

Title: Steps toward understanding the role of sLYVE-1 in breast cancer cell proliferation.

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A resident stromal macrophage subpopulation within the mouse nulliparous mammary gland and mammary tumor is characterized by the expression of lymphatic vessel endothelial hyaluronan receptor (LYVE-1). Previous work from our lab has demonstrated that these macrophages have tumor promoting functions. Therefore, further studies have focused on identifying mechanisms by which LYVE-1 might promote tumor progression. LYVE-1 is an integral transmembrane glycoprotein LYVE-1 that can be cleaved at the membrane, resulting in a soluble fragment of its shed ectodomain (sLYVE-1). Preliminary data show that sLYVE-1-treated cancer cells activate Akt and ERK, which are proteins typically involved in cancer cell proliferation and survival. Thus, it is hypothesized that sLYVE-1 activates mitogenic pathways in cancer cells and promotes cancer cell proliferation in vitro. Examination of mitogenic and proliferative proteins by immunoblot analysis of lysates from sLYVE-1-treated EO771 cancer cells, as well as analysis of proliferation by MTT assay were conducted. Findings suggest that there is an upregulation of mitogenic proteins associated with the Akt and ERK pathways and increased proliferation of sLYVE-1 treated EO771 cancer cells. Understanding the mechanisms by which LYVE-1 in macrophages contributes to tumor growth is of interest for cancer research, as the mechanisms by which these macrophages behave may enable us to target them more effectively from a therapeutic perspective.