## Project Title:
The effects of Neuregulin1 (NRG1) on cardiomyocyte survival, proliferation and differentiation

### Code: SoMS6

## Host School/Institute
School of Medical Sciences/Physiology & Bosch Institute

### Address:
Bosch Molecular Biology Facility, Anderson Stuart Building (F13), Camperdown Campus 2006

### URL:

### Personal Supervisor:
Dr. Donna Lai

### Phone:
02 9351 8787

### Email:
donna.lai@bosch.org.au

### Co-supervisors:
Dr. Sheng Hua

## Project Type:
Laboratory based

## Project Category:
Cardiovascular

### Project Keywords:
1. Neuregulin
2. Cardiomyocyte
3. IncuCyte ZOOM
4. Seahorse XF Analyzer
5. Cell proliferation and apoptosis

### Project Description:

Neuregulin-1 (NRG1) is a multipotent EGF-like factor that can activate ErbB receptor tyrosine kinases and mediate cell proliferation, differentiation and survival in many tissues. NRG-1/ErbB signaling is not only crucial for the development and growth of fetal heart but also important in the maintenance of the structural and functional integrity of the adult heart. NRG-1 secretion by endocardial and cardiac microvascular endothelial cells has been shown to inhibit the apoptosis of myocardial cells, protect ischemic and prostrated myocardial cells and improve cardiac function.

Treatment of breast cancer using Herceptin (trastuzumab), an anti-ErbB2 antibody, sometimes produces undesirable cardiac side effects. The risk for cardiac dysfunction increases when Herceptin is given along with other chemotherapy medicines. Several studies suggest that NRG1 may reduce cardiotoxicity, prevent or reverse myocardial dysfunction.

This project will examine the effect of NRG1 on cardiomyocyte growth, survival and cell metabolism under normal or stress conditions. Candidates will work in a state-of-the-art Bosch Molecular Biology Facility. This is a great opportunity to learn a broad range of techniques including cell culture, live cell imaging (e.g. IncuCyte ZOOM), as well as functional assays to examine mitochondrial function and energy consumption (e.g. Seahorse XF analyzer), cell proliferation and apoptosis.