

Scientist discovers stem cell 'partnership' that could advance regenerative medicine

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A study led by a researcher at Albert Einstein College of Medicine of Yeshiva University has revealed a unique "partnership" between two types of bone marrow stem cells, which could lead to advances in regenerative medicine. The aim of regenerative medicine is to enable the body to repair, replace, restore or regenerate damaged or diseased cells, tissues and organs.

The study was led by Paul Frenette, M.D., the new director of the Ruth L. and David S. Gottesman Institute for Stem Cell and Regenerative Medicine Research at Einstein. Dr. Frenette conducted the research while at Mt. Sinai School of Medicine in New York City.

Hematopoietic [stem cells](#) (HSCs) in the [bone marrow](#) perform the vital task of producing all [blood cells](#) in the human body. Now, the new study, published in the August 12 issue of Nature, has revealed that HSCs pair up in the bone marrow with another type of stem cells, known as [mesenchymal stem cells](#), which give rise to bone, cartilage, fat and other tissues. This pairing, the research shows, form a unique stem cell "partnership" that could lead to advances in regenerative medicine.

The identity of cells in close proximity to HSCs had been a matter of dispute. Dr. Frenette and his team not only found that HSCs and mesenchymal stem cells partner physically with each other, but they also showed that the two types of stem cells interact in crucially important ways. Mesenchymal cells, for example, were found to be necessary for keeping HSCs in the bone marrow alive.

"We think that these mesenchymal stem cells are a very important component of the stem cell niche in the bone marrow," said Dr. Frenette. "These cells likely play important roles in stem cell maintenance, movement, and regeneration of the bone marrow. Further studies into their functions might allow us to maintain healthy stem cells and develop new methods to expand them for clinical use."

Provided by Albert Einstein College of Medicine

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