Cellular communication in the cancer microenvironment

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In the February 1st issue of *G&D,* Dr. Johanna Joyce and colleagues at Memorial Sloan Kettering Cancer Center lend new insight into the mechanism by which tumor-associated macrophages promote malignant progression.

Innate immune cells, including macrophages, comprise a large fraction of the cellular environment that infiltrates tumors - the so-called "tumor microenvironment". Tumors have a dynamic relationship with their microenvironment, communicating via secreted factors to modulate cellular growth and cancer progression.

In their upcoming *G&D* paper, Dr. Joyce and colleagues delineate how tumor-associated macrophages (TAMs) promote tumor growth and invasion. The researchers found that macrophage cells infiltrating pancreatic, mammary and lung tumors produce high levels of the proteases cathepsin B and S (Cts B and S), which enhances tumor growth and invasion. Interestingly, the researchers discovered that increased Cts B and S activity is stimulated by the tumors, themselves - through the release of interleukin (IL)-4.

The study is highly anticipated because it provides novel and compelling evidence for the therapeutic targeting of the tumor microenvironment -- specifically TAMs -- to disrupt communication and ultimately impede cancer progression.

Dr. Joyce is optimistic that "the identification of factors that are

differentially produced by conscripted cells in the tumor microenvironment provides a strategy to selectively target these cells in combination with targeting the cancer cells, an approach that could have significant therapeutic potential."

More information: The paper will be made available online ahead of print at www.genesdev.org.

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