Therapy may block expansion of breast cancer cells

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Breast cancer stem cells are known to be involved in therapy resistance and the recurrence of cancerous tumors. A new study appearing in *Clinical and Translational Science* shows the mechanisms governing stem cell expansion in breast cancer (called Notch activity), and finds that therapy targeting a protein called cyclin D1 may block the expansion of cancerous stem cells.

The study, conducted by Dr. Richard Pestell and colleagues at Thomas Jefferson University, was the first to show that cyclin d1 is required for breast cancer growth in mice. As cyclin d1 is known to be over-expressed in human breast cancer, the findings may explain how cyclin d1 contributes to breast tumor growth, and provide the rationale for targeted therapies at cancerous stem cells in humans.

"Breast and other cancers are maintained through a population of cancer stem cells. By specifically targeting cancer stem cells we hope to reduce recurrence and improve therapy responses," says Pestell.

Cancer arises as a result of the accumulation of multiple genetic lesions that ultimately result in unregulated cell cycle, and Notch activity is a key determinant of the cellular development and differentiation related to this process. As Notch signaling is activated in human breast cancer, (and a negative regulator of Notch signaling reduces the disease), the molecular mechanisms regulating Notch activity are of fundamental importance for future therapy.

Source: Wiley