



## Isolation and characterization of white and brown adipocytes in Kunming mice

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**ABSTRACT.** White adipose tissue and brown adipose tissue play critical roles in controlling energy homeostasis and the development of obesity and diabetes. We isolated mouse white adipocytes from inguinal white fat tissues and brown adipocytes from interscapular brown fat tissues, and employed a variety of approaches, including immunofluorescent staining, quantitative real-time PCR, western blotting analysis, and differentiation assay, to characterize those adipocytes. Both white and brown adipocytes stained positively for CD44 and CD29, and lipid droplets were observed after the induction of adipogenesis. The *Asc1* expression level in the white adipocytes was 2.5-fold higher than that in the brown adipocytes ( $P < 0.05$ ), and the expression of *Ucp1* in the white adipocytes was approximately 50% of that in the brown adipocytes ( $P < 0.05$ ). The expression of  $\alpha$ -tubulin in the brown adipocytes was approximately 70% of that in the white adipocytes. The brown adipocytes had a higher *Cidea* mRNA level ( $P < 0.05$ ) and a lower *Ppar $\gamma$*  mRNA level ( $P < 0.05$ ) than the white adipocytes. The results demonstrate that white and brown adipocytes have different

gene expression signatures, and may represent two useful cell models to study the mechanisms involved in obesity.

**Key words:** White adipocytes; Brown adipocytes; Asc1; Ucp1; Adipocyte differentiation