Gut Microbiome Analysis for Detecting Colon Cancer Mutations

IP Status: Pending US Patent; **Application #:** 15/947,366

Predicts Colon Cancer Mutations

Analyzing the microbiome of colon cancer microenvironments can detect colorectal cancer (CRC) and even predict specific types of mutations present in a tumor. This new, non-invasive method was developed by analyzing fecal swabs from tumor microenvironment microbial communities and found that specific tumor mutations were associated with specific gut bacteria. In fact, results found a correlation between the presence and abundance of specific bacterial taxa with loss-of-function (LOF) mutations in certain genes. The method includes a kit comprised of probes and/or primers used for detecting specific bacterial taxa in the colon mucosa and stool microbiomes of CRC cancer patients. The method might also be employed as a non-invasive screening for the presence or increased risk of colon cancer.

Noninvasive Colon Cancer Detection without DNA Sequencing

While DNA sequencing of stool microbiomes has previously detected colon cancer in a non-invasive manner, this method is unique in that it can detect or predict specific types of mutations without having to sequence the exome or genome of tumor cells. Using only the taxonomic profile of the microbial community from the tumor microenvironment, this method can predict whether certain types of mutations are present in a particular tumor's genome, insight which may lead to increased efficacy of treatment.

BENEFITS AND FEATURES OF GUT MICROBIOTA ANALYSIS FOR DETECTING COLON CANCER MUTATIONS:

- Predicts specific types of colorectal cancer mutations
- Correlates specific bacteria with specific tumor mutations
- Packaged as a kit for bacterial taxa detection
- DNA sequencing of tumor exome or genome not required
- May be used as colon cancer screening test
- Results may help treat or prevent colon cancer

Phase of Development Discovery

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