Project proposal template
Graduate School studentships
March 2015

Project title	The role of mesenchymal stromal cells in chronic idiopathic thrombocytopenic purpura.
First Supervisor	Dr — Karen Whiting
Second Supervisor	Dr Andreas Hoppe
School	Life Sciences
Other member of supervisory team (no more than three KU supervisors in total)	Dr Ruth Pettengell and Dr Steve Austin (SGUL/SGH-NHST)
Specific requirements beyond 2:1 degree	

Project summary

(max 4,000 characters)

Chronic idiopathic thrombocytopenic purpura (ITP) is a long lasting blood disorder of unknown cause that is characterised by an abnormally low platelet count with, impaired blood clotting, thus increased risk of bleeding. Autoreactive T-cells and auto-antibodies against platelet antigens are the cause of thrombocytopenia (1).

Mesenchymal stromal cells (MSC) are known to suppress T-and B-lymphocytes and have therapeutic effects in a number of autoimmune disorders (2). MSC have also been shown to stimulate platelet production (3), however, little is known on the physiological characteristics of MSC and their immunosuppressive effectives or failure in ITP patients.

We aim to analyse the potential role of MSC in the pathogenesis of chronic ITP by studying the physical and functional properties in vitro of MSC from the bone marrow of ITP patients and healthy individuals. Functional properties of ITP MSC will be assessed through proliferative, clonogenic and cross-over culture experiments to assess their support of megakaryocytopoiesis and their interaction with T regulatory cells will be investigated. If alterations in ITP MSC are identified, this may suggest a role of MSC impairment in the pathogenesis of chronic ITP, as well as their potential therapeutic use.

(1) Terry Gernsheimer. Chronic Idiopathic Thrombocytopenic Purpura: Mechanisms of Pathogenesis. The Oncologist;2009,14:12–21.

(2) Figueroa FE, Carrión F, Villanueva S, Khoury M. Mesenchymal stem cell treatment for autoimmune diseases: a critical review. Biol Res. 2012,45(3):269-77.

(3) Cheng et al., Human mesenchymal stem cells support megakaryocyte and pro-platelet formation from CD34(+) hematopoietic progenitor cells. J Cell Physiol, 2000,184:58-69.