

# Removal of 'zombie cells' alleviates causes of diabetes in obese mice

March 25 2019

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Mayo Clinic researchers and their collaborators have shown that when senescent cells—also known as "zombie cells"—are removed from fat tissue in obese mice, severity of diabetes and a range of its causes or consequences decline or disappear. The findings appear in *Aging Cell*.

Inflammation and dysfunction of fat tissue cause some of the insulin

resistance in obese people. In many cases, that dysfunction is caused by zombie cells that already have been shown to be responsible for conditions related to aging and illness, including osteoporosis, muscle weakness, nerve degeneration and heart disease. These cells also accumulate in the fat tissues of obese and diabetic people and [mice](#).

In this study, the researchers, using genetically modified mice and wild-type (normal) mice, removed zombie cells two ways: by causing genetically-mediated cell death and by administering a combination of senolytic drugs. Senolytic drugs selectively kill senescent cells but not normal cells. The result: Glucose levels and insulin sensitivity improved. The mice also showed a decline in inflammatory factors and a return to normal fat cell function.

The senolytic drugs also prompted improved kidney and heart function, both of which are common complications of diabetes.

"Our findings show that senescent [cells](#) are a cause of obesity-related inflammation and metabolic dysfunction, and that senolytic drugs hold promise as a treatment of these conditions and their complications, which include diabetes," says James Kirkland, M.D., Ph.D., senior author of the article. Dr. Kirkland is the director of the Robert and Arlene Kogod Center on Aging at Mayo Clinic.

**More information:** Allyson K. Palmer et al, Targeting senescent cells alleviates obesity-induced metabolic dysfunction, *Aging Cell* (2019).

[DOI: 10.1111/acer.12950](https://doi.org/10.1111/acer.12950)

Provided by Mayo Clinic

Citation: Removal of 'zombie cells' alleviates causes of diabetes in obese mice (2019, March 25)

retrieved 28 February 2023 from <https://medicalxpress.com/news/2019-03-zombie-cells-alleviates-diabetes-obese.html>

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