

## **ETM/432 - Developing novel methodology for identification of umbilical cord blood grafts with rapid long-term haematopoietic reconstitution**

Haematopoietic stem cell (HSC) transplantation is a standard treatment for many malignant and non-malignant haematological disorders. The shortage of suitable HSC donors for some patient groups, however, is a major obstacle for clinical transplantations. This has been partially overcome by transplanting umbilical cord blood (UCB), as an alternative source of HSCs over the traditional bone marrow source. UCB transplantation has its own advantages and disadvantages. UCB transplantations are sometimes associated with increased risk of graft failure and delayed haematopoietic reconstitution, which may adversely affect patient survival. Currently, selection of UCB grafts is based on relatively simple criteria. Developing novel criteria that accurately identify the best UCB samples containing potent HSCs would be of great benefit for patient treatment and would improve clinical outcomes. Here we propose to use modern genetic methods and xenograft transplantation mouse models to identify gene expression signatures that define quick and sustainable production of human blood cells by UCB transplants. This research project is entirely orientated towards the rapid translation of scientific knowledge and the safe improvement of UCB transplantation.