CELLULAR AND MOLECULAR BIOLOGY

Role of autophagy-related protein Vps34 in the function of adipose tissues and interactions with the immune system. HENRY KWAN, LAN WU, AND LUC VAN KAER. Department of Pathology, Microbiology, and Immunology, Vanderbilt University Medical Center, Nashville, TN 37212.

Autophagy is a cellular degradation system that delivers cytoplasmic elements to the lysosome. This process involves various factors known as autophagy-related proteins. One of them, Vps34, is critical to the early stages of autophagy and also contributes to processes such as endocytosis and phagocytosis. Studies have shown that Vps34 plays a survival role in many important cellular types, and that global depletion of Vps34 causes autophagy dysfunction and cell death. Therefore, analysis of Vps34 function in distinct tissues requires tissue- or cell type-specific Vps34 gene deletion, a process called conditional gene-deficiency. The Van Kaer and Wu labs have generated mice selectively deficient in Vps34 only in adipocytes to understand the role of Vps34 function in metabolic disease. Studies with these animals showed that the animals develop insulin-resistance, which is a precursor for the development of diabetes. Herein, we analyzed stained tissue sections of liver, spleen, and adipose tissue of mice with and without the Vps34 gene in adipocytes. The inflammatory status and immune cell composition within adipose tissues were also analyzed.