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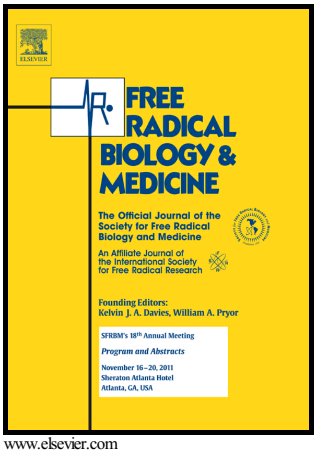

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Hypothalamic redox balance and leptin signaling - Emerging role of selenoproteins

Ting Gong[1,3], Daniel J. Torres[2,3], Marla J. Berry[2], Matthew W. Pitts[2*]

[1]Department of Molecular Biosciences and Bioengineering, University of Hawaii, Honolulu, HI 96813, USA

[2]Department of Cell and Molecular Biology, John A. Burns School of Medicine, University of Hawaii, Honolulu, HI 96813, USA

[3]Co-first Authors

***Corresponding author:** Dr. Matthew W. Pitts, Department of Cell & Molecular Biology, John A. Burns School of Medicine, University of Hawaii, 651 Ilalo St, Honolulu, HI, 96813, USA. Tel: 808-692-1516; FAX: 808-692-1968. Email: mwpitts@hawaii.edu

Abstract

The hypothalamus is the central neural site governing food intake and energy expenditure. During the past 25 years, understanding of the hypothalamic cell types, hormones, and circuitry involved in the regulation of energy metabolism has dramatically increased. It is now well established that the adipocyte-derived hormone, leptin, acts upon two distinct groups of hypothalamic neurons that comprise opposing arms of the central melanocortin system. These two cell populations are anorexigenic neurons expressing proopiomelanocortin (POMC) and orexigenic neurons that express agouti-related peptide (AGRP). Several important studies have demonstrated that reactive oxygen species and endoplasmic reticulum stress significantly impact these hypothalamic neuronal populations that regulate global energy metabolism. Reactive oxygen species and redox homeostasis are influenced by selenoproteins, an essential