Tulane University

New Role for the Hunger Hormone

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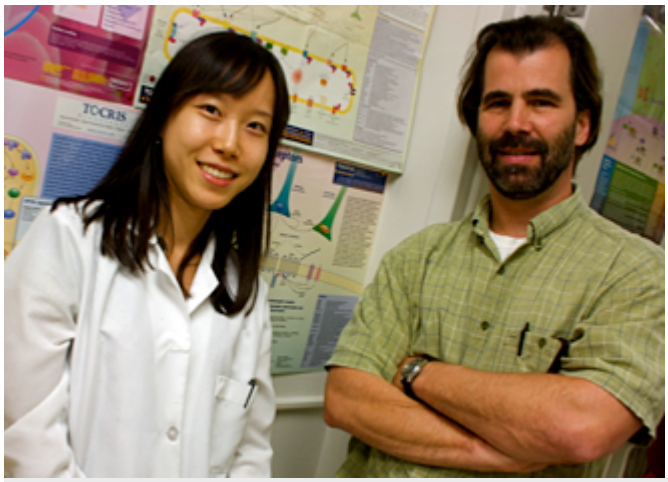
Belinda Lacoste newwave@tulane.edu



Tulane graduate student Juhee Haam, left, and Jeffrey Tasker, professor of cell and molecular biology, are conducting research to understand the interaction between two hormones that may contribute to obesity, diabetes and hypertension. (Photo by Tricia Travis)

Over the past decade, researchers have studied the hunger hormone ghrelin and discovered many of its functions, but Tulane graduate student Juhee Haam recently found another role of this attention-grabbing hormone.

Haam says the peptide hormone ghrelin stimulates appetite and helps maintain the body's energy balance. Ghrelin can cause overeating and cravings for high-calorie foods. It also contributes to fat storage and can prevent a good night's sleep, she says.

In a preliminary study with Jeffrey Tasker, professor of cell and molecular biology, Haam found evidence that ghrelin may play a role in activating the hormone vasopressin. Vasopressin, known as the anti-diuretic hormone, regulates water intake and the body's fluid balance, the researchers explain. It causes the body to retain or release water in response to fluid needs.

“Understanding how this mechanism works can help us better understand how to study metabolic diseases obesity, diabetes and hypertension,” Haam says.

In the lab Haam fasted one group of rats and allowed another group to eat normally. Fasting causes a rise in ghrelin secretion from the stomach and increased ghrelin actions in the brain, she says, but data from electrical readings of the rats' brain cells also showed heightened activity in vasopressin neurons in the fasted rats. The activity was amplified when ghrelin was added to the cells and reduced when ghrelin was blocked. Haam says this indicates the communication to vasopressin cells is activated by ghrelin.

The scientists also observed physiological changes. During fasting, the rats drank less but had more water retention. Once food was reintroduced, fluid balance returned to normal. When food was eaten, ghrelin levels temporarily subsided, causing less action on vasopressin.

“Energy balance and fluid balance are closely related, but we don't know much about how they are correlated,” says Haam. “I'm working in the lab with animals now, but I hope someday my research will help people in their lives, their health.”

Another study this fall will further examine ghrelin's role in the physiological changes in water

intake and water retention caused by fasting.

Belinda Lacoste is a student studying journalism in the School of Continuing Studies and a staff member who writes for the School of Science and Engineering.