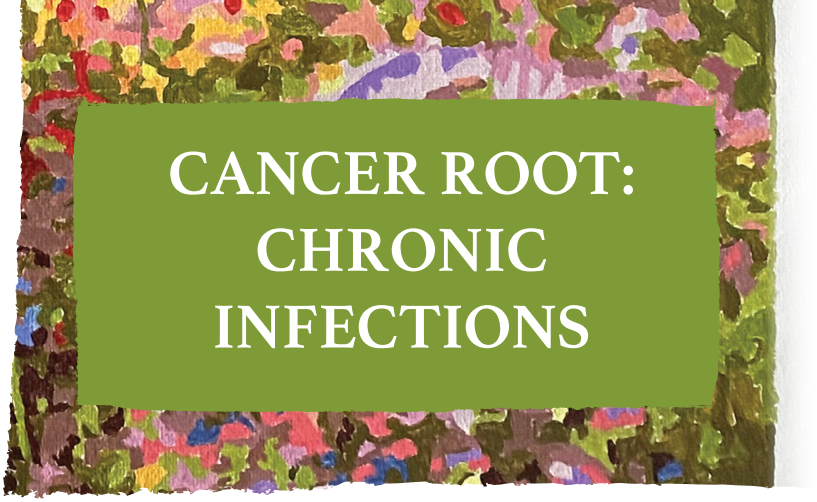
Healing Cancer at the Root
HYPERION
Functional Medicine



CANCER ROOT: CHRONIC INFECTIONS

There are many roots to your cancer, we find that cancer can arise because of immune weakness, and chronic inflammation. Chronic infections arising from a weak immune system and inflammation will reduce a cancer patient's immune response to their disease. With a suppressed immune response, these conditions further facilitate infection and cancer by a microorganism or toxic substance. Chronic infections may be part of many patients' roots of cancer, but so often these underlying infections are not tested for or diagnosed. Chronic infection needs to be identified and treated in cancer patients to optimize treatment response and survival.

Infections that cause inflammation in the body can increase the risk of cancer or contribute to its progression. Infections are linked to up to 20% of cancers worldwide, and some malignancies can arise from areas where infection and inflammation are active[1]. Among the most important infectious agents studied that have been found to be involved in cancer development and progression are Helicobacter pylori found in the gut, human papillomavirus (HPV), hepatitis B virus (HBV), hepatitis C virus (HCV), and Epstein–Barr virus (EBV)[2]. There are several parasites that have also been shown to lead to cancer.

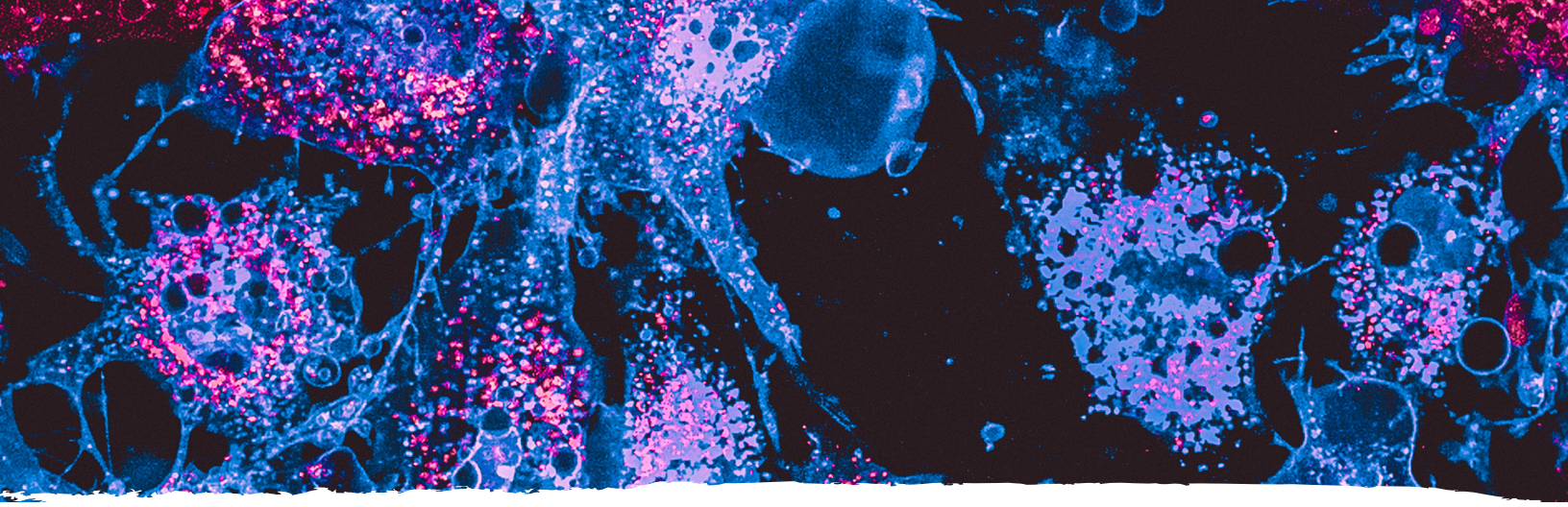
Key Points:

- **Cancer arises from infections:** Infections can cause long-term inflammation in any part of the body, which can lead to changes in the affected cells and nearby immune cells. These changes can eventually lead to cancer and are known to be drivers for cancer cell proliferation and cancer metastasis.

- **Immune system weakening:** Infections can weaken the immune system, making it harder for the body to fight off cancer-causing infections, and cancer itself.

- **What is inflammation?** Inflammation is the body's response to tissue injury or infection. When an infection occurs in a healthy patient, an inflammatory reaction is triggered. This reaction can cause changes to the surrounding cells, which could lead to cancer. Inflammation can promote tumor growth and progression by:
    a. Increasing cancer cell proliferation
    b. Causing damage to DNA
    c. Reduction of cancer cell death
    d. Producing tumor-promoting cytokines. Cytokines are a protein made by cells that influence the immune system and inflammation.

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Inflammation promotes cancer tumor growth; tumors can even generate their own inflammatory microenvironment to accelerate their growth.

Mitochondria are the target for viruses, and bacteria have been reported to directly affect mitochondria during infection. Inflammatory disorders have been related to mitochondrial dysfunction . Tumor cells in cancers are assisted by mitochondria that have been damaged leading to reprogramming of their functions. This reprogramming increases energy needed for cancer cells by switching to a specialized form of metabolism known as the "Warburg Effect" for growing the tumor. These results of reprogramming favor tumor progression, blood vessel growth for the tumor, and suppression of the immune system. This enables cancer cells to survive and multiply more effectively. In addition, reactive oxygen species generated by toxin exposures promote cancer's initiation and progression because of these mutations in mitochondrial DNA. More simply stated, our genetics are modified due to environmental insults that lead to chronic infection and mitochondrial dysfunction[4].

Chronic infection must be eliminated, and inflammation reduced to influence mitochondrial damage in cancer.

Many patients harbor chronic yeast, specifically candida, in the gut. Yeast is increased by our high sugar and carbohydrate diets, and exposure to many toxins including mold and heavy metals. Studies have shown that Candida albicans is very closely related to cancer development. *C. albicans* may promote the development of cancer by damaging the gastrointestinal tissue, then causing chronic inflammation and the production of carcinogens[5].

For our functional oncology patients, Hyperion Functional Medicine utilizes the Genova GI Effects stool test to reveal infections in the G.I. tract with H. pylori, candida albicans and other yeasts, and many other potential pathogens or parasites that the body may be working on fighting in addition to fighting off your cancer. Chronic infection with viruses such as EBV (mono), candida and other infections are tested via blood labs as indicated. Chronic infection is treated in cancer patients to optimize response to treatment and healing from cancer. In patients with chronic fatigue, often we find EBV has reemerged as an active infection and must be treated.

CANCER ROOTS
Collaborating for a Cure

In partnership with healingstrong

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