



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP120422

Project Title:
Simultaneous Vascular Targeting and Tumor Targeting of Cerebral Breast
Cancer Metastases Using a T Cell Receptor Mimic Antibody

Award Mechanism:
High Impact/High Risk

Principal Investigator:
Bickel, Ulrich

Entity:
Texas Tech University Health Sciences Center

Lay Summary:

The proposed work will explore a novel concept for the treatment of brain metastases of breast cancer. Recently there has been some progress in the therapy of breast cancer due to availability of new drugs. However, brain metastases are a major threat for patients because they seem to occur now more frequently and current possibilities for treatment are very limited. Only about one in five patients is alive one year after a brain metastasis has been detected. One of the main problems is that the blood vessels in the brain do not allow passage of most anticancer drugs and therefore drug concentrations in brain tumors are too low to be effective. We have recently identified a new type of antibody, which could be a promising drug for brain metastases in such patients. This antibody has been shown in animal models of breast cancer to kill tumors. In addition, the antibody has the unusual property of being transported into brain. We therefore speculate that this antibody could be injected to patients and accumulate in brain in high enough concentrations to kill tumor cells. We want to study this possibility in a suitable model of human breast cancer in mice. The animals will develop brain tumors and then receive the antibody. In one series of experiments we will measure the concentrations reached in brain and in brain tumors. In another series of experiments we will treat the mice with the antibody repeatedly over an extended period and determine whether this treatment increases their survival. If successful, we expect this therapy will be tested in human cancer patients. This novel type of treatment could represent a major benefit not only for breast cancer patients. Similar treatment strategies could also be developed for other types of brain tumors.