Integration of nutrient and temperature homeostasis

Bruno Conti, Professor

Department of Chemical Physiology, Molecular and Cellular Neuroscience Department, The Scripps Research Institute, SR-307, 10550 N. Torrey Pines Road, La Jolla, CA 92037. Tel. 858-784-9069 and Fax 858-784-9099. E-mail bconti@scripps.edu

Nutrient and the regulation of core body temperature (CBT) represent the two main components of energy homeostasis influence energy intake and energy expenditure, respectively. Although nutrient and temperature homeostasis are typically investigated independently, there is a unifying relationship between them since calorie intake influences CBT. In fact, feeding produces acute transient hyperthermic effects, and food deprivation, as well as the controlled reduction of nutrient intake used in CR, induces lasting hypothermia. We present data showing the warm sensitive neurons of the hypothalamic preoptic area – the region containing the “central thermostat”- express receptors for nutrient signals and that their activation or expression level influence core body temperature. These include the receptors for insulin, adiponectin and an orphan G-protein coupled receptor.

Key words: temperature regulation, hypothalamus, nutrient signals.