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(54) Title: ISOLATION, EXPANSION AND OF CLONOGENIC ENDOTHELIAL PROGENITOR CELLS

(57) Abstract: A hierarchy of endothelial colony forming cells (EPCs) was identified from mammalian cord blood, umbilical vein and aorta. A newly isolated cell named high proliferative potential - endothelial colony forming cell (HPP-ECFC) was isolated and characterized. Single cell assays were developed that test the proliferative and clonogenic potential of endothelial cells derived from cord blood, or from HUVECs and HAECs. EPCs were found to reside in vessel walls. Use of a feeder layer of cells derived from high proliferative potential-endothelial colony forming cells (HPP-ECPCS) from human umbilical cord blood, stimulates growth and survival of repopulating hematopoietic stem and progenitor cells. Stimulation of growth and survival was determined by increased numbers of progenitor cells in *in vitro* cultures and increased levels of human cell engraftment in the NOD/SCIID immunodeficient mouse transplant system.

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