Studies pinpoint specific brain areas and mechanisms associated with depression and anxiety

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Research released today reveals new mechanisms and areas of the brain associated with anxiety and depression, presenting possible targets to understand and treat these debilitating mental illnesses. The findings were presented at Neuroscience 2013, the annual meeting of the Society for Neuroscience and the world's largest source of emerging news about brain science and health.

More than 350 million people worldwide suffer from clinical depression and between 5 and 25 percent of adults suffer from generalized anxiety, according to the World Health Organization. The resulting emotional and financial costs to people, families, and society are significant. Further, antidepressants are not always effective and often cause severe side effects.

Today's new findings show that:

- A molecule in the immune system may contribute to depression, suggesting a potential biomarker for the disease (Georgia Hodes, PhD, abstract 542.1, see attached summary).
- Decreasing a chemical signal in the amygdala, a brain area associated with emotional processing, produces antidepressant-like effects in mice (Yann Mineur, PhD, abstract 504, see attached summary).
- MicroRNAs, tiny molecules that alter gene expression, correlate

with how mice respond to socially stressful situations that cause depressive-like behavior. The findings may help determine why some people are more likely to suffer from depression than others (Karen Scott, PhD, abstract 731.2, see attached summary).

Other recent findings discussed show that:

- A pathway between two brain regions, the amygdala and the hippocampus, plays a significant role in anxiety. Shutting down this connection can decrease anxiety-like behavior in mice (Ada Felix-Ortiz, MS, presentation 393.01, see attached speaker summary).
- Aversive experiences can change how humans, particularly those with anxiety disorders, perceive stimuli. After a severe negative incident, patients with anxiety disorders over-generalize the experience and have increased emotional responses to subsequent similar situations (Rony Paz, PhD, presentation 295.05, see attached speaker summary).

"Today's findings represent our rapidly growing understanding of the individual molecules and brain circuits that may contribute to depression and anxiety," said press conference moderator Lisa Monteggia, PhD, of the University of Texas Southwestern Medical Center, an expert on mechanisms of antidepressant action. "These exciting discoveries represent the potential for significant changes in how we diagnose and treat these illnesses that touch millions."

Provided by Society for Neuroscience