

BIOCHEMISTRY

Cancer May Be a Mistake

Cancer may be the mistake of a virus that can fool a normal cell into reproducing virus. However, sometimes defective and abnormal cells result instead.

➤ **CANCER** may be a mistake of a virus, scientists were told at the American Chemical Society meeting in Chicago.

A virus is a very complicated chemical compound with two parts: the nucleic acid, which has the reproducing information, and the protective coating, which is made of protein, Dr. M. P. Gordon, University of Washington, told the meeting. The nucleic acid of the virus is almost identical with the nucleic acid of the cell it infects, and the virus can fool the cell into using virus nucleic acid and reproducing virus, he said.

The deception does not always work, however, and the infected cell may produce defective and abnormal cells instead of viruses.

Scientists can now fool the virus, Dr. Gordon reported. They change the chemistry of the nucleic acid with similar chemicals, called analogues, and make the virus less effective. In some cases, the analogues prevent the virus from infecting the cell altogether.

When the analogue of an amino acid, 5-fluorouracil, is incorporated into the simple plant virus, tobacco mosaic virus, the virus has difficulty infecting new cells and is more susceptible to certain chemical agents, Dr. Gordon said. The virus also becomes more sensitive to the type of radiation used in tumor treatment.

"It is generally found that compounds incorporated into nucleic acids also inhibit the multiplication of viruses in infected tissues," Dr. Gordon continued. "They are often non-infectious or their ability to initiate infections and transfer genetic information to other cells is reduced. The genetic message carried by the virus is often garbled, resulting in mutants."

Nucleic acids that contain analogues are also more sensitive toward the action of a variety of physical and chemical treatments. This is the basis of cancer chemotherapy, Dr. Gordon concluded.

• Science News Letter, 80:189 September 16, 1961

Test to Help Extend Life

➤ **A CHEMICAL TEST** may help extend life for a substantial proportion of the population, Dr. Herbert L. Davis of the University of Nebraska reported. Details of the test procedure were reported at the American Chemical Society's 140th national meeting in Chicago.

The test measures the total fats in the blood stream. It is expected to provide a screening procedure for patients suspected of having arteriosclerosis and other disorders of digestion and utilization of fats. Conspicuously high values in the test would justify further procedures to determine the

separate kinds of fats present, he indicated.

The results will show the effects of exercise, reduced fats in the diet, substitution of polyunsaturated fats for the saturated ones and the use of various drugs, Dr. Davis said.

It is hoped that screening for total liquids may become as common and as valuable as the X-ray test for tuberculosis, Dr. Davis said.

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Drinking Water Safe

➤ **A NUCLEAR WAR** will not permanently contaminate our water supply, scientists were told at the American Chemical Society meeting in Chicago.

A mobile water purification unit has been developed that removes 90% of the plutonium in contaminated water at the rate of 1,500 gallons of water per hour, Maurice Pressman, U. S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va., said.

Although the amount of pollution from a nuclear attack or an accident in an atomic plant is uncertain, the equipment is believed to be capable of reducing contamination to the level set by the National Committee on Radiation Protection as safe during a 30-day emergency period.

Plutonium, used as an explosive component of nuclear weapons and as a fuel for nuclear reactors, is now in large-scale production in the United States. If the element gets into the body, it tends to concentrate in the bones and can cause tumors or injure the sensitive bone marrow, site of most blood cell formation.

The purification equipment, stored in a van-type object on a two and a half ton truck, can be put into operation within an hour after arrival at the emergency site, it was reported.

Normally, the unit removes 72% of the contamination. By making the water very alkaline, this can be increased to 97.5% in an emergency. Neutralization with acid would then make the water safe and drinkable, Mr. Pressman concluded.

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MEDICINE

Device Used to Measure Slightest Finger Wiggle

➤ **A DEVICE** that measures the slightest wiggle of a finger has been developed by research teams working under Prof. James B. Reswick of the Case Institute of Technology and Dr. Charles Long of Highland View Hospital, Cleveland, Ohio.

The electrogoniometer, or elgon, uses hair-fine electrodes to pick up minute electrical impulses in the finger muscles. These impulses are then magnified and a complete record is made of finger position as various joints bend during motion.

The elgon, designed by Keith Marquardt, a senior student at Case's design center, will be particularly useful in determining how much manipulating ability has been lost in patients who have had strokes or are arthritic.

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FINGER WIGGLE RECORDER—The electrogoniometer records finger position when hand is in motion.