MEDICINE

# Virus Link to Cancer

**Viruses have been shown to bind together cancer-causing materials in test tubes. Researchers believe viruses serve as carriers of the cancer agents, Faye Marley reports.**

➤ A FRESH APPROACH to the cancer problem was offered to physicians attending the American Medical Association convention in New York in a report linking common human viruses with the disease.

Drs. Christopher M. Martin, Sigmundur Magnusson and two medical students, all of the Seton Hall College of Medicine in Jersey City, N. J., reported studies in mice that may possibly apply to cancers including leukemia (blood cancer), lymphomas (lymph-gland cancers) and fibrosarcomas (connective or scar-tissue cancers).

The researchers built on previous work done as early as 1944 in pioneer experiments at the Rockefeller Institute by Drs. Peyton Rous and W. F. Friedewald, and at Yale University by the late Dr. F. Duran-Reynals and by Mrs. M. L. Duran-Reynals.

The investigators injected mice with moderate doses of poliovirus type two, with vaccinia virus (used for smallpox vaccination), or two viruses causing a variety of grippe-like diseases—Coxsackie B-4 and ECHO type-9—and found that they developed no significant disease.

Mice given very small doses of either of two cancer-causing compounds—9,10-dimethyl-1,2-benzanthracene (DMBA) and 2-amino-fluorene—developed neither disease nor tumors.

Then Dr. Martin and his colleagues tried giving the same doses of one of the viruses and one of the carcinogens with the result that a variety of cancers developed in the mice.

The next step was to immunize a group of mice against vaccinia virus, rendering them highly resistant to vaccinia infection. They then compared the effect of injecting vaccinia virus plus DMBA into these protected mice and into non-immunized mice still susceptible to vaccinia, and found that cancers occurred only in the non-immunized, vaccinia-susceptible mice.

Dr. Martin said that by adding carcinogens tagged with radioactive carbon-14 atoms to solutions of highly concentrated, purified viruses, they were able to show that viruses bind minute quantities of carcinogens in the test tubes. The cancer-causing virus retains the ability to invade cells, which the researchers have interpreted to mean that common viruses can serve as carcinogen-vectors or carriers, and that specific immunity against the virus of a carcinogen-virus pair would protect against the development of tumors.

The carcinogen-vector concept, the researchers believe, deserves study in man, inasmuch as it introduces the possibility that some forms of cancer may be preventable through suppression of the carrier by virus vaccines.

Another cancer study was reported by Dr. Stephen Rothman of the University of Chicago and Argonne Cancer Research Hospital, which is operated for the Atomic Energy Commission by the University.

Visiting Uganda, East Africa, with 21 other physicians from all over the world who attended a symposium at Makerere College, Dr. Rothman found that a cancer rare in this country is 200 times more prevalent in the Congo, South Africa and other parts of Africa where the climate is consistently warm.

The disease, which accompanies poor circulation and shows up first as dark, bluish spots on the backs of the toes and fingers, is called Kaposi's sarcoma.

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***DISEASE STAGES—Various stages of rheumatoid spondylitis are demonstrated with a skeleton by Dr. John Sigler, Detroit, at an exhibit at the American Medical Association meeting in New York.***

## Hepatitis Vaccine Seen

➤ FOUR YEARS of prison life have not been wasted for some 175 men at the Illinois State Penitentiary, Joliet. Their contribution toward a vaccine for infectious hepatitis was announced at the American Medical Association meeting in New York by Dr. Joseph D. Boggs of Children's Memorial Hospital, Chicago.

Dr. Boggs' investigation was done in cooperation with research scientists at Parke, Davis & Co. laboratories, Detroit, who had first reported isolation of virus-like agents from the blood of patients with infectious hepatitis in 1956.

But research was slowed up by the fact that it was impossible to reproduce the disease in any laboratory animal. The viruses would grow successfully only in human cell cultures.

These cultured viruses produce hepatitis when introduced into human beings, who in turn produce antibodies against the virus administered.

Dr. Boggs said that although there is now definite proof that hepatitis viruses have been tracked down and isolated, production of a safe, effective vaccine now awaits additional study and evaluation.

Studies of reactions in the prison volunteers, none of whom suffered serious after-effects, showed that hepatitis virus probably occurs in at least three distinct types, at least two of which are capable of producing the disease.

The virus was given by injection in a single dose, with potency and size of dose varied. The volunteers, all of whom were healthy when injected, and who had no previous history of liver abnormality or hepatitis that might have built up immunity, were divided into several groups.

Hepatitis developed in 30 days among those who received high concentrations of virus. Groups that received less potent virus developed antibodies to the virus without disease.

With infectious hepatitis becoming one of the most serious communicable disease problems in the country (twice as many cases were reported during the first 18 weeks of 1961 as compared to the same period in 1960), public health authorities hope for confirmation of the breakthrough in research that may stamp out the scourge.

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## Report on Heart Disease

Also reported at the AMA symposium on new approaches in the treatment of acquired heart disease was the discovery that some enzymes (proteins that act as catalysts in the chemical processes of the body), called isoenzymes, may aid in the early diagnosis of disease.

"It may be possible at some future date for a family physician to record routinely the isoenzyme blood pattern of patients when they are well in order to provide a baseline or biochemical 'fingerprint' of them," Dr. Felix Wroblewski, Cornell Medical School and Sloan-Kettering Memorial Hospital, New York, said.

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