

Researchers find potential therapeutic target for controlling obesity

June 14 2011

A new study from Mount Sinai School of Medicine has found that a cellular signaling pathway governs the differentiation of cells into fat tissue or smooth muscle, which lines the vascular system. Engaging this signaling pathway and its capacity to govern cell differentiation has important implications in preventing obesity and cardiovascular disease. The study is published in the June issue of *Developmental Cell*.

This research, by Philippe M. Soriano, PhD, Professor, Developmental and Regenerative Biology at Mount Sinai School of Medicine, and Lorin E. Olson, PhD, previously a postdoctoral fellow in the laboratory who is now an Assistant Member of the [Immunobiology](#) & Cancer Research Program at the Oklahoma Medical Research Foundation, is a novel in vivo study to evaluate the signaling activity of the Platelet Derived Growth Factor Receptor-beta (PDGFR-beta). The research team used mice that were genetically engineered to have elevated PDGFR β signaling. They found that elevated PDGFR β signaling inhibits differentiation of immature mesenchymal stem cells. These cells have the ability to give rise to multiple cell types in the organism, including fat cells and vascular smooth muscle.

"How mesenchymal cells are regulated within the body had been unclear until now. Our research is the first done in animals to show that PDGFR β is a key regulator of cellular differentiation into fat cells or [smooth muscle](#) cells," said Dr. Soriano. "These data indicate that PDGFR-beta plays a critical role in determining their cellular fate, providing a new therapeutic target in preventing the onset of diseases

like obesity."

The researchers caution, based on their previous research published in *Developmental Cell*, that some types of chronic activation of PDGFR receptors may result in tumor formation. Therefore, signaling events further in the differentiation process may be better therapeutic targets. More research is needed to better understand how PDGFR-beta regulates mesenchymal [cell differentiation](#) and the immune system's response to that activity to help identify treatments for cardiovascular and obesity-related diseases.

Provided by The Mount Sinai Hospital

Citation: Researchers find potential therapeutic target for controlling obesity (2011, June 14) retrieved 23 April 2024 from

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