CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP170653

Project Title:
Identify Streptococcus gallolyticus Factors Important for Promoting Colorectal Tumor Development

Award Mechanism:
High Impact/High Risk

Principal Investigator:
Xu, Yi

Entity:
Texas A&M University System Health Science Center

Lay Summary:

It has been demonstrated that intestinal microbiota influences the development of colorectal cancer (CRC). This microbe-CRC connection suggests a potential paradigm shift in the way CRC is detected, treated and managed. Knowledge of specific microbial components involved in the development of CRC is critical to moving this field forward. Among the bacterial species known to associate with CRC, Streptococcus gallolyticus subsp. gallolyticus (Sg) stands out as having a strong and well-documented clinical association supported by numerous case reports and surveys over the past several decades. We and others further found that Sg is present in a substantial percentage of CRC patients (up to ~ 74%). Furthermore, our work using in vitro and in vivo models of CRC demonstrated that Sg actively promotes colon tumor growth. These exciting discoveries underscore the importance of Sg in CRC with respect to both function and clinical relevance. Further investigation into the molecular details of the Sg-CRC relationship should be of a high priority. Work in our lab has led to the first working model for how Sg promotes colon tumor growth. Our data suggests a novel mechanism by which Sg promotes colon tumor growth. Going forward, the key question that beckons to be addressed is what Sg molecules initiate the molecular changes resulting in enhanced tumor development. Identifying the critical Sg molecules is the goal of this proposal. These Sg molecules are essential to advancing the field in the following important areas; 1) a better understanding of microbial contributions to CRC development, 2) the prospect of using growth-promoting Sg factors as molecular markers for more precise CRC subtyping and diagnosis, and 3) the possibility of improving therapeutic responses by eliminating Sg from the intestinal tract or inhibiting the activities of key Sg molecules as a part of the treatment strategy for Sg-positive CRC patients.