TRANSPORT PROPERTIES OF MCF-7 CELLS

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Description:

The MCF-7 cell line has been utilized to study the physiology and pathology of human epithelial breast carcinomas. The effects of antiestrogens, tumor promoters, and other chemotherapeutic agents on cell proliferation cell cycle, and viability have been extensively characterized. The effects of these agents on the cellular electrophysiology are not fully understood, however. Ion channel activity is related to cell function and viability and these agents are known to affect the activity of a variety of ion channels in a multitude of systems, including MCF-7 cells. Therefore, a better understanding of tumor promoting or tumor inhibiting agents is paramount to improving breast cancer therapy. Before the effects of these agents on the electrophysiological properties of breast cancer cells can be detailed, these cells must be studied under growth conditions that closely mimic those observed in vivo.

Objectives:

The LAMP student will assist in the culture of MCF-7 cells under conditions that allow the formation of distinct apical and basolateral membranes. The transepithelial transport properties of the cells will be characterized and both the short and long term effects of estrogens, antiestrogens, and adriamycin on the transport properties will be determined. The completion of the study will provide a better understanding of the actions of the therapeutic agents on the MCF-7 cells.

Prerequisites:

The student should have a background in biology, chemistry, and physics.