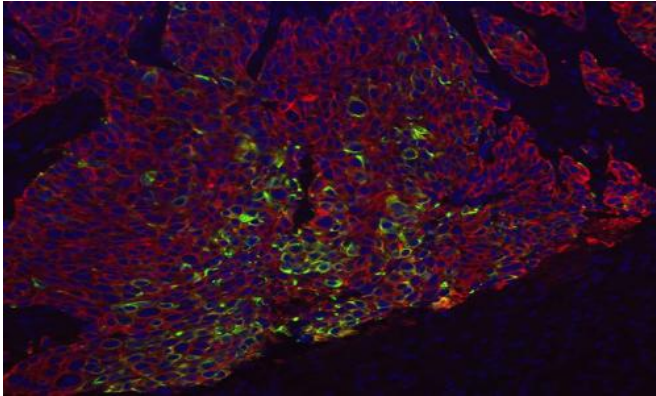


Obesity found to be major risk factor in developing basal-like breast cancer

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Women who are obese face a higher risk of developing the basal-like subtype of breast cancer. The basal-like subtype is an aggressive form of the disease with a poor prognosis for diagnosed women. Credit: UNC/Perou Lab

Women who are obese face an increased risk of developing an aggressive sub-type of breast cancer known as 'basal-like', according to research conducted at the University of North Carolina.

In a study published online by the journal *Breast Cancer Research and Treatment*, a team led by Liza Makowski, assistant professor with the UNC Gillings School of Global Public Health and member of the UNC Lineberger Comprehensive Cancer Center, and Sneha Sundaram, PhD, a post-doctoral fellow in the Makowski Lab, outlined the biological mechanisms where [obesity](#) can create a favorable environment for the growth of basal-like [breast cancer](#) tumors.

"Obesity is widespread and is one of the few risk factors for breast cancer that we may be able to control, hence our intention in this study was to better understand the molecular mechanisms and/or biomarkers of obesity-related basal like breast cancer that could impact disease prevention," said Dr. Makowski.

Breast cancer is a heterogeneous disease made up of several distinct subtypes. The basal-like subtype, an aggressive form of breast cancer, is found in 15 to 20 percent of women diagnosed with breast cancer, with a high percentage of cases found among young and African-American women. Women diagnosed with the basal-like subtype often have a poor prognosis and cannot be treated with hormonal and targeted therapies.

Using a mouse model developed to study the basal-like subtype, the research team discovered that obesity radically alters the cellular microenvironment of mammary glands in ways favorable to the growth of basal-like tumors. One major change is that obesity promotes a growth factor signaling pathway between the hepatocyte growth factor (HGF) protein and an oncogene known as c-Met that is linked with basal-like cancer formation. In animals with elevated levels of HGF, the development of basal-like tumors increased.

"Our study was fairly unique in that we focused on the role that the surrounding tissue in the breast, known as the stroma, plays in breast cancer onset. Many scientists study the tumor alone, but the stroma 'soil' where the cancer 'seed' grows is important in helping that tumor grow," said Makowski.

Since HGF levels are increased with obesity, the study indicates that public health efforts to prevent obesity in at-risk populations may be a clinically useful way of preventing the disease. Makowski said that whether weight loss can minimize [breast cancer risk](#) in already obese patients is an area that needs further investigation.

Provided by University of North Carolina Health Care

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