

New study on popular prostate cancer protein provides insight into disease progression

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Researchers at the Cedars-Sinai Samuel Oschin Comprehensive Cancer Institute have uncovered for the first time the vital role a popular protein plays in the stroma, the cell-lined area outside of a prostate tumor.

Researchers have long understood the function of the protein, Caveolin-1 (Cav-1), in prostate cancer, including its role in [treatment resistance](#) and disease aggressiveness. However, prior to this study, little was known about the role of Cav-1 within the [stroma](#).

The study, published in the *Journal of Pathology*, found that a decreased level of the Cav-1 protein in the stroma indicated tumor progression—a function opposite to the known role of Cav-1 within a tumor. Inside the tumor, an increased level of this protein signifies [tumor progression](#). These human tumor findings suggest that patients whose prostate tumor is surrounded by a stroma with decreased levels of the Cav-1 protein may have an overall worse prognosis and a higher chance of disease relapse.

"How a prostate tumor communicates with its microenvironment, or stroma, is a vital process we need to understand to assess the aggressiveness of a patient's disease and potential response to treatment," said Dolores Di Vizio, MD, PhD, associate professor in the Urologic Oncology Research Program and senior investigator of the study. "This research suggests that the cells surrounding a [prostate tumor](#) are equally as important as the tumor itself in helping understand the complexity of a man's disease. This early-stage research may provide a new, future

marker that may ultimately aid diagnosis and treatment, and personalize prostate cancer therapy."

In addition to understanding the role of Cav-1 in the [tumor microenvironment](#), researchers discovered that the loss of Cav-1 causes an increase of cholesterol in the stroma. Previous research findings suggest that [cholesterol levels](#) are related to aggressive prostate cancer, but cholesterol's role had never been evaluated within the stroma.

"Cholesterol has been shown to be a driver of prostate cancer progression," said Di Vizio. "For the first time in [prostate cancer](#) research, we found that when levels of Cav-1 decrease in the stroma, both cholesterol and androgens increase. This finding may partly explain a resistance to traditional treatments."

Though the findings are preliminary, the Cedars-Sinai researchers Di Vizio, Michael Freeman, PhD, vice chair of research in the Department of Surgery and professor/director of the Cancer Biology Program at the Samuel Oschin Comprehensive Cancer Institute, and post-doctoral fellows Matteo Morello, PhD, and Sungyong You, PhD, will continue evaluating the role of the Caveolin-1 protein in the stroma and its potential end benefit in patients.

More information: *J Pathol.* 2013 May 31. [doi: 10.1002/path.4217](https://doi.org/10.1002/path.4217)

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