

The ever-increasing prevalence of the metabolic disorders, obesity, insulin resistance and type II diabetes, represent significant health problems in Canada. These are highly variable and complex conditions based on environmental, social and genetic determinants. This places an emphasis on finding treatment strategies that are safe and physiologically relevant so that they can be applied to anybody. Functionally and morphologically different types of fat cells play a crucial role in energy homeostasis by influencing glycemic and lipid control. While white fat cells store energy in the form of lipid, brown-type fat cells metabolize fatty acid and glucose to generate heat. Thus, readjusting the proportion of white versus brown fat cells will provide a significant health benefit. White and brown fat cells are constantly renewing themselves through the transformation of stem cells. Our present results show that the protein, p107, is essential in controlling the type of fat made from stem cells. Stem cells, when depleted or genetically ablated in p107, differentiate into the brown type versus the white type fat cells. Notably, we found that a brown fat cell-promoting factor Prdm16 targets p107 by down regulating its levels. This research is novel and essential, providing crucial data on the fundamentals of brown fat formation and thus an avenue for a comprehensive therapeutic intervention for the treatment of metabolic disease, which is an ever-increasing global health concern.

Reference: De Sousa M, Porras DP, Perry CG, Seale P, Scimè A. [p107 Is a Crucial Regulator for Determining the Adipocyte Lineage Fate Choices of Stem Cells](#). Stem Cells. 2014 May;32(5):1323-36.

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