



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP180288

Project Title:
Innate Immune Regulation of Cancer Cell Proliferation

Award Mechanism:
Individual Investigator

Principal Investigator:
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Entity:
The University of Texas Southwestern Medical Center

Lay Summary:

Innate Immune Regulation of Cancer Cell Proliferation
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Our immune system responds to viral infection by turning on innate immunity that acts immediately inside of infected ('sick') cells and adaptive immunity that brings in T cells and B cells that can better control the infection. Cancer cells can also be detected by the immune system as 'sick' cells due to their rapid growth. Unfortunately, many viruses still cause diseases because they can block our immune response. Similarly, many cancers also weaken the immune response around them. One of the most promising strategies to treat cancer is to restore our immune system to attack cancer cells, also known as checkpoint blockade immunotherapy. The current immunotherapy relies on restoring adaptive immune response such as T cells. It is unclear whether we can also restore innate immune response inside of the cancer cells. We recently discovered that cancer cells turn-up genes that block innate immune response and turn-off genes that drive innate immune response. We propose to study how do these innate immune genes work inside of cancer cells, how do they know or 'sense' a cell becomes a cancer cell, and how do they inhibit cancer cell growth. An advantage of innate immune response is that it not only acts immediately inside of cancer cells, it also secretes proteins that can activate adaptive immune response. Our ultimate goal is to design new immunotherapy drugs that can restore innate immune response inside of cancer cells. We expect that our approach will restore the full capacity of our immune system to fight against cancer.