



Roswell Park Memorial Institute

Roswell Park's Dr. Gen Niwayama prepares frozen tissue for shipment.

The Dead Help the Living

by Faye Marley

Cadavers are likely to become the source of choice for human kidney transplants. And the time may come when a human tissue bank—a kind of spare parts repository—will be among the most important of a hospital's facilities.

A transplantation conference at Santa Barbara, Calif., has just closed after encouraging reports on the future of human transplants. From the Medical College of Virginia, Richmond, came reports of success with dog hearts and the prediction that the first human heart transplant will come within five years. This, of course, means that the donor must have died recently, and that the heart must be rushed immediately to a person whose ailing organ needs replacing. The problem of long-time preservation is a tough one.

Other tissues can be preserved. A few years ago in Washington, D.C., the 87th Congress passed a Tissue Bank Act that erased most of the legal problems of bequeathing a human body for scientific research for the city.

The term "tissue" referred to any portion of the body, and "tissue bank" meant a facility for procuring, removing and disposing of parts of the body for the purpose of reconstructive surgery, research and teaching.

Many states have similar laws, but in the District of Columbia, long without the rights of other states, the law has special meaning.

In the first place, there are three

medical schools in a very small geographical area, all vying with each other for human tissue, or for that matter, for cadavers that could be used in anatomy classes.

Dr. Baldev Raj Bhussry, head of the Georgetown University anatomy department, points out that both research and transplantation are possible as a result of the D.C. law.

For example, Dr. George E. Schreiner, professor and head of the Renal and Electrolyte Division at Georgetown, is using kidneys from newly dead patients in the hospital for patients who would die without such help.

Much of the tissue at Georgetown, however, goes to the National Cancer Institute, and is sent from there to Roswell Park Memorial Institute in Buffalo, where a cancer stockpile of preserved tissue is aiding leukemia and other types of cancer research.

Researchers in all parts of the United States and some scientists overseas are benefiting from shipments of the cancerous tissue from Georgetown.

Established in 1963 under a contract with the National Cancer Institute the Roswell Park tumor procurement laboratory operates on an annual budget of about \$180,000.

Scientists requiring cancerous tissue from humans apply directly to the National Cancer Institute's section handling orders. The request is evaluated, and if the researcher is a responsible scientist, an operator punches out an order card

that is fed instantly by telecommunication into the computer at Roswell Park.

The computer returns to the operator a printed detailed inventory of cases matching the request, along with necessary information about each patient.

The laboratory has shipped 39,838 tissue samples and 2,230 vials of serum (during its first 31 months of operation) to scientists in 50 centers in the U.S. and other countries.

Today there are a number of tissue banks in the world, but credit for having the first one goes to the National Naval Medical Center established in 1950 in Bethesda, Md. Although the transplantation of human organs is still only temporarily effective, remarkable progress has been made in grafting skin, bone, blood vessels, cornea and other tissue.

The Duke University Medical Center in Durham, N.C., has been working with a five-year grant of \$786,000 from the National Institutes of Health for a pioneering effort in the transplantation of kidneys and other organs from its "living tissue bank."

A transplantation conference in Durham will be held in February for science writers to bring the public up to date on the progress of the program, which is largely under the direction of Dr. Bernard Amos, Duke immunologist.

Dr. Amos says he hopes eventually that the Duke program may include transplantation of lung, liver, heart and other organs and tissues. Kidney transplants have been most successful among operations of this kind.

In Philadelphia at the University of Pennsylvania School of Medicine, Dr. Herndon B. Lehr, a plastic surgeon, has been successful in preserving and storing human skin for as long as one year. The University Hospital maintains a long-term skin bank that makes skin grafts accessible for patients suffering from large burns, or from smaller wounds where healing is a problem, as in gangrene. He has used the experimental drug DMSO, short for dimethyl sulfoxide, but says glycerol is equally effective as a preservative. These protective solutions prevent tissue damage during freezing and thawing, and insure a constant supply of tissue for grafting.

The best success has been reported when skin is taken from the patient's own body, but transplants from donors have been retained for about two weeks in some cases. This allows time for a burn patient, for example, to get past the early crucial period of his shock and general debilitation. Then he can bear to have skin taken from healthy areas of his body for transplants that will be permanent.