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# News

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\* \* \* \* \*Dallas research duo elected to  
National Academy of Sciences--nation's  
top scientific group.

DALLAS--Two Dallas medical school scientists who opened a new research frontier with their discovery of how one kind of inherited defect causes heart attacks have been elected to the National Academy of Sciences--the nation's top scientific advisory group.

Drs. Joseph L. Goldstein and Michael S. Brown, professors at The University of Texas Health Science Center at Dallas, join a prestigious roster with their April 22 election in Washington, D.C.

Goldstein is chairman of Molecular Genetics at the health science center and Brown a professor in molecular genetics and director of the Center for Genetic Diseases.

The NAS is an organization of distinguished scientists and engineers concerned with the furtherance of science and its uses for human welfare. Its congressional charter of 1863--signed by Abraham Lincoln--calls on the academy to serve as official advisor to the Federal Government, although it is not a government agency.

Goldstein and Brown have been widely recognized for their discovery of a fundamental chemical pathway by which the body controls production of cholesterol, unravelling a genetic defect which causes high blood fat. Working with victims of this ailment, the two discovered that the sparsity--or sometimes complete lack--of a specialized receptor on cell surfaces meant fat production inside the cell went uncontrolled and fat was not removed from blood. Victims of this genetic defect often die of heart attacks at an early age.

The achievement of Goldstein and Brown has been credited by other researchers as shedding new light on how body cells regulate production of essential substances. Starting with groups of people whose cells seemed to produce too much cholesterol or fat, the pair focused on children who were dying of heart attacks as early as age 7 to 12.

Working step by step through complex chemistry, Brown and Goldstein concentrated on the membranes which cover each of the body's millions of cells.

Normal cells are covered with receptors which have a specific job of recognizing and "grabbing" various body chemicals. Some of the receptors have the job of binding with a form of blood fat known as low density lipoprotein, (LDL).

The process is so sensitive that "it compares to putting a teaspoon of sugar in a swimming pool and being able to taste the sweetness," Dr. Brown has explained.

Taken inside the cell by the receptor, the LDL takes a part in building and maintaining the cell and, more importantly, causes a chemical reaction which keeps the cell from manufacturing too much of its own fat or cholesterol. In addition, when the LDL is taken inside the cell this also helps prevent the blood fat from building too high.

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first add Goldstein & Brown to NAS

By growing and manipulating skin cells in test tubes, the Dallas researchers learned that people who inherited the blood fat disease (familial hypercholesterolemia) were lacking the right kind of cell membrane receptors.

Will little or no LDL absorbed by the cell, there was no chemical reaction to stop internal production of cholesterol. The body built up enormous levels of fat in the blood stream which eventually plugged arteries, producing heart attacks.

As many as one out of every 500 Americans have some form of this disorder.

The further importance of the discovery may rest with the fact that other processes in the cell seem to be regulated by the receptor binding process.

The discovery holds major implications for both heart disease research and the study of other genetic disorders, which also ultimately may prove to result from inherited abnormalities in cell receptors.

Drs. Brown and Goldstein have won a number of awards for their work. These include the Heinrich Weiland Prize for 1974, the Pfizer Award of the American Chemical Society for 1976, the Harvey Society Lectureship for 1977, the Bernstein Award of the New York State Medical Society for 1977, and the Passano Award of 1978. The scientists are also co-holders of the Paul J. Thomas Chair of Medicine here at The University of Texas Southwestern Medical School.

Dr. Goldstein is a graduate of Southwestern Medical School where he received the school's top honor--the Ho Din award of Southwestern Medical Foundation. Dr. Brown won similar acclaim at the University of Pennsylvania medical school. The two became friends in 1966 when they were interns at Massachusetts General Hospital. The pair began developing their common interest in genetics when they were appointed to research positions at the National Institutes of Health near Washington.

With their election to the roster of NAS members, Goldstein and Brown bring the total membership to 1,324. As two of only 59 scientists or researchers appointed this year, they are the only new members from the state of Texas.

They join Dr. Ronald W. Estabrook, chairman of the Department of Biochemistry, at the health science center and one of last years NAS elected members. Estabrook is a well-known researcher and educator in biochemistry, one of three scientists who discovered the role of a key enzyme system of the body--one which metabolizes, or processes drugs, pollutants and environmental chemicals so they can be eliminated by the body. It is important in the processes suspected in lung cancer.

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