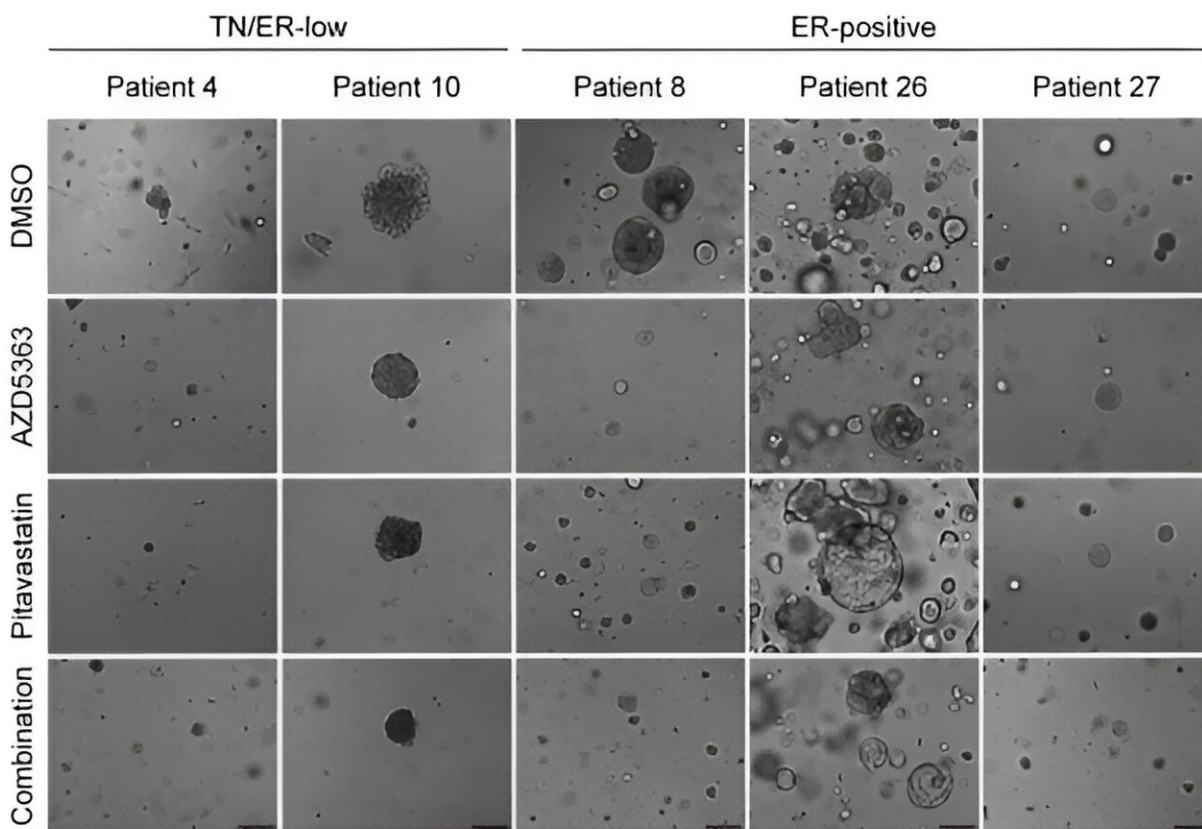


Combining cholesterol-lowering statins with existing cancer drug shows potent effect against breast cancer subtype

August 5 2024, by Katie Brace



TN/ER-low PDOs are sensitive to combination AZD5363 and pitavastatin. A panel of breast cancer PDOs were treated with DMSO, 1 μ M AZD5363, 5 μ M pitavastatin or the combination of AZD5363 and pitavastatin for 96 hours and organoid size and morphology were assessed. A representative image for each PDO in each treatment condition is shown. Credit: *Cancer Research* (2024). DOI: 10.1158/0008-5472.CAN-24-0970

In a new translational [research study](#) published in *Cancer Research*, investigators at Beth Israel Deaconess Medical Center (BIDMC) explored the potential of statins—commonly used medications for managing cholesterol levels—to work in conjunction with AKT inhibitors, a class of drugs that target a key pathway involved in cancer cell survival and growth.

Researchers discovered that this drug combination potently killed triple negative breast cancer (TNBC) cells in preclinical models. The findings suggest the drug combination may provide a new, effective treatment for TNBC, a subtype of breast cancer known for its aggressiveness and limited treatment options and that affects up to 15% of [breast cancer patients](#).

The BIDMC investigators and their colleagues used a CRISPR-based screening approach in TNBC to identify genes that could be targeted in combination with a recently FDA-approved AKT-inhibitor called capivasertib. The screen identified genes in [cholesterol metabolism](#) as candidates, revealing a TNBC-specific vulnerability to the combination of statins—cholesterol-lowering drugs that target cells' cholesterol metabolism—and AKT inhibitors.

As the scientists expected, the combination killed TNBC cells in a panel of cell lines, patient-derived organoids and mouse models. The findings pave the way for [clinical trials](#) to determine the safety and effectiveness of this combination in patients. If successful, this basic, discovery science approach could lead to a new treatment option for patients with TNBC, providing a much-needed advancement in the fight against this aggressive cancer.

More information: Alissandra L. Hillis et al, Targeting Cholesterol

Biosynthesis with Statins Synergizes with AKT Inhibitors in Triple-Negative Breast Cancer, *Cancer Research* (2024). DOI: [10.1158/0008-5472.CAN-24-0970](https://doi.org/10.1158/0008-5472.CAN-24-0970)

Provided by Beth Israel Deaconess Medical Center

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