



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP110107

Project Title:
A therapeutic approach for lung cancer chemoprevention

Award Mechanism:
Individual Investigator

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

Lay Summary:

Many years of research has led to great improvement in our understanding of the molecular mechanisms of cancer and to the development of various advanced treatment procedures. However, progress has been slow in the long-term survival rate for patients with lung cancer and other solid tumors. Several intrinsic properties of late-stage cancer may contribute to the difficulty in its treatment, including genomic instability leading to drug resistance, insensitivity of cancer stem cells to current cancer therapy, and poor drug penetration and hypoxic condition caused by tumor vasculature. These issues result in frequent occurrence of drug resistance and high relapse rates in cancer treatment, and are formidable tasks to overcome. Tumorigenesis in humans is believed to be a multistep process and these steps reflect genetic and epigenetic alterations that drive the progressive transformation of normal human cells into highly malignant cancer cells. We hypothesize that if we can find a way to specifically target early genetic changes in tumorigenesis and kill tumor cells at early stage, we will be able to prevent or significantly inhibit tumor development and reduce cancer related deaths. By targeting genetic changes in early tumorigenesis, we would gain specificity to diminish potential side effects. Furthermore, by eliminating premalignant tumor cells, we will have the potential to make the approach work like therapy to reduce the duration of treatment and diminish cost as well as side effects often associated with long-term therapy. In this application, we propose to develop a novel approach for lung cancer chemoprevention by targeting the activation of EGFR/RAS for apoptosis.