



## CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:  
RP140141

Project Title:  
Targeting HER2 for Cancer Therapy

Award Mechanism:  
Individual Investigator

Principal Investigator:  
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Entity:  
Texas A&M University System Health Science Center

### Lay Summary:

Aside from skin cancer, breast cancer is the most common form of malignancy in women. About 1 in 8 women are expected to develop breast cancer during their lifetime, and at the current time, about 40,000 women per year are predicted to die from this disease in the United States alone. Despite intensive efforts, a need therefore persists for the development of new therapies. Our proposed study seeks to address this by investigating a new therapeutic strategy for the treatment of breast cancer and multiple other cancer types. Our approach is based on the following: cancerous cells frequently have proteins called growth factor receptors that are displayed on the surface of the tumor cells. The receptors signal to the cell to continue to grow and divide in an uncontrolled way, resulting in tumors. One particularly potent stimulator of cancer cell growth is a receptor called HER2. HER2 can be targeted with proteins called antibodies. Recently, antibodies that target HER2 have been made more effective in killing tumor cells by linking them to potent drugs. However, there remains a need for the development of antibodies that deliver these drugs more efficiently to their target cell, and our study is directed towards addressing this. Recent analyses in our laboratory have led to an improved understanding of the trafficking pathways that HER2-specific antibodies take within cells. Importantly, this knowledge indicates ways of generating antibodies with enhanced efficiency in delivering drugs to HER2-expressing tumor cells. These studies could therefore lead to a new therapy for breast cancer that targets tumor cells with a wide range of HER2 expression levels. In addition, our approach could have broad relevance to the targeting of multiple other malignancies that are known to express HER2, such as ovarian, lung, pancreatic and bladder cancer.