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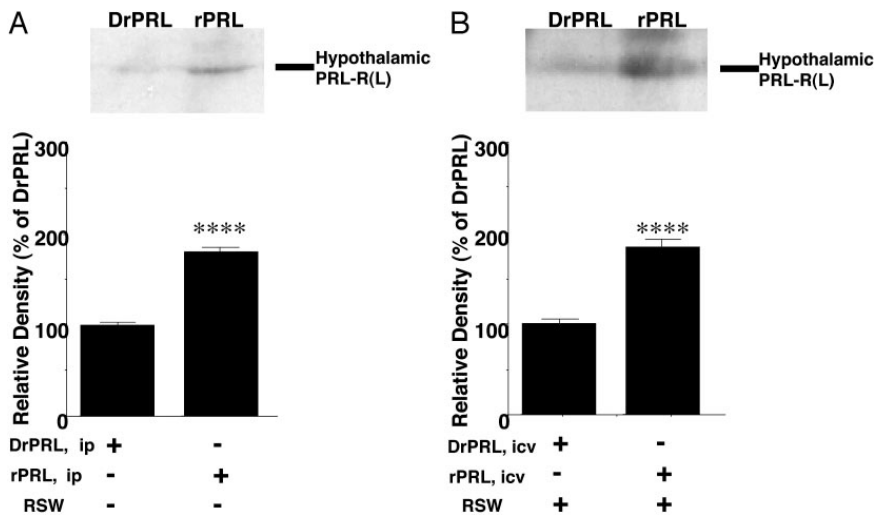
Description of Research:

Dr. Sakai's research examines the role of the renin-angiotensin system and adrenal steroids in mediating thirst and sodium appetite. The expression of sodium appetite in the rat is controlled by a multitude of hormonal mechanisms evoked when the animal is sodium depleted. Previous studies have shown that it is not the sodium deficiency itself but rather the synergistic action of angiotensin and aldosterone, hormones that are released in response to the sodium depletion, which generate the appetite for salt and have long-term effects that enhance subsequent salt intake. Dr. Sakai is examining the genomic and non-genomic effects of steroids on sodium intake. Additionally, he has a unique animal model to study social stress. This model is used to determine how social hierarchies influence the regulation of food intake and body weight and to identify the neuroendocrine mechanisms that underlie social influences on body weight. Understanding the mechanisms underlying the regulation of the stress response as well as the long-term consequences of stress may enhance rational clinical therapies for treatment of affective disorders such as depression and post-traumatic stress disorder. Both programs of research utilizes an interdisciplinary approach to examine behavioral and physiological phenomena at multiple levels and includes behavioral observations, in vivo manipulations such as antisense oligodeoxynucleotide technology, and molecular biological assays.

Collaborations:

Dr. Sakai collaborates with Drs. Benoit, D'Alessio, Seeley, Tschop, Tso, and Woods on examining the effects of stress on body weight and body composition. As a new member, Dr. Sakai has not used DHC cores.

Representative Figure:



Increased hypothalamic long form of prolactin receptor (PRLR(L)) protein expression in rats treated with rat prolactin (rPRL). A. Rats were treated with heat-denatured rat prolactin (DrPRL) (200 μ l saline) and rPRL (50 μ g/200 μ l saline). B. Animals were treated with DrPRL (500 ng/3 μ l saline) and restraint stress in water (RSW) or rPRL (500 ng/3 μ l saline). A: ****, $P < 0.0001$ (vs. DrPRL, ip/RSW⁻). B: ****, $P < 0.0001$ (vs. DrPRL, icv/RSW⁺). $n = 7$. *Endocrinology*, 2004; 145:2006-2013.