HONOURS PROJECT 2017

**Project Title:**
Control of the production of sphingosine 1-phosphate in nociceptive neurons

**Supervisor:** Prof Rainer Haberberger
**Email:** rainer.haberberger@flinders.edu.au

**CNS Lab:** Pain & Pulmonary Neurobiology

**Location of Project:** Anatomy & Histology, Level 6 Flinders Medical Centre

**Brief Outline of Project:**
Pain is a significant global health problem and seems to be the most burdensome health issue facing the planet – about as costly as diabetes and cancer combined. Cells that measure pain, nociceptors, respond to high threshold stimuli (e.g. when you step into glass) to warn or inform you about actual or potential damage. Nociceptive neurons can be subdivided in two major cell types, peptidergic, NGF-dependent and non-peptidergic, GDNF-dependent nociceptors. Those differ in their receptors, activation pattern and in their connections to the central nervous system. Both subtypes have different roles in chronic inflammatory and neuropathic pain. It is therefore essential to be able to use both nociceptor subtypes as biosensors.

Our overarching aim to characterise a nociceptor cell line (50B11), and test its suitability for investigating pain signalling and testing pain-targeted drugs. In this part of the project we aim to differentiate cells into nociceptor subtypes and investigate differences in sphingolipid signalling.

**Specific aims:**
1. Validate the functional phenotype for 50B11 cells delineated into 2 subtypes of pain sensing neurons;
2. Analyse the presence of components of sphingolipid signalling;
3. Inhibit sphingolipid synthesis via miRNAs.

**Key References:**