



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP120406

Project Title:
A New Role for Triptan Drugs in the Treatment of Breast Cancer

Award Mechanism:
Individual Investigator

Principal Investigator:
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Entity:
The University of Texas at Austin

Lay Summary:

Through a joint translational drug discovery effort the Dalby and Ozpolat laboratories recently discovered a potential new role for an established class of drug in the treatment of breast cancer. We discovered that a member of this drug class showed promising anticancer properties in models of human breast cancer. Significantly, we found evidence for previously unknown signaling pathways in estrogen receptor ER(-), ER(+), triple negative, highly aggressive metastatic and drug resistant (tamoxifen and chemotherapy) breast cancers, which could be exploited therapeutically. Based on our preliminary results we hypothesize that the targeting of a specific receptor, that we discovered to be over-expressed in breast cancers, represents a promising therapeutic strategy for the inhibition of multiple pathways in advanced highly aggressive and metastatic breast cancers with potential for overcoming resistance to current cancer therapy. To test our hypothesis, we propose to carry out 3 specific aims. 1) to delineate the molecular mechanism of growth inhibition and cell death induced by the most potent drug derivatives 2) to synthesize a novel library of drug derivatives and formulate into tumor-targeting nanoliposomes; 3) to determine the efficacy of nanoliposomal delivered drugs alone and in combination with chemotherapy in in vivo ER(-), ER(+) and metastatic breast cancer models. In this proposal we combine our expertise to explore a new paradigm in breast cancer therapy. We combine state-of-the-art delivery technology to target a receptor previously unassociated with breast cancer with a drug class used by millions, but which has never been associated with therapeutic potential in human breast cancer. This study represents a unique opportunity to rapidly translate a basic scientific discovery into a phase 1 clinical trial in humans with a distinct biomarker.