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****McGarry honored for research on diabetic coma.

DALLAS--Dr. Denis McGarry of The University of Texas Health Science Center at Dallas was recently honored with this year's David Rumbough Scientific Award at the annual conference of the Juvenile Diabetes Foundation in Atlanta. McGarry is an investigator in the Center for Diabetes Research.

The award is presented annually by the foundation to recognize sustained commitment and achievement in the field of diabetes research.

McGarry, professor of internal medicine and biochemistry, is internationally known for research performed at the health science center with Drs. Roger Unger and Daniel Foster.

With Foster, McGarry showed that elevated levels of the hormone glucagon play a key role in the development of diabetic coma (ketoacidosis) in persons with insulin deficiency. Ketoacidosis occurs when strong acids called ketone bodies accumulate in the blood because of uncontrolled diabetes.

In the blood of normal persons, ketone bodies appear after a fast of about 24 hours. They are a very effective energy source for the brain, which cannot burn fat for energy as most tissues of the body can. During a fast when the blood sugar is expected to fall, fatty acids are released from the body's fat stores and pass to the liver for conversion into ketone bodies. The liver does not carry out this conversion efficiently in a well-fed state.

McGarry and Foster discovered that glucagon changes liver metabolism both in starvation and in diabetes so that fatty acids can be changed into ketone bodies.

"In understanding the mechanisms of ketone body production, the question was why the body produces ketones at a nice conservative rate during prolonged starvation, but under different circumstances--uncontrolled diabetes--produces them at a pathological level," McGarry said.

"The first committed intermediate in the synthesis of fat from carbohydrate is malonyl-Coenzyme A. We found that malonyl-CoA shuts down the production of ketone bodies," McGarry said. Glucagon reduces the concentration of malonyl-CoA in the liver with the result that ketone body production is accelerated.

McGarry and colleagues went on to localize the site of malonyl-CoA action to the enzyme system responsible for transporting fatty acids into the mitochondrion, where their oxidation to ketone bodies takes place. The discovery has prompted intensive

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research world-wide into the complexities of the transport mechanism and how it might be controlled therapeutically for the prevention of life-threatening ketoacidosis in vulnerable individuals.

"It was a beautiful piece of work that Denis did," said Foster. "Older investigators had worked on that problem for years. And he systematically eliminated all the popular theories."

Born in Liverpool, England, McGarry was educated in England and Wales. He received a Ph.D. in Biochemistry from the University of Manchester, England, and performed postdoctoral studies at the University of Liverpool and the University College of Wales.

In 1968 he began work as a special fellow under Foster at Southwestern Medical School, and he joined the UTHSCD faculty as an assistant professor in internal medicine and biochemistry in 1969.

Previous honors include a Research Career Development Award from the United States Public Health Service, the Lilly Award of the American Diabetes Association, the Jacobaeus Lecturer to the Nordisk Insulin Foundation and Overseas Lecturer to the Australian Biochemical Society. He has held editorial positions for a number of scientific journals, in addition to serving as consultant-reviewer for the National Institutes of Health and the Veterans Administration.

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Distribution: AM,SC,SL

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