

## Research activity

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[Railways \(http://www.birmingham.ac.uk/research/activity/railway/index.aspx\)](http://www.birmingham.ac.uk/research/activity/railway/index.aspx)



[REFER \(REFER for Echocardiogram\) - A Prospective Validation of a Clinical Decision Rule, NT-proBNP, or their combination, in the Diagnosis of Heart Failure in Primary Care \(/research/activity/mds/trials/pccrtu/trials/refer/index.aspx\)](/research/activity/mds/trials/pccrtu/trials/refer/index.aspx)

Index page for the REFER (REFER for Echocardiogram) Trial - A Prospective Validation of a Clinical Decision Rule, NT-proBNP, or their combination, in the Diagnosis of Heart Failure in Primary Care - at the University of Birmingham.



[Regeneration Economies: Transforming People, Place and Production \(/research/activity/ias/regeneration-economies/index.aspx\)](/research/activity/ias/regeneration-economies/index.aspx)



[Regulation of Haematopoietic Cell Differentiation \(/research/activity/mds/domains/immunity-infection/immunology/regulation-of-haematopoietic-cell-differentiation/index.aspx\)](/research/activity/mds/domains/immunity-infection/immunology/regulation-of-haematopoietic-cell-differentiation/index.aspx)

The mammalian blood cell system provides cell biologists with one of the best experimental models in which to unravel how one stem cell – the haematopoietic stem cell – gives rise to the many different types of cells of the blood and immune systems. The classic model for this process depicts two families of cells; lymphoid and myeloid. This dichotomy has been increasingly challenged in recent years – to the extent that the accumulation of new findings culminated in a Nature commentary suggesting that "the latest research will necessitate revision of textbook accounts". We proposed the 'Pair-wise Relationships Model' of haematopoiesis, which is an updated version of our 'Sequential Determination Model' (proposed in 1985). Our model groups the pair-wise relationships between lineage fates around a broken circle; to date there aren't findings that refute this model. Ongoing studies are examining whether our model is a correct representation of haematopoiesis by extending understanding of the events that govern commitment of haematopoietic stem cells to becoming one particular type of cell. Endeavours to understand the controls that drive cell differentiation are focussed on signals that arise from all-trans retinoic acid and vitamin D3. We are also interested in the use of novel retinoids to modulate haematopoiesis and the behaviour of malignant cells.



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