GENETICS

Proteins Linked to Cancer

Possible relationships between proteins and cancer have been found by researchers in two separate studies—By Patricia McBroom

➤ GENETICISTS at the University of Pennsylvania are actively tracking a type of blood protein that has been associated with leukemia, leprosy and mongolism.

The protein, probably inherited, is common in Korea, Malaysia, the Philippines, Viet Nam and other parts of southeast Asia, but is extremely rare in northern Europe and the United States. No "healthy" North American was found with this protein or family of proteins among some 15,000 tested. However, 18% to 20% of patients with acute myelogenous leukemia and 25% of the mongoloids studied had this factor, called the Australia antigen, in their blood. Among lepers in a colony in Sebu, Philippines, 6% had the protein.

Whether this tendency is actually inherited or is produced by a virus acting on genes is not known at this point, said Dr. Baruch S. Blumberg of the Institute for Cancer Research, Philadelphia, and the University of Pennsylvania. Dr. Blumberg and his colleagues presented their research to scientists attending the annual Federation of American Societies for Experimental Biology meeting in Atlantic City.

Very little is known about the incidence of leukemia in Asian countries, but the prevalence of the Australia antigen in these areas raises some interesting speculation about the environmental background of genetically caused disease.

Dr. Blumberg said that his hypothesis is that the Australia antigen indicates the presence of, or a weakness for, certain diseases, probably many more than just leukemia and leprosy. The protein could very well have something to do with white blood cell diseases in general.

Dr. Blumberg cautioned, however, that the connection made between Australia antigen and disease is a "simple-minded explanation," because research is only in its initial, and therefore simple, stages.

Dr. Blumberg is planning a trip to India to study the prevalence of Australia antigen there. He said that except for lepers, the Japanese people do not appear to have this protein, nor did the Chinese in a study of 100 people in Hong Kong. But conditions in these countries are very different from the environment found in Malaysia, said Dr. Blumberg.

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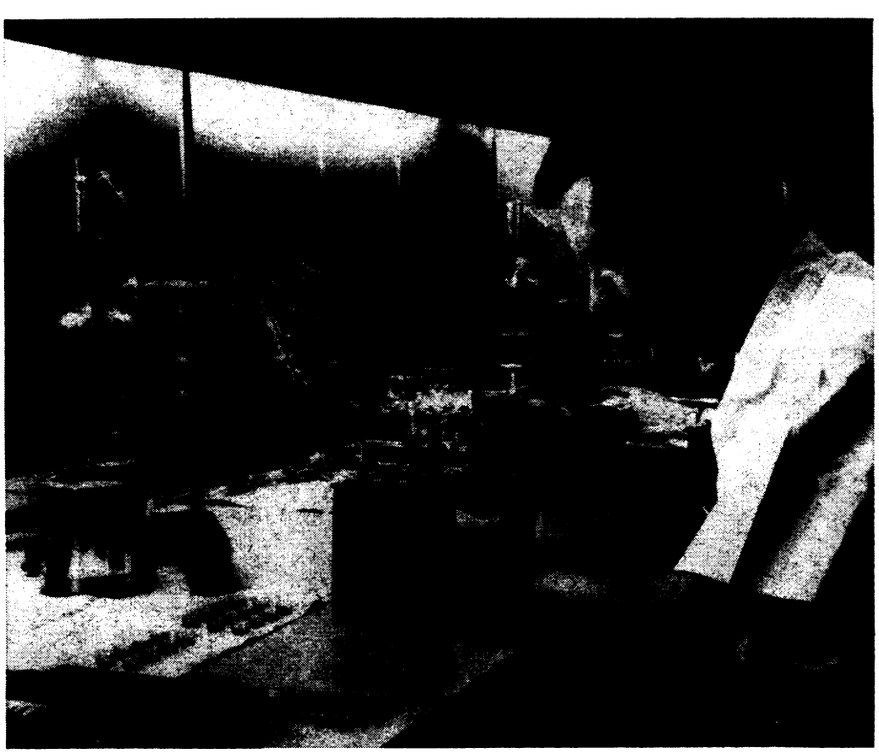

Chas. Pfizer & Co., Inc.

CANCER RESEARCH—In a test procedure for detecting antitumor compounds cancer cells of human origin are grown in small, transparent plastic cups for microscopic examination. The material being tested is added to the cup and its cancer restraining ability is measured by the various degrees of cell damage. The procedure was developed by Irving Toplin, shown here, of Pfizer's John L. Smith Memorial for Cancer Research, Maywood, N.J.

BIOCHEMISTRY

'Foreign' Proteins

➤ WHY SHOULD a man need tons of meat and other high-protein foods during his lifetime when the food only breaks down into a complex of chemicals anyway before it can be used by his body? Why not eat the amino acids directly?

The answer to this question, now partially solved, may be an important step toward curing cancer.

Dr. George L. Tritsch, a biochemist at Roswell Park Memorial Institute, Buffalo, N.Y., has for the first time seen large portions of unchanged proteins taken up directly by human cells growing in cultures.

Such incorporation of "foreign" protein seems to be essential to cell growth, he told scientists attending the Federation of American Societies for Experimental Biology meeting in Atlantic City.

If this is the case, it may be possible by making small chemical changes to introduce a poison into these foreign proteins and kill malignant cells, Dr. Tritsch said.

In his research Dr. Tritsch used both hamster and human cells incubated with the purest protein that can be taken from human blood—serum albumin. After a week's incubation the cells were cracked open to reveal the fate of the foreign proteins. About a third of each albumin molecule had never broken down into the separate amino acids needed for the normal process of developing new protein and new cells.

Dr. Tritsch's cultures grew at very different rates, depending upon whether they were fed protein or amino acids. With amino acids the cells divided once, while with proteins they divided three times. Whole serum brought an even greater growth—four divisions.

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