Study unveils novel link between cell polarity and cancer-associated inflammation

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A new study led by University of Kentucky Markey Cancer researchers and published in the *Journal of Cell Science* establishes a novel link between cell polarity and cancer-associated inflammation.

Reactive oxygen species (ROS) are reactive molecules and free radicals derived from molecular oxygen, and they are part of the immune system's "killing response" against microbial invasion. Using a 3-D co-culture model of breast cancer cells and monocytes, Markey's Ren Xu and Linzhang Li found that disruption of cell polarity is accompanied by increased ROS production, leading to increased inflammation in these cells. The increased ROS production controls monocyte/macrophage infiltration by inducing the NF-kB pathway in mammary epithelial cells.

Loss of cell polarity and inflammation are hallmarks of breast cancer development.

Cancer is like a wound that never heals, characterized by the disruption of normal tissue structure and inflammation. However, it is unclear whether and how the loss of tissue organization causes inflammation.

Moving forward, figuring out ways to reduce ROS levels in mammary epithelial cells is a potential strategy to inhibit cancer-associated inflammation and prevent cancer development and progression.

More information: Linzhang Li et al. Increased ROS production in non-polarized mammary epithelial cells induces monocyte infiltration in

3D culture, *Journal of Cell Science* (2017). DOI: 10.1242/jcs.186031