

Super-potent blood stem cells discovered in human embryos

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Stem cells that form the blood and immune system, so-called hematopoietic stem cells (HSCs), have important applications in the treatment of blood cancers and other diseases of the immune system. Through blood stem cell transplantation, healthy blood stem cells can replace diseased ones, potentially making all future blood and immune cells and curing the patient. HSCs or the cells that they form are typically collected from donated umbilical cords or peripheral blood or

bone marrow in adults, but the supply of such cells is a constant issue.

To overcome these limitations, researchers are looking for ways to expand the available cells through the expansion of adult stem cells (the HSCs) or the specialization and expansion of pluripotent [stem cells](#).

In research recently published in *Stem Cell Reports*, Andrejs Ivanovs, Alexander Medvinsky and colleagues from the University of Edinburgh discovered that HSCs from early human embryos, when HSCs are just starting to form, are more robust at expanding than those from the cord blood.

The scientists compared HSCs from developing human embryos and from umbilical cord blood for their potential to multiply to generate more HSCs.

This research showed that after transplantation into mice, embryonic HSCs generated approximately 200—500 times more new HSCs compared to cord blood HSCs.

It will be important to understand why these cells are so much more capable of multiplying, but this new insight could lead to advances in expanding HSCs from the cord blood and adult [bone marrow](#), ultimately expanding the available blood supply.

Provided by International Society for Stem Cell Research

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