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### Adipocyte activation of cancer stem cell signaling in breast cancer

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#### Abstract

Signaling within the tumor microenvironment has a critical role in cancer initiation and progression. Adipocytes, one of the major components of the breast microenvironment, have been shown to provide pro-tumorigenic signals that promote cancer cell proliferation and invasiveness in vitro and tumorigenicity in vivo. Adipocyte secreted factors such as leptin and IL-6 have a paracrine effect on breast cancer cells. In adipocyte-adjacent breast cancer cells, the leptin and IL-6 signaling pathways activate JAK2/STAT5, promoting the epithelial mesenchymal transition, and upregulating stemness regulators such as Notch, Wnt and the SOX2/OCT4/Nanog signaling axis. In this review we will summarize the major signaling pathways that regulate cancer stem cells in breast cancer and describe the effects that adipocyte secreted IL-6 and leptin have on breast cancer stem cell signaling. Finally we will introduce a new potential

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