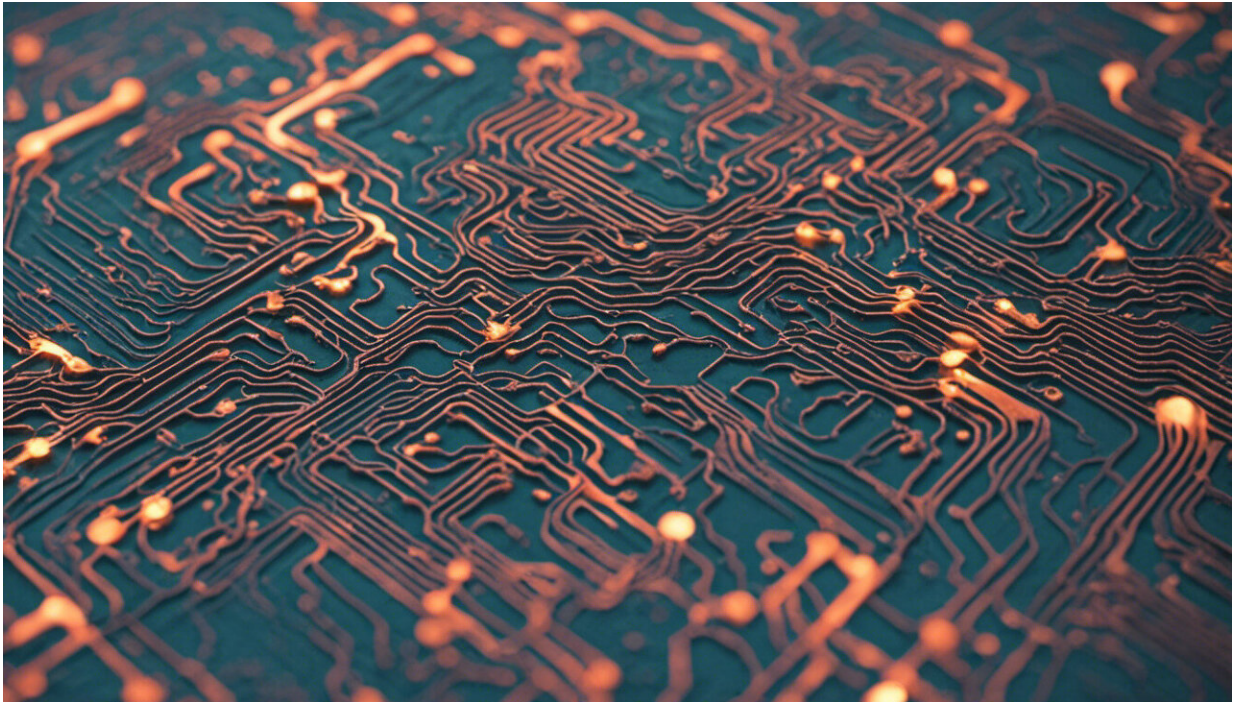


# Modulating stress circuits

February 18 2019, by Leigh Macmillan

---



Credit: AI-generated image ([disclaimer](#))

Stress contributes to psychiatric diseases including depression, eating disorders and addiction. Neurons that express the stress signal corticotropin releasing factor (CRF) in a brain region called the BNST are thought to promote negative responses to stress.

Danny Winder, PhD, and colleagues reported in the *Journal of Neuroscience* that acute restraint stress in mice activates CRF neurons in

the BNST, supporting a role for these neurons in stress-related behaviors. They showed that the drug guanfacine, which acts on inhibitory alpha2A-adrenergic receptors, reduces CRF neuron activity in both stressed and unstressed conditions.

In mapping experiments, the researchers found that alpha2A-adrenergic receptors reduce excitatory input to the BNST from neurons in the parabrachial nucleus brain region. They also discovered a unique population of CRF [neurons](#) in female mice that may mediate sex differences in responses to stress.

The findings demonstrate interactions between norepinephrine, which works through adrenergic receptors, and CRF, and they offer valuable insights for the development of therapeutics that can alter [negative responses](#) to stress.

**More information:** Tracy L. Fetterly et al.  $\alpha$ 2A-Adrenergic Receptor Activation Decreases Parabrachial Nucleus Excitatory Drive onto BNST CRF Neurons and Reduces Their Activity In Vivo, *The Journal of Neuroscience* (2018). [DOI: 10.1523/JNEUROSCI.1035-18.2018](https://doi.org/10.1523/JNEUROSCI.1035-18.2018)

Provided by Vanderbilt University

Citation: Modulating stress circuits (2019, February 18) retrieved 25 April 2024 from <https://medicalxpress.com/news/2019-02-modulating-stress-circuits.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--