

# Prolactin blocks oncogene associated with poor prognosis in breast cancer

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Researchers from the Kimmel Cancer Center at Jefferson have found a mechanism by which a hormone responsible for milk production blocks an oncogene that makes breast cancer more aggressive.

Publishing in the journal *Cancer Research*, the researchers discovered that prolactin, a pituitary hormone that normally stimulates breast development and milk production, in fact reduces levels of an [oncogene](#) called BCL6. The BCL6 protein has previously been shown to play a role in poorly differentiated breast cancer, which carries a poorer prognosis.

According to Hallgeir Rui, M.D., Ph.D., a professor of Cancer Biology and Medical [Oncology](#) at Jefferson Medical College of Thomas Jefferson University, prolactin's role in breast cancer is, to a large extent, carried out by a protein pathway called Stat5. In breast cancer, the inactivation of Stat5 is related to poorly differentiated breast cancer, and thus poorer prognosis.

"We found that prolactin will block expression of the BCL6 protein, and showed that Stat5a, but not the very similar Stat5b variant, is involved in this process as a mediator of prolactin," said Dr. Rui. "We think that prolactin plays an important role in preventing aggressive breast cancers, and that there is a connection between the loss of Stat5 and the increase of BCL6 in making breast cancer more aggressive."

Dr Rui and his laboratory investigated the phenomenon in several different breast cancer cell lines grown in the laboratory, and also in

mice and in human breast cancer samples. The relationship held up across all three.

Receptors for prolactin are present on a majority of breast cancers. Prolactin levels in blood are relatively unaffected by menopause, and breast cancer patients across all age groups are exposed to the hormone. The new findings may lead to better diagnostic tests for [breast cancer](#), and also the development of new treatments.

Provided by Thomas Jefferson University

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