

Scientists identify origins of process that is key to diabetes

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Credit: Darren Lewis/public domain

Oklahoma Medical Research Foundation scientists have pinpointed a cell that begins the process of scarring in fatty tissue. The findings cast new light on a biological process that occurs with obesity and can lead to diabetes.

"Scarring can be an important part of the [healing process](#) when a person suffers an injury," said OMRF's Lorin Olson, Ph.D., who led the research. "But excessive scarring, or fibrosis, can contribute to many

dangerous health conditions."

The new research appears in the June 1 issue of the journal *Genes & Development*.

Using experimental models, Olson and his team found that by stimulating a particular growth factor (known as platelet-derived growth factor, or PDGF) that occurs naturally in the body, they could cause certain undifferentiated cells to develop into [scar tissue](#). But when the researchers didn't activate the growth factor, those cells continued on their normal fate and became fat cells.

Injured or stressed tissues produce PDGF, which stimulates wound repair. However, too much of the growth factor leads to scar tissue, so the body needs a balance of PDGF activity for proper tissue repair.

Fibrosis can also be an early event in the disease process leading to diabetes, which, according to the American Diabetes Association, affects nearly 30 million Americans.

"When fat cells are surrounded by scar tissue, it inhibits their ability to store lipids," said Olson. "When that happens, the lipids are stored in places like the liver or muscle. That can cause insulin resistance, which can lead to diabetes."

In future studies, Olson will examine the PDGF pathway and how it disrupts the fate of the fat cells. "By studying the molecular mechanisms involved in the process, we'll try to understand the role it may play in heart disease, diabetes and other metabolic disorders."

Provided by Oklahoma Medical Research Foundation

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