

News & Comments

Our Blood's Origins May not be Quite What We Thought

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Our blood's origins may not be quite what we thought, according to Boston Children's Hospital researchers. A team of researchers discovered that blood cells arise not from one type of precursor cell, but from two types, which could have implications for the treatment of blood cancers, bone marrow transplants, and immunology.

Most people believe that blood stem cells, also known as hematopoietic stem cells (HSCs), are derived from a very small number of cells. Scientists were astonished to find another group of progenitor cells that do not originate from stem cells. Most of the blood is made by them during fetal development until young adulthood when they gradually begin to decrease, said Fernando Camargo, chief investigator at Boston Children's Hospital Stem Cell Program.

Endothelial-to-hematopoietic transition (EHT) generates hundreds of blood progenitors from the arterial endothelium in the embryo, some of which become definitive HSCs. The majority of adult blood is thought to be derived from these HSCs, but it isn't clear whether other progenitors also contribute to adult hematopoiesis.

An experiment was conducted using a barcoding technique developed several years ago. In embryonic mouse cells, they either used transposase enzymes or CRISPR gene editing to insert unique genetic sequences that were passed down to all subsequent cells. Through adulthood, the team was able to track all the different types of blood cells, as well as where they originated.

To determine if the findings are also applicable to humans, the researchers are now following up on the findings. These cells could be used to develop new treatments to boost aging people's immune systems if they are embryonic multipotent progenitor cells. Moreover, they could help improve bone marrow transplants and shed new light on blood cancers, particularly those in children.

KEYWORDS

Hematopoiesis, Hematopoietic stem cells, Blood, Blood Cells, Boston Children's Hospital, Cancer, Leukemia

