

BIOCHEMISTRY

Nobelist's Cancer Theory

Two newly found animal compounds, which stimulate and hold back cell growth, may contain the key for finding the cause and treatment of cancer—By Walter Wingo

► THE KEY to finding the cause and treatment of cancer is the balance between two newly-found substances in the body, Dr. Albert Szent-Gyorgyi, the 1937 Nobelist in Medicine, has suggested.

The substances are promine, which causes sudden cell growth, and retine, a similar chemical that holds back growth.

Dr. Szent-Gyorgyi, a Hungarian-born biochemist, is research director at the Institute for Muscle Research, Marine Biological Laboratory, Woods Hole, Mass.

He predicted in *Science*, 140:1391, 1963, that the new theory will "open a wide field for cancer research." Drs. Andrew Hegyeli and Jane A. McLaughlin were coauthors of the report.

Laboratory observations during the past ten years, they said, indicate sudden cell growth is caused by a predominance of promine over retine.

Tumors in experimental mice grew when mice were given extra promine and subsided when given retine, Dr. Szent-Gyorgyi reported.

He said the substances have been found to exist naturally in pairs in the thymus, a gland in the neck, and in big blood vessels, muscle and tendon.

Dr. Szent-Gyorgyi noted that retine, the inhibitor, deteriorates significantly sooner than promine. In one experiment, the aortas of old animals contained less retine than those of young ones. This, the scientists said, suggested "a possible connection between a diminished concentration of retine and the increased incidence of cancer with advancing age."

They said the theory might also help explain why cells that have been dormant for long periods suddenly multiply if a wound is made and then stop when the wound is healed.

"Retine contains one or more unstable links," Dr. Szent-Gyorgyi said, "and it is easy to believe that on injury some enzyme is liberated which causes decomposition, leaving the uninhibited promine in command." He said the fact that cancer is rarely found in muscle, tendon and big blood vessels is not necessarily due to the higher retine concentration, since other tissues are equally rich in the substance.

However, the ratio of retine to promine in the muscle, tendon and big blood vessels is much higher than in other parts of the body.

"We found no harmful side effects either with retine or with promine," the scientists said.

"One might have here substances which will stop cancer growth and even produce regression without toxicity," they predicted. The first object of research in this line must be the isolation, analysis and synthesis of the two compounds.

They suggested that further experiments be carried out to answer two questions:

1. Do species which have lower incidences of cancer have higher retine rates?
2. Will an analysis of urine reflect the ratio of promine and retine in a living human? (Dr. Szent-Gyorgyi said his preliminary experiments indicate that it would.)

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MEDICINE

Three Polio Doses Needed

► THREE DOSES of the three-way oral poliovirus vaccine developed by Dr. Albert B. Sabin of Cincinnati are still necessary.

"There is nothing new in the mixture put out by Lederle Laboratories as a three-in-one polio vaccine," Dr. Sabin said. "The licensing by the Department of Health, Education and Welfare is to help in selling, and I'm sorry it gives the impression of something new."

The time when only one dose of a three-virus vaccine for polio will be possible is not foreseen by the Cincinnati researcher. The Lederle mixture will be given in two doses eight weeks apart, but one dose of the trivalent vaccine, called Orimune, is said to give some protection.

"This mixture has value as a booster for infants," Dr. Sabin said, noting that it also will eliminate much record keeping.

Orimune contains more of type one and type three vaccines than the Sabin trivalent mixture.

The licensing papers of the three-in-one vaccine designed to confer immunity to all three types of polio do not mean that the single types of poliovirus vaccine will not also be needed. Especially if there is an epidemic in which type one or three poliovirus predominates those types of vaccine would be given.

The trivalent vaccine has been in use both in Canada and Great Britain for some time, and has been tested widely in other countries.

Dr. Robert P. Parker of Lederle Laboratories said Orimune has been administered to "some 250,000 persons in studies both in the U.S. and abroad."

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BIOLOGY

Historic Biology Center Given New Organization

► THE CARNEGIE Institution of Washington has transferred its two laboratory buildings at Cold Spring Harbor, N. Y., worth over \$1,000,000, to a new organization for biological research, the Cold Spring Harbor Laboratory of Quantitative Biology, organized by a group of eight universities and research institutes. Its director is Dr. John Cairns, microbiologist, formerly of the Australian National University at Canberra. The chairman of the board of directors is Dr. Edward Tatum, professor at the Rockefeller Institute of New York. The sponsoring institutions are the Albert Einstein College of Medicine, Brooklyn College, Duke University, the New York University School of Medicine, Princeton University, the Public Health Research Institute of the City of New York, the Rockefeller Institute of New York, and the Sloan-Kettering Institute.

Transfer of the laboratories does not imply any basic lessening of interest in genetics research on the part of Carnegie Institution. Dr. Caryl P. Haskins, president, said: "The field of genetics is now well supported and the subject of much attention in many research centers throughout the country and the world. Carnegie Institution has traditionally used its funds to pioneer new fields and 'high risk' areas of research, and will continue to do so. In the new setup, we are reserving space for the Carnegie Institution's Genetics Research Unit, which is engaged in highly significant work."

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West Virginia University Medical Center

NERVE COUNT—Counts of the number of fibers in nerves show loss of nerve fibers is one of the ways the body deteriorates with aging. The deterioration can happen without evidence of disease. Dr. Royce L. Montgomery counts the odd-shaped fibers in a cross-section of a nerve.