

Regulating fat cell differentiation

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(PhysOrg.com) -- New research led by University College Dublin Conway Fellow, Professor Johan Ericsson has identified a key regulator of fat cell differentiation that may be a novel target for obesity drugs. The results of the research are published in the current edition of a leading scientific journal, *Proceedings of the National Academy of Sciences (PNAS)*.

Adipose tissue plays an important role in controlling the balance of insulin in our bodies as well as energy production and consumption. White adipose tissue is a storage depot for excess energy in the form of fat. Excessive adipocyte (fat cell) size and/or number is a hallmark of obesity, which is a major risk factor for developing type-II diabetes, cardiovascular disease and hypertension.

Professor Ericsson and his team have demonstrated that the protein Fbxw7 regulates the cascade of events that control the development of <u>fat cells</u>. They found that when Fbxw7 was inactive, the development of fat cells was enhanced. In fact, in the case of mouse precursor or immature fat cells, the inactivation of this protein alone was enough to convert them to mature fat cells. The team also demonstrated that Fbxw7 blocks the development of fat cells because it tags other proteins in the regulatory cascade for destruction.

Commenting on the results, Professor Ericsson said; 'The picture we have built of the role of Fbxw7 in energy and lipid metabolism suggests that it is a key regulator of this process. As such, it may impact on two very important health problems, type-II diabetes and obesity'.



In the future, the group would like to determine exactly how Fbxw7 regulates adipocyte differentiation, and identify the factors and signals that control the amount of this protein in fat cells. It will also be important to determine if the levels of Fbxw7 are changed during the development of obesity.

In Ireland, an estimated 200,000 people are suffering from type-II diabetes and it is anticipated that this will rise by 37% in the coming years. This places an enormous burden on the national healthcare budget as people are treated for the disease and its complications.

More information: 'The ubiquitin ligase Fbxw7 controls adipocyte differenciation by targeting C/EBPalpha for degradation'. Published online before print June 1, 2010, <u>doi:10.1073/pnas.0913367107</u>

Provided by University College Dublin

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