Neural Control of Ingestive Behavior: Hypothalamic Neuropeptide Y and Urocortin

Goal of project: Examination of site-specific inhibition of neuropeptide Y-induced eating induced by hypothalamic injections of the recently identified peptide urocortin.

Project Summary: Increasing evidence suggests that neuropeptide Y (NPY), a 36 amino acid polypeptide hormone widely distributed in the mammalian brain, plays an important role in the integrative mechanisms controlling feeding behavior and energy metabolism. Microinjection of NPY into various areas of the rat hypothalamus stimulates a robust eating response. Further, NPY injection into the medial hypothalamic paraventricular nucleus potentiates food intake and chronic NPY into this nucleus result in rapid weight gain and increased body fat deposition. In the current summer project, we assessed the ability of the recently identified corticotropin-releasing factor-like peptide, urocortin, to antagonize the hypothalamic action of NPY on ingestive behavior. Our results demonstrate that administration of urocortin directly into the hypothalamic paraventricular nucleus (PVN) or ventromedial hypothalamus (PFH) failed to alter NPY feeding. We plan to present these data along with other recent findings from our laboratory that have examined the integrative metabolic action of hypothalamic urocortin and NPY at the upcoming annual meeting of the Society for Neuroscience in San Diego, November 2001.

Conclusions: Our results suggest that the two hypothalamic peptides, urocortin and NPY, may interact uniquely within the medial hypothalamus (PVN and VMN) to modulate energy intake and metabolism.