

News

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****Drs. Michael Brown and Joseph Goldstein
receive National Medal of Science

DALLAS -- Nobel Laureates Michael S. Brown and Joseph L. Goldstein of The University of Texas Southwestern Medical Center at Dallas received the National Medal of Science on July 15. The medals were presented by President Ronald Reagan in a ceremony at the Old Executive Office Building in Washington, D.C.

Brown and Goldstein were honored, according to the presidential citation, "for their historic discovery of the basic mechanisms controlling cholesterol metabolism, opening the way to a new pharmacologic approach to the treatment of cardiovascular disease, the leading cause of death and disability in the Western world."

They were among 20 of the nation's top scientists to receive the National Medal of Science during the ceremony. President Reagan also awarded the National Medal of Technology to 10 corporate executives who have made significant technological contributions.

Commenting on the honor, Brown said, "Through the bestowing of this medal, the President and the Congress acknowledged the crucial importance of science and technology to this nation. Over the past few decades, America has maintained the lead across the entire spectrum of science. Many of us have come to take this leadership for granted, but we should not be overconfident. If we are to maintain our pre-eminence, we must continue to encourage young people to accept science as a natural and exciting endeavor. We hope that awards such as this one will encourage this attitude." Brown is director of the Center for Genetic Diseases at UT Southwestern.

In acknowledging the award, Goldstein also emphasized the importance of a scientific education: "Most of the crucial issues before our country today, such as nuclear energy, national security, the environment and AIDS, to name a few, are rooted in science. Yet many decision makers lack the scientific background that is necessary to comprehend the complexities of these broad issues.

"If our society is to flourish, it is essential that our next generation of politicians and educated citizens be taught the rudiments of physics, mathematics, astronomy and molecular biology in high school and college. Students at all levels clearly need to be exposed to more courses in math, chemistry, biology and physics. After all, scientific and technical innovation is the motor that drives our economy." Goldstein is chairman of the Department of Molecular Genetics at UT Southwestern.

Brown and Goldstein won the 1985 Nobel Prize for Physiology or Medicine for their findings on cholesterol metabolism. Both are Paul J. Thomas Professors of Medicine at UT Southwestern and Regental Professors of The University of Texas System.

The National Medal of Science is the nation's highest scientific honor bestowed by the President. No more than 20 may be awarded each year. The scientists to be honored are recommended by the Committee on the National Medal of Science, which receives nominations from the National Academy of Sciences, the National Academy of Engineering, universities and professional societies. The President makes the final selection from the committee's recommendations.

Approximately 150 nominations are received each year, and the committee has reviewed nearly 2,000 to date. However, only 225 medals have been awarded since the first in 1962, an average of nine a year.

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The main criterion for selection is the impact of an individual's work on the present state of the sciences -- physical, biological, mathematical, engineering, behavioral or social. In addition, achievements are judged for their potential effects on the development of scientific thought.

The work of Goldstein and Brown meets both criteria: it provided new and significant knowledge about cholesterol metabolism, and it uncovered a basic biological process that has much broader implications.

As young faculty members at The University of Texas Southwestern Medical School in 1972, the two began investigating the cause of familial hypercholesterolemia (FH) -- a genetic form of abnormally high cholesterol that often causes heart attacks in men in their 30s and women in their 40s. In its most severe form, FH may cause heart attacks in children of 10 or younger.

The researchers knew that if they could pinpoint the genetic defect that causes FH, their findings would have important implications about the cause and treatment of atherosclerosis and heart disease.

Their research took them down a trail of discovery that led to the answer they sought. They uncovered the basic mechanism by which cells select and envelop cholesterol-laden particles from the bloodstream. This discovery, which they called receptor-mediated endocytosis, won them the 1985 Nobel Prize for Physiology or Medicine. Their research has both practical and fundamental implications:

- * It revealed a fundamental process, receptor-mediated endocytosis, by which many molecules are removed from the bloodstream and taken into cells. These molecules include not only cholesterol but also transferrin, which shuttles iron around the body, vitamin B-12, insulin, epidermal growth factor and at least a dozen other known substances.
- * It laid the theoretical foundation for the discovery of drugs that reduce cholesterol by stimulating the production of additional cholesterol receptors. In October 1987 the Food and Drug Administration approved such a drug, lovastatin, which is now helping hundreds of thousands.
- * It provided clues about the intrinsic relationship of diet and heart disease that are being pursued by clinical scientists. Subsequent research, much of it at UT Southwestern, has determined which fats in the diet contribute to high cholesterol and which are "cholesterol-safe."
- * It literally gave the gift of life to patients like Stormie Jones, who had inherited defective receptor genes from both parents and who had a heart attack by age six. Brown and Goldstein reasoned that a liver transplant would provide Stormie with enough receptor cells to metabolize cholesterol sufficiently. She also underwent a heart transplant to replace her badly damaged heart. Four and a half years after her surgery, Stormie is doing well.

Dr. Kern Wildenthal, president of UT Southwestern, said, "Goldstein and Brown's discoveries have revolutionized an entire area of medical science, and their colleagues around the country will applaud this latest, well-deserved recognition.

"Here in Dallas, we are especially proud that, in addition to their contribution to science, they have dedicated themselves to serving The University of Texas Southwestern Medical Center at all levels -- teaching medical and graduate students, treating patients, recruiting superb new faculty members and generally striving to do all they can to help improve our institution. They are good citizens in every sense of the word, and their Dallas colleagues will take a special pride and pleasure in their receiving the National Medal of Science."

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Note: The University of Texas Southwestern Medical Center at Dallas comprises Southwestern Medical School, Southwestern Graduate School of Biomedical Sciences and Southwestern Allied Health Sciences School.