College of Science
Neuroscience Faculty Candidate

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Tuesday, October 6, 2015
310 Kelly Hall
3:00pm – 4:00pm

"Epigenetics, Neurodevelopment, and Risk for Anxiety and Depression studied in a rat model"

Individual differences in human temperament and stress coping style can increase risk for psychiatric disorders like depression and anxiety. Dr. Clinton's research program uses rat models to study how biological and environmental factors interact to shape brain development, temperament, and vulnerability to emotional dysfunction. Her recent work revealed epigenetic (DNA methylation and microRNA) changes in the developing and adult rat brain that predispose for high levels of anxiety and depression-like behavior. Specifically, she found that rats prone to high (versus low) levels of anxiety/depression-like behavior display distinct DNA methylation patterns in the early postnatal and adult amygdala. Manipulating DNA methylation levels in "anxiety-prone" rats through diet effectively improved their anxiety-like behavior. Other experiments showed that manipulating the early-life environment of "anxiety-prone" rat pups (by altering the maternal style they were exposed to) also effectively improved adult offspring's anxiety-like behavior, potentially via epigenetic changes. Overall, this work aims to elucidate naturally-occurring DNA methylation differences that underlie emotional behavior, how early-life experience shapes such processes, and how these factors may contribute to the pathogenesis of psychological disorders.

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