

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 58 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

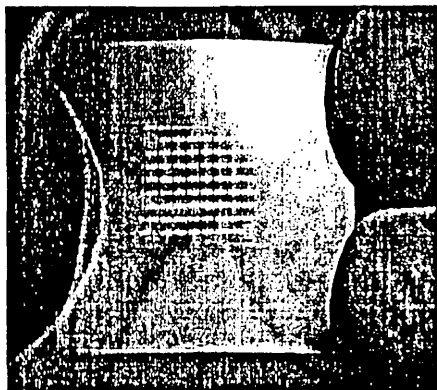
See-through component for flexible displays

BY [unreadable]

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.

Hideo Hosono and his colleagues at the Tokyo Institute of Technology developed a transparent semiconductor material out of indium gallium zinc oxide. Although other research groups have previously made transparent circuitry, "their performance was not so good," says Hosono. In contrast, prototype transistors made from his team's new material are 10 times as conductive as the silicon transistors used in today's liquid-crystal displays.

Hosono attributes his material's success to the greater mobility of electrons when a voltage is applied.



NOW YOU SEE IT Transparent transistors on a sheet of plastic can be seen only at certain angles. Such circuitry could find its way into computer displays in car windshields and other curved surfaces.

"This is the first time I've seen a transparent transistor on a plastic substrate with such high performance," says Edzer Huitema of Philips Research Laboratories in Eindhoven, the Netherlands. "This opens up a range of new applications."

Depositing standard silicon transistors on plastic is nearly impossible since the process requires much heat. "That would melt the plastic," says Huitema. However, the indium gallium zinc oxide goes onto plastic at room temperature. The researchers describe their new material in the Nov. 25 *Nature*.

"This paper is exciting," says John Rogers of the University of Illinois at Urbana-Champaign. "The area of flexible electronics has attracted a great deal of attention over the last few years." For instance, a number of groups in academia and industry have created electronic components out of organic materials for flexible computer displays (*SN*: 1/31/04, p. 67). However, none of these materials is transparent.

In addition to providing a host of specialty applications, transparent circuitry could make existing displays brighter by increasing the amount of light reaching the viewer's eyes, adds Rogers.

As in all new technologies, devising methods for mass production presents a technical hurdle. The method that the researchers used to deposit the transistors on plastic isn't amenable to large-scale manufactur-

ing, says Tobin Marks of Northwestern University in Evanston, Ill. He notes that it remains to be seen whether the researchers can find a method for making large quantities of high-quality transistors.

Hosono says that his group is collaborating with an electronics company to develop the technology. Through this partnership, he plans to sort out the manufacturing issues and improve the material's long-term stability. —A. GOHO