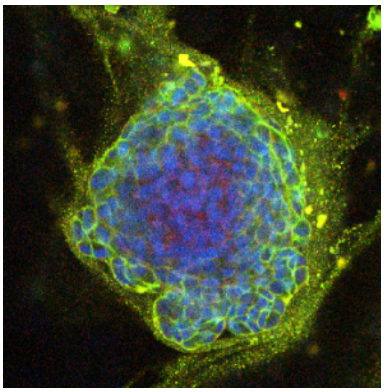
research>>

Radiogenic Breast Cancer



Ductal carcinoma in situ (DCIS) is a premalignant "stage 0" breast cancer that is fully contained within the mammary ducts; In other words, a condition that has many of the hallmarks of cancer, but has not yet invaded the surrounding breast tissue. Not all DCIS lesions are destined to become cancer, however the risk of progression result in aggressive treatment with surgery, radiation therapy, and/or Tamoxifen treatment. My project is focused on understanding the mechanisms involved in why some DCIS lesions become malignant. I am using in vitro three dimensional cell culture of normal and premalignant mammary epithelial cells with which I can generate physiologically relevant models of healthy and DCIS tissue. Through collaboration with the Radiation Oncology Department at Drexel University College of Medicine, I treat these cells with ionizing radiation and have found that a sub-population of the DCIS-like cells begins to invade their surroundings. I am strongly focused on studying the mechanisms of 1. why these cells become invasive and 2. how they are different from their sister cells in the same culture condition. Specifically, I am focusing on a process called epithelial-mesenchymal transition (EMT) and the involvement of the Her2/Neu breast cancer oncogene in this process, as its expression is highly associated with DCIS.