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NEWS

THE UNIVERSITY OF TEXAS
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DALLAS--Recent grants by private and government agencies have enabled University of Texas Southwestern Medical School researchers to focus on cancer from three promising angles.

A total of around $217,000 has been made available for investigation of female hormones in relation to one form of uterine cancer; a look at the interaction of a cancer-causing chemical with a cancer-causing virus; and a study of the mechanism of immunity to chemically-modified cancer cells.

Dr. Pentti K. Siiteri, (cq) professor in the departments of Obstetrics and Gynecology and Biochemistry, has been granted $79,984 by the American Cancer Society for a two-year study of an estrogen-class hormone named "estrone" in relation to tumors and cancers arising in the endometrium--the lining of the uterus.

Dr. Siiteri, in collaboration with Dr. Paul MacDonald, chairman, and Dr. Creighton Edwards, assistant professor, Department of Obstetrics and Gynecology, will try to learn more about the action of estrone--a hormone produced by the post-menopausal female, by some young, obese women who stop ovulating; also by those with polycystic ovarian disease and by those with certain tumors--young or old.

In only the past several years, Drs. MacDonald and Siiteri discovered that estrone is not directly produced by a gland as many other hormones are. Rather, it appears that the ovaries and adrenal glands secrete a substance into the bloodstream called "androstenedione" which is converted to estrone at some unknown tissue site.

It is the higher incidence of cancer in those women producing mostly estrone by this mechanism that is the intriguing part of the study, says Dr. Siiteri. (A normal woman of child-bearing age will secrete a hormone called "estradiol," which is the physiologically active form of estrogen.)

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first add cancer

"We are comparing the effects of estrone and estradiol at the biochemical level," said the researcher.

Dr. Morton Prager is the principal investigator in a study of the immune mechanisms involved with a chemically modified cancer cell. For this, the National Cancer Institute has committed around $90,000 for a three-year period.

"We're trying to find ways of stimulating the immunologic response to cancer," explained Dr. Prager, a professor of Surgery and an associate professor of Biochemistry. "We've learned that people with cancer do have immunologic responses against their own tumors. But, unlike a case of the flu, it does not generally lead to a cure--except on rare occasions."

He will report results already obtained at an international symposium sponsored by the World Committee for Comparative Leukemia Research this September in Italy.

Dr. Prager uses leukemia cells which are modified by a chemical process, then injected into mice. "We wanted to see if this protected the mice when they were challenged with innoculations of cells which ordinarily would produce leukemia in them."

In fact, it did: A group of mice used as a control which did not have previous injections of modified leukemia cells, all contracted leukemia. Those which had the previous injections withstood the challenge. Dr. Prager emphasized this involves only two strains of leukemia--that there are many others. Efforts to induce the immune response in these others are underway.

Dr. Prager explained that people have tried to immunize against cancer for many years, but one problem they encountered and did not understand was tissue graft rejection. This rejection is not present in the highly inbred strain of mice used in the latest experiments.

Another thing that Dr. Prager will report in Italy is work with L-Asparaginase, a drug which has had some limited success in treating leukemia. He will report findings that the drug acts to suppress the immune reaction in a way which seems to shed new light on the biochemistry of lymphatic tissue, the site of antibody formation.

second add cancer

In the third investigation, Dr. Robert F. Jones is getting around $47,000 over a two year period to study how a human virus--one which is known to produce upper respiratory infections--interacts with a fungus toxin to produce cancer in hamsters.

By itself, the human "ademovirus 12" will cause cancer at the site it is injected into hamsters--but it may be several months later. "To speed this up," says Dr. Jones, "we put it into a tissue culture of that animal's cells, where it converts a certain percentage of the cells to a cancerous condition, then inject it."

Also by itself, the "aflatoxin" produced by a fungus sometimes seen on musty or stale peanuts, will cause cancer.

"There's been some suggestion that the cause of cancer in humans may be a combination of a virus and a carcinogen--a cancer-causing chemical," says Dr. Jones. He adds that the virus and the aflatoxin would be used separately and in various combinations to study cancer production in hamsters. He also has worked with simian adenoviruses and with chicken adenoviruses, both of which are carcinogenic to hamster cells.

These three projects add to a number of other cancer investigations underway at Southwestern Medical School.

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