CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP100960

Project Title:
Prostaglandins and Inflammation in Colorectal Cancer

Award Mechanism:
Individual Investigator

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

Lay Summary:

Colorectal cancer (CRC) is a major cause of morbidity and mortality in the United States. Texas ranks fourth overall as a state in total number of cases. Scientific evidence has linked the regular use of nonsteroidal anti-inflammatory drugs (NSAIDs) to reducing the relative risk for developing colorectal CRC. Generally, NSAIDs reduce inflammation and tumor progression by inhibiting enzymes called cyclooxygenases. This inhibition reduces the production of proinflammatory lipids called prostaglandins (PG)s. Prostaglandins can worsen chronic inflammation and promote CRC formation but the details of these processes are not known. We recently found that one prostaglandin, PGE2, can silence tumor suppressor and DNA repair genes by affecting DNA methylation. This discovery is a real breakthrough in understanding the complexity of PGE2 in cancer progression. This discovery, among others, prompted us to hypothesize that PGE2 is a key mediator connecting inflammation to carcinogenesis. This proposal will help examine our hypothesis and reveal how PGE2 promotes tumor formation and growth by regulating DNA methylation factors, and thereby enable tumor cells to survive and adapt to their microenvironment.