Journal of Diabetes Research

Hindawi

Special Issue on

Skeletal Muscle and Adipose Tissue in Glucose and Energy Homeostasis, Type 2 Diabetes, and Obesity

CALL FOR PAPERS

The incidence of overweight has been increasing dramatically worldwide. Accordingly obesity and its associated metabolic disorders such as type 2 diabetes mellitus (T2D) and cardiovascular diseases have become an epidemic health threat. A major metabolic defect associated with T2D is the failure of proper glucose utilization by peripheral tissues such as skeletal muscle and adipose tissue, the primary targets of insulin-stimulated glucose uptake. Skeletal muscle undergoes significant atrophy in T2D, obese patients, and animal models, which in turn can worsen the diabetes and obesity status. Adipose tissue, an essential regulator of metabolic homeostasis, is classified into white adipose tissue (WAT) and brown adipose tissue (BAT). WAT stores excess energy as triglycerides, whereas BAT is involved in energy expenditure, dissipating energy as heat. When energy intake exceeds energy expenditure, obesity may develop over time, with resultant complications. Thus both skeletal muscle and adipose tissue are key regulators of energy and glucose homeostasis.

For the past few years, great efforts and exciting advances have been made in deciphering the development and metabolic functions of skeletal muscle and adipose tissue. Activation of brown adipocytes and browning of WAT has been shown to counter obesity and to promote insulin sensitization in animal models and potentially also humans. Meanwhile, myokines have emerged as important regulators of metabolic homeostasis. Such advances also raise more questions that need to be answered, such as the lineage specification of white, beige, and brown adipocytes; molecular pathways controlling brown fat development, thermogenesis, and muscle metabolism; signals mediating the cross-talk between skeletal muscle and adipose tissue.

In this special issue, we invite submissions of original research articles and contemporary reviews on latest advances in these fields, including basic and clinical studies on understanding the pathogenesis, diagnosis, and therapeutic strategies of insulin resistance and T2D, obesity, and associated diseases. We will also give emphasis on the use of novel assays and biomarkers for assisting diagnosis and predicting disease progression and on emerging biological, pharmacological, and chemical approaches to manipulate muscle and fat cells for therapeutic purposes.

Potential topics include but are not limited to the following:

- Role of skeletal muscle and adipose tissue in glucose transport, glucose homeostasis, and insulin resistance
- Developmental origin, differentiation, activation, and function of white, beige, and brown adipocytes in mouse and human
- Advances in signaling pathways controlling glucose/ energy metabolism
- Endocrine regulation of glucose and/or energy metabolism: implications of skeletal muscle and brown and white adipose tissue as endocrine organs—myokines and adipokines
- Mechanistic study of brown adipocyte and WAT browning in systemic energy balance and glucose homeostasis
- Novel animal models and technology and translational bioassays for the study of glucose and energy homeostasis, T2D, and obesity
- Targeting beige and brown fat for the treatment of obesity and related disorders

Authors can submit their manuscripts through the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/jdr/smat/.

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