Enzyme Assay Development for Hormonally Up-regulated Neu-associated Kinase (HUNK) Protein: A Target in EGFR+ (HER2+/ErbB2+) Breast Cancers

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Background: Breast cancer is the second leading cause of cancer death among women in the United States, with about 264,000 cases of breast cancer diagnoses and 42,000 deaths per year. For many drug-resistant metastatic breast cancers, epidermal growth factor receptor (EGFR) is highly expressed with a conferred resistance to HER2/ErbB2 inhibitors. Hormonally up-regulated protein kinase (HUNK) is a protein kinase that has been evidenced as a target in EGFR+ (HER2+/ErbB2+) breast cancers, presenting a potential for targeted treatment.

Methods: To determine its efficacy as a target, we implemented ADP enzyme assays to test the amount of phosphorylation of HUNK, both alone and in the presence of various HUNK inhibitors.

Results: The activity of specific drug inhibitors was found to be inconclusive. However, HUNK does demonstrate affinity to EGFR when combined with additional DTT, suggesting its potential for further study as a target for drug-resistant breast cancer therapy.

WH and FL Hardiman Fellowship
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Year: Class of 2026
Specialty Interest: OB/GYN or pediatrics
Biggest takeaway: Enzyme assay development not only requires the achievement of replicable results, but also sheds light on the importance of optimizing conditions in a way that delivers replicable results in a timely manner.
As a result, the time I spent with IMPRS research optimizing an enzyme assay for novel breast cancer drugs deepened my ability to problem solve, trouble shoot, and become a master of the essence of trial and error. Working in Dr. Yeh's lab, which focused on all stages of drug discovery , also created an impactful connection between laboratory science and the clinical relevance and pathology of breast cancer. Above all, I am appreciative to have had such a supportive and welcoming team to learn from.