Weighty Research: The Metabolic Hormone Core

The number of adults with diabetes worldwide has more than doubled since 1980 to 347 million. According to the Center for Disease Control, if the current trend continues, then one-third of US adults will have diabetes by 2050. While these numbers look bleak, there are researchers at Northwestern whose work creates hope for the epidemic. A main source of support for them is the Metabolic Hormone Core in the Feinberg School of Medicine.

The mission of the core is to advance research across Northwestern in metabolic diseases, including diabetes, obesity, thrombosis, and cardiovascular disease by establishing validated high-throughput hormone analyses and creating a consolidated reference center for efficient testing for the community.

“Our facility does the day-to-day work that needs to be done for research,” says Joe Bass, medicine: endocrinology, neurobiology, and director of the core. “That allows individual labs to focus on exploratory experimental work.”

An example of that experimental work includes Bass’s own research. Although lifestyle habits and poor diets are the most recognized factors for diabetes and obesity, new evidence from experimental models suggests that a disruption in the circadian system also plays a role. One of Bass’s projects involves studying this role of the body’s biological clock in regulating insulin secretion in the pancreas. His team has developed a broad panel of genetic mouse models and selectively eliminated genes that are involved in regulating the biological clock in the pancreas.

“We discovered that eliminating these genes causes diabetes and affects insulin,” he says. “By virtue of having the core, we’re able to do these large analyses and studies with the animals.”

Better understanding of the metabolic system will allow researchers to pinpoint new treatments and discover drugs for metabolic disease. To aid this research, the core has equipment that is capable of measuring specific coenzymes involved in metabolic function, insulin levels, glucose, lipids, and cholesterol in blood samples as well as identify and examine genetic markers related to disease.

The Metabolic Hormone Core was founded in 2009 as a part of the Department of Neurobiology and Physiology on the Evanston campus. In April of this year, the facility moved to the seventh floor of the Lurie Building on the Chicago campus. Moving to the Chicago campus allowed Bass to expand the core to include behavioral testing that requires more animal handling. This behavioral component of the core is located on the 15th floor of the Ward Building.

Despite its move downtown, the core still has several users from the Evanston campus. For example, Fred Turek, neurobiology, has an ongoing program sponsored by the Defense Advanced Research Projects Agency (DARPA) that looks into stress responses and the genetics that control cytokine and endocrine systems that are affected by stress. He uses the facility to analyze stress and genetic modifiers in animals. The core has also performed leptin analyses for a research group in anthropology that studies diabetes and obesity from a population standpoint.

Bass says that having the Metabolic Hormone Core places Northwestern in competition with top research institutions around the globe. It could also potentially discover the end of the ever-growing epidemic of diabetes.

For more information about the core, visit www.feinberg.northwestern.edu/research/cores/units/met-hormone.