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POSTER 29: Edification of the blood system in the human embryo

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The continuous generation of blood cells throughout life relies on the existence of hematopoietic stem cells (HSC) generated during embryogenesis. Adult-type HSC are first generated in the aorta-gonad-mesonephros (AGM) region between the 3rd and 5th week of human embryonic development. Although it is relatively well accepted that the first HSCs emerge in the AGM through a hemogenic endothelium, the direct precursor of this cell type in the embryo remains to be clearly identified.

We have previously shown that the angiotensin converting enzyme (ACE), already identified as a marker for HSC, recognizes into the human embryo rare undifferentiated mesenchymal pre-HSC as well as the hemogenic endothelial cells. To improve the understanding of cellular and molecular events leading to the specification of a hematopoietic program during embryonic development, we recently performed a transcriptomic analysis of different intermediate cell populations sorted from human embryo based on the expression of ACE: namely pre-HSCs mesodermal cells (MC), hemogenic endothelium cells (HEC), vascular endothelium cells (VEC) and HSC.

A bioinformatics analysis carried out specifically on the two endothelial populations revealed the differences between the endothelium and the hematopoietic properties and defined a list of genes which characterize the hemogenic endothelium. Among these genes, we focused on the study of genes that code for surface molecules.

