# life sciences

## Gathered at the American Cancer Society's Annual Science Writers' Seminar in New Orleans

ENZYME

### Asparaginase promise dims

Two years ago scientists reported that an enzyme that starves cancer cells while leaving healthy ones untouched might provide a cure for certain cancers. Called asparaginase, it led to dramatic remissions in a few cases, but technical difficulties in production made wide-spread use impossible.

Since then, Dr. Robert G. Denkewalter and his colleagues at Merck Sharpe & Dohme in Rahway, N.J., have found ways of producing asparaginase in quantity, much of it going to researchers at New York's Memorial Sloan-Kettering Institute. More than 170 patients have been treated, according to Dr. Joseph Burchenal, but with less success than was anticipated. Only half of those with acute lymphocytic leukemia, which afflicts children, responded favorably. And relapses occurred within eight months. Among adult leukemia victims, only 10 percent showed remissions, and these were temporary too. Although asparaginase will be useful as a part of combination drug therapy, it is not, in itself, an answer, he says.

HEMATOLOGY

### White blood cell control isolated

It is possible that some forms of adult leukemia develop because the control mechanisms regulating the production of white blood cells in bone marrow go awry. If this is true, it means that treatment should be directed at regulatory mechanisms rather than at eliminating or killing the wildly proliferating cells.

"The cells themselves may not be malignant," says Dr. William Robinson of the University of Colorado in Denver. If they were, their production could not be returned to normal. But if it is only the control mechanism that is out of line, restoring it to normal function could conquer the disease.

In support of this idea is evidence from Dr. Robinson's laboratory that a protein called leukopoitin, which circulates in the body, influences the manufacturing processes in bone marrow cells. Isolated from human urine, the protein is biochemically similar to another protein, erythropoitin, known to regulate the production of red blood cells.

THERAPY

### Hot blood fights cancer

In the early 1900's there were several reports of patients recovering from cancer after having high fevers—fevers probably induced by impurities in drugs. As drugs became cleaner, the incidence of such reports dropped.

Now, a Texas researcher is reviving the use of heat in treating the disease and reports good results when used in combination with drugs. Dr. John Stehlin of Baylor College of Medicine finds his method useful, particularly as a last resort, in patients who have previously had surgery or X-ray treatments with a recurrence of disease requiring amputation of a limb. Employing a technique called regional perfusion, he floods just the diseased limb with blood, isolating its veins from the rest of the body. Then drugs, in higher doses than would be safe for the whole body, are added to the blood.

Although the drugs themselves are partially effective, their action is strengthened when the blood flowing through the limb is heated to about 115 degrees, Dr. Stehlin reports. In a group of 50 patients, 32 are alive after 10 months. Under previous treatments only 10 could be expected to survive that long.

BIOPHYSICS

### Cancer cells build bridges

Cancer cells, scientists have long known, divide abnormally, but the details of their lethal proliferation have remained elusive. Using a new way to study cells, called the microlagoon technique, an astronautical engineer has found that cancer cells bump into each other and build networks of delicate, connecting bridges.

Clarence Cone of the Laboratory of Molecular Biophysics at the National Aeronautics and Space Administration's Langley Research Center in Hampton, Va., placed cancer cells on slides with tiny fluid grease spots. Normally, cancer cells slide all over the surface. But the grease spots bonded those cells to one spot.

Then he observed something biologists have not seen before. Delicate bridges or channels formed between the cells, binding them into dividing masses of 2 to 20 or more.

Normally when two cells come in contact with each other they separate, each remaining intact and independent of its colliding neighbor. But, Cone reports, cancer cells formed connecting channels and shared cellular fluids. This leads him to think that something is wrong with the cells' protein coats or cell surfaces. In fact, he says, the surfaces are sticky, weak and thin, enabling them to hook together and then divide, not as single cells, but as many.

SURGERY

### Abdominal tissue aids swollen tissue

Often, after major surgery for cancer, if they have not been removed, lymph channels that act as a fluid drainage system become blocked. As a result, patients may have grossly swollen and painful arms or legs as fluids build up to extreme proportions.

One answer, at least partially successful in about 60 patients so far, is a radical surgical technique designed to bring drain pipes from the abdomen to the swollen limb. Dr. Harry S. Goldsmith, who with his colleagues at Cornell Medical College in New York developed the technique, reports that the omentum can be cut partially loose from the abdomen where it lies as an apron of fatty tissue and stretched enough to reach the affected limb. The omentum is rich in lymphatic tissue.