

Possible link between bacterium, colon cancer found

October 17 2011

For the first time, a specific microorganism has been found to be associated with human colorectal cancer. In two studies published online today in *Genome Research*, independent research teams have identified *Fusobacterium* in colon cancer tissue, a finding that could open new avenues for diagnosis and treatment of the disease.

Colon cancer ranks as the second leading cause of cancer deaths, and while the underlying cause remains unclear, inflammation is known to be a risk factor. Gastric cancers have been previously linked to inflammation mediated by the microorganism *H. pylori*, so it is possible that some of the many species of microbes found in the gut could be associated with [colorectal cancers](#).

Two independent research teams have now identified a potential link between a microorganism and [colon cancer](#), making the unexpected observation that a single genus of bacteria, *Fusobacterium*, is found more often in colon cancer tissues than normal tissue.

"This was especially surprising because although *Fusobacterium*, the bacterium we found in colon tumors, is a known pathogen," said Dr. Robert Holt of the BC Cancer Agency and Simon Fraser University, and senior author of one of the reports, "it is a very rare constituent of the normal gut microbiome and has not been associated previously with cancer."

"It was also surprising that ... *Fusobacterium* has also previously been

reported to be associated to be with ulcerative colitis, which is itself a risk factor for colon cancer," noted Dr. Matthew Meyerson of the Dana-Farber Cancer Institute and senior author of the other study.

Holt's group identified *Fusobacterium* by sequencing the RNA present in colon [cancer tissue](#) and compared this to RNA from normal colon tissue, looking for sequences that originate from microorganisms, while Meyerson's team sequenced the DNA present in the cancer tissues and normal tissues to find microbial sequences.

Holt and Meyerson both noted that although it is unclear at this time whether *Fusobacterium* infection is a cause or consequence of colorectal tumors, the microbe could prove to be very useful in the clinic as a marker for cancer. If *Fusobacterium* is found to be causative for disease, clinical trials could evaluate the effectiveness of antibiotics or vaccines to treat or prevent cancer.

More information: The manuscripts will be published online ahead of print on Tuesday, October 18, 2011. The full citations are as follows:

Castellarin M, Warren RL, Freeman D, Dreolini L, Krzywinski M, Strauss J, Barnes R, Watson P, Allen-Vercoe E, Moore RA, Holt RA. *Fusobacterium nucleatum* infection is prevalent in human colorectal carcinoma. *Genome Res* [doi: 10.1101/gr.126516.111](https://doi.org/10.1101/gr.126516.111)

Kostic AD, Gevers D, Pedamallu CS, Michaud M, Duke F, Earl AM, Ojesina AI, Jung J, Bass AJ, Tabernero J, Baselga J, Liu C, Shivdasani RA, Ogino S, Birren BW, Huttenhower C, Garrett WS, Meyerson M. Genomic analysis identifies association of *Fusobacterium* with colorectal carcinoma. *Genome Res* [doi: 10.1101/gr.126573.111](https://doi.org/10.1101/gr.126573.111)

Provided by Cold Spring Harbor Laboratory

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