BCHM 421/422 – 2018-19

Project Outline: The aim of this project is to investigate the potential contribution of the von Willebrand factor (VWF) propeptide in the development of a normal hemostatic response. The large, polymeric glycoprotein, VWF plays a critical role in mediating platelet plug formation during initiation of the hemostatic clot. In addition, the large VWF propeptide (VWFpp) is also secreted as a dimer from endothelial cells, and circulates with a half-life of ~2hrs in humans. An extracellular function for the VWFpp has yet to be determined. This question is being addressed in this project through the application of a range of molecular, in vitro and in vivo mouse studies.

Supervisor: David Lillicrap

Project Title: Extracellular role of the von Willebrand factor propeptide in Hemostasis

Keywords (3-5):

1. Blood
2. Hemostasis
3. von Willebrand factor
4. Platelets
5. Propeptide

Project Goals: To determine the contributions of the VWF propeptide (VWFpp) to normal blood clot formation

Experimental Approaches:

1. Immunohistochemistry to evaluate the localization of the VWFpp in venous and arterial thrombi
2. Immunoassays to quantify VWFpp levels in murine models of disease
3. Binding assays to determine VWFpp binding to cell membrane ligands
4. Application of mouse models of venous and arterial thrombosis

References:

Haberichter SL. von Willebrand factor propeptide - biology and clinical utility. *Blood*. 2015;126 (15):1753–1761.

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Rawley O, Brown C, Dwyer C, et.al. Mouse von Willebrand factor propeptide regulates platelet thrombus formation in vitro. *Res. Pract. Thromb. Haemost.* 2017;1(s1):OC22.3