

FALSE ALARM!

Fake Viral Signal Can Prevent Colon Cancer

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Source: [Saint Agnes Health](#)

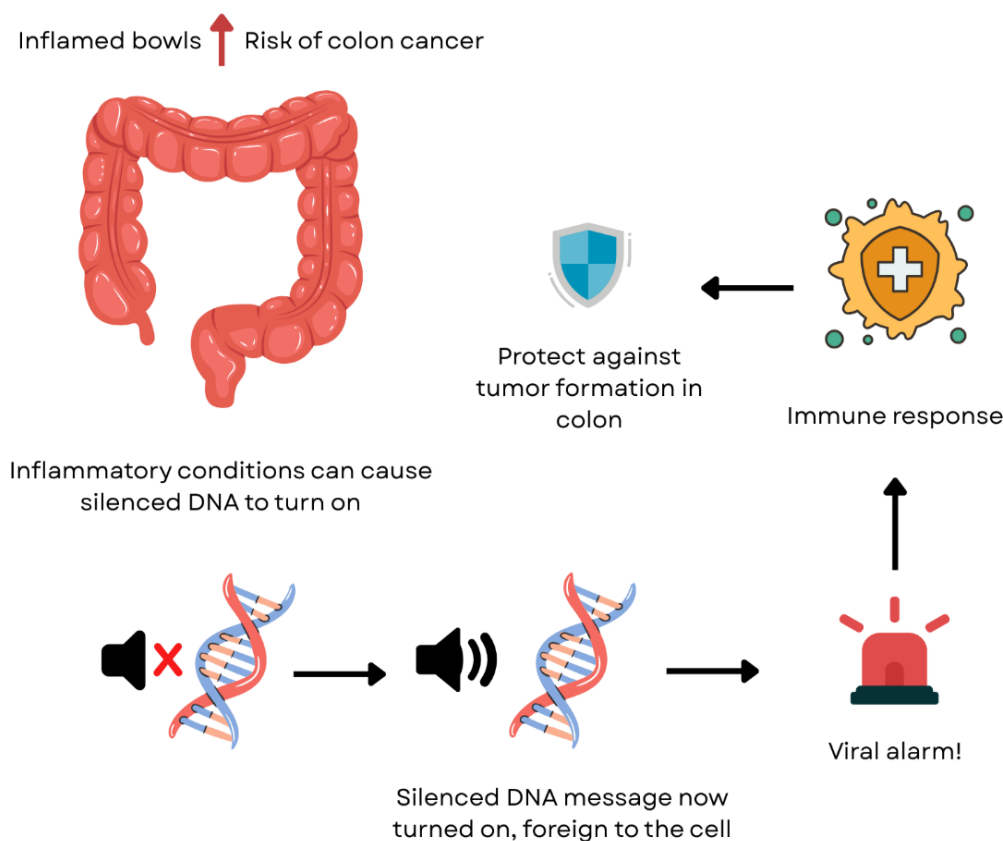
Inflammatory bowel disease (IBD), affecting over 200,000 Canadians, occurs because of long-term inflammation of the colon. As the colon is repeatedly inflamed, the cells in these areas may become cancerous and colorectal cancer may form. Although IBD may increase the risk of colorectal cancer, some individuals with IBD do not end up with colorectal cancer. The question then is *why do some individuals with IBD develop colorectal cancer while others do not?* A group at the London Health Sciences Center Research Institute aimed to answer this question and better understand how inflammation in the colon may influence cancer formation. They found that [the answer lies in our DNA](#).

DNA holds the message and blueprint for all our cells. It tells our cells what to do and when a cell needs to respond to changes in its environment. Given our cells can do so much and need to adapt to the many needs of our body, we have lots of DNA that carry these messages. But surprisingly, a lot of this DNA is silent, meaning it doesn't send out messages.

Scientists have thought for a long time that these portions of silent DNA weren't that important and their function in the cell went understudied. However, with further research, this view has changed dramatically, and

these silent DNA segments have been found to turn on and be involved in various diseases, one of which is cancer. This research led by Dr. Samuel Asafha, a clinical scientist at the London Health Sciences Center has found that these silent DNA play an important role in protecting some individuals with IBD from developing cancer.

Silent DNA typically have chemical tags attached to them that repress these segments. Under stress and inflammation, similar to that in IBD, these tags can be removed, and silent DNA can be unsilenced and start sending out messages. The cell isn't familiar with this DNA because it is usually silent, so the immune system doesn't recognize it and puts up defenses, treating the cell like a virus. The immune system recruits other immune components to eliminate the cell. This fake antiviral signal is called "viral mimicry" and the researchers found that this process may stop early cancer cells from forming full blown tumors in the colon.



Silent DNA causes a viral alarm which helps protect against tumor formation ([Larsen et al. 2026](#)). Created in Canva, Isabel Kannampuzha

To research this better, the group went through patient data from colon biopsies. They found that patients with IBD, but no cancer, showed evidence for active viral mimicry compared to patients with IBD and early signs of colon cancer. This suggests that this viral mimicry process or false alarm may be playing a protective role in those patients with IBD. As well, dysfunctional viral mimicry can be involved in formation of tumors.

To determine whether viral mimicry directly influences tumor formation, researchers conducted two studies in mouse models. One, they prevented the silencing molecules from binding the DNA ensuring its expression and viral mimicry activation. This experiment showed that when viral mimicry was activated, tumor formation was prevented. Two, the researchers turned off the cells' ability to exhibit antiviral response. When this process is disabled, viral mimicry could not occur, and colon tumors could develop more readily. Both findings support that the expression of silenced DNA and the following viral mimicry responses act as processes that prevent tumor formation.

All in all, chronic inflammation can both promote cells to become cancerous and *trigger a false viral alarm that helps the immune system remove these early cancer cells*. Moving forward, the findings of this research can be built upon and further explored in many ways that will guide the development of new therapies for colon cancers. There are various types of silent DNA, and as this study shows, some play a direct role in activating viral mimicry. Determining exactly which segments are involved in viral mimicry to specifically target those regions could be a start. More importantly, viral mimicry overall can be leveraged as a therapeutic strategy to prevent colon cancer from developing and could be studied in other cancer contexts. Drugs can be used to selectively turn on silent DNA allowing for viral mimicry to occur in a controlled manner and kill precancerous cells. There is still more work to be done but the findings of this research provide a crucial building block to understanding colon cancer prevention strategies and study new colon cancer treatments.

Original Article: Larsen, F., Jeong, W., Schep, D. et al. Viral mimicry acts as a tumor suppressor in colitis. *Nat Commun* 17, 1313 (2026). <https://doi.org/10.1038/s41467-026-68850-1>