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The Nelson lab is focused on determining how endocrine and metabolic factors associated with obesity and hypercholesterolemia influence breast and ovarian cancer progression. A strong focus is on the interface between cholesterol homeostasis and the immune system.

Keywords

Cancer, drug discovery, endocrinology, gene regulation, immunology, metabolism, molecular pharmacology, signal transduction

Research Interests

- Establishing 27-hydroxycholesterol as a causal link between obesity, hypercholesterolemia and breast cancer metastasis
- The role of cholesterol homeostasis within the immune system
- Defining the mechanisms by which 27-hydroxychoelsterol increases metastasis
- Determining the impact of cholesterol and its metabolites on ovarian cancer progression
- Delineating the role of nuclear receptor signaling within the tumor microenvironment and its impact on tumor progression

Current Projects

- Using cholesterol biology to reprogram tumor-associated immune cells
- Defining mechanisms by which cholesterol metabolites impact tumor progression & metastasis
- Delineating the role of nuclear receptor signaling within the tumor microenvironment & its impact on tumor progression
- Determining what regulates extracellular vesicles

Interest Areas for Collaboration/Future Work

The magnitude of metastatic relapse of solid tumors (breast & ovarian cancer) provides strong rationale for studies that may lead to novel lifestyle or therapeutic strategies for the prevention and treatment of metastatic disease.

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