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The role of ??T and pDC cells in pulmonary arterial hypertension (PAH)

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Pulmonary arterial hypertension (PAH) is a cardiovascular disease characterised by a high mean pulmonary arterial pressure of ?20 mmHg at rest and it has an average survival rate of 6 years. It is associated with chronic inflammation, immune dysregulation, lung vascular remodelling and vasoconstriction that ultimately leads to heart failure and death. We hypothesise that by understanding of the inflammatory cell landscape and immune cell interaction will uncover new targetable pathologic pathways. We aim to investigate how gamma delta T (??T) and plasmacytoid dendritic cells (pDC) cell populations potentiate vascular remodelling by altering the local inflammatory environment in IPAH. We use several methods, such as cell isolations via magnetic beads, cell culture, flow cytometry, in combination with multicolour immunofluorescence and qPCR, to characterise the two cell populations and understand the cell-crosstalk between them and structural cells. Cell isolation protocols have been established to isolate ??T and pDC from buffy coats, resulting in an 84 and 89% purity, respectively. Using multi-colour flow cytometry, we characterised the isolated populations, which revealed two different subsets in ??T, V?2+ and V?2-. Co-culture of ??T and pDC with primary pulmonary arterial smooth muscle cells (PASMC), did not result in overt morphological changes, however, preliminary qPCR revealed changes in extracellular matrix components. The influence of PASMC on the two immune populations is yet to be shown by ongoing experiments. So far, these preliminary results are promising, however, additional experiments are needed to validate these findings and functional assays need to be performed to uncover the potential pathogenic role of ??T and pDC in PAH.