

# Study links body fat, weight loss, and chromosome length in breast cancer patients

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Micrograph showing a lymph node invaded by ductal breast carcinoma, with extension of the tumour beyond the lymph node. Credit: Nephron/Wikipedia

It is well documented that a healthy diet and exercise are key in cancer prevention and management, but the exact mechanism hasn't been clear. Now, Yale Cancer Center researchers have found an explanation in the tiny protective ends of chromosomes called telomeres. The findings will be presented Dec. 11 at the 2015 San Antonio Breast Cancer Symposium.

The researchers used a previously published Yale weight-loss intervention study called LEAN to examine how body fat and weight loss through lifestyle changes are associated with telomere length in [breast cancer survivors](#) enrolled in a weight-loss trial. Telomeres shorten with cell division and are associated with aging and increased risk of breast cancer mortality.

The Yale study—among the few to explore a link between weight loss and telomere length in breast cancer survivors—found that telomeres were slower to shorten in breast cancer survivors who lost weight through diet and exercise. In some cases, telomere shortening even reversed, said the study's first author Tara Sanft, M.D., assistant professor of medical oncology.

"Our results indicate that having higher body fat levels is associated with shorter telomere length, and weight loss was associated with an increase in telomere length," Sanft said. "This suggests that [telomere length](#) may be a mechanism mediating the relationship between obesity and breast cancer risk and mortality."

The study's senior author, Melinda Irwin, professor of epidemiology and associate director for Population Sciences at the Yale Cancer Center, said the growing body of research linking healthy lifestyle factors, such as maintaining a healthy weight and exercise, with improved breast cancer survival is compelling.

"With the consistent findings of [weight loss](#) and exercise improving potential mechanisms related to [breast cancer mortality](#), we feel there should be a shift in how [breast cancer](#) care is delivered, as well as increased access to and reimbursement of lifestyle behavioral counseling and programs," Irwin said.

Provided by Yale University

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