The new role of lipin1 in myogenic progenitor differentiation to muscle and adipose tissues

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Brown adipose tissue and skeletal muscle originate from common myogenic factor 5-expressing (Myf5) progenitors. Despite, the great promise of directing Myf5+ progenitor cells in the treatment of obesity, little is known about what controls the progenitors commit to the brown adipogenic lineage. Lipin1 catalyzes the penultimate step in triglyceride synthesis and play an important role in promoting adipogenic differentiation in Myf5neg fibroblast cells. Surprisingly, depletion of lipin1 in Myf5+ progenitors in our newly generated Lipin1Myf5cKO mice promotes brown adipose tissue conversion indicated by inhibition of skeletal muscle development and expanded brown adipose tissue formation in the dorsal cervical region compared to control littermates. In this seminar, I will discuss about the mechanism of lipin1 in regulating skeletal muscle development and commitment and differentiation of skeletal muscle and brown adipose tissue, and affects the cell fate switch between myogenesis and adipogenesis.

Speaker Biography

Hongmei Ren is currently an Assistant Professor in the Department of Biochemistry and Molecular Biology at the Wright State University. She has received her Postdoctoral training in Cardiovascular Research Center at University of Kentucky. Her research interests focus on lipid metabolism, and their effects on cardiac and skeletal muscle function. Her laboratory recently revealed a previously unknown role of lipin1 (phosphatidic acid phosphatase) in controlling myogenic cell fate commitment.

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