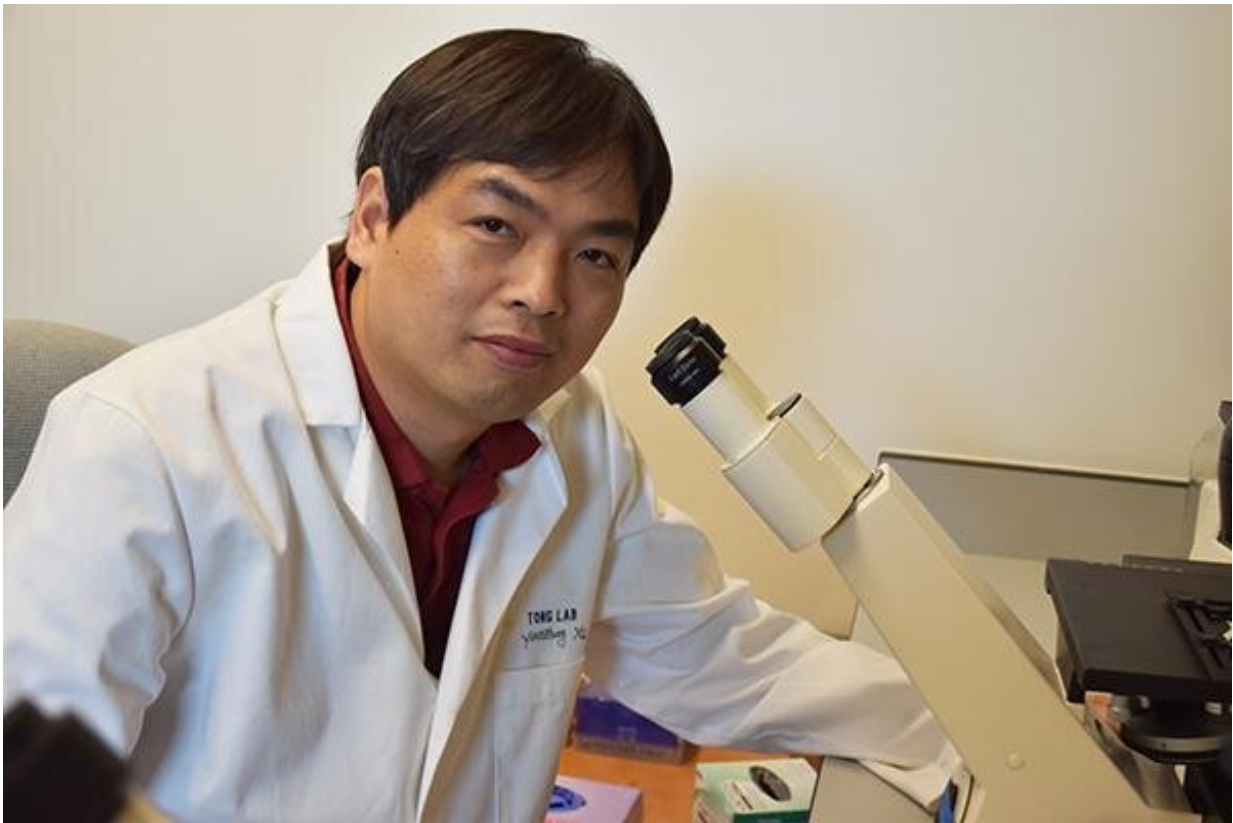


Study reveals how stress can curb the desire to eat in an animal model

August 16 2019, by Rob Cahill



UTHealth's Yuanzhong Xu, PhD, is studying the parts of the brain that affect hunger. Credit: Rob Cahill/UTHealth

Eating disorder researchers at The University of Texas Health Science Center at Houston (UTHealth) have discovered a neurocircuit in mice

that, when activated, increased their stress levels while decreasing their desire to eat. Findings appear in *Nature Communications*.

The scientists believe their research could aid efforts to develop treatments for a serious eating disorder called anorexia nervosa, which has the highest mortality rate of any mental disorder, according to the National Institute of Mental Health. People with anorexia nervosa avoid food, severely restrict food, or eat very small quantities of only certain foods. Even when they are dangerously underweight, they may see themselves as overweight.

"We have identified a part of the brain in a [mouse model](#) that controls the impact of emotions on eating," said Qingchun Tong, Ph.D., the study's senior author and an associate professor in the Center for Metabolic and Degenerative Disease at McGovern Medical School at UTHealth.

Because mice and humans have similar nervous systems, Tong, the Cullen Chair in Molecular Medicine at UTHealth, believes their findings could shed light on the part of the human brain that regulates hunger.

The investigators believe they are among the first to demonstrate the role of this neurocircuit in the regulation of both stress and hunger.

While previous research has established that stress can both reduce and increase a person's desire to eat, the neural mechanisms that act on the regulation of eating by stress-related responses largely remain a mystery.

Tong's team focused on a neurocircuit connecting two parts of the mouse brain: the paraventricular hypothalamus, an eating-related zone in the brain, and the ventral lateral septum, an emotional zone in the [brain](#). The neurocircuit acts as an on/off switch.

When researchers activated the neurocircuit, there was an increase in anxiety levels and a decrease in appetite. Conversely, when the investigators inhibited the neurocircuit, anxiety levels dropped and hunger increased.

The scientists used a research technique called optogenetics to turn the neurons in question on and off.

Yuanzhong Xu, Ph.D., the study's lead author and an instructor at McGovern Medical School, said additional preclinical tests are needed to confirm their findings.

More information: Identification of a Neurocircuit Underlying Regulation of Feeding by Stress-Related Emotional Responses, *Nature Communications* (2019).

Provided by University of Texas

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