



CANCER PREVENTION & RESEARCH
INSTITUTE OF TEXAS

Award ID:
RP100777

Project Title:
Suppressing maturation of an oncogenic microRNA with small molecules.

Award Mechanism:
Individual Investigator

Principal Investigator:
Luebke, Kevin J

Entity:
The University of Texas Southwestern Medical Center

Lay Summary:

The aim of the proposed research is to find compounds that bind to and diminish the function of RNA molecules involved in cancer. The RNA molecules targeted are precursors to a recently discovered class of biological molecules called microRNAs. The normal function of microRNAs is to suppress the expression of specific genes by diminishing their translation into proteins. In many cancers, certain microRNAs are overproduced, contributing to the dysfunction of the cancer cell. The microRNA targeted in this study is overproduced in a large number of human cancers, and its overproduction contributes to a cancer cell's resistance to natural processes that would normally kill a malfunctioning cell. With compounds that bind to precursors of this microRNA, we hope to inhibit their maturation into the functional molecules and stimulate cancer cell death. To discover molecules that bind to the targeted RNA, we will screen a collection of thousands of peptoids, which are cell permeable, biologically stable compounds that show promise as pharmacological agents. We will modify the lead compounds that arise from this screen to improve their ability to bind uniquely to the microRNA precursor, and test the resulting agents for their ability to diminish the amount of the pathological microRNA in cancer cells. We will test lung cancer, breast cancer, and pancreatic cancer cells. We will assess the effects on cancer cell viability of compounds that diminish the level of the target microRNA.