

# Researchers publish new findings on influence of high-fat diet on colorectal cancer

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Cancer—Histopathologic image of colonic carcinoid. Credit: Wikipedia/CC BY-SA 3.0

Poor diet is associated with 80% of colorectal cancer cases, but the exact pathways by which diet leads to cancer are not known.

In a newly published study, Cleveland Clinic researchers have identified

a specific molecular pathway that plays a key role in the link between a high-fat [diet](#) and tumor growth in the colon.

In the July 6 issue of *Stem Cell Reports*, the team showed in pre-clinical models that [cancer](#) stem cell growth in the colon was enhanced by a high-fat, Western diet. Cancer stem cells are a subset of resilient, aggressive malignant [cells](#) that are believed to be partially responsible for spread and recurrence of cancer.

Furthermore, when the researchers blocked the JAK2-STAT3 [cellular signaling pathway](#), a widely studied pathway known to promote tumor growth, the spike in cancer stem cell growth caused by the high-fat diet declined.

This study provides more insight into how the JAK2-STAT3 pathway is linked to diet-related cancer. Pinpointing the exact mechanism can help researchers develop therapeutics to counteract the negative effects of a Western diet on [colorectal cancer](#).

Colorectal cancer is the third most common cancer in the United States with more than 130,000 cases reported annually. The disease arises as a result of a combination of several genetic, epigenetic and environmental causes, such as diet.

"We have known the influence of diet on colorectal cancer. However, these new findings are the first to show the connection between high-fat intake and colon cancer via a specific molecular pathway," said Matthew Kalady, M.D., co-author of the study, colorectal surgeon, and Co-Director of the Cleveland Clinic Comprehensive Colorectal Cancer Program. "We can now build upon this knowledge to develop new treatments aimed at blocking this pathway and reducing the negative impact of a high-fat diet on colon cancer risk."

The team analyzed human colorectal cancer-free survival data in the Cancer Genome Atlas and evaluated primary and metastasized colorectal cancer specimens via microarray analysis. They further verified the link between [high-fat diet](#) and stem cell maintenance in obesity-resistant mice.

"These findings also provide a new way in which [cancer stem cells](#) are regulated and provide insight into how environmental influences, such as diet, can alter cancer stem cell populations in advanced cancers," said Justin D. Lathia, Ph.D., Associate Professor in the Department of Cellular and Molecular Medicine, Lerner Research Institute, and co-author of the study.

**More information:** *Stem Cell Reports* (2017).  
[www.cell.com/stem-cell-reports](http://www.cell.com/stem-cell-reports) ... 2213-6711(17)30265-5

Provided by Cleveland Clinic

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