Developing an Alternative Treatment to Luminal B Breast Cancer by Targeting DNA Repair Mechanisms

Waddell, Lily

Worldwide, more than 1,300,000 people are diagnosed with and more than 450,000 die of breast cancer every year. There are several ways breast cancer can be subclassified, one of which is immunohistochemistry, which determines the presence of hormone receptors and growth factors in cancer cells. In this project, I am developing an alternative treatment for Luminal B breast cancer, a hormone receptor/growth factor-positive subtype. Luminal B breast cancer is more aggressive, has a worse prognosis, and is less responsive to chemotherapy than other subtypes. I have chosen to treat two Luminal B cell lines with a combination treatment of two DNA damage repair inhibitors, with the theory that this combination treatment will stop virtually all DNA repair in cancer cells. If DNA repair can be effectively inhibited, the cancer cells will build up mutations and ultimately die. So far, preliminary assays with combination treatments have been completed, and results indicate that the novel combination treatment is more effective than each single agent, and is very effective at killing breast cancer cells over the course of each assay. Future work includes expanding these assays to different cell lines and eventually real patient specimens.