

# SCIENCE NEWS

This Week

## Umbilical Bounty

### Cord blood shows value against leukemia

In two studies comparing treatments for adults with leukemia, scientists find that a transplant of umbilical cord blood offers a viable option for people who don't have a well-matched bone marrow donor.

Leukemia occurs when marrow cells—the stem cells for blood—become cancerous. Using drugs and radiation, doctors can wipe out nearly all the malignant marrow cells, clearing the way for an infusion of donated marrow that can make new, healthy blood cells. Marrow transplants precisely matched to a patient's blood characteristics can be remarkably successful.

Only about 20 percent of leukemia patients have a sibling donor who's a good match, says hematologist Mary J. Laughlin of Case Western Reserve University in Cleveland. Of the other patients, fewer than a third find an acceptable match, she says.

Moreover, even a slightly mismatched marrow transplant is fraught with risks. That's because marrow delivers more than just nascent blood cells; it carries mature immune cells that can make trouble by attacking a recipient's tissues, causing graft-versus-host disease.

On the other hand, umbilical cord blood contains predominantly naive cells, which aren't yet programmed to attack foreign tissue, says hematologist Juliet N. Barker of the University of Minnesota in Minneapolis.

That's part of the reason why, since the first cord-blood transplant took place in 1988, many scientists have eagerly awaited hard evidence of the technique's benefits. Cord-blood transplants in which the donor and recipient aren't related or fully matched have shown success in children, who are small and resilient. But their potential in adults has been less clear, because a single umbilical cord contains only about one-tenth as many blood stem cells as the typical bone marrow transplant does.

In a new study from Europe, Eliane

Gluckman of Hospital St. Louis in Paris and her colleagues compared the outcomes for 98 leukemia patients who received cord-blood transplants from donors who were unrelated and nearly all mismatched and for 584 similar patients who received marrow transplants from unrelated-but-matching donors. After 2 years, 36 percent of the cord-blood recipients and 42 percent of the marrow recipients were alive and free of disease. Statistical analysis indicates that these survival rates aren't significantly different, the authors note.

In a U.S. study, Laughlin, Barker, and their colleagues assessed 367 matched-marrow transplants, 150 mismatched cord-blood transplants, and 83 mismatched marrow transplants. After 3 years, 35 percent of patients getting matching marrow were alive. Statistics indicate that no significant difference between the 26 percent of the mismatched cord blood recipients and the 20 percent of the mismatched marrow recipients who survived. The two studies appear in the Nov. 25 *New England Journal of Medicine*.

Both research groups found that cord blood, with its small number of stem cells, was slower than marrow to develop into a full complement of blood cells. That makes cord-blood recipients more vulnerable to infection after the transplant, says Claudio Anasetti of the Moffitt Cancer Center in Tampa, Fla.

On the other hand, both studies show that mismatched cord-blood transplants are less apt to spawn acute attacks of graft-versus-host disease than mismatched marrow is.

The pros and cons of mismatched marrow and cord blood seem to balance out, says Ted A. Gooley of the Fred Hutchinson Cancer Research Center in Seattle.

Laughlin says the findings open the way for cord-blood treatments in some adult leukemia patients. "We're recommending, at this point, that if a patient doesn't have a matched marrow [transplant available] in a timely fashion, then proceed with cord blood," she says. —N. SEPPA

## Transparent Transistor

### See-through component for flexible displays

Imagine a car windshield that suddenly lights up to reveal a map of the city and directions to your next destination. Or picture a computer display that you can not only see through but also roll into a tube and slip into your coat pocket. Scientists in Japan have taken a major step to fulfilling such visions with the creation of a transparent transistor deposited on plastic.