



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP150235

Project Title:
Role of TBK1 in Regulating Dendritic Cell Function and Antitumor Immunity.

Award Mechanism:
Individual Investigator

Principal Investigator:
Sun, Shao-Cong

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

Lay Summary:

Immunotherapy has become a highly promising approach for cancer treatment. The immune system is evolved as a mechanism that detects and attacks foreign substances, such as microbial pathogens. On the other hand, the immune system does not attack cells or tissues of our body, which is the so-called immune tolerance. Cancer cells accumulate genetic mutations, making them different from normal cells. However, because the differences between cancer cells and normal cells are very small, the immune system is usually tolerant to the cancer cells and does not mount strong responses to attack them. The general principle of tumor immunotherapy is to stimulate the tumor-specific T-cell responses strongly enough to overcome the tolerance. T-cell activation requires a specific type of supporting cells, called dendritic cells (DCs), which present the antigens (small peptides derived from pathogens or created through genetic mutations in tumor cells) to T cells. One way to boost antitumor immunity is to modify DCs using vaccine adjuvants or adoptively transferred DCs. This research project is to study the signaling mechanism that regulates the function of DCs in the activation of antitumor T-cell responses. We have identified a proteins kinase that controls DC function and regulate antitumor immunity. Based on our preliminary studies, we believe that targeting this protein kinase is an important approach to improve the efficacy of tumor immunotherapy. We will examine our hypothesis by performing a series of studies using both molecular biological tools and animal models of tumor immunotherapy. The outcome of these studies will be highly important for designing more effective tumor immunotherapies.