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Researchers tap into a new and potentially better source of platelets for transfusion

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Japanese researchers may be one step closer to improving treatments for bleeding disorders. A group of researchers from the University of Tokyo has devised a way to maximize the numbers and function of clot-forming blood cells from mice. Their work will be published online in the Journal of Experimental Medicine on July 28.

Clot-forming blood cells, or platelets, can drop to dangerously low levels in diseases such as anemia and in patients undergoing chemotherapy. To replace these critical cells, doctors filter platelets from donated blood, but this approach can increase the risk of transmitting blood infections and cause other side effects in patients who need frequent transfusions.

To get around these problems, scientists have been trying to generate platelets from embryonic stem cell lines. But stem cells also give rise to other types of cells, which tend to quickly outnumber the platelets. The Japanese group solved this problem with a simple refinement—they started with a stem cell population that was already committed to becoming platelets.

Another problem with making platelets from stem cells is that the resulting platelets often fail to form clots properly. This defect can be caused by the presence of enzymes that shear adhesive proteins from the cells' surface, preventing them from sticking to one another or to blood vessel walls. The researchers found these enzymes in their laboratory cultures and showed that blocking them restored platelet function when the cells were infused into injured mice. The scientists now plan to test

whether the same approach will work in humans.

Source: Journal of Experimental Medicine