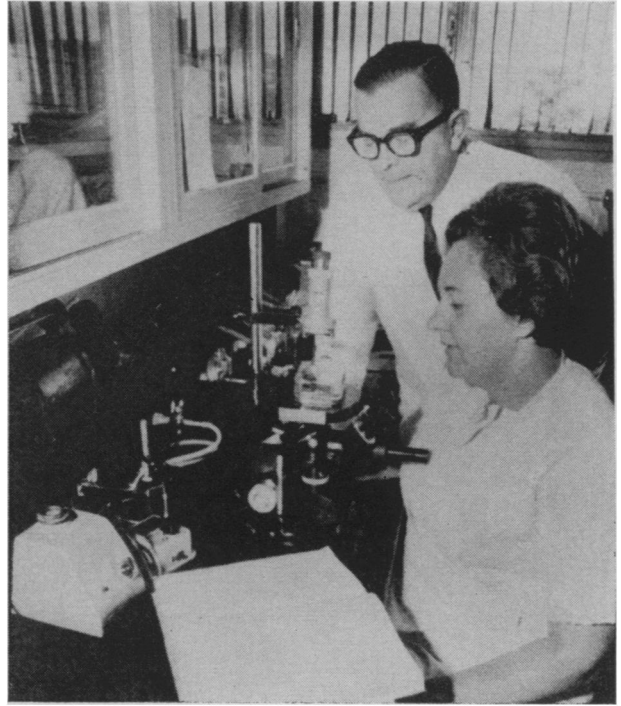


Isolation and culture of a virus from human cancer tissue

Houston team's achievement opens paths
for research, but many questions remain



Wide World

Dmochowski and Priori: 175 games of hide-and-seek.

In spite of intense efforts by many researchers in recent years, no one managed to culture or isolate an RNA virus, known as type C, from human cancer tissue. Now Drs. Elizabeth Priori and Leon Dmochowski of the University of Texas and the M. D. Anderson Hospital and Tumor Institute in Houston have done just that. They cultured and isolated the C-type virus from tissue of a child patient with Burkitt's lymphoma—cancer of the lymph nodes.

The only advance approximating this one occurred in the 1960's when two British scientists—Drs. Michael Epstein and Y. M. Barr—cultured a herpes-type virus from blood cells from individuals with the Burkitt lymphoma, suggesting the virus might be implicated in tumor formation. The true role of the herpes-type virus is still uncertain.

Drs. Priori's and Dmochowski's work reinforces the growing body of evidence that human cancers are linked with, or caused by, a virus or viruses. It confirms what the National Cancer Institute's Dr. Robert Huebner and other leading viral cancer researchers have been postulating for some time—that a C-type RNA virus underlies all forms of human cancer. Leukemia and tumors in animals have been known for some time to be caused by a type-C virus. Because of the advance, cultured C-type viruses can now be taken apart to test them for their antigen properties and to see how various tissues, cells or cell parts might respond to such properties. If the serum of a tumor patient reacts to the virus, or if an anti-serum to the virus reacts with the tumor cells, then

one can assume the virus was there and caused an immune response—"guilt by association," according to Dr. John B. Maloney, head of the NCI viral cancer program, which financed the Houston scientists' research.

The advance also allows tissue samples from various human populations to be checked for the C-type virus or for an antibody response to the virus. And it once again raises the possibility of a cancer vaccine, although critics claim that route is a dead end. States Dr. Maloney: "Even if humans volunteered to have a C-type virus injected into them, I doubt whether we would do so because of the ethics involved."

And finally the Houston success, like some other coups in cancer research (SN: 6/19/71, p. 421), raises the disturbing question of whether cancer might be infectious. Before working on cancer viruses, Dr. Priori did considerable work in Rome on infectious viruses. While she hesitates to associate infectious viruses and cancer viruses, she admits that both kinds have essentially the same structures and similar antigen properties, and each enters cells and replicates in cells in the same manner. However the C-type virus, she says, has a neat way of multiplying in cells that infectious viruses do not.

Thus Drs. Dmochowski and Priori have suddenly found themselves celebrities, receiving phone calls and congratulations from all over the world on their contribution. Even the more cautious cancer researchers admit they are excited about it. But of course it isn't all that simple. Questions still abound. "Do viruses, or a virus, cause human cancer?" "If so, how do they

work at the cell level?" "Is there a cure, a prevention?"

The Houston researchers found culturing the C-type virus a grim and grueling chore. Dr. Dmochowski has worked 15 years to convince the Doubting Thomases that he saw the C-type virus under the electron microscope in 1956. Since 1968, Dr. Priori has played some 175 excruciating games of hide-and-seek with the C-type virus ("When you find small amounts of the viruses with the electron microscope, and then return to the tissue culture, the viruses have disappeared," Dr. Priori says). Other researchers have gone several thousand games without culturing the C-type virus.

Then last fall, an island of cells in the culture grew faster than usual and viral particles were found in them. "I knew from the start this culture was going to be different," says Dr. Priori. The Houston scientists kept their excitement under their hat until they sent the cultured viruses around to various laboratories and checked and rechecked it themselves to make sure the culture did not sprout from animal cancer viruses that had stealthily contaminated the tissue. Only eight months later have the researchers felt they have had enough evidence to announce their advance to the world at large.

Small quantities of the cultured viruses have now been passed on to some nine other scientists, including Dr. Hueber, for the next of what will be probably more steps until cancer can be understood and, perhaps, cured or prevented. Yet at least now, Dr. Huebner says, we "have a handle on a human tumor virus." □