



CANCER PREVENTION & RESEARCH
INSTITUTE OF TEXAS

Award ID:
RP100670

Project Title:
ATM Activation by Oxidative Stress: Characterization and Regulation of
Signal Transduction Induced by Reactive Oxygen species

Award Mechanism:
Individual Investigator

Principal Investigator:
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Entity:
The University of Texas at Austin

Lay Summary:

This project focuses on the ATM protein, which is an important suppressor of tumor formation in humans and is known to act in response to DNA damage to repress cell growth. We have recently found that ATM can also be directly activated by oxidation, separate from its activation through DNA breaks, and also that this pathway is important for the regulation of cell fate after exposure to oxidative stress. This response is important in cancer biology because levels of intracellular reactive oxygen species (ROS) increase dramatically during the initiating stages of oncogene activation and inflammation, and responses to ROS have been shown to be important for the regulation of cancer cell proliferation. In this project we will identify the downstream targets of ATM during exposure of human cells to oxidative stress, and also investigate the use of small molecules as activators of ATM through targeted oxidation. These studies will increase our understanding of the mechanisms of ATM activation and potentially provide insights into how to manipulate cellular defenses against tumor progression.