

40: Dual PI3K and Wnt pathway inhibition as a synergistic combination against triple negative breast cancer

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“Triple negative breast cancer” accounts for 15 to 20 percent of breast cancers. Triple negative means the tumor is not positive for estrogen, progesterone or HER-2, all types of receptors that help cancer grow. This may sound like a good problem to have, but women with this type have higher rates of mortality compared to those who have tumors positive for any of those three receptors.

One reason may be that, other than chemotherapy, women with TNBC have few treatment options compared to women with positive tumors. But the genetic nature of TNBC also may hold clues to how to predict and treat it more successfully. In this study, researchers wanted to look at using combinations of therapies that may limit the action of two genetic “pathways” that often make tumor growth possible.

Methods:

Many times, stopping a single genetic pathway that seems to help cancer grow is not enough. These researchers already knew that the PI3K pathway was active in the majority of TNBC, and they knew that PI3K seemed to enable another pathway, Wnt, to actively assist cancer growth.

For this study, they looked at ways to combine therapies: one that would slow or stop the PI3K pathway and one that would cut off the Wnt pathway. Using mice in a laboratory setting and extensive data analysis, they used two drugs that inhibit each of those pathways to see if the combination would be better slowing or stopping tumor growth.

Findings:

The researchers found that using both drugs worked better than using one alone in slowing or stopping the PI3K and, therefore, also the Wnt it seems to support. They compared their approach to “whack-a-mole,” where hitting both pathways with drugs designed to stop them individually worked better than either drug alone.

Why this study is important:

Both drugs the researchers used in this study, buparlisib and WNT974, are in clinical trials and are not FDA approved. But the study suggests that a combination of these drugs may be helpful in treating several types of cancer, not only TNBC.