Effects of Glucose Concentration on Macrophage Growth and Macropinocytosis

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Macrophages are vital cells of the immune system with roles in protecting against infection. Macrophages internalize chemicals or pathogens through phagocytosis or pinocytosis. Macropinocytosis enables macrophages to internalize large volumes of fluid from the cell's environment. This process can be stimulated with a ligand, macrophage colony stimulating factor (MCSF) which binds and activates receptors on the cells surface, initializing a signaling cascade that results in macropinosome formation, cell spreading and proliferation. These processes are important for an effective immune response. During cancer progression, the dense packing of tumor and immune cells can lead to a decrease in availability of glucose. When macrophages are deprived of glucose, they may supplement their energy needs for protein and macromolecules through changes in macropinocytosis. This is why I have chosen to observe the effect of glucose modulation on macrophage growth and macropinocytosis. These data are expected to deepen our understanding of the activity of macropinosomes, and how macropinocytosis ties into overall macrophage growth and health.

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