POSTDOCTORAL FELLOW

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The brain regulates food intake via a complex interplay of circuit mechanisms. Dysfunction in these mechanisms can lead to overconsumption and obesity. Because obesity and its associated health problems are reaching epidemic proportions, elucidation of the neural mechanisms regulating caloric intake is of paramount importance.

The hypothalamus is a key element of the neural circuits that regulate food intake. Specific neuronal populations within the hypothalamus are sensitive to a variety of homeostatic indicators, such as circulating nutrient levels, as well as hormones (e.g., insulin, ghrelin, leptin) that signal circulating glucose, gut nutrient, and body fat content. Because understanding caloric intake regulation is of critical importance for the development of physiological interventions that treat and prevent obesity, neuroscientists have recently focused a great deal of attention towards elucidating the functional role of defined hypothalamic neuronal populations in the regulation of food consumption. A major component of this undertaking is to identify all of the relevant neuronal populations and determine how they are interconnected.

My research program focuses on studying the neurobiology of energy metabolism in general and hypothalamic neural mechanisms associated with metabolic dysregulation and obesity in particular. My lab is currently mapping the melanocortinergic neural circuits that control overall energy metabolism and the autonomic sensory and motor nervous systems that regulate liver function. Interested candidates should be **passionate** about research, have the desire to establish her/himself as an independent investigator, and be willing to go above and beyond to accomplish a research goal. My recent publications are the following:

1. Kwon, E., Joung H.-Y., Liu, S. M., Chua, S. C., Jr., Schwartz, G. J., and **Jo, Y. H**. Optogenetic stimulation of the liver-projecting melanocortinergic pathway promotes hepatic glucose production. ***Nature Commun*** (Dec. **2020**); 11(1):6295. doi: 10.1038/s41467-020-20160-w

2. Jeong, J. H., Chang, J. S., and **Jo, Y. H.** Intracellular glycolysis in brown adipose tissue is essential for optogenetically induced nonshivering thermogenesis in mice. ***Sci Rep*** 8, no. 1 (Apr. 27 **2018**): 6672.

3. Jeong, J. H., Lee, D. K., Liu, S. M., Chua, S. C. Jr., Schwartz, G. J., and **Jo, Y. H.** Activation of temperature-sensitive Trpv1-like receptors in arc POMC Neurons reduces food intake. ***PLoS Biol*** 16, no. 4 (Apr. **2018**): e2004399 (selected as a Research highlight in ***Nature*****,** Top 10% cited article in ***PLOS biology*** in 2018-2019**,** *Featured article in* ***PLOS Biology*****)**

4. Lee, D. K., Jeong, J. H., Chun, S. K., Chua, S.C.Jr., and **Jo, Y. H.** Interplay between glucose and leptin signaling determines the strength of GABAergic synapses at POMC neurons. ***Nat Commun*** 6 (Mar. **2015**): 6618.

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