

Dissecting the neural circuits that mediate motivated behavior

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In order to survive and effectively navigate an ever-changing and unpredictable environment, organisms must readily adapt their behavior to seek out needed resources, while simultaneously avoiding life-threatening situations. These opposing processes are controlled by neural circuitry that is readily engaged by both environmental and physiological factors to promote behavioral output. The work of my lab studies the precise neural circuits that control both reward and aversive-related behavioral responses. By utilizing optogenetic and other circuit mapping tools, we aim to delineate the precise functional synaptic connections between molecularly distinct neuronal populations that are critical for the generation of these critical behavioral states. A holistic understanding of the interconnected neural circuit elements that mediate diverse motivational behaviors will likely provide important insight into a variety of complex neurological and neuropsychiatric illnesses such as drug and alcohol addiction, anxiety, depression, and eating disorders.