



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP160482

Project Title:
Nanoparticle Targeted STAT3 Immune Expression

Award Mechanism:
Individual Investigator

Principal Investigator:
Heimberger, Amy B

Entity:
The University of Texas M.D. Anderson Cancer Center

Lay Summary:

For the last several years there has been a great deal of enthusiasm for immunotherapeutic treatment of malignancies. This has been in large part due to recent FDA approvals of antibodies that are capable of targeting immune checkpoints (i.e. the breaks of the immune system). The key inflection point has now been reached in the field of immunology with a wide variety of robust targets, unique and innovative strategies that include and go beyond the targeting of cell surface molecules, and rigorous preclinical testing in state-of-the-art model systems. This proposal brings together unique and unprecedented expertise in immunology, neurosurgery, and translational biology, to work together to identify a robust immunotherapeutic strategy that will improve the survival of patients with glioblastoma. In the case of glioblastoma, there are multiple mechanisms of tumor-mediated immune suppression, so we have focused on a key molecular hub that drives these mechanisms – the signal transducer and activation of transcription 3 (STAT3). We have created a unique way of targeting STAT3 in the immune cells that has demonstrated remarkable therapeutic activity in animal models while potently activating the immune system. Furthermore, this approach has demonstrated minimal toxicity. Since monitoring immune responses in the blood has not correlated with tumor shrinkage in clinical trials, we are now focused on studying these immune responses directly in the tumor of mice with unique intracranial imaging. Through the proposed studies, we envision to attain our goal of therapies, applicable to the vast majority of our patients that durably afford them the opportunity to pursue an excellent quality of life.