, kinase assay’s. Molecular biology including: PCR, DNA cloning and DNA sequencing. Immuno-fluorescence microscopy and live cell imaging.

Key References:

