

Indirect path to attack breast cancer stem cells found

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(PhysOrg.com) -- Scientists at the University of Michigan Comprehensive Cancer Center have identified a potential new way of attacking breast cancer stem cells, the small number of cells in a tumor that fuel its growth and spread.

Researchers found that [breast cancer stem cells](#) are regulated by a type of cell derived from [bone marrow](#), called mesenchymal stem cells. These cells are drawn from the bone marrow to the cancer and create a "niche" for the cancer stem cells, allowing them to replicate.

"The importance of this is that we may be able to attack breast cancer stem cells indirectly by blocking these signals from the niche," says study author Max S. Wicha, M.D., Distinguished Professor of [Oncology](#) and director of the University of Michigan Comprehensive Cancer Center.

Breast cancer stem cells were first identified by Wicha and colleagues at the University of Michigan in 2003. Cancer stem cells are believed to be resistant to current chemotherapies and [radiation treatment](#), which researchers say may be the reason cancer so often returns after treatment.

Little is known about the cancer stem cell niche - a type of microenvironment that is highly associated with tumor growth and metastasis. The researchers looked at mesenchymal stem cells, which arise in bone marrow. They found that breast cancers in mice sent out signals which attracted mesenchymal stem cells from the bone marrow into the tumor where these cells interacted and stimulated the growth of breast cancer stem cells.

Researchers then identified two signals from a cytokine network - a type of protein that affects how cells communicate - that were responsible for stem cell regulation. These same cytokines play a role in inflammation and drugs that block them

have already been approved for the treatment of inflammatory diseases such as rheumatoid arthritis. By blocking these cytokine signals, researchers hope that they can successfully target the cancer stem cell population providing a more effective treatment for breast cancer.

Results of the study appear in the Jan. 15 issue of *Cancer Research*.

More information: Suling Liu, et al. *Cancer Research*, Vol. 71, No. 2, Jan. 15, 2011. cancerres.aacrjournals.org/

Provided by University of Michigan Health System

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