Genomic strategies to identify druggable targets in breast cancer

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Dr. Ethier's laboratory has studied the mechanisms by which oncogenes transform human mammary epithelial cells and play a role in breast cancer development. His lab has a long standing interest in the mechanisms by which the HER-2 oncogene regulates the expression of transformed phenotypes in breast cancer cells. More recently, they extended their focus to studies of the role of EGFR signaling in triple negative breast cancers. They have also worked to understand how oncogenes that are present on the 8p11 amplicon, which occurs in approximately 15% of human breast cancers, drive progression of aggressive luminal breast cancers. Among the key oncogenes that they have identified from these studies are WHSC1I1, DDHD2, and LSM1.

The lab has recently incorporated the use of genome-scale shRNA screening strategies to identify other key breast cancer oncogenes that play important roles in breast cancer development, and interact with other more well-known oncogenes to induce malignant transformation.

Dr. Ethier is dedicated to teaching and training, and places a high priority on teaching students about the importance of proper experimental design, and about rigor and reproducibility in research. He considers the teaching and training of students and fellows to be one of the most rewarding aspects of his scientific career, which he is dedicated to continue in the future.