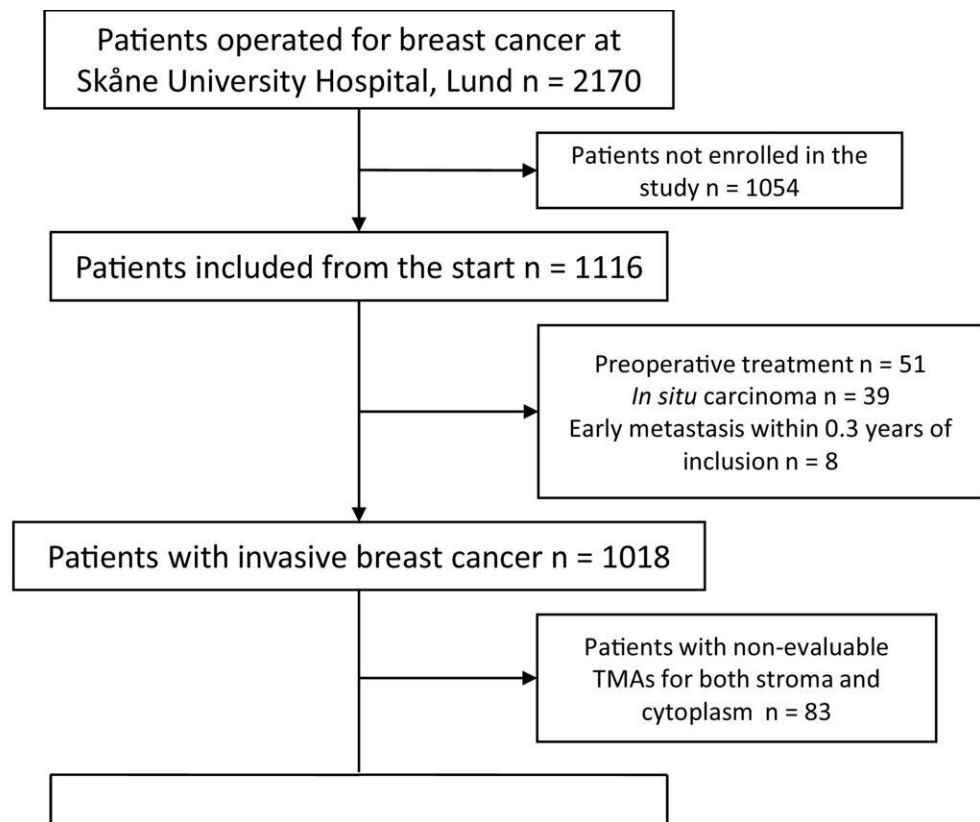


# The tumor environment can affect breast cancer prognosis

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Flowchart of included and excluded patients and representative pictures of each CAV1 staining category in stroma and cytoplasm. Credit: *Translational Oncology* (2022). DOI: 10.1016/j.tranon.2022.101464

The environment in which breast cancer arises—the interplay between the patient's BMI, tumor size and cancer-specific proteins—is of

importance for the prognosis. This is shown in a study from Lund University in Sweden. The knowledge could further enhance precision medicine in breast cancer.

Major advances in diagnostics and treatment have improved [survival rates](#) among [breast cancer patients](#) in recent decades. In the last few years, many studies have focused on tumor characteristics and its prognostic significance. There is an increased understanding of, for example, how the tumor size and molecular characteristics as well as the surrounding tumor environment can affect [drug absorption](#) and treatment effectiveness in killing cancer cells.

Now, research from Lund University in Sweden enhances the understanding of how the interplay between the patient's body constitution (BMI) and the surrounding tumor tissue can be of importance for the prognosis.

The results of the new study are based on around 1,000 breast cancer patients who were operated on at Skåne University Hospital in the years 2002 to 2012. The clinical outcome of the patients was followed until 2019. The researchers have studied tumor size, the cells surrounding the tumor tissue, the patient's body constitution, and a protein called Caveolin-1. The protein is found in the cell membrane of all cells, both in tumor cells and in the tumor's surrounding cells, where it is involved in the transport of different substances (including drugs) into the cells.

"We found that it was good to have little or no Caveolin-1 in the cells surrounding the tumor if the person was of [normal weight](#), or if they had a small tumor, but the opposite was true if the patient was overweight or had a large tumor. This shows the importance of placing the tumor in its correct context," says Christopher Godina, doctoral student at Lund University.

Further research is required to confirm the findings, but the results suggest that the Caveolin-1 protein could be used as a marker to provide an even more precise prognosis and offer support in choosing treatment for breast cancer patients.

"Our study suggests the importance of paying more attention to the patient characteristics, not just aspects of the tumor. The level of Caveolin-1 can be affected by existing approved drugs, but here there is a need for further studies, as it is unclear what effect these drugs have in [breast cancer](#). The [cancer cells](#)' environment in each patient is different in several ways, for example regarding the extent of inflammation in the body and the surrounding cells in the breast," says Helena Jernström, professor of oncology, specializing in integrated cancer epidemiology at Lund University, who led the study, now published in *Translational Oncology*.

**More information:** Christopher Godina et al, Interplay between Caveolin-1 and body and tumor size affects clinical outcomes in breast cancer, *Translational Oncology* (2022). [DOI: 10.1016/j.tranon.2022.101464](#)

Provided by Lund University

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