



M a r i a n a M o r r i s

Cardiovascular disease is one of the most devastating complications of diabetes, a disease in which the body does not produce or properly use insulin. According to the American Diabetes Association, 18.2 million Americans, or 6.3 percent of the population, have diabetes, and that percentage is rapidly increasing. More than 70 percent of diabetics also have high blood pressure or hypertension with pressure levels above 130/80 mmHg, considered a major disease risk factor. Two out of three people with diabetes will die from heart disease or stroke.

Mariana Morris, Ph.D., chair and professor of the Department of Pharmacology and Toxicology, leads an international team that is investigating the links between cardiovascular pathologies and a hormonal regulatory system for blood pressure and volume, the renin angiotensin system. Located in the kidneys, vasculature, and brain, this endocrinological system may hold the key to the adverse cardiovascular outcomes associated with diabetes.

Morris explains that her research is focused on diet and the development of diabetes and hypertension. She presented her findings as the keynote speaker at the Brazilian Society of Hypertension's annual conference this past summer and will present at the American Heart Association Meeting in the fall. "We are studying the influence of the consumption of a high-fructose diet with measurement of blood pressure, glucose, and metabolism in mice. When animals consume high levels of this sugar, which is present in most soft drinks and processed foods, they develop high blood pressure as well as resistance to insulin, the precursor to diabetes. The syndrome in mice is similar to that present in humans, providing a good model for investigation of drug therapies."

Morris maintains a state-of-the-art laboratory in integrative pharmacology, which simulates disease paradigms in animal models. Staffed by scientists from Brazil, China, Africa, and the United States, the laboratory uses genetically manipulated mouse models to study the role of angiotensin receptors in the development of the cardiovascular and renal pathologies associated with diabetes. Using radiotelemetry, scientists are able to monitor blood pressure, heart rate, and activity in mice over long periods and study the consequences of drug therapies. Studies in animals and humans have indicated that lowering blood pressure by targeting angiotensin receptors is much more effective than lowering blood pressure through other methods. Significantly, these studies are raising important public health questions concerning the increasing intake of high-fructose corn syrup in the United States.