Examining the brain circuits governing social decisions

November 9 2022

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Studies of how the brain processes social behavior are unraveling the

complexities of how positive and negative interpersonal interactions may have long-term effects on neural function and memory. The findings were presented at Neuroscience 2022, the annual meeting of the Society for Neuroscience and the world's largest source of emerging news about brain science and health.

It has been historically challenging to study social behavior in the brain. New tools, including powerful imaging, machine learning and computational advances are improving the ability to measure behavioral and neurological changes with greater nuance and specificity. As societal factors—such as advancing technology and the COVID-19 pandemic—are changing when and how people interact and communicate, the need to understand social behavior and the brain is more important than ever.

Today's new findings show that:

- A novel reward circuit in the brain differentiates between positive and negative social experiences, which could help guide future social behavior based on previous interactions. (Pedro Espinosa, University of Geneva)
- A small group of neurons in the hypothalamus signal social interaction or isolation, providing greater insight into the neuronal basis of social need. (Ding Liu, Harvard University)
- In mice, a population of stress/threat-responsive neurons encode past social trauma and over-activate in subsequent, non-threatening situations, supporting the idea that social trauma impairs brain reward function. (Long Li, Icahn School of Medicine at Mount Sinai)
- Rats were less likely to help trapped cage mates when the trapped animals appeared less distressed (as a consequence of being treated with anxiety medication), suggesting that an experience of shared suffering may promote altruistic behavior. (Hassan

Lopez, Skidmore College)

"The importance of social structures and connections are often overlooked, but they are vital to our physical and mental health," said session moderator Moriel Zelikowsky, an assistant professor in the Department of Neurobiology and Anatomy at the University of Utah School of Medicine.

"Moving forward, a stronger understanding of the importance of social connections, the debilitating effects of social isolation, and how interpersonal relationships affect the brain will be important for understanding not just basic human nature, but also disease states such as depression and anxiety."

More information: Conference: www.sfn.org/meetings/neuroscience-2022

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Provided by Society for Neuroscience