

Step forward in understanding arterial disease

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The next step has been made into isolating the origin of cells linked to the progressive disorder Pulmonary Arterial Hypertension.

Further strides have been made into isolating the origin of cells that could lead to a greater understanding of what goes into the development of our blood circulating systems.

University of Lincoln Life Sciences academic Dr Rajiv Machado, with colleagues from the University of Cambridge, King's College London and Papworth Hospital, has revealed the recent findings in a research letter to The American Journal of Respiratory and Critical Care Medicine.

Dr Machado's main research area is in Pulmonary Arterial Hypertension (PAH) which is a progressive disorder characterised by abnormally <u>high</u> <u>blood pressure</u> (hypertension) in the <u>pulmonary artery</u>, the blood vessel that carries blood from the heart to the lungs.

Symptoms are shortness of breath, dizziness, swelling (oedema) of the ankles or legs, chest pain and a racing pulse.

In this latest study, researchers investigated genetically identical twins, both of which had the <u>genetic marker</u> responsible for PAH.

However, only one had the disorder which resulted in both a heart and lung transplant.From this starting block, the team were able to



investigate the origin of blood outgrowth endothelial cells (BOEC), which are <u>stem cells</u> and good candidates for vascular (re-) generating cell therapy. However, uncertainty remains as to the specific origin of these cells.

The researchers study of the twins and the mutation they both harboured enabled them to identify a marker to show that those stem cells, the BOECs, were very unlikely to have come from the heart or lungs.

Dr Machado said: "When the circulating BOECs were cultured from the new heart and lungs they still showed the mutation. Hence, they must have been produced in a different organ/s. The importance of this is that scientists are keen to know the origin of these cells both as a proxy for basic science and to provide an understanding of what goes into the development of our blood circulating systems. If we can in one fell swoop remove two organs as being contributory then we are another step closer to knowing where these cells come from."

More information: Mark L. Ormiston, Laura Southgate, Carmen Treacy, Joanna Pepke-Zaba, Richard C. Trembath, Rajiv D. Machado, and Nicholas W. Morrell "Assessment of a Pulmonary Origin for Blood Outgrowth Endothelial Cells by Examination of Identical Twins Harboring a BMPR2 Mutation", *American Journal of Respiratory and Critical Care Medicine*, Vol. 188, No. 2 (2013), pp. 258-260.

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