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“Exploring the ERK5 in Triple Negative Breast Cancer”

Breast Cancer is the most commonly diagnosed cancer among women. Breast Cancer is classified by the presence of hormone receptors and human epidermal receptor 2 (HER2). Receptor positive breast cancers have available targeted therapies for treatment; however, the triple-negative breast cancer (TNBC) subtype lacks these receptors and to date has no targeted therapy. TNBC is a particularly aggressive, challenging to treat breast cancer, and is most prevalent in younger Black and Hispanic women, making this an underserved breast cancer subtype. Due to the nature of the disease and its prevalence in minority populations, it is imperative that researchers find effective novel targeted therapies and treatments.

One avenue researchers are interrogating for novel drug targets is through the exploration of protein kinases. Here, we focused on the extracellular signal-regulated kinase 5 (ERK5) a member of the MEK5/ERK5 pathway which regulates cellular proliferation, cell survival, differentiation, and apoptosis. The ERK5 pathway is known to have effects on TNBC, however the impact of these kinases on the tumor microenvironment is not currently evaluated.

In this project, the role ERK5 as a driving factor in the progression and development of TNBC tumor microenvironment was evaluated. Kinase evaluation was performed through the stable repression of ERK5 in TNBC. Following validation of stable repression, conditioned media experiments were performed to understand the role ERK5 plays on the secretome. The MDA-MB-231-ERK5KO lines were evaluated for gene expression of cytokine markers and cell death. Results from this study will be used to better understand the role of ERK5 in TNBC microenvironment and better inform novel drug targets. .