

## Strategies of raising incidence and increase of colorectal cancer (CRC).

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### Introduction

Colon cancer is a type of cancer that affects the colon and rectum. It is also known as bowel cancer, colon cancer, or rectal cancer. In 2022, the American Cancer Society estimates that 106,180 new cases of colon cancer and 44,850 new cases of rectal cancer will be diagnosed in the United States. Non-cancerous polyps might appear in the early stages of the disease. These are frequently asymptomatic but can be found by screening. As a result, doctors advise testing for people who are at high risk or are above the age of 50.

Colorectal cancer symptoms vary depending on the cancer's size and location. Changes in bowel patterns, changes in stool consistency, blood in the stool, and stomach discomfort are all typical signs.

### Incidence of raising colorectal cancer

Developing evidence has demonstrated that human malignancies are stem cell diseases. Malignancies, according to the cancer stem cell paradigm, arise from a small subset of cancer cells that exhibit self-renewal and pluripotency, as well as the ability to initiate and sustain tumour growth. Cancer-initiating cells, often known as "cancer stem cells," were first discovered in hematologic malignancies and, more recently, in a variety of solid tumours, including CRC. The possibility of stem cell-driven carcinogenesis in colon cancer raises the question of whether current treatments can effectively target the tumorigenic cell population responsible for tumour growth and maintenance. This review will examine many elements of stem cell biology in the context of CRC, with the goal of better understanding the mechanisms that lead to tumour growth and therapeutic resistance. First, we'll go through what we know about normal intestinal stem cells and how recent advances in crypt biology have led to new theories on the origins of colon adenomas and malignancies. Then, we'll go over the facts and current state of colon cancer stem cells, emphasising their importance and potential for treating colorectal cancer [1].

### Impact of poor health

Colorectal cancer is the second biggest cause of cancer death worldwide, and it is one of the so-called "westernised" diseases. Evidence from global epidemiological and scientific studies suggests that processed and unprocessed meat consumption increases the risk of colorectal cancer while fibre consumption decreases it, and that food composition affects colonic health and cancer risk via its effects on colonic microbial metabolism.

Complex food residues that are resistant to breakdown by enteric enzymes can be fermented by the gut bacteria. This process provides energy to the microbiota, but it also results in the production of short-chain fatty acids like butyrate, which are used for the colon's and metabolic demand of the body [2].

Butyrate has a wide range of anti-inflammatory and anti-carcinogenic properties in the colon, including being the preferred energy source for colonocytes, maintaining mucosal integrity, and suppressing inflammation and carcinogenesis via effects on immunity, gene expression, and epigenetic modulation. The microbiome also converts protein residues and fat-stimulated bile acids to inflammatory and/or carcinogenic compounds, increasing the likelihood of neoplastic development. The processes behind these microbial metabolite effects will be discussed in this review, which could be influenced by diet to reach the goal of reducing colorectal cancer in Western countries [2].

### Metastatic colon cancer treatment

Systemic treatments for colon cancer patients have progressed well beyond 5-fluorouracil-based chemotherapy. Multiple considerations, such as the risk of disease recurrence, the absolute survival benefit of chemotherapy, treatment toxicity, and the patient's comorbid medical problems, must be considered for early stage colon cancer patients who are considering adjuvant chemotherapy. Biomarkers include the KRAS/NRAS/BRAF mutation, microsatellite instability status, and left- vs right-sided colon cancer have enabled physicians customise systemic treatment regimens like chemotherapy, targeted therapy, and immunotherapy in the metastatic scenario [3].

### Causes

Colon cancer is thought to develop from two different types of precursor polyps via two different pathways: conventional adenomas via the conventional adenoma-to-carcinoma sequence and serrated adenomas via the serrated adenoma-to-carcinoma theory. Traditional adenomas are caused by mutations in the APC gene, and colon cancer is a multi-step process. Serrated adenomas have a fundamental genetic abnormality that is unknown. Colon cancer can be exacerbated by environmental factors. Although advanced colon cancer generally has symptoms, early colon cancer and premalignant adenomatous polyps are frequently asymptomatic, making them difficult to detect and justifying adult mass screening [4].

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