

CYTOLOGY

See New Cancer Attack

➤ DIFFERENCES in the electrical charges carried by normal cells and cancer cells have been discovered by Dr. E. J. Ambrose of the Chester Beatty Research Institute and Royal Cancer Hospital, London, and Drs. A. M. James and J. H. B. Lowick of the Chelsea Polytechnic, London.

The discovery may give a new approach to chemical treatment of cancer and let scientists launch an attack on the cancer cells without damaging normal cells, the scientists reporting the research point out in *Nature* (March 24).

The average electrical charge density of kidney cancer cells from hamsters is almost twice that of the normal kidney cells from which the cancer cells developed, the scientists found.

A similar difference was found for liver cancer cells and normal liver cells.

The scientists think the differences may be due to one of two things:

1. A change in the number of charged

groups attached to high-molecular weight material, such as carboxyl-rich chains of protein.

2. A change in the ability to absorb positive ions. The second is considered more likely, because cancer tissues show a decreased calcium content in comparison with normal tissues.

The findings followed investigation of an earlier finding, by another scientist, that normal cells in tissue culture affect each other's movements by contact inhibition. Cancer cells do not show this inhibition with respect either to each other or to normal cells.

The difference is believed due to a loss of adhesiveness or stickiness of the surface of cancer cells during their transformation from normal to cancerous. This suggested the electrical properties of the cell surface might have changed during the cancerous transformation. The findings show that this is the case.

Science News Letter, April 7, 1956

MEDICINE

Leukemia Defies Drugs

➤ WHY LYMPHATIC LEUKEMIA defies even "overwhelming" doses of drugs has been discovered by scientists at the University of Utah, the American Cancer Society, which supports their work, has reported.

Lymphatic leukemia is the kind of leukemia that is common in children and that affects the lymphatic tissues and those white blood cells known as lymphocytes.

The lymphocytes in leukemia, unlike normal lymphocytes, can break down the adrenal hormone, cortisone, into five compounds. One of the five becomes an enriched food on which the leukemic lymphocytes thrive.

Cortisone, famous as an arthritis remedy, has also been tried as treatment for leukemia.

Normal lymphocytes mature, age and die under the influence of cortisone. Leukemic lymphocytes are also vulnerable to the aging and death brought on by cortisone and its relative, hydrocortisone. However, because they remain eternally young by frequently dividing and never do grow to maturity, it takes more hormone to make them age and die than it takes to age and kill the already mature normal lymphocytes.

This seems to be why cortisone and hydrocortisone can help but not cure children with lymphatic leukemia. The hormones make the normal and useful lymphocytes die readily. Doses big enough to kill all the leukemic lymphocytes, however, would be so big the patient would die from the

toxic effects of the hormones.

When cortisone is added to normal and leukemic lymphocytes growing in laboratory dishes, the normal cells start to show the effects of the hormone in about three minutes. The leukemic cells are not visibly affected for about 45 minutes.

The scientists who made the discovery are a husband and wife team, Drs. Martha L. and David L. Berliner, and Dr. Thomas F. Dougherty and Gottlieb Schneebli.

They are now trying to find a cortisone relative that would destroy leukemic lymphocytes faster than normal ones.

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AERONAUTICS

Russian Jet Textbook Shows Big Aviation Effort

➤ A RUSSIAN JET ENGINE textbook for training mechanical engineers contains pictures of objects being intensively studied by the National Advisory Committee for Aeronautics.

Dr. Hugh Dryden, director of NACA, showed the jet engine book to the House appropriations subcommittee during hearings on fiscal 1957 budget.

The pictures indicate the Russians are making a "big effort on jet engines," Dr. Dryden said. They show blade failures and gear failures among other subjects, and cover kinds of material not taught in United States schools.

Dr. Dryden said this did not necessarily mean the Russian school system was superior to ours, but that the focus of Soviet attention was on "specific military and technical jobs."

He warned that Americans must not think Russians are a backward people.

"They are advancing as quickly or perhaps more quickly than most of the nations of the world," Dr. Dryden said, and should not be "underestimated."

The book is "high-level, first-class material," Dr. Jerome Hunsaker, NACA chairman, told the subcommittee.

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