Hypothalamic glucose sensing neurons: multiple functions, one goal

Glucose is the primary fuel of the brain; thus, the brain is keenly sensitive to the threat posed by hypoglycemia. Data will be presented from our laboratory suggesting that glucose sensing neurons within the ventromedial hypothalamus (VMH) are critical components of the hormonal counterregulatory response to insulin-hypoglycemia which restores euglycemia. Additionally, a role for the glucose-inhibited orexin neurons of the lateral hypothalamus in hypoglycemia awareness and unawareness will be considered. We further hypothesize that these neurons play a role during non-threatening changes in glucose homeostasis such as the response to fasting or food restriction by regulating behavior (food intake) as well as glucose levels.