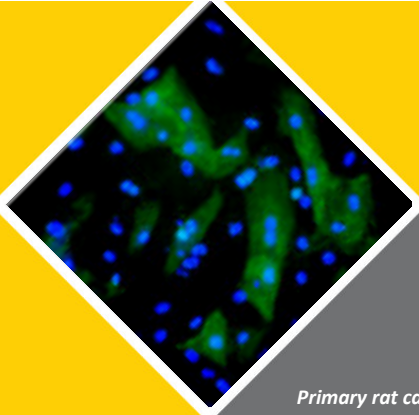
Cardiovascular Diseases

CARDIOGENIC SHOCK



Primary rat cardiomyocytes exposed to OGD

Background

Cardiogenic shock is a life-threatening medical condition characterized by insufficient perfusion of tissue to meet the demands for oxygen and nutrients. The condition involves increasingly more pervasive cell death from oxygen starvation (hypoxia) and nutrient starvation (e.g. low blood sugar). Because of this, it may lead to cardiac arrest (or circulatory arrest), which is an abrupt stopping of cardiac pump function.

Pathology Model

Primary cardiomyocytes will be isolated from the heart of P2 Sprague Dawley rats. Cells will be cultured in vitro, either in the presence/absence of primary activated macrophages, and challenged with 12 hours oxygen glucose deprivation followed by 2 hours of reperfusion. Cells will be either cocultured in static conditions, or tested in dynamic micro environmental conditions, flushing activated macrophages on primary cardiomyocytes.

Readouts

The following parameters will be analyzed:

- Quantitative evaluation of cell metabolism
- Quantitative evaluation of cell survival
- Quantitative evaluation of mithochondrial damage
- Expression of troponin C
- Qualitative evaluation of cell morphology
- Quantitative evaluation of selected genes of interest
- Quantitative evaluation of beating rate
- Quantitative evaluation of intracellular calcium dynamics