

news *THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT DALLAS*

southwestern medical school ■ graduate school of biomedical sciences ■ school of allied health sciences

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DALLAS--A basic study of how lung tissue changes certain pollutants--including cigarette smoke--into chemicals suspected of causing cancer will be undertaken by researchers at The University of Texas Health Science Center here under a \$146,545 contract from the National Cancer Institute.

Dr. Ronald W. Estabrook, dean of the Graduate School of Biomedical Sciences, and Dr. Russell A. Prough, assistant professor of biochemistry, will be the principal investigators on the 18-month project.

The study is an attempt to understand how the lung and respiratory tract handles certain chemicals known as polycyclic hydrocarbons. Among these hydrocarbons is one known as benzpyrene, which is contained in cigarette smoke.

Dr. Estabrook, who is also chairman of the Department of Biochemistry at UTHSCD, explained he and other researchers would be looking specifically at the enzyme system in the lung responsible for the transformation of chemicals such as benzpyrene. This system, which is contained in the membranes of cells, does a number of valuable things, including protein synthesis and detoxification of many drugs and insecticides.

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first add cancer study

But it also seems to do one unfortunate thing: when brought in contact with the polycyclic hydrocarbons, it converts or metabolizes them into potential carcinogenic, or cancer causing agents, said Dr. Estabrook.

"For instance, the benzpyrene in cigarette smoke does nothing until it gets metabolized by this process. But after metabolism, the resultant compound exhibits carcinogenic properties.

"If this compound is, indeed, specifically responsible for lung cancer we will have learned a lot," Dr. Estabrook added.

"Once we can understand the mechanisms of metabolism, then we will have a better means of attempting to regulate the function of the enzyme system and control the operation of the system. The idea would be to develop a rational program to interfere with or alter the process."

Drs. Estabrook and Prough will be joined by Drs. Takashi Matsubara and Michael Burke in the study. The group will be attempting initially to separate and identify the enzyme complex in the lung and then characterize it using experimental animals--either rats or rabbits.

Since the process apparently involves a basic mechanism in the formation of cancer-causing agents, it is the subject of intense scientific research around the world. Among those investigating the process are Prof. Sten Orrenius at the Karolinska Institute in Stockholm and Prof. Lee Wattenberg at the University of Minnesota Medical School, said Dr. Estabrook.

The studies involve a complicated biochemical system which must be measured with some of the most sophisticated equipment available, including spectrometric identifications by optical and electron paramagnetic resonance instrumentation.

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