Yerkes researchers create animal model of chronic stress

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In an effort to better understand how chronic stress affects the human body, researchers at the Yerkes National Primate Research Center and the Department of Psychiatry and Behavioral Sciences, Emory University, have created an animal model that shows how chronic stress affects behavior, physiology and reproduction.

Developing the animal model better positions the researchers to understand the neurohormonal causes of such stress and the body reaction in order to develop more effective treatment options for humans. The study is available in the current online edition of *Molecular Psychiatry*.

According to lead researcher Mark Wilson, PhD, chief of the Division of Psychobiology at Yerkes, "Chronic stress can lead to a number of behavioral changes and physical health problems, including anxiety, depression and infertility."

Via the animal model, the researchers found corticotropin releasing factor (CRF) is a key neurohormone involved in stress response. Wilson explains, "CRF is located in several different brain regions, serving different functions. Its release is important for our ability to adapt to every day stressors and to maintain our physical and emotional health."

In response to stress, CRF levels rise; CRF levels decrease when the stressor no longer is present. Chronic stress, however, increases the length and volume of expression of CRF in areas of the brain associated

with fear and emotion, including the amygdala. Such chronic stress changes the body's response, and the resulting increased expression of CRF is thought to be the cause of such health-related stress problems including anxiety, depression and infertility.

To study the importance of CRF, the research team used a viral vector to increase the production of CRF in the amygdala of female rats.

"In our study, rats that continuously were exposed to CRF from this area of the brain experienced anxious and depressive behavior, decreased libido and disrupted ovarian cycles suggesting that persistent release of CRF such as occurs in chronic stress clearly affects multiple body systems," says Wilson. "These behavioral changes are similar to what we see in human females who are exposed to stressors on a daily basis."

Dr. Wilson and his research team next will attempt to learn more about the negative effects of increased CRF by examining actual molecular and cellular changes in specific brain areas targeted by the neurohormone. Knowing how CRF affects the brain positions the researchers to develop better treatment options.

Source: Emory University