

Sensors of Survival Pleiotropic Function and the Regulation of Hunger Circuits

January 21

Tuesday, 12:30 pm

Weekly Colloquium

Billings Building
Rosedale Conference Room



Speaker: J. Nicholas Betley, Ph.D.

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Abstract

In our laboratory, we address two main questions:

1. What does a hungry brain look like and how does food intake influence brain activity?
2. How does the brain sense, process, and prioritize survival behaviors to guide behavior?

We are interested in deconstructing the neural circuits that underlie the behavioral response to physiological needs in order to better understand how the brain guides behavior in a complex environment. We focus our efforts on essential behaviors – such as food seeking and ingestion – as these robust responses are evolutionarily conserved and amenable for examination in murine models. Maladaptive responses to such basic survival signals lead to improper decisions and have consequences for human health, including metabolic and affective disorders. By understanding the neural coding of adaptive survival behaviors, we aim to establish the framework to understand the dysfunction underlying these disorders.

1. Alhadeff AL, Goldstein N, Klima ML, Park O, Vargas A, Betley JN. 2019. Distinct pathways for the regulation of hypothalamic neurons by natural and drug rewards. *Neuron*, 103:891-908. DOI:<https://doi.org/10.1016/j.neuron.2019.05.050>.
2. Alhadeff AL, Su Z, Hernandez E, Klima MK, Phillips SZ, Holland RA, Guo C, Hantman AW, De Jonghe BC, Betley JN. 2018. Discovery of a neural circuit for the suppression of pain by a competing need state. *Cell*, 173(1): 140-52.
3. Su Z, Alhadeff AL, Betley JN. 2017. Nutritive, post-ingestive signals are the primary regulators of AgRP neuron activity. *Cell Reports* 21(10):2724-36.

