



## APOPTOSIS IN SEVERE ACUTE PANCREATITIS.

Supervisors: Prof C Christophi and Dr V Muralidharan

Contact details: Ph: 9496 3670 or 9496 3574

Email: surgery-armc@unimelb.edu.au and muv@unimelb.edu.au

Acute pancreatitis (AP) is an inflammatory condition involving the exocrine (acinar) cells of the pancreas, and subsequent injury to multiple other organs. Our aim is to determine the underlying pathophysiological mechanisms in the severe form of the disease, and devise new strategies to minimise mortality and morbidity. Currently, evidence suggests that severity of AP may be related to the balance of acinar cell necrosis and apoptosis. This project investigates the important factors involved in apoptosis in severe acute pancreatitis (SAP), and methods which modulate apoptosis.

A clinically relevant and fully characterised model of SAP in Wistar rats will be used. Determining factors which can reduce the severity of SAP may lead to therapies that decrease morbidity and mortality and improve the outcome for patients with SAP.

### Techniques:

Animal models  
Microarray analysis  
FACS analysis  
Immunohistochemistry  
RNA extractions  
Real Time RT-PCR

### Projects

1. Changes in expression levels over time for apoptosis and apoptotic related factors in SAP.
2. Changes in cell proliferation rates and necrosis in pancreatic acinar and endothelial cells in SAP.
3. Changes in apoptosis and cell proliferation of endothelial cells in SAP.
4. Comparison of the expression of apoptosis and apoptotic related factors in extrahepatic organs (lung, liver or kidney) in SAP.
5. The effect of Menadione induced apoptosis on the severity of pancreatitis.

### Publications:

Cuthbertson C, Su K, Malcontenti-Wilson C, Muralidharan V, Millar I, Christophi C. Hyperbaric Oxygen improves capillary morphology in acute severe pancreatitis. *Pancreas*. 36(1) 70-75, Jan 2008.

Christophi C, Millar, I, Nikfarjam N, Muralidharan V, Malcontenti-Wilson C. Hyperbaric oxygen therapy for the treatment of severe acute pancreatitis. *Journal of Gastroenterology and Hepatology*, 22(11):2042-2046. November 2007.

Nikfarjam M, Cuthbertson C, Malcontenti-Wilson C, Muralidharan V, Millar I, Christophi C. Hyperbaric Oxygen Therapy reduces severity and improves survival in severe acute pancreatitis. *J Gastrointestinal Surgery*, 11(8): 1008-15. Aug, 2007.