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Self-renewing hematopoietic stem cells created for transplantation

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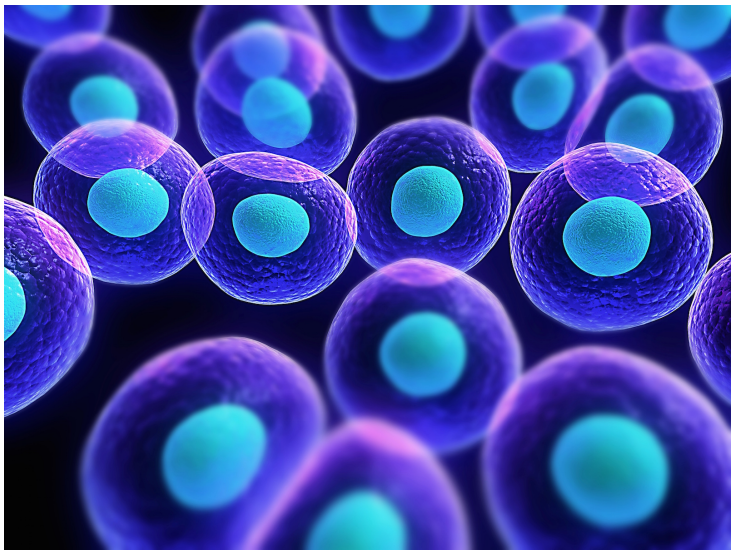

Researchers at Weill Cornell Medicine have discovered an innovative method to make an unlimited supply of healthy blood cells from the readily available cells that line blood vessels. This achievement marks the first time that any research group has generated such blood-forming stem cells.

Senior author Dr. Shahin Rafii, director of the Ansary Stem Cell Institute, chief of the Division of Regenerative Medicine and the Arthur B. Belfer Professor at Weill Cornell Medicine said, "This is a game-changing breakthrough that brings us closer not only to treat blood disorders, but also deciphering the complex biology of stem-cell self-renewal machinery."

Co-senior author Dr. Joseph Scandura, an associate professor of medicine and scientific director of the Silver Myeloproliferative Neoplasms Center at Weill Cornell Medicine said, "This is exciting because it provides us with a path towards generating clinically useful quantities of normal stem cells for transplantation that may help us cure patients with genetic and acquired blood diseases,"

In a paper published May 17 in *Nature*, Dr. Rafii and his colleagues demonstrate a way to efficiently convert cells that line all blood vessels, called vascular endothelial cells, into abundant, fully functioning HSCs that can be transplanted to yield a lifetime supply of new, healthy blood cells. The research team also discovered that specialized types of endothelial cells serve as that nurturing environment, known as vascular niche cells, and they choreograph the new converted HSCs' self-renewal.

Dr. Jason Butler, an assistant professor of regenerative medicine at Weill Cornell Medicine said, "We think the difference is the vascular niche. Growing stem cells in the vascular niche puts them back into context, where they come from and multiply. We think this is why we were able to get stem cells capable of self-renewing."