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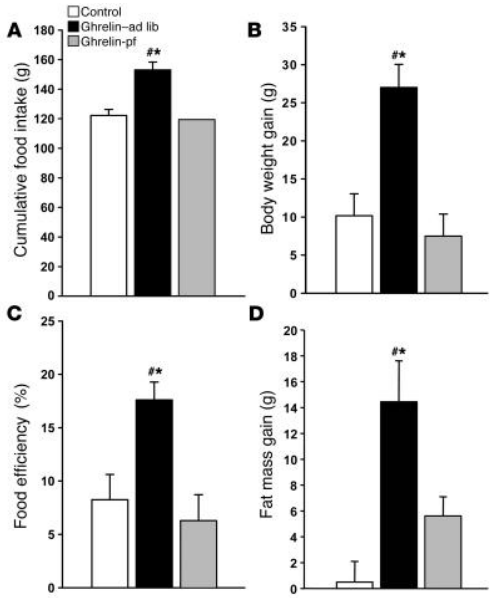
Description of Research:

The communication between afferent signals, specific central nervous system circuitry and efferent pathways plays a major role in the regulation of food intake, energy balance and body weight. Dr. Tschop focuses on the crosstalk between neuroendocrine signals of these pathways as a possible target for the treatment of obesity, anorexia and cachexia. He first described the novel hormone ghrelin as not only an important regulator of energy balance, but also as the only circulating orexigenic agent known. He also found that human body weight changes influence ghrelin levels and that mutations in the ghrelin gene are associated with symptoms of the metabolic syndrome. Recent data indicates that ghrelin action in the brain is mainly mediated by hypothalamic neurons, but also targets other brain areas such as the ventral tegmental area. Dr. Tschop is currently dissecting ghrelin induced energy balance changes in food intake, respiratory quotient and locomotor activity as well as metabolic changes due to modulation of the thyroid and hypothalamic-pituitary-adrenal axis axis. To decipher the multiple mechanisms involved in ghrelin action and regulation, they are using novel tools such as ghrelin neutralizing RNA Spiegelmers (biostable RNA-based compounds), several ghrelin receptor antagonists and a variety of transgenic models.

Collaborations:

Dr. Tschop collaborates with Dr. Tso in the Cincinnati Mouse Diabetes Phenotype Center. Additionally, he works with Dr. Hui examining how changes in metabolic rate are influenced by stress and diet selection. He has published with Drs. Seeley, Woods, Benoit, Tso and Min. As a new member, Dr. Tschop has not used DHC cores.

Representative Figure:



Food efficiency was calculated as the ratio between body weight gain over the 6-day experimental period and cumulative food intake and was expressed as a percentage. Body fat was determined by nuclear magnetic resonance imaging. Values are mean ± SEM of 6–7 animals per group. **P* < 0.05 versus control; $^{\#}P$ < 0.05 versus ghrelin-pf. Figure 1 from J Clin Invest. 2006 116: 1983–1993.