



## CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:  
RP160589

Project Title:  
Arylhydrocarbon receptor mediated modulation of colorectal cancer by  
microbiota metabolites

Award Mechanism:  
Individual Investigator Research Awards for Prevention and Early  
Detection

Principal Investigator:  
Chapkin, Robert S

Entity:  
Texas Agrilife Research

### Lay Summary:

This proposal seeks to determine how bacteria present in the human gastrointestinal tract modulate colon cancer in a high fat diet environment. It is becoming increasingly clear that the intestinal bacterial community plays an important role in human health. Alterations in the bacterial community composition and function have been correlated to several diseases including cancer, insulin resistance and diabetes, and autism. However, very few studies have accounted for the role of the intestinal bacteria - specifically, the molecules that it produces due to metabolism - in cancer prevention and treatment. Since studies have shown that (i) body mass index is strongly associated with risk of colon cancer, (ii) perturbations in intestinal stem cell responses represent the first step in colon tumorigenesis, and (iii) the arylhydrocarbon receptor is important in tumor formation, we propose that metabolites generated by the intestinal bacteria are important in controlling colon tumor formation through this receptor by acting on intestinal stem cells. Identifying these molecules will provide novel preclinical candidates for colon cancer prevention and possibly, even treatment, of colorectal cancer.