# THE BODY'S SILENT MONSTERS

## THE PARASITIC PATH TO CANCER

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# THE PARASITIC PATH TO CANCER

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# INTRODUCTION

For centuries, many people have believed that cancer was solely a result of genetic mutations. However, there is an insidious connection between the hidden world of parasites and the sinister growth of cancer. The Body's Silent Monsters delves into this unsettling intersection, exploring how parasites, often invisible to the naked eye, maybe more than mere biological passengers; they could be silent architects of disease.

For centuries, the medical community has been aware of parasites and their ability to wreak havoc on human health. Still, the idea that these microscopic invaders could play a role in cancer development is relatively recent and revolutionary. This book aims to uncover this connection's startling evidence and theoretical underpinnings, examining how parasites might contribute to the onset, progression, and even cancer treatment.

Through a synthesis of cutting-edge research, case studies, and expert insights, The Body's Silent Monsters will guide readers through scientific discoveries and medical mysteries. We will explore how parasites may influence cellular behavior, modulate immune responses, and create environments conducive to cancer growth.

As we embark on this journey into the hidden dimensions of our biology, we challenge long-held assumptions and invite readers to consider a new perspective on health and disease. In discussing the connection between parasites and cancer, we hope to foster a deeper understanding of these silent monsters within us and inspire innovative approaches to combating one of humanity's most formidable challenges.

Prepare to look beyond the visible and uncover the silent, sinister forces of parasites deep within our bodies. According to the CDC, certain parasites have been found to induce tumor formation.

"Scientists at the Centers for Disease Control and Prevention have discovered cancer cells originating in a common tapeworm may take root in people with weakened immune systems, causing cancer-like tumors. It is the first known case of a person becoming ill from cancer cells that arose in a parasite—in this case, Hymenolepis nana, the dwarf tapeworm.

The report, in the Nov. 5 issue of the New England Journal of Medicine, raises concern that other similar cases, if they occur, may be misdiagnosed as human cancer, especially in less developed countries where this tapeworm and immune-system-suppressing illnesses like HIV are widespread." [1]

This shocking piece of information has brought a lot of controversy to the forefront of the medical field. This has led to new questions being asked on a daily basis: "What is really causing cancer? Do all types of parasites cause cancer? How can I find out if I have parasites? Moreover, how do we treat parasites?"

## WAYNE ROWLAND

*"My name is Wayne Rowland. I'm just like you. I have heard that there's a cure for disease that's been suppressed. I have cancer. I'm not going to accept the modality of the day. I need to know if there's a cure that's suppressed out there and I offer a $10,000 reward.*

*I literally received thousands of calls. But one man impressed me. One man. And he said, "Well," he said, "There's not one cure for cancer that's been suppressed. There's been five. Which one do you want to know about?" I said, "Whatever one works." He sent me to somebody that had an original Rife Raymond unit.*

*Everything in creation spins and vibrates. Everything has its own prime resonance frequency. And this is why once we can identify the resonance frequency of a bacterium or an atom or whatever it is, we can then manipulate that object with its prime resonance frequency.*

*Sound is the source of all creation. Sound and resonance is responsible for everything. And I used it. Three months later, the cancer was gone. So was my arthritis. So I started doing research into the Rife technologies, and I found another man who really knew quite a bit about Rife, and had all the frequencies and everything, and I went to see him.*

*And he became a friend of mine. His name is John Sajaka. And John Sajaka showed me that I wasn't usinrg the hertz ates to get rid of cancer at all. And that upset me, because I paid good money for this. Now, and why did the cancer leave? And I looked at the hertz rates that I was using, and lo and behold, there were hertz rates to get rid of worms and parasites.*

*It turned out that the lead poisoning was giving a bed for parasites to breed in furiously, and it was their waste that had given me cancer. I was absolutely in shock. And the more research I did and the further I got into this, the more I found out that pretty much all disease is caused by worms and parasites."*

CHAPTER 1

# UNDERSTANDING CANCER

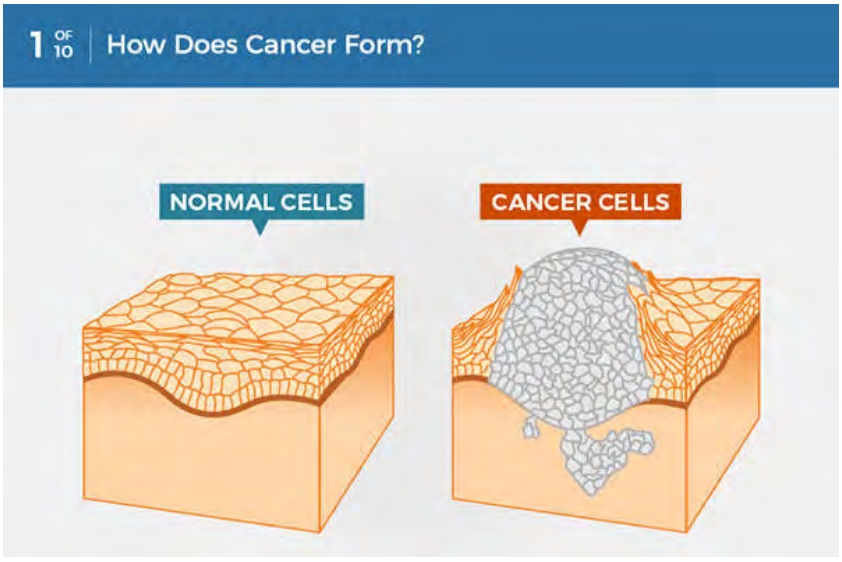
Cancer arises when genetic mutations in normal cells disrupt their growth and division processes. Due to this uncontrolled cell proliferation, tumors, which are abnormal masses of cells, form. Cancer can develop in nearly any tissue or organ and may spread to other areas of the body through the lymphatic or circulatory systems, known as metastasis. Under normal circumstances, human cells divide to produce new cells to replace those that die from aging or injury. When this process goes awry, damaged or abnormal cells may proliferate uncontrollably, leading to the formation of tumors or lumps, which can be either cancerous or non-cancerous.

Malignant or cancerous tumors can invade surrounding tissues and form new tumors in other body parts. Blood cancers, such as leukemia, typically do not create solid tumors, unlike many different forms of cancer. Non-cancerous tumors, on the other hand, do not spread to nearby tissues and are less likely to recur after removal. However, they can still grow quite large and in some cases, such as non-cancerous brain tumors, they can be life-threatening or cause significant symptoms.

## Fundamentals of Tumor Growth and Cancer Biology

Normal cells and cancer cells differ in several ways:

- ***Uncontrolled Growth:*** Cancer cells ignore the signals that should regulate their division and multiply and divide quickly.
- ***Invasion:*** They can infect surrounding tissues and organs, interfering with their regular operation.
- ***Metastasis:*** When cancer cells split off from their parent tumor, they may spread to other body parts via the lymphatic or circulatory systems.




*Source: The National Cancer Institute - What Is Cancer (2)*

# Types of Cancer

Cancer exists in various forms, typically named based on the organs or tissues where the tumors originate. For instance, brain cancer starts in the brain, while lung cancer begins in the lungs. Additionally, cancers can be classified according to the type of cell that causes them, such as squamous or epithelial cells. [2]

## Carcinoma

The most frequent cancer is carcinoma. Carcinoma manifests from epithelial cells covering the body's exterior and interior surfaces. There are many kinds of epithelial cells, which, when viewed under a microscope, frequently resemble columns.

Specific names are given for cancers that arise from various types of epithelial cells:

### *ADENOCARCINOMA*

Adenocarcinoma is a type of cancer that develops in mucous-producing epithelial cells. Sometimes, tissues containing this kind of epithelial cell are called glandular tissues. Adenocarcinomas account for most of the malignancies of the breast, colon, and prostate.

### *BASAL CELL CARCINOMA*

Basal cell carcinoma starts at the bottom, or basal (base) layer of the epidermis, or a person's outermost layer of skin.

### *SQUAMOUS CELL CARCINOMA*

Squamous cells are epithelial cells located under the skin's outer layer. A type of cancer that develops in these cells is squamous cell carcinoma. Many other organs, like the stomach, intestines, lungs, bladder, and kidneys, are also lined with squamous cells. Under a microscope, squamous cells look flat, almost like fish scales. Epidermoid carcinomas are another name for squamous cell carcinomas.

### *TRANSITIONAL CELL CARCINOMA*

Transitional cell carcinoma originates in a type of epithelial tissue known as transitional epithelium or urothelium. This tissue is found in the linings of the bladder, ureters, kidneys (renal pelvis), and a few other organs. It consists of many layers of epithelial cells that can change size. Transitional cell carcinomas can occur in some kidney, ureter, and bladder malignancies.

## Sarcoma

Sarcomas are cancers that can develop in the soft tissues of the bone, like the muscles, fat, blood, and lymph arteries, as well as fibrous tissue (such as ligaments and tendons).

The most frequent cancer of the bone is osteosarcoma. Lipopolysarcoma, Kaposi sarcoma, liposarcoma, malignant fibrous histiocytoma, and dermatofibrosarcoma protuberans are the most common forms of soft tissue sarcoma.

## Leukemia

Leukemias are cancers that start in the bone marrow's blood-forming tissue. These cancers do not form solid tumors. Instead, normal blood cells are pushed out of the bone marrow and blood by an abundance of aberrant white blood cells (leukemia cells and leukemic blast cells) that accumulate there. If there is a low concentration of regular blood cells, the body may find it more difficult to fight infections, regulate bleeding, and deliver oxygen to its tissues.

Leukemia has four primary forms, categorized according to the kind of blood cell the cancer begins in (lymphoblastic or myeloid) and the rate at which the illness progresses (acute or chronic). Chronic forms grow more slowly, while acute variants grow more quickly.

## Lymphoma

Cancer that begins in lymphocytes, such as T cells or B cells, is called lymphoblastic cancer. These are immune system-fighting white blood cells that combat illness. Abnormal lymphocytes accumulate in lymphoma lymph nodes, lymph arteries, and other bodily organs.

Two primary forms of lymphoma exist:

### *HODGKIN LYMPHOMA*

Individuals with this illness have Reed-Sternberg cells, which are abnormal lymphocytes. Usually, B cells develop into these cells.

### *NON-HODGKIN LYMPHOMA*

Non-Hodgkin lymphoma is a broad category of malignancies originating in the lymph nodes. B cells or T cells can develop into malignancies, which can grow quickly or slowly.

## Multiple Myeloma

Another kind of immune cell called a plasma cell is the source of multiple myeloma. Myeloma cells, abnormal plasma cells, accumulate in the bone marrow and develop into bone tumors throughout the body. Kahler disease and plasma cell myeloma are other names for multiple myeloma.

## Melanoma

Melanoma is a cancer that starts in cells that develop into melanocytes, specialized cells that produce melanin, the pigment responsible for skin color. Although melanomas can also develop in other pigmented tissues, like the eye, they typically arise on the skin.

## Spinal Cord and Brain Tumors

Brain and spinal cord cancers come in a variety of forms. These tumors have been given names according to the kind of cell they originated in and the location of the tumor's initial formation within the central nervous system.

For instance, astrocytes, star-shaped brain cells that support nerve cells' health, are an astrocytic tumor's starting point. Brain tumors are also given names according to malignancy, benign brain tumors (not cancerous), and malignant brain tumors (cancer).

## Other Types of Tumors

### *GERM CELL TUMORS*

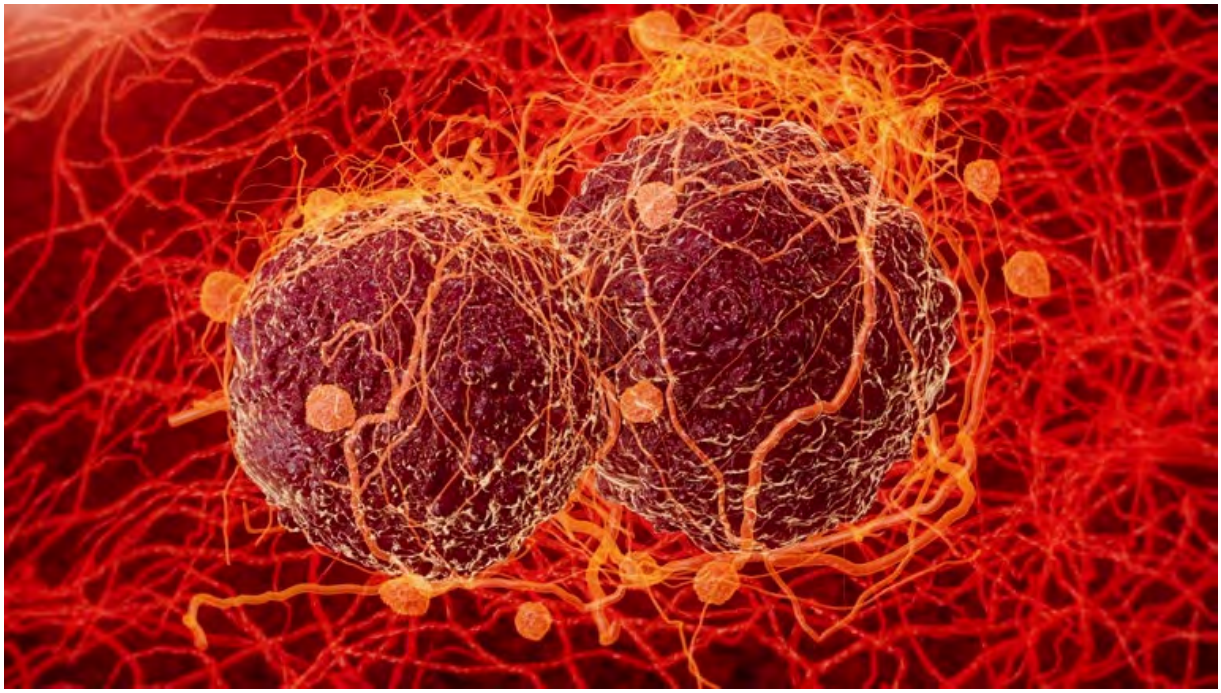
A germ cell tumor is a type of tumor that starts in the cells that produce sperm or eggs. These tumors can be benign or malignant and appear practically anywhere in the body, but they mainly develop in the ovaries or testicles.

### *NEUROENDOCRINE TUMORS*

Cells that release hormones into the blood in reaction to a signal from the neurological system give rise to neuroendocrine tumors. These tumors can produce a wide range of symptoms due to their potential to produce hormones in higher quantities than usual. Benign or malignant neuroendocrine tumors are both possible.

### *CARCINOID TUMORS*

Neuroendocrine tumors include carcinoid tumors. These are slow-growing tumors that usually appear in the small intestine and rectum of the gastrointestinal tract. Carcinoid tumors can produce chemicals like prostaglandins or serotonin, which can lead to the development of carcinoid syndrome. They can also move to the liver or other parts of the body.



CHAPTER 2

# THE IN'S AND OUT'S OF PARASITES

An organism that resides in or on a host and consumes nutrients or other resources without providing the host any benefits is called a parasite. A parasite and its host usually have an exploitation relationship in which the parasite benefits at the host's expense. This exploitation relationship can significantly impact the host's health, leading to various degrees of illness, weakness, or even death as a result of the parasitic invasion.
Parasites are categorized based on their lifestyle and relationship with their hosts.

Ectoparasites live on the host's exterior, such as fleas, ticks, and lice, whereas endoparasites reside inside the host's body, including organisms like tapeworms, roundworms, and certain protozoa. Some parasites have complex life cycles that involve multiple hosts or stages, each critical for their development and reproduction. For example, the malaria parasite (Plasmodium) has a life cycle between mosquitoes and human hosts.

The impact of parasitism on the host can be multifaceted. In addition to causing direct harm through tissue damage or nutrient depletion, parasites can weaken the host's immune system, making them more susceptible to secondary infections and diseases. The severity of the parasitic impact often depends on factors such as the type of parasite, the host's overall health, and the environmental conditions.

Parasites have evolved adaptations to successfully exploit their hosts, including mechanisms to evade the host's immune system, specialized feeding structures, and strategies for reproduction and transmission. The evolutionary arms race between parasites and their hosts has led to the development of various defense mechanisms in hosts, such as immune responses and behavioral changes aimed at avoiding or eliminating parasites.

Understanding parasitism is essential for comprehending ecological interactions and addressing public health concerns, as many parasites are responsible for diseases that affect humans and other animals. Advances in research and treatment strategies continue to improve our ability to manage and mitigate the effects of parasitic infections, ultimately benefiting both individual hosts and broader ecological systems.

# Types of Parasites

## Protozoa

Protozoa are single-celled organisms that can infect people and cause disease. These tiny parasites often have complicated life cycles with several hosts. Examples include Giardia lamblia (which causes giardiasis), Entamoeba histolytica (which causes amoebiasis), and Plasmodium species (which causes malaria).

## Helminths

Helminths are multicellular parasitic worms that can live in the blood vessels, liver, or intestines of humans. There are different types of helminths and these include:

1. ***Nematodes (Roundworms):*** Nematodes, often called roundworms, are cylindrical worms that can cause infections with pinworms, like Ascaris lumbricoides, which causes ascariasis, and Enterobius vermicularis.
2. ***Cestodes (Tapeworms):*** Tapeworms, or cestodes, are segmented, flat worms that cause taeniasis, such as Taenia solium.
3. ***Trematodes (Flukes):*** Trematodes, or flukes, are worms that resemble leaves, like the Schistosoma species that cause schistosomiasis.

## Ectoparasites

Ectoparasites are parasites that live on the surface of their host and usually feed on skin cells or blood. Examples of ectoparasites include fleas, lice, ticks, and mites. These parasites are often vectors for other diseases, like Borrelia burgdorferi (causing Lyme disease through tick bites).

# How Parasites Interact with Their Hosts

The relationship between parasites and their hosts is complex and ever-changing, often contributing to the host's harm. The nature of this interaction depends on a number of factors, including the type of parasite, the host's immunological response, and the environment.

***INVASION AND ATTACHMENT:***

When attaching to or invading the tissues of their host, parasites often have specialized structures or mechanisms. For instance, protozoa like plasmodium infiltrate red blood cells, while hookworms possess mouthparts that allow them to cling to the intestinal walls of their hosts.

***STOLEN NOURISHMENT:***

The host provides the nutrition that parasites need to survive. While ectoparasites like lice feed on blood, helminths like tapeworms get their source of nutrition from the host's intestines.

***IMMUNE EVASION:***
Parasites have developed a variety of evasion and immune-suppressive methods over time. The sleeping sickness-causing Trypanosoma brucei can alter its surface proteins to evade the host's immune system.

***REPRODUCTION:***
In order to maintain their life cycle both inside and outside of their host, parasites often use different and complex reproductive techniques. Certain parasites, such as Plasmodium, reproduce sexually in one host and asexually in another to maintain genetic variety and survival.

***MANIPULATION OF THE HOST:***
Certain parasites have the ability to change the host's behavior in order to improve their chances of spreading. For instance, Toxoplasma gondii can change the way infected rodents behave, making them less afraid of predators and so increasing the possibility that they would be consumed by cats, the parasite's definitive host.

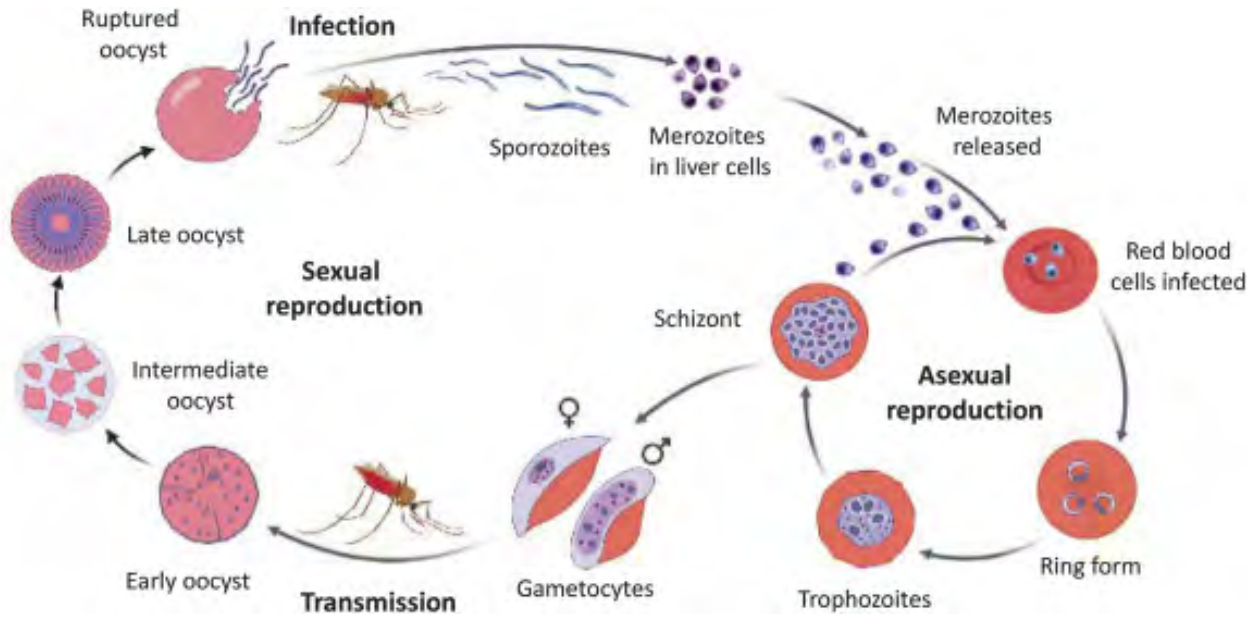
# The Life Cycle of Parasites

## Plasmodium spp. (Malaria Parasite)

Malaria-causing Plasmodium species have a unique life cycle that includes human and insect hosts. When an infected Anopheles mosquito bites a human, Plasmodium sporozoites are injected into the bloodstream, starting the cycle. After making a swift journey to the liver, these sporozoites infiltrate the liver's cells and mature into schizonts. The schizonts grow asexually within the liver cells until they ultimately burst open, unleashing hundreds of merozoites into the bloodstream.

Once in the bloodstream, the merozoites enter red blood cells and proceed with their asexual reproduction, rupturing the cells and releasing other merozoites. The typical malaria symptoms, such as fever, chills, and anemia, are brought on by this recurrent cycle of red blood cell invasion and death. However, some merozoites differentiate into gametocytes, which are sexual forms. When bitten by another mosquito, these gametocytes are consumed by the infected person and continue to develop in the insect's stomach. The gametocytes in the mosquito reproduce sexually to create zygotes, which eventually grow into new sporozoites. To continue the cycle, these sporozoites move to the mosquito's salivary glands, where they await injection into the next human host.

> *"Researchers have found that the damage to DNA caused by the malaria parasite in cells increases the risk of those cells turning into cancerous cells."* [3]

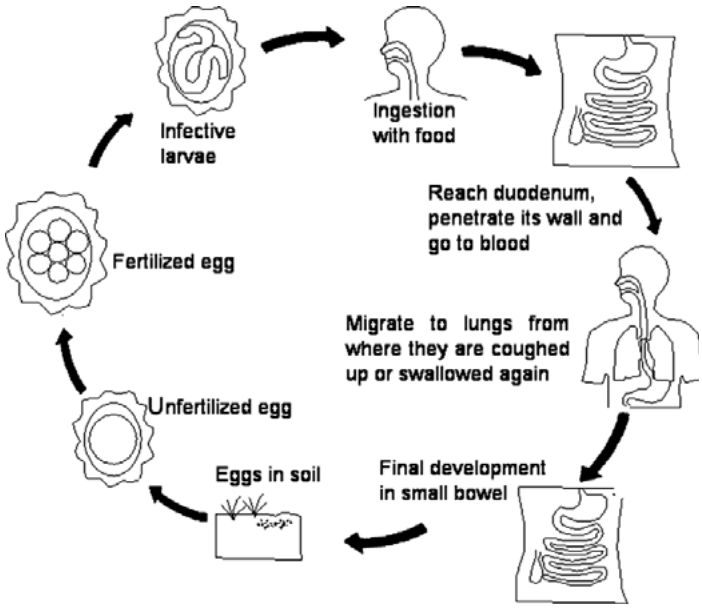



*Life Cycle of The Malaria Parasite (4)*

## Ascaris lumbricoides (Roundworm)

One of the most prevalent intestinal parasites that harm humans is Ascaris lumbricoides, especially in unsanitary areas. This nematode's life cycle starts when humans consume microscopic eggs in tainted food, water, or soil. These eggs hatch in the small intestine, releasing larvae that pierce the intestinal wall quickly. After that, the larvae migrate through the body, passing through the bloodstream, the lungs, and the alveoli.

The larvae continue to develop in the lungs before being coughed up and ingested, which enables them to pass back into the small intestine. They grow into adult worms here, reaching a maximum length of 30 centimeters. The mature worms live in the intestine, where they can cause various issues like malnourishment and discomfort in the abdomen. Up to 200,000 eggs are produced daily by female worms, which are then expelled in their feces, polluting the surrounding area and continuing the cycle. Ascaris is a dangerous parasite because of its flexibility and resistance, especially in areas with poor sanitation.

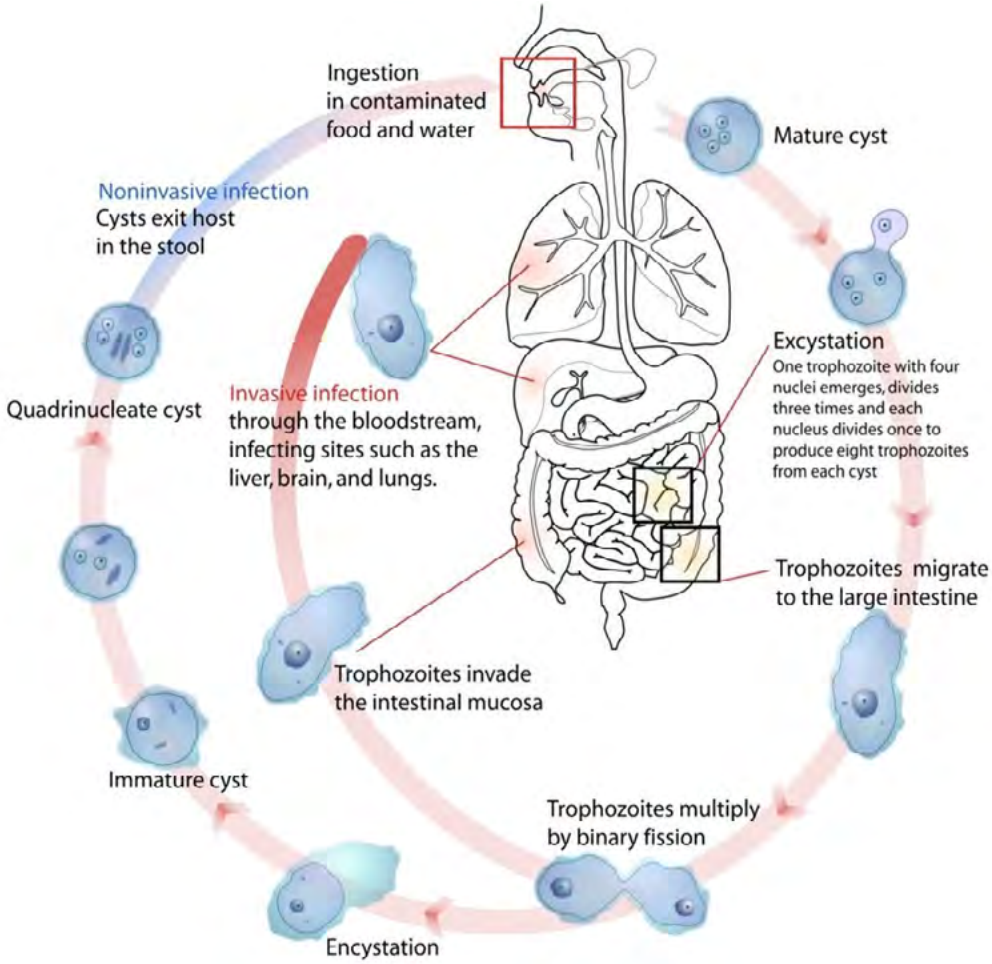



*Source (5)*

## Entamoeba histolytica (Amoeba)

The protozoan parasite Entamoeba histolytica causes amoebiasis, a condition that can result in severe diarrhea and liver abscesses. E. histolytic's life cycle starts when a person consumes the parasite's cyst form, usually through contaminated food or drink. After being consumed, the cysts go from the stomach to the small intestine, where they undergo excystation and become trophozoites. These mobile living trophozoites pierce the intestinal lining and increase through binary fission.

Sometimes, trophozoites remain within the gut, resulting in symptoms like diarrhea and pain in the abdomen. In more extreme situations, though, they can penetrate the intestinal wall and cause ulceration and possibly systemic infection. When trophozoites fail to infiltrate the tissues, they eventually encyst again, creating fresh cysts expelled in the stool. Since these cysts are highly resilient to the environment, they can live independently of their host until they are consumed by another person, which completes the cycle. The key to E. histolytica's survival and spread is its ability to transition between its cystic and trophozoite forms.

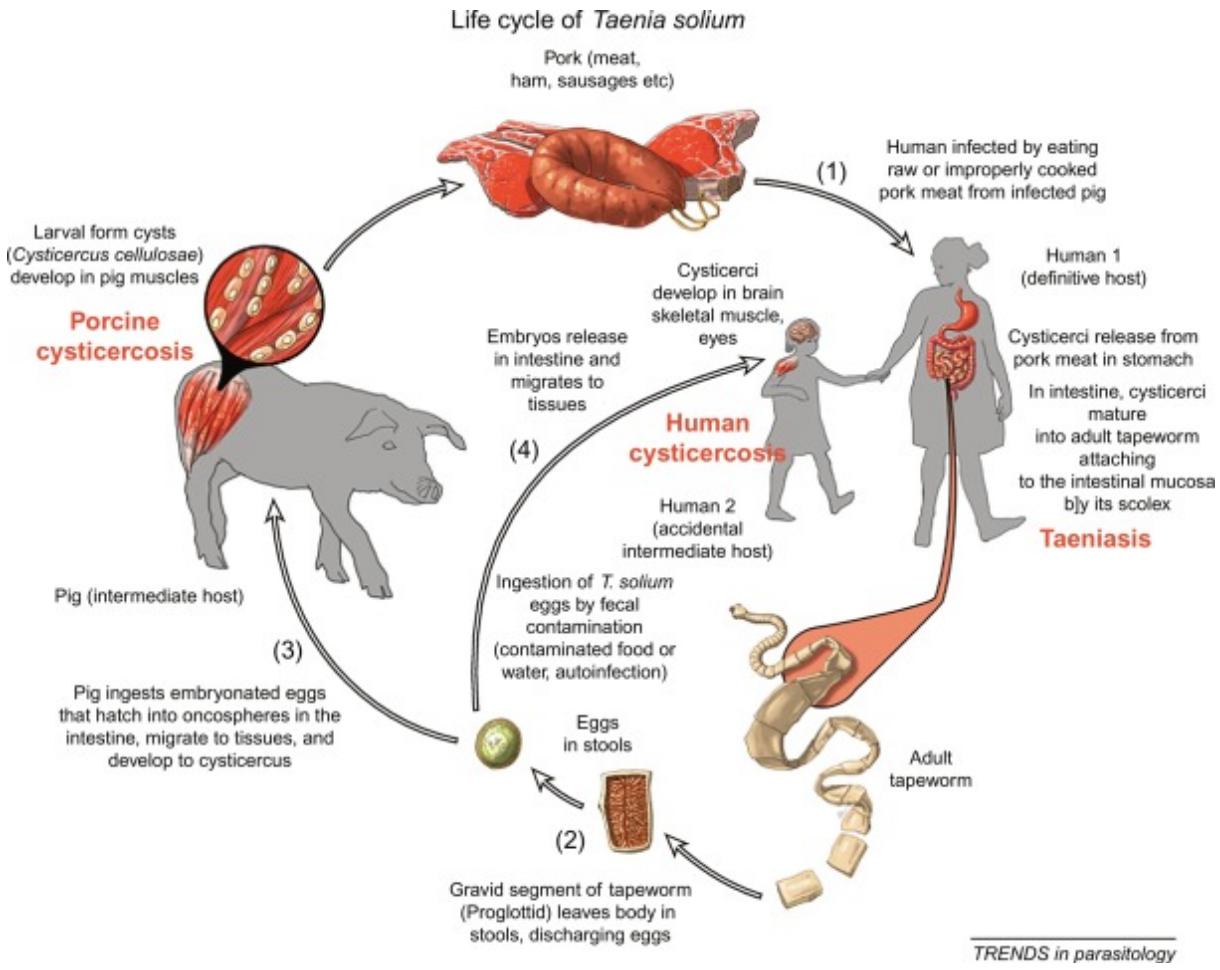



*Source (6)*

## Taenia solium (Pork Tapeworm)

Taenia solium, the pork tapeworm, has a life cycle involving humans and pigs, with humans acting as the definitive and intermediate hosts. When a person eats undercooked pork that has cysticerci, the cycle starts. The cysts inside the human gut mature into adult tapeworms, which can reach lengths of several meters. The mature worm attaches to the intestinal wall using its scolex, or head. From there, it consumes nutrients from the host and develops proglottids, which are segments of the worm packed with eggs.

These proglottids release eggs into the environment and are excreted in feces. Pigs that eat or drink contaminated water or food will develop cysticerci when the eggs hatch in their intestines and release larvae that pierce the intestinal wall and go to different body parts. When humans eat the meat, the cysticerci in the pig's muscles go dormant, and the cycle resumes. Humans can occasionally contract the disease known as cysticercosis by directly consuming contaminated eggs. In this scenario, larvae develop in human tissues, including the brain, and cause severe neurological symptoms. The fact that people play two roles in the life cycle of T. solium emphasizes how crucial cleanliness and safe food handling are to stopping its spread.




*Source (7)*

# CHAPTER 3
# THE LINK BETWEEN PARASITES AND CANCER

The link between parasitic infections and cancer is a rapidly growing and complex study area. While most people associate parasites with acute and chronic illnesses, several species have also been linked to cancer development, particularly in areas where these infections are common.

Although there has been evidence linking parasite infections to cancer for a long time, scientific understanding of this connection has only recently started to come together. There has long been evidence in historical records from countries with high parasite disease prevalence (e.g., parts of Asia and Africa) indicating a higher incidence of several malignancies, especially in areas with endemic parasitic infections. For example, accounts of liver fluke infections in historical Chinese medical literature indicate knowledge of the parasites' long-term effects on health.

However, it wasn't until the 20th century that scientists began to investigate the possible connection between parasites and cancer thoroughly. Early epidemiological research in the 1950s and 1960s revealed links between parasite infections and certain types of cancer, which sparked additional research into the molecular processes at play. These investigations laid the foundation for modern research to understand the relationships between parasite organisms and host tissues that may cause carcinogenesis.

# How Do Parasites Contribute to Cancer Development?

Through several methods, like immune system modulation, direct cellular harm, toxic waste build-up, and chronic inflammation, parasitic infections can contribute to the development of cancer. To prevent and treat cancers linked to parasites, it is important to understand these pathways.

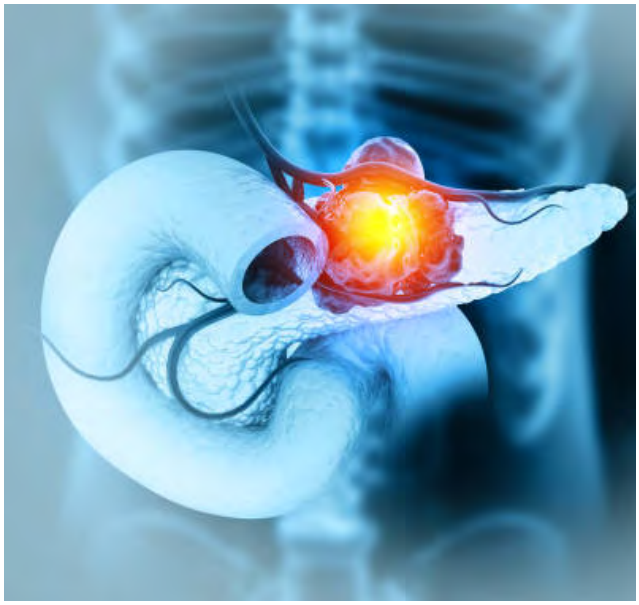
## Chronic Inflammation

Numerous parasitic infections cause the host to experience chronic inflammatory reactions, which are known to be risk factors for cancer. For example, liver flukes like Opisthorchis viverrini and Clonorchis sinensis induce chronic inflammation in the bile ducts, which can eventually result in cholangiocarcinoma (bile duct cancer) growth, cellular damage, and upregulated cell turnover.

An article, Parasite Infection, Carcinogenesis and Human Malignancy, found that chronic inflammation caused by infections with Clonorchis, Opisthorchis, and Schistosoma parasites triggers several signaling pathways, such as p53, NF-κB, Jak/Stat, and Rb. These pathways can lead to genetic mutations or the activation of cancer-causing genes (oncogenes). The parasites release products and metabolites into the host environment that can cause oxidative stress, damaging the chromosomal DNA of nearby epithelial cells, particularly cholangiocytes in the liver and urothelial cells in the bladder.

Additionally, the physical damage inflicted by the parasites during their development, along with the host's wound-healing response, leads to increased cell transformation and proliferation. This process is also linked to DNA damage. The combination of chronic inflammation, parasite-derived substances, and physical damage affects the chromosomes and cell behavior, ultimately disrupting cell growth, proliferation, and survival, which can initiate and promote cancer development. [8]

Additionally, a review, Parasites and malignancies, a review, with emphasis on digestive cancer induced by Cryptosporidium parvum (Alveolata: Apicomplexa), found that there have been some speculations about links between Cryptosporidium infections and cancer in humans. For example, a Spanish patient who had both Cryptosporidium infection and colonic adenocarcinoma died quickly after symptoms began (Izquierdo et al., 1988). Another case involved an AIDS patient with a Cryptosporidium infection in the bile ducts that looked like pancreatic cancer. Additionally, research by Hayward et al. (1997) found that children with X-linked immunodeficiency with hyper IgM syndrome (XHIM) were more likely to develop cancers of the liver, pancreas, and bile ducts. They suggested that the genetic mutation causing XHIM might make the bile ducts more susceptible to infections like Cryptosporidium. Chronic infection and inflammation from this parasite might then lead to cancer development. [9]



## Immune System Modulation

Parasites change the host's immune system to survive longer. This could create an environment where cancer can grow. For example, a Schistosoma haematobium infection has been linked to bladder cancer. The parasite stops specific immune responses, which allows cells to grow uncontrollably and tumors to form. In a study conducted by ScienceDirect, Parasite Infection, Carcinogenesis and Human Malignancy, it was proven that certain types of parasites can suppress the immune system's response to them which may contribute to the development of certain cancers.

> *"S. mansoni infection may constitute a risk for the development of HCC during co-infection with HCV. Case reports have described associations of schistosomiasis mansoni with prostatic adenocarcinoma and sigmoid colonic cancer (Basilio-de-Oliveira et al., 2002, HS et al., 2010). A recent case report from Turkey described the etiological relationship between S. mansoni and bladder cancer (Kiremit et al., 2015). Cell-mediated responses are depressed during intestinal schistosomiasis and the degree of suppression apparently correlates with the development of hepatosplenomegaly. Anti-idiotype antibodies produced during chronic schistosomiasis may modulate immune responses and S. mansoni egg antigens can effectively modify subpopulations of T helper cells (Cheever et al., 2002). Moreover, schistosomal colitis may be associated with earlier onset of multicentric colorectal cancer. Altered expression of the tumor protein 53 (TP53) in patients with S. mansoni colitis-related colorectal cancer suggests that schistosome infections may induce carcinogenesis by targeting oncogenes (Madbouly et al., 2007). Other oncogenes such as Bcl-2 and C-Myc also are relevant in the development of colorectal cancer during schistosomiasis (Zalata et al., 2005). Therefore, cancer induction by S. mansoni infection could result from somatic mutations in oncogenes and in the regulation of immune responses that can activate several host-signaling cancer pathways."* [10]

## Direct Cellular Damage

Certain parasites have the ability to directly harm cells, potentially leading to cancer. For instance, parasites can cause physical damage to tissues, and toxins released by them can alter host cells. Excretory-secretory compounds produced by liver flukes can damage DNA and promote the development of bile duct cancer.

"Parasitic protozoans may invade and hijack cell pathways to enhance survival. In doing so, they may resemble cancer cells. One such example is a tick-borne parasitic infection called Theileria annulata, affecting South African cattle. The invading parasite transforms the animal's lymphocytes into lymphoma cells, demonstrating all the hallmarks of cancer. Because of the similarity with cancer, this model has been extensively studied, hoping for clues leading to an understanding of cancer biology." - Cancer as a Parasitic Disease, Jeffrey Dach MD [11]

An article, Liver Fluke-Associated Biliary Tract Cancer, discussed how liver fluke infection, combined with exposure to carcinogens, increases Cholangiocarcinoma (CCA) risk, particularly in endemic regions. The carcinogenic process involves mechanical damage to the bile duct, immune reactions to fluke antigens and secretions, alterations in the biliary microbiome, and effects of repeated fluke treatments. [12]

## Alteration of Cellular Signaling Pathways

Uncontrolled cell growth and cancer can result from parasites disrupting normal cellular signaling pathways. This occurs when proteins that mimic host molecules are secreted, taking control of cellular functions such as angiogenesis, apoptosis, and proliferation.

Numerous similarities exist between parasitic infections and cancer, particularly in their ability to escape the host's immune system and withstand apoptosis. Because of these similarities, the body finds it difficult to get rid of parasites and cancer cells. Through direct cellular damage, immunological suppression, and persistent inflammation, parasites can produce a microenvironment that promotes tumor formation.

### DR. BRYAN ARDIS

*"I've been preaching to every patient for the last 20 years, and that is 80 to 90% of every single cancer I've ever seen in my practice, it wasn't cancer, it was actually parasitic egg sacs or adult parasitic worms that were being misdiagnosed as cancer. In fact, lung cancer, I just did an entire radio show, there's actually a published paper on lung cancer diagnosis, and they were taking quarter-size lesions inside the lungs that looked like black quarters on the lung field in an X-ray, which your lungs should be white, but they're seeing these masses the size of quarters and they're calling these metastatic cancers.*

*Well, what they found was, is when they did biopsies of all of these actual lung diseases and lesions, they found that every single one of them were actually parasites, and were not cancers, but were actually misdiagnosed as cancers. And this is from 20 years ago. I really do believe that this new reality for many MDs worldwide, that antiparasitic drugs, they're finding it's helping to mitigate, reverse, and cure some people with cancers is a big 'Aha' moment for them."*

# CHAPTER 4
# PARTICULAR PARASITES ASSOCIATED WITH CANCER

Numerous parasites have been found to be strong carcinogens that can cause or exacerbate human cancer. The two most well-researched of these are Helicobacter pylori and Schistosoma species.

## Helicobacter pylori

Helicobacter pylori is a bacterium that infects the stomach lining and is widely recognized as a risk factor for gastric cancer. It can lead to chronic gastritis, stomach adenocarcinoma, and mucosa-associated lymphoid tissue (MALT) lymphoma, which is why it is regarded as a carcinogen. The International Agency for Research on Cancer (IARC) has designated H. pylori as a Group 1 carcinogen, making it one of the few bacteria proven to cause cancer. An article, Helicobacter pylori and Gastric Cancer: Pathogenetic Mechanisms, discusses how gastric cancer ranks as the sixth most common cancer and the fourth leading cause of cancer-related deaths globally. Helicobacter pylori (H. pylori) is a major risk factor for this cancer type, contributing through chronic inflammation and virulence factors that damage gastric epithelial DNA and induce genomic instability. In 2020, over 1,000,000 new cases were recorded, with about 768,000 deaths. Gastric cancer predominantly manifests as adenocarcinomas, but can also occur as lymphomas, gastrointestinal stromal tumors (GISTs), carcinoid tumors, or hereditary diffuse gastric cancer (HDGC). H. pylori, a gram-negative bacterium, is linked to gastritis, ulcers, and eventually gastric cancer, with risk also influenced by alcohol, smoking, salt-preserved foods, and low fruit intake. [13]

## Schistosoma haematobium

Schistosomiasis is a common disease in several regions of Africa, the Middle East, and Asia, caused by the waterborne parasite Schistosoma haematobium. This parasite is closely linked to squamous cell carcinoma and bladder cancer. It is categorized as a Group 1 carcinogen by the World Health Organization (WHO) due to its significant contribution to cancer development.

A study, Schistosoma haematobium and bladder cancer: what lies beneath?, discussed how schistosoma haematobium, a parasitic flatworm prevalent in the developing world, is linked to a high incidence of bladder cancer. The research has identified the mechanistic relationship between S. haematobium infection and bladder cancer. Using in vitro models with CHO cells exposed to S. haematobium total antigen, the study observed key carcinogenic changes: increased cell proliferation, reduced apoptosis, upregulation of the anti-apoptotic protein Bcl-2, downregulation of the tumor suppressor p27, and enhanced cell migration and invasion. [14]

## Opisthorchis viverrini and Clonorchis sinensis

Liver flukes, which are mainly found in East Asia, have been associated with bile duct cancer, also known as cholangiocarcinoma. These parasites cause ongoing inflammation in the bile ducts, which harms cells and increases the risk of developing cancer. Both Opisthorchis viverrini and Clonorchis sinensis are classified as Group 1 carcinogens.

Cancer can be triggered by various environmental and physiological factors, including infections by viruses, bacteria, and parasites. This review, Parasite Infection, Carcinogenesis and Human Malignancy , explores the carcinogenic potential of parasitic infections. Helminthic diseases like schistosomiasis, opisthorchiasis, and clonorchiasis are strongly linked to cancer development. The protozoan Trypanosoma cruzi, responsible for Chagas disease, exhibits

both carcinogenic and anticancer effects. Although malaria itself does not directly cause cancer, it is associated with endemic Burkitt lymphoma in malaria-endemic regions, with additional cancerous changes facilitated by Epstein-Barr virus. Moreover, Strongyloides stercoralis may act as a co-factor in HTLV-1-related T cell lymphomas. The review summarizes the mechanisms by which parasitic infections can induce cancer. [15]

### DR. TOM LEWIS

*"So let's just look at some organisms with bonafide relationship to cancer, Helicobacter pylori, a gut pathogen, rectal, anal, gastric. We have case studies on H. pylori with colon cancer, Barrett's esophagitis, cancer of the esophagus, because when you have that GERD, if it's caused by H. pylori reducing your stomach acid, it's there and it can come back up in the throat.*

*We can see H. pylori in the stool. So it's around, in general, it's in the lining of the gut. Chlamydia pneumoniae, not the STD. The pneumoniae means it's a respiratory pathogen spread through the air. And I would say this was discovered, he's probably around 96, 97 now, last time I checked he was alive at 94, but J. Thomas Grayston out of the University of Washington that found this organism in the lining of blood vessels in heart disease patients, and characterized it. First, he thought it was the STD, but then he realized it wasn't. There are 3 types of chlamydia. This is a chlamydia psittaci from birds, chlamydia pneumoniae from the air, and then chlamydia trachomatis is the STD.*

*But chlamydia pneumoniae has been shown to be linked to lung cancer. Is it the final blow? Is it the initiator? Nobody knows. By the way, chlamydia pneumoniae has been tied to Alzheimer's, heart attack and stroke, multiple sclerosis. So, it's not like these organisms are benign."*

## How Parasites Cause Cancer

Parasites cause cancer by affecting the cells of the host's body at both the molecular and cellular levels. This can disrupt normal cell processes, change the way genes work, and cause genetic abnormalities.

### Unpredictable Genetic Changes

Infections by parasites can lead to unstable genes in the host's cells because of ongoing inflammation. This leads to more gene changes, rearranged chromosomes, and an increased risk of cancer. For example, an infection with Opisthorchis viverrini can cause stress that changes genes that stop tumors from forming and causes breaks in the DNA.

### Changes in Epigenetics

Parasites can change the way our cells work without changing the DNA itself. For example, an infection with Helicobacter pylori can stop some genes from working, leading to an increased risk of cancer.

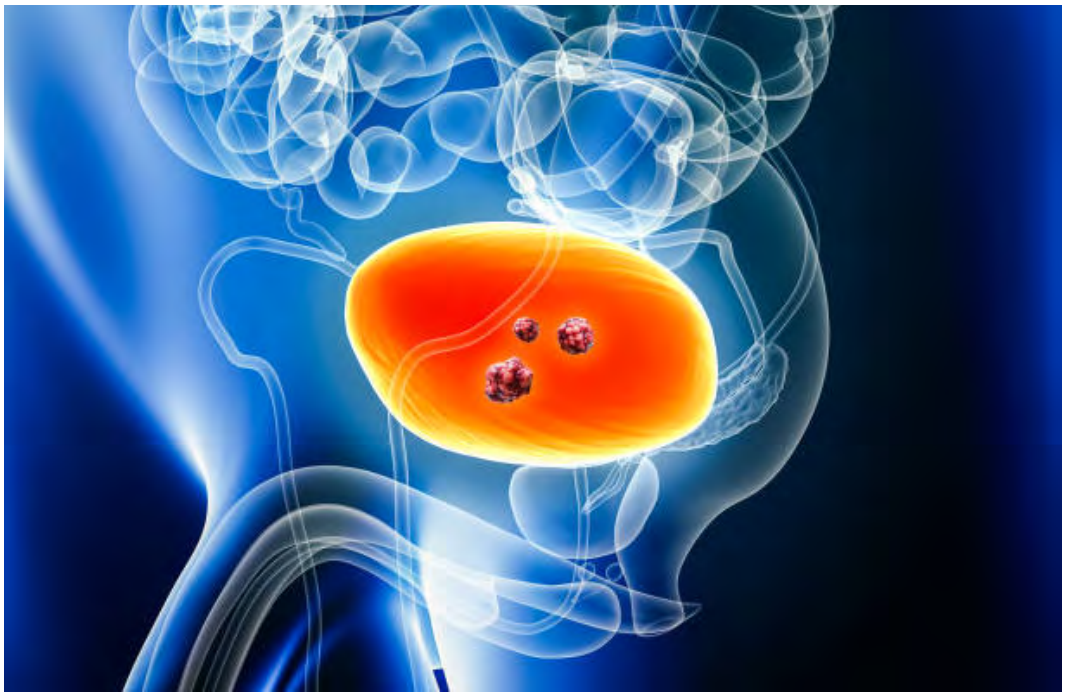
## Disrupted Cellular Signals

Parasitic infections can change the way cells talk to each other, leading to the growth of cancer. For example, an infection with Schistosoma haematobium stops a system that usually stops cancer from developing. This lets cells grow out of control, leading to bladder cancer.

## Induction of a Pro-Tumorigenic Microenvironment

Parasites can create an environment that promotes tumor growth. This environment is often the result of chronic inflammation and suppression of the immune system, leading to the recruitment of immune cells that produce pro-inflammatory cytokines and growth factors. These substances can support tumor development and metastasis by aiding in processes such as angiogenesis and tissue remodeling.

A review, Parasites and malignancies, a review, with emphasis on digestive cancer induced by Cryptosporidium parvum (Alveolata: Apicomplexa), discusses how parasites cause adverse reactions in their host, ultimately leading to cancer. The link between parasitic worms and cancer was initially suspected due to geographic patterns linking certain infections with specific cancers. Currently, the International Agency for Research on Cancer (IARC) classifies various parasites based on their carcinogenic potential, with Schistosoma haematobium identified as a definite carcinogen (Group 1). S. haematobium causes urinary bladder cancer through chronic inflammation and tissue damage caused by retained eggs in the bladder. This inflammation leads to metaplasia and increased cell proliferation, which, combined with oxidative stress and genotoxic effects from inflammatory cells and carcinogens, significantly raises cancer risk. The chronic inflammatory environment enhances DNA damage and genetic instability, contributing to the development of bladder cancer. [16]



CHAPTER 5

# SCIENTIFICALLY PROVEN PARASITIC-CAUSED CANCERS

In the last few decades, a great deal of studies have shown that some parasite infections can cause specific cancers directly. These findings have not only changed our perception of the genesis of cancer, but have also emphasized the need to eliminate infection by parasites as a top public health concern.

# Bladder Cancer

## Parasite: Schistosoma haematobium

Schistosoma haematobium, prevalent in parts of Africa and the Middle East, is the primary cause of bladder cancer in these regions due to schistosomiasis. The high prevalence of chronic schistosomiasis in these areas makes bladder cancer one of the most common cancers.

When Schistosoma haematobium eggs become trapped in the bladder wall, they can cause granuloma formation, persistent inflammation, and eventually fibrosis. This ongoing inflammatory condition creates a mutagenic environment that promotes DNA damage and increases the risk of bladder squamous cell cancer. Additionally, the parasite's eggs release antigens that can stimulate cell division and oxidative stress, both of which contribute to cancer development.

Several epidemiological studies have established a strong connection between schistosomiasis and bladder cancer, and molecular research has demonstrated that the infection has genotoxic effects. This can be seen in the chapters above. The International Agency for Research on Cancer (IARC) has classified Schistosoma haematobium as a Group 1 carcinogen, confirming its role in cancer development.

A study, The trend of schistosomiasis-related bladder cancer in the lake zone, Tanzania: a retrospective review over 10 years period, highlights how bladder cancer, particularly squamous cell carcinoma (SCC), remains a significant issue in the Lake Victoria area of Tanzania, where chronic urinary schistosomiasis is prevalent. A decade-long study (2001–2010) revealed that SCC was common in individuals under 50 and highlighted the need to assess the impact of prevention and intervention efforts. A recent retrospective study of 481 bladder cancer cases at Bugando Medical Centre showed that SCC was the most frequent type (57%), followed by transitional cell carcinoma (37.6%) and adenocarcinomas (5.4%). Schistosoma haematobium eggs were found in 25.2% of cases, with a significant association with SCC. Poorly differentiated cancers were more common in females, and muscular invasion was more prevalent in non-squamous cancers. These findings underscore the ongoing challenge of schistosomiasis-related bladder cancer. [17]

# Colorectal and Hepatocellular Carcinoma

## Parasite: Schistosoma japonicum

Schistosoma japonicum infection has been linked to the development of colorectal cancer, although the evidence is limited. Epidemiological and clinical studies from China and Japan indicate that S. japonicum may act as a carcinogen. For example, a study in Japan found that 19% of patients with chronic liver disease and 51% of patients with hepatocellular carcinoma (HCC) were infected with S. japonicum.

Another case-control study, Parasite Infection, Carcinogenesis and Human Malignancy, showed that HCC developed in 5.4% of patients with chronic schistosomiasis and in 7.5% of those with chronic liver disease. However, the potential contribution of hepatitis C virus (HCV) infection to HCC development cannot be entirely ruled out. In rural China, a matched case-control study demonstrated that previous infections with S. japonicum were independently associated with both HCC and colon cancer, as well as with membranous nephropathy and metastatic lung tumors. Isolated cases have also linked S. japonicum infection to other malignancies, such as cutaneous squamous cell carcinoma and rectal carcinoid tumor.

These findings suggest that the soluble egg antigen (SEA) from S. japonicum, known for its strong immunogenic activity, may contribute to carcinogenesis by stimulating chronic inflammation. In support of this, somatic mutations in the p53 gene were more frequent in rectal cancers associated with schistosomal infections, suggesting that S. japonicum may promote genomic instability and lead to cancer development. [18]

## Parasite: Schistosoma mansoni

Infection with Schistosoma mansoni has been linked to an increased risk of hepatocellular carcinoma (HCC), especially when co-infected with hepatitis C virus (HCV). There are also case reports associating S. mansoni infection with other cancers, such as prostatic adenocarcinoma and sigmoid colonic cancer. A recent report from Turkey also suggested a possible connection between S. mansoni and bladder cancer. During intestinal schistosomiasis, cell-mediated immune responses are often suppressed, which appears to be linked to the development of hepatosplenomegaly.

The production of anti-idiotype antibodies during chronic schistosomiasis and the modulation of T-helper cell populations by S. mansoni egg antigens may also contribute to carcinogenesis. Schistosomal colitis is associated with an earlier onset of multicentric colorectal cancer. Altered expression of the tumor protein p53 (TP53) in patients with schistosomiasis-related colorectal cancer suggests that S. mansoni infection may induce cancer by targeting oncogenes. Other oncogenes, such as Bcl-2 and C-Myc, are also implicated in the development of colorectal cancer during S. mansoni infection. Therefore, the potential of S. mansoni to cause cancer could result from a combination of somatic mutations in oncogenes and the dysregulation of immune responses that activate various cancer pathways. [18]

# Liver Fluke Infections and Cholangiocarcinoma

## Opisthorchis viverrini

Opisthorchis viverrini infection is strongly linked to bile duct cancer (cholangiocarcinoma) in Southeast Asia, and it is classified as a Group 1 carcinogen by the International Agency for Research on Cancer (IARC). The presence of O. viverrini in the biliary system, along with environmental factors and other microbes that avoid host inflammatory responses, may contribute to the development of cancer. Molecules derived from O. viverrini can promote uncontrolled cell growth in the host, potentially leading to cancer. For instance, studies in animals have shown that dimethylnitrosamine from Opisthorchis can induce cholangiocarcinoma, with elevated levels of nitroso compounds detected in infected individuals. Additionally, O. viverrini-derived granulin can promote biliary cell proliferation, while thioredoxin (TRX) and thioredoxin peroxidase (TPX) prevent apoptosis, increasing the risk of cancer. Other potentially carcinogenic compounds, such as oxysterol derivatives, have also been found in O. viverrini extracts. Chronic O. viverrini infection initiates inflammation, leading to the production of cytokines that drive cancer progression. The infection also affects the expression of important regulatory proteins and signaling pathways, including the retinoblastoma protein (RB) pathway, PI3K/AKT, and Wnt/β-catenin, all of which are implicated in cancer development. Genetic studies have indicated distinct mutation patterns in genes such as p53 and SMAD4 among patients with O. viverrini-related cholangiocarcinoma, suggesting a unique genomic profile influenced by the infection. [18]

A scientific article, OPISTHORCHIS VIVERRINI AND CLONORCHIS SINENSIS- Biological Agents, on NCBI Bookshelf, states the following on Opisthorchis:

> *"There is sufficient evidence in humans for the carcinogenicity of chronic infection with Opisthorchis viverrini. Chronic infection by Opisthorchis viverrini causes cholangiocarcinoma.*
>
> *There is sufficient evidence in humans for the carcinogenicity of chronic infection with Clonorchis sinensis. Chronic infection with Clonorchis sinensis causes cholangiocarcinoma."* [19]

## Clonorchis sinensis

Infection with Clonorchis sinensis has been strongly linked to cholangiocarcinoma, making it a highly carcinogenic agent. Studies in Korea have demonstrated that C. sinensis infection significantly increases the risk of developing bile duct cancer, with higher infection rates associated with a greater incidence of the disease. The exact mechanisms of C. sinensis-induced carcinogenesis are not fully understood, but they are thought to be similar to those of O. viverrini. These mechanisms likely involve chronic inflammation, products derived from the parasite, and physical damage to the host tissues. Moreover, C. sinensis can cause changes in pancreatic ducts, potentially leading to conditions such as squamous metaplasia, mucous gland hyperplasia, and even ductal adenocarcinoma. Research has also shown that products derived from C. sinensis (ESPs) can promote the aggregation and invasion of cancer cells. The infection triggers a strong Th2-associated inflammatory response, which contributes to the initiation and progression of cancer. Additionally, C. sinensis affects various metabolic and inflammatory pathways, including those involving lipid peroxidation products such as 8-oxodG, which can cause DNA lesions and contribute to the carcinogenic process. [18]

## Opisthorchis felineus

The connection between Opisthorchis felineus infection and cholangiocarcinoma has been suggested, but the exact mechanisms are not fully understood. There is evidence that O. felineus can alter immune responses, potentially contributing to cancer development. For instance, negative correlations between O. felineus infection and allergic responses suggest that the parasite can prompt regulatory immune cells, affecting the host's immune environment. The infection has been found to impact the expression of genes related to Th1/Th2 regulation, such as SOCS5 and IFNG, which could influence cancer progression. Additionally, regulatory T cells, associated with more aggressive tumor growth and poorer cancer prognosis, may be influenced by O. felineus infection. Recent research also indicates that glucose dysmetabolism, possibly in the context of diabetes, and dicarbonyl stress could play a role in O. felineus-related carcinogenesis. [18]

# Gastric Cancer and MALT Lymphoma (Helicobacter pylori Infection)

## Parasitic: Helicobacter pylori

Helicobacter pylori is a bacterium frequently associated with species resembling parasites because of its harmful lifestyle.

More than half of the world's population is infected with Helicobacter pylori, a common infection particularly prevalent in underdeveloped nations. The bacteria is a primary cause of peptic ulcer disease and a significant contributor to stomach adenocarcinoma and mucosa-associated lymphoid tissue (MALT) lymphoma.

This bacteria causes chronic gastritis, which can develop into atrophic gastritis, intestinal metaplasia, dysplasia, and eventually gastric cancer. H. pylori's virulence factors, like VacA and CagA, interfere with the host cells' signaling pathways, leading to inflammation, cell adhesion disruption, and DNA damage. The bacteria also create an environment that promotes lymphoid hyperplasia and chronic inflammation, which aids in developing MALT lymphoma.

Scientific studies, including epidemiological research, clinical trials, and molecular investigations, strongly support the link between H. pylori and stomach cancer. Evidence suggests that eradicating H. pylori can decrease the risk of developing gastric cancer and MALT lymphoma in infected individuals. H. pylori is classified as a Group 1 carcinogen by the IARC due to its well-established role in stomach cancer development.

In the article, Helicobacter pylori and Gastric Cancer: Factors That Modulate Disease Risk, the link between H. pylori and gastric cancer is discussed. This article proves that this bacteria can cause cancer, but the eradication of it can decrease the risk of developing cancer.

> *"The link between H. pylori and gastric cancer was a matter of debate for a number of years. However, several studies, including a study of 1,526 Japanese patients, have now provided clear evidence that H. pylori infection significantly increases gastric cancer risk. Uemura et al. (319) reported that gastric cancer developed*

*in approximately 3% of H. pylori-infected patients, compared to none of the uninfected patients. Eradication of H. pylori significantly decreases the risk of gastric cancer in infected individuals without premalignant lesions. Randomized prospective studies demonstrated that eradication significantly reduced the presence of premalignant lesions, providing additional evidence that this organism has an effect on early stages of gastric carcinogenesis. In experimentally challenged Mongolian gerbils, eradication of H. pylori resulted in a significant attenuation of the progression toward gastric cancer. Taken together, these studies support an unequivocal role for H. pylori in the development of gastric cancer and indicate that anti-H. pylori therapy may be an effective means of gastric cancer prevention."* [19]

## STRONGYLOIDES STERCORALIS AND CANCER

Strongyloides stercoralis is a parasitic worm that can cause strongyloidiasis, leading to gastrointestinal ulcers and other health problems. It affects 50–100 million people in tropical and subtropical regions, as this is the ideal climate for this parasite. The infection can cause skin issues, diarrhea, nausea, and abdominal discomfort. In some cases, the infection may lead to a dangerous increase in the number of worms in the body, especially in patients who suffer from Human T-cell Leukemia Virus Type 1 (HTLV-1).

Research suggests that people with S. stercoralis infection, especially those also infected with HTLV-1, may have a higher risk of developing certain cancers. HTLV-1 can cause adult T-cell leukemia/lymphoma by transforming specific white blood cells into dangerous cells. The presence of the S. stercoralis parasite may increase these cancer-causing virus levels and the abnormal growth of infected cells. This could lead to specific types of cancer forming. There are also indications that S. stercoralis might play a role in the development of gastric adenocarcinoma and colorectal cancer. This could be linked to its interaction with the immune system and its ability to stimulate cancerous tissue changes directly. [18]

A case report, Parasite Infection, Carcinogenesis and Human Malignancy, states that there is a clear association between gastric adenocarcinoma, colorectal cancer and this parasite.

*"In addition, a case report described a Korean patient presenting with both S. stercoralis infection and early gastric adenocarcinoma. Further analysis revealed that the gastric adenocarcinoma and adenoma tissues were positive for S. stercoralis suggesting a causative effect of S. stercoralis (Seo et al., 2015). An association of colorectal cancer with chronic S. stercoralis infection has also been reported in a Columbian patient (Tomaino et al., 2015). These observations suggest that S. stercoralis may not only serve as a cofactor for induction of HTLV-1-related lymphoid cancers, but also stimulates induction of colon adenocarcinoma probably by interacting with the host and/or activating the host immune response."* [18]

# PARADOXICAL DUAL IMPACTS OF CHAGAS DISEASE ON CARCINOGENESIS

Chagas disease is a parasitic infection caused by the protozoan Trypanosoma cruzi, and it is prevalent in South and Central America, affecting approximately 15 million people. The disease is mainly transmitted by triatomine insects, commonly known as kissing bugs. When these insects feed, they deposit feces containing T. cruzi, which can enter the human body through mucous membranes, conjunctivae, or skin breaks, leading to infection.

Chagas disease can present in various forms: around 40% of those who are infected remain asymptomatic or have indeterminate forms, while 2-5% develop symptomatic forms each year. This often leads to severe cardiac or digestive disorders, such as mega-organs—less than 1% experience severe acute manifestations, including acute myocarditis, pericardial effusion, and meningoencephalitis.

Chronic infection with T. cruzi has been suggested as a risk factor for cancer, particularly in the gastrointestinal tract. Some case reports, and studies have documented associations between Chagas disease and cancers such as esophageal leiomyosarcoma, uterine leiomyomas, and colon cancer, especially in cases involving chagasic megaesophagus or megacolon. Patients with chagasic megaesophagus may have increased gastroesophageal reflux, which is one potential mechanism that could contribute to the development of cancer.

Cytogenetic studies have identified chromosomal abnormalities and gene deletions in patients with chagasic megaesophagus, including those affecting the p53 tumor suppressor gene, indicating a possible association between these genetic alterations and cancer risk. Some genetic changes may contribute to the carcinogenic process, even though specific point mutations in important genes are uncommon. These changes are probably made worse by persistent parasite-host interactions and chronic inflammation. [18]

# CHAPTER 6
# UNKNOWN SYMPTOMS OF PARASITIC INFECTIONS

The signs of parasite infections are frequently mild and easily missed, making diagnosis difficult. As a result of parasites removing vital nutrients from the host's body, common but less evident symptoms include chronic weariness, overall body weakness, and anemia or malnutrition symptoms. Even when a person follows a normal diet, unexplained weight loss may be a sign of a parasitic infection like hookworms or tapeworms, which steal nutrients meant for their host. Additionally, parasites can interfere with digestion, causing gastrointestinal problems including gas, bloating, diarrhea, or constipation, which can aggravate the digestive tract.

Either allergic reactions to the presence of parasites or parasitic diseases like scabies can result in skin problems like itchy rashes, dermatitis, or eruptions of unclear origin. Unknown causes of muscle and joint discomfort can also be attributed to some parasites, like Trichinella worms.

Headaches, vertigo, or seizures are examples of neurological symptoms that could be brought on by nervous system parasites such as Toxoplasma gondii or Taenia solium-caused neurocysticercosis. Roundworms or lung flukes can migrate to the lungs and obstruct airways, producing discomfort that can lead to respiratory issues including persistent coughing or wheezing.

In addition to causing pain and systemic inflammation, parasitic diseases can also cause insomnia or interrupt sleep. Mood swings and alterations in behavior can be brought on by certain parasites that modify neurotransmitter levels. Recurrent infections or symptoms similar to autoimmune diseases could be signs that parasite activity has weakened the immune system.

Significant and unexplained weight loss can occur with chronic parasitic infections. Parasites such as tapeworms or hookworms can cause malabsorption of nutrients, leading to weight loss and potentially impacting overall health in ways that could be linked to cancer. Additionally, certain parasites, like those causing cutaneous leishmaniasis, can cause skin lesions. Persistent skin issues or ulcers that don't heal properly might be indicative of chronic inflammation, which is a risk factor for cancer.

Diagnosing parasitic infections can be challenging since their early symptoms are sometimes so vague or mild that they are misdiagnosed as general malaise. Many of the misconceptions of parasitic symptoms could be characterized into below classes:

## Neuropsychiatric Symptoms

The effects of parasite infections on mental health and cognitive function are among their less well-known side effects. Parasites can induce significant neuropsychiatric changes even though it may seem unlikely that they might have an impact on the brain.

### *DEPRESSION AND MOOD SWINGS*

Toxoplasmosis, brought on by the parasite Toxoplasma gondii, has been connected to depression and mood swings. According to recent research, this parasite may potentially raise the risk of developing schizophrenia since it disrupts brain chemistry and causes behavioral abnormalities.

A review, Toxoplasmosis and Schizophrenia: A Systematic Review and Meta-Analysis of Prevalence and Associations and Future Directions, of 66 studies involving over 11,000 schizophrenia (SCZ) patients and nearly 70,000 controls suggests a strong link between toxoplasmosis and schizophrenia. On average, 45% of SCZ patients had been exposed to Toxoplasma, compared to 30% of controls, increasing the odds of SCZ by 1.91 times. Some studies found that SCZ patients with shorter illness duration and toxoplasmosis exposure had more severe symptoms. However, most research lacked adjustments for key factors like age and socioeconomic status, making causality unclear. Future studies should focus on randomized trials testing anti-Toxoplasma treatments in SCZ patients to determine the potential impact on disease progression. [20]

### *COGNITIVE DECLINE*

Memory loss, disorientation, and cognitive decline are linked to neurocysticercosis, a disorder brought on by the pork tapeworm (Taenia solium). The tapeworm-caused cysts in the brain progressively deteriorate memory and mental clarity by interfering with regular brain activity.

Cognitive disturbances are common in neurocysticercosis (NCC), affecting 66-87% of patients.

A study, Reversible dementia due to neurocysticercosis: Improvement of the racemose type with antihistamines, shows dementia in 12.5% and cognitive decline in 45% of patients. Key areas impacted include executive functions, memory, language, and visuospatial skills. These impairments may result from factors like inflammation, vascular damage, immune reactions, or epilepsy related to NCC, along with the effects of antiepileptic drugs. While MRI findings don't always correlate with cognitive issues, active disease, and intracranial pressure increase the risk. Some patients experience cognitive improvement with appropriate treatment. [21]

### *EPILEPSY AND SEIZURES*

Invasion of brain tissues by parasites such as the pig tapeworm can result in seizures. Actually, one of the most prevalent causes of acquired epilepsy globally is neurocysticercosis.

An article, Neurocysticercosis as an infectious acquired epilepsy worldwide, proves this statement:

"Neurocysticercosis (NCC), the most common cause of epilepsy worldwide, is caused by brain cysts from the Taenia solium tapeworm." (22)

## Dermatological Symptoms

The largest organ in our body, the skin, often shows symptoms of parasite invasion first. These symptoms are simple to ignore because they are commonly confused with common skin disorders.

### *SKIN RASHES*

Strongyloides parasites are known to induce urticaria, skin rashes, and itching that are readily confused for eczema or allergies. Although the continuous itching is frequently written off as a small problem, it may indicate parasite activity beneath the surface.

***MIGRATORY SKIN LESIONS***

Visible, winding skin lesions are a symptom of cutaneous larva migrans, which are caused by Ancylostoma braziliensis. The larvae leave a trail resembling a snake as they travel beneath the skin. There are occasions when this illness is misdiagnosed as a fungal infection or another skin problem.

***ITCHY PALMS AND SOLES***

Larval migration can produce severe itching in the palms and soles, especially in cases of hookworm infection. Although it is painful, the itching is a reaction to the larvae moving through the skin, and it is frequently mistaken as a dermatological condition unrelated to parasites.

## Respiratory Symptoms

Many people are unaware that parasites can have an impact on the respiratory system and resemble symptoms of more prevalent respiratory illnesses.

Parasitic infections can significantly impact respiratory health, leading to a range of symptoms including cough, wheezing, and shortness of breath. For instance, Strongyloides stercoralis and Ascaris lumbricoides can cause respiratory issues during their larvae migration phase, sometimes resulting in conditions like Löffler's syndrome. Hookworms may also induce coughing and wheezing as their larvae travel through the lungs. Echinococcus granulosus, which forms cysts in the lungs, can lead to severe respiratory distress if cysts rupture. Paragonimus westermani specifically targets the lungs, causing chronic cough, and chest pain. Other parasites, such as Toxocara spp. and filarial worms, can contribute to respiratory symptoms through immune responses or lung involvement.

***WHEEZING AND PERSISTENT COUGH***

A form of roundworm called Ascaris lumbricoides can move into the lungs and produce symptoms that mimic bronchitis or asthma. Patients frequently complain of chronic coughing and wheezing, which prompts doctors to look into respiratory conditions rather than parasite infections.

In a study, Ascaris Larval Infection and Lung Invasion Directly Induce Severe Allergic Airway Disease in Mice, it discusses how ascaris lumbricoides, the most common helminth infection worldwide, can lead to lifelong health issues, including an asthma-like condition. Research shows that Ascaris larvae migrating through the lungs can cause persistent airway hyperresponsiveness (AHR) and type 2 lung inflammation, similar to allergic airway disease. Infected mice developed severe AHR, which lasted even after the infection resolved. They also showed high levels of inflammatory cytokines and lung damage, indicating that Ascaris infection could be a significant cause of allergic airway disease in areas where the parasite is common. [23]

***PULMONARY INFILTRATES***

Hemateptysis (coughing up blood), pleurisy, and chest pain can all be symptoms of lung flukes, a form of parasitic worm. These symptoms are concerning since they are frequently misdiagnosed as tuberculosis or other severe lung infections.

## Musculoskeletal Symptoms

In addition, parasitic infections can significantly impact the musculoskeletal system, leading to symptoms such as joint pain, muscle pain, and weakness. Trichinella spiralis, for example, causes trichinosis, which results in muscle pain and swelling when larvae encyst in muscle tissue. Toxocara spp. can cause muscle pain through visceral larva migrans, where larvae migrate to muscle tissues. Echinococcus granulosus can form cysts in muscles, causing localized pain and swelling. Lymphatic filariasis, caused by Wuchereria bancrofti, can lead to severe limb swelling and pain. Schistosomiasis and onchocerciasis can also cause musculoskeletal symptoms through chronic inflammation and granuloma formation.

### *MUSCLE SORENESS AND WEAKNESS*

Trichinella spiralis, the parasite that causes trichinosis, frequently results in soreness, weakness, and pain in the muscles. The diaphragm and intercostal muscles are most frequently affected, which makes breathing and movement difficult.

A study, Effect of Muscle Strength by Trichinella spiralis Infection during Chronic Phase, states that Trichinella spiralis causes chronic infection in skeletal muscles by forming nurse cells. This leads to muscle damage and inflammation, impacting muscle function. In a study on infected mice, muscle strength weakened significantly during later stages of infection. Early on, inflammation-related cytokines increased but then declined quickly. However, signs of inflammation, such as vacuoles and eosinophil infiltration, persisted in the muscle tissue. These findings suggest that Trichinella infection causes long-term muscle weakness due to ongoing muscle damage and inflammation. [24]

### *JOINT PAIN*

Due to the fact that Lyme disease is vector-borne and is brought on by the bacteria Borrelia burgdorferi, which is spread by ticks, parasites are frequently linked to this illness. Lyme disease can produce arthritis-like joint pain, accompanied by joint swelling and stiffness.

## Gastrointestinal Symptoms

Many parasitic infections primarily affect the digestive tract, which can result in a variety of gastrointestinal problems that are easily misdiagnosed. Parasitic infections are a common cause of gastrointestinal symptoms, which can vary widely depending on the type of parasite. For instance, Giardia lamblia causes giardiasis, leading to symptoms such as diarrhea, abdominal cramps, and nausea.

Entamoeba histolytica is responsible for amoebiasis, which can cause dysentery, abdominal pain, and fever. Ascaris lumbricoides, a large intestinal roundworm, can lead to symptoms like abdominal pain, nausea, and intestinal obstruction. Hookworms (Ancylostoma duodenale and Necator americanus) cause iron-deficiency anemia and gastrointestinal discomfort through their feeding on blood in the intestines. Trichuris trichiura (whipworm) can result in abdominal pain, diarrhea, and in severe cases, rectal prolapse. Strongyloides stercoralis can lead to gastrointestinal symptoms like abdominal pain and diarrhea during its life cycle.

***BLOATING AND GAS***

Giardiasis, a common parasite infection brought on by Giardia lamblia, is characterized by persistent bloating and gas. Many times, people confuse these gastrointestinal symptoms for food intolerances or irritable bowel syndrome (IBS).

An article on parasites, Giardiasis, discusses how Giardiasis is a common intestinal infection caused by the parasite Giardia duodenalis, especially in low-resource areas. Symptoms include flatulence and watery diarrhea, though some people may have no symptoms. This parasite is the most common intestinal parasite in the U.S. and worldwide, especially among children. High-risk groups include international travelers, outdoor enthusiasts, and daycare workers. The infection can lead to dehydration and weight loss but is treatable with medications that result in quick recovery. In developing countries, giardiasis can cause chronic diarrhea and growth issues in children, especially those who are immunocompromised or frequently exposed to contaminated water. [25]

## Cardiovascular Symptoms

Even though they are uncommon, certain parasites can lead to major cardiovascular issues that, if left untreated, could be fatal. Parasitic infections can occasionally affect the cardiovascular system, leading to a range of symptoms. Trypanosoma cruzi, the causative agent of Chagas disease, can lead to chronic cardiomyopathy, characterized by heart enlargement, arrhythmias, and heart failure. Wuchereria bancrofti, responsible for lymphatic filariasis, can cause elephantiasis, which may include severe swelling and fibrosis of the extremities and genitals, occasionally affecting blood circulation and leading to secondary cardiovascular issues. Toxoplasma gondii, primarily known for causing flu-like symptoms, can also lead to myocarditis (inflammation of the heart muscle) in immunocompromised individuals. Leishmania spp. can cause visceral leishmaniasis, which may result in cardiovascular symptoms due to systemic involvement and inflammation.

***ARRHYTHMIAS AND HEART FAILURE***

If untreated, the parasite Trypanosoma cruzi, which causes Chagas disease, can result in persistent heart problems such as arrhythmias, cardiomyopathy, and heart failure. The right diagnosis is frequently delayed since these symptoms are frequently mistaken for other cardiac disorders.

An article, Perspectives on Trypanosoma cruzi-induced heart disease (Chagas disease), states that:

> *"Chagas disease is caused by the parasite Trypanosoma cruzi it is the most common cause of heart disease in endemic areas of Latin America. The year 2009 marks the 100th anniversary of the discovery of T. cruzi infection and Chagas disease by the Brazilian physician Carlos Chagas. Chagasic cardiomyopathy develops in from 10 to 30 percent of persons who are chronically infected with this parasite."* [26]

***EOSINOPHILIC MYOCARDITIS***

This condition, which is brought on by certain parasite infections, is characterized by inflammation of the heart muscle. Chest pain, breathlessness, and exhaustion are symptoms that can be mistaken for other heart problems, making diagnosis more difficult.

Protozoa and helminths can affect the heart both directly and indirectly, leading to various cardiovascular conditions. This review, Cardiac manifestations of parasitic diseases, summarizes the major heart diseases caused by protozoan and metazoan parasites. Protozoan infections like Chagas disease, African trypanosomiasis, toxoplasmosis, and trichinellosis can invade the myocardium, causing myocarditis or cardiomyopathy. Infections with free-living amoebae also lead to similar myocarditis. Amoebiasis and echinococcosis typically affect the pericardium, causing pericardial effusion, acute pericarditis, or constrictive pericarditis. Chronic hypereosinophilia from helminth infections, particularly filariasis, is linked to tropical endomyocardial fibrosis, a severe restrictive cardiomyopathy. Schistosomiasis may cause pulmonary hypertension and cor pulmonale through lung vasculature involvement. Filarial infections can lead to tropical pulmonary eosinophilia, which may also result in pulmonary hypertension. Additionally, Echinococcus cysts can rupture, leading to embolism of secondary cysts to the lungs or other organs. Heart involvement by parasites, although rare outside endemic areas, should be considered in diagnosing unexplained myocardial or pericardial diseases in both immunocompetent and immunocompromised individuals. [27]

## Immune System-Related Symptoms

Parasitic infections can profoundly affect the immune system, leading to a range of symptoms and complications. For instance, Schistosoma spp. can cause chronic immune activation, resulting in fever, rash, and abdominal pain due to granuloma formation and fibrosis in organs like the liver and bladder. Toxoplasma gondii may lead to flu-like symptoms and severe complications such as encephalitis in immunocompromised individuals, as it manipulates the immune response and causes chronic inflammation. Leishmania spp. can result in visceral leishmaniasis, characterized by fever, weight loss, and splenomegaly, severely impacting immune function and increasing susceptibility to secondary infections.

Strongyloides stercoralis may cause gastrointestinal issues and severe disseminated infections in those with weakened immune systems. Wuchereria bancrofti leads to lymphatic filariasis, causing chronic inflammation and immune dysregulation that result in conditions like elephantiasis. Onchocerca volvulus can cause river blindness and skin issues due to significant immune responses to dying microfilariae. Echinococcus granulosus can trigger immune reactions to cysts in organs such as the liver and lungs, leading to symptoms related to cyst rupture. Similarly, Toxocara spp. larvae migration can cause fever, cough, and eosinophilia, with immune responses leading to granuloma formation.

### *EOSINOPHILIA*

High concentrations of eosinophils, a type of white blood cell involved in infection defense, are a common side effect of parasite infections. Although this is frequently observed in blood tests, it might not be recognized as a sign of parasitic activity.

A study, Cross-Sectional Assessment of the Association of Eosinophilia with Intestinal Parasitic Infection in U.S.-Bound Refugees in Thailand: Prevalent, Age Dependent, but of Limited Clinical Utility, displays the relationship between eosinophils and parasites.

*"The most common global cause of eosinophilia (high levels of eosinophils) is helminth (worm) infections. Refugees from areas with high parasite rates are at greater risk compared to the U.S. population. While eosinophilia is often a sign of helminth infection in these individuals, its absence does not rule out infection. A study conducted by the CDC tested U.S.-bound refugees in Thailand for parasites and measured eosinophil levels. Of the 2,004 participants, 73% had at least one parasitic infection. Higher eosinophil levels were linked to certain parasites, such as Ascaris lumbricoides and Strongyloides stercoralis."* [28]

***UNEXPLAINED FEVERS***

A common sign of certain parasite diseases is recurrent fevers that do not improve with conventional therapy. These fevers are sometimes misinterpreted as signs of long-term illnesses such as unidentified viral infections or autoimmune disorders.

## Reproductive Health Issues

Parasitic infections can significantly impact reproductive health, leading to a variety of complications for both men and women. Trichomonas vaginalis is a protozoan parasite causing trichomoniasis, which can lead to symptoms such as vaginal discharge, itching, and discomfort in women, and urethral discharge and irritation in men. Schistosoma haematobium, which infects the urinary tract, can cause reproductive health issues including hematuria (blood in urine) and may contribute to bladder cancer. Filarial worms, such as those causing lymphatic filariasis (e.g., Wuchereria bancrofti), can lead to hydrocele (fluid accumulation around the testicle) in men, while chronic infection may cause genital elephantiasis, severely affecting reproductive function. Echinococcus granulosus (hydatid disease) can lead to complications if cysts form in reproductive organs, potentially causing pain and dysfunction. Toxoplasma gondii, while primarily causing flu-like symptoms, can affect pregnancy outcomes, leading to congenital infections if transmitted from mother to fetus. Leishmania spp. (leishmaniasis) can cause genital ulcers and complications in pregnant women.

***INFERTILITY***

Problems with reproductive health and infertility have been connected to schistosomiasis, a parasitic condition brought on by blood flukes. When a parasite is present in the reproductive organs, it can cause malfunction and scarring.

An article published by PubMed Central, "Female genital schistosomiasis is a sexually transmitted disease": Gaps in healthcare workers' knowledge about female genital schistosomiasis in Tanzania, states that:

*"Female Genital Schistosomiasis (FGS) is a gynecological disease caused by Schistosoma haematobium, a parasitic worm that is acquired by skin contact with freshwater contaminated by schistosome cerceriae. Communities in which the infection is most endemic have limited access to clean water and healthcare services. Up to 150 million adolescent girls and women are estimated to be at risk of FGS and about 16–56 milion womens are living with FGS, with the majority of these in sub-Saharan Africa. The variability of these estimates points to the fact that this neglected tropical disease is not well studied and frequently not prioritized by local, regional, and global health policy makers.*

*FGS results from the inflammatory responses to eggs of S. haematobium that become trapped in the female reproductive tract, where they cause fibrosis and scarring of genital tissues."* [29]

***PELVIC PAIN***

Infections with parasites can be the cause of chronic pelvic pain, which is frequently misdiagnosed as endometriosis or pelvic inflammatory disease (PID). The patient experiences prolonged discomfort as a result of these illnesses not typically being taken into account in the differential diagnosis.

## Fatigue and Malaise

A generalized, sometimes hard-to-diagnose feeling of exhaustion and malaise is one of the most prevalent symptoms of parasite infections. Parasitic infections often lead to fatigue and malaise, which can be attributed to a variety of mechanisms including chronic inflammation, nutrient malabsorption, and systemic effects of the infection. Giardia lamblia, a common protozoan parasite, causes giardiasis, which frequently results in chronic diarrhea, leading to dehydration and fatigue. Plasmodium spp., responsible for malaria, causes cyclic fevers and severe fatigue due to the destruction of red blood cells and the body's inflammatory response. Toxoplasma gondii can lead to flu-like symptoms including malaise and prolonged fatigue, particularly in immunocompromised individuals. Hookworms (Ancylostoma duodenale and Necator americanus) can cause iron-deficiency anemia due to blood loss, leading to fatigue, weakness, and general malaise. Strongyloides stercoralis can cause persistent gastrointestinal and skin symptoms, contributing to chronic fatigue. Trichinella spiralis, causing trichinosis, leads to muscle pain, fever, and fatigue as the larvae invade muscle tissues. Schistosoma spp. infections can result in chronic inflammation and anemia, leading to persistent fatigue.

***CHRONIC FATIGUE***

Excessive tiredness, disturbed sleep, and drowsiness throughout the day can be caused by the parasite Trypanosoma brucei, which is connected to African sleeping sickness. These symptoms are easily written off as stress or other typical exhaustion-inducing factors.

A study, Chronic fatigue syndrome 5 years after giardiasis: differential diagnoses, characteristics and natural course, investigating chronic fatigue following a large giardiasis outbreak in Bergen, Norway, found that a significant number of patients reported persistent fatigue five years after the infection. Among 253 patients invited for follow-up, 53 were assessed for chronic fatigue. Using established diagnostic criteria, 41.5% were diagnosed with Chronic Fatigue Syndrome (CFS), 13.2% with idiopathic chronic fatigue (ICF), and 24.5% with fatigue due to other causes such as sleep apnea, depression, or anxiety. Notably, 20.8% of the patients experienced resolution of their fatigue. The study highlighted that Giardia duodenalis infection could lead to long-term CFS and emphasized the importance of considering other conditions like sleep disorders and mental health issues when evaluating post-infectious fatigue. [30]

***GENERAL MALAISE***

A common symptom of parasite infection is an ill feeling that doesn't seem to have a clear reason. This widespread sickness is sometimes disregarded or mistaken for other, more prevalent illnesses.

# CHAPTER 7
# PREVENTION AND TREATMENT

Parasitic infections represent a significant global health challenge, affecting millions and manifesting in diverse ways depending on the parasite and the host's health. Traditional approaches to managing these infections typically focus on specific treatments and preventive measures to eradicate the parasites. However, a holistic approach to preventing and treating parasitic infections considers not only the direct management of the parasites, but also the broader context of host health, environmental factors, and lifestyle changes.

By adopting a holistic perspective, we aim to enhance our understanding and management of parasitic infections, ultimately improving outcomes for affected individuals and communities.

Gastrointestinal (GI) parasitic infections continue to be a major health problem globally, especially in developing countries, despite advancements in medicine. The rise of multi-drug resistance and side effects from synthetic drugs has spurred interest in alternative treatments. This study, Medicinal plants as a source of antiparasitics: an overview of experimental studies, reviews the antiparasitic effects of various medicinal plants and their components, highlighting their potential as inexpensive and abundant alternatives. Research published from 1990 to 2020 identified 68 plant species from 32 families with antiparasitic properties against GI parasites. Most studies (70%) were conducted in vitro, with the majority of plants belonging to the Fabaceae family. The findings suggest that herbal medicines offer significant potential for new drug discoveries and that plant derivatives can be valuable for drug development and optimization. [31]

## DR. DANIEL NUZUM

*"There are things I did for about 10 years to make sure that we as a family, me, my wife, 5 kids every month for the last 10 years. We actually take one dose of ivermectin every month and have been doing that for 10 years just to make sure we're detoxing from parasites that may be hatching in our body from our food, the water we're drinking, or if we're at the lake or at an ocean in the water. All of us have the potential to be exposed through soil, food, water, parasites, and in the air actually.*

*And that's not a false hood for Americans. Go to the CDC.gov's website, in the search engine type parasites, or Google cdc.gov and parasites. They have tons of pages of parasites and they talk about parasites infecting Americans around the entire country. In fact, I think it states 90 million Americans right now. Americans are struggling with parasites. That's almost a third of our country.*

*So it's a bigger deal than the medical profession admits. So, parasites, I would say, there's a whole bunch of things you can do for parasites. I always prefer natural means for treatment. I said I used one dose of ivermectin monthly. We do that with our animals, our pets like our dog. Put it in their dog bowl. Let them drink it. For those of you who give your animals Heartgard or make them wear a necklace that's Heartgard, just look at it. Heartgard is ivermectin. So they're just treating all your animals with ivermectin. You too would benefit from the transferring of parasites from your animals to you. If you have pets in your home, you for sure have parasites. If you have pets outside and you pet them, love them, let them kiss on you, you kiss on them, you have parasites too.*

*So I would be looking at trying to make sure on a parasitic basis, every six months or so, especially if you have pets you deal with daily or animals like horses or cattle, every month or every day, please make sure you do a parasite test or parasite cleanse at least every 6 months or each year at minimum, at least every year, if not every 6 months. So that's what I would do.*

*I mentioned ivermectin, which most of the world knows about. But ivermectin has the same mechanism of action as wormwood, which is a plant. And you can supplement wormwood and do the same thing as with ivermectin. Hydroxychloroquine is an anti-parasitic drug, and I know a lot of people with autoimmune diseases like rheumatoid arthritis or osteoarthritis have been prescribed hydroxychloroquine, including lupus patients. they'll be put on Plaquenil, which is hydroxychloroquine. Well, hydroxychloroquine was actually developed in a lab from quercetin which is a flavonoid found in the fruit rinds or peels of different fruits, the skin of different fruits.*

*So Quercetin is an absolute natural alternative to using hydroxychloroquine, which is a prescription medication for parasites. So is wormwood, a substitute for ivermectin, and also dandelion root extract- that we use to help address parasites to help people detox every 6 months or a year. So those are a few of the examples of ways we detox. Wormwood is fantastic. Wormwood and black walnut. Another one, that's right up there is chaparral, the herb chaparral. Not many people know about chaparral. And the other one is pau d' arco. Pau d'arco is a mold and fungus resistant wood from the Amazon. And interesting enough, when you take it, it gets rid of fungus and mold in your system."*

## Natural Methods for Detoxifying the Body From Parasites

Since our bodies are continually exposed to toxins from the environment, food, and internal metabolic processes, detoxification is an essential process for preserving our health and well-being. Thankfully, a variety of chemicals found in nature help our bodies' natural detoxification processes.

### DR. CATHLEEN GERENGER

*"One of the natural ways that you can do a little detox on your own, is dry brushing. You can dry brush, and hit those little lymph node areas because it helps lymphatic drainage and your lymph nodes are important because that's part of your immune system. So, parasite detox, lymph detox, colon detox, and also liver detox.*

*One thing that I love about natural supplementation, or natural remedies, or even natural vegetables and herbs is that our body has the ability to heal itself if we provide it with the right kind of stuff. And a lot of people out there that do follow me on social media or TV, what I do is I talk a lot about food because I love food. I'm a big foodie. One of my favorite things that I like to cook or I like to throw in my salad is called dandelion roots. Dandelion roots are so beneficial, especially for your liver. It helps the body to naturally detox. Also, you can add supplementation. It's called milk thistle. Milk thistle is another great detoxifier for the liver. The medical name for it is called silymarin. So, it's used interchangeably and it helps, between the milk thistle and the dandelion, to keep your liver nice and clean. It's almost like a little detoxification for the*

*liver. And that dandelion tastes a little bit bitter, which is okay. You just shred in a little piece and just throw it into your salad. And sometimes I saute it with a little bit of grapeseed oil. Grapeseed oil can cook it at a higher heat. Sometimes with olive oil, when we cook it too high of a heat, it can be rancid.*

*So, when your olive oil gets rancid, it cannot do what it needs to do to provide all the health benefits. And we're on the oil tangent. Let's stay away from canola oil and vegetable oil because those are the two oils that can be rancid that can counteract the antioxidants in your body and it can promote a higher amount of free radical damage. A free radical is something that you don't want, and what it is, is that it can age you or create wrinkles or lead to other illnesses and other diseases long-term.*

*Another thing that I love is it's called bentonite clay. I was like, "Wow, what is this?" I remember looking into it. It is just amazing. You can ingest it, or I see it a lot at a spa, at more of the healthy type of spa, organic spa where they use it as a mask.*

*It helps to detoxify the body and it detoxifies your skin, so it keeps your skin nice and healthy. And what it has in there, is it's rich in minerals. Minerals such as calcium, magnesium, silica, things that help to promote collagen. And when our body starts to, unfortunately, biologically ages, that's when the wrinkle starts to show up. So, bentonite clay helps to keep your skin nice and smooth, and it helps to promote your body's natural collagen.*

*Psyllium husk is one of those fibers, I call them soluble fiber. When we eat foods, especially vegetables, and things like that, it's important for us to also add more soluble fiber. What soluble fiber does is that it helps to regulate our digestive tract and move our bowel movements smoothly out of our large intestines so it doesn't just sit there and create some kind of constipation or irritable bowel syndrome. So, anybody who has digestive issues or has a history of constipation or even high cholesterol, adding soluble fiber like psyllium husk helps to move that bowel. Apple pectin. Apple pectin is another one that I love, especially one of the ingredients that helps to aid with digestion. I hear so many, so many, especially my teenage girls or even my 25-year-old, all the way up to the 35 to 45 age group that always suffer from acid reflux or stomach digestive issues or even cramping around their menstrual cycle. I usually say, "Make sure that your digestive tract's nice and clean." And apple pectin, believe it or not, not only helps with digestion, but it releases intestinal spasms. So, it kind of calms their digestive tract down. Sometimes if women out there are going through cramping during their menstrual cycle, I would say take magnesium, about 250 milligrams to 500 milligrams of magnesium helps with the cramping. Instead of just popping what we call ibuprofen or aspirin or painkillers, you can approach it more naturally.*

*Wormwood. We talk about wormwood, and wormwood is really important when it comes to parasites. We mention the parasites and how these little creatures can hatch and have little hatchings and they can create a disturbance in your microbiome that can create a leaky gut, that can create all sorts of skin rash, acid reflux, indigestion, or even bloating. Sometimes what we want to do is that when we incorporate wormwood in there, it's almost like they call it 'bitters'. It's important for us to have some bitters in our dietary habits."*

## DR. JACK WOLFSON

*"And in addition to those binders, which is often called Phase III detoxification, we also need Phase I and Phase II detoxifiers. And these are where products like milk thistle, dandelion come into play. Ginger for example is fantastic. Fennel seed is another fantastic way to promote liver health and therefore excrete a lot of those environmental toxins. So those are all wonderful strategies that really are effective and we've seen a lot of success with that.*

*Now when it comes to parasites, parasites like Borrelia, Bartonella, Babesia, and others, they clearly affect the body. And there are fantastic strategies again to destroy those parasites. And again, products that typically are well-known, black walnut, wormwood are all fantastic strategies. Clover, black cumin seed, a lot of these different things can be very useful to combat parasites. Parasites are well-known to impact the cardiovascular system. I love different strategies that go after the parasites, go after the toxins, help you mobilize these toxins, and then put them into the gut. And then, we need the binders in there to bind them up and excrete them out the other side."*

# Herbal Remedies

## Wormwood (Artemisia absinthium)

Wormwood (Artemisia absinthium) is a traditional herb with a long history of use for its potential antiparasitic properties. Wormwood contains compounds such as artemisinin, which is thought to have antiparasitic effects. These compounds may help in expelling intestinal worms and other parasites. It is traditionally used to treat various parasitic infections, including intestinal worms like pinworms, roundworms, and tapeworms. In addition to its antiparasitic effects, wormwood is sometimes used to stimulate appetite and alleviate digestive issues like bloating and indigestion.

***FORMS AND DOSAGE:***

- **Tinctures:** Wormwood tinctures are concentrated liquid extracts. Typically, a few drops are diluted in water or juice and taken daily, but dosage varies depending on the specific product and intended use.
- **Capsules/Tablets:** Available as dietary supplements, these provide a standardized dose of wormwood extract.
- **Teas:** Wormwood can be brewed into a tea. The dosage will depend on the strength of the tea and individual needs.
- **Powder:** The dried herb can be used in powdered form, either in capsules or as a loose powder added to foods or drinks.

## DR. BRYAN ARDIS

*"So, HCQ has actually many published studies of helping to cure and reverse cancers. Also, ivermectin has been and so has fenbendazole. Well, I have been recommending herbs for decades actually, which have*

*helped to either mitigate, reverse entire cancerous tumors, polyps that have been diagnosed as cancers for years. But I did not need the drugs to do it. So, for example, ivermectin an herb, ivermectin is a patented prescription drug, but there's an actual plant called wormwood that has the exact same mechanism of action as ivermectin. So I don't need a prescription drug. I can use wormwood or I can use dandelion root, which are both very anti-parasitic. You can use artemisinin, which is also another fancy term for wormwood. But these are plants that are proven to have the exact same actions as those. Fenbendazole happens to have the action of rupturing parasitic egg sacs.*

*So as we're seeing the likes of Paul Marik publishing papers, the Substacks I saw this morning on fenbendazole's action to cure and reverse cancers, this actually just supports one huge narrative. I've been preaching to every patient for the last 20 years, and that is 80 to 90% of every single cancer I've ever seen in my practice, it wasn't cancer, it was actually parasitic egg sacs or adult parasitic worms that were being misdiagnosed as cancer. In fact, lung cancer, I just did an entire radio show 2 weeks ago on, there's actually a published paper on lung cancer diagnosis and they were taking quarter-size lesions inside the lungs that looked like black quarters on the lung field in an X-ray, which your lungs should be white, but they're seeing these masses the size of quarters and they're calling these metastatic cancers.*

*Well, what they found was, is when they did biopsies of all of these actual lung diseases and lesions, they found that every single one of them were actually parasites, and were not cancers, but were actually misdiagnosed as cancers."*

## Cloves (Syzygium aromaticum)

Cloves (Syzygium aromaticum) are widely recognized for their potential antiparasitic properties. Cloves contain eugenol, an essential oil with known antimicrobial and antiparasitic effects. Eugenol may help in eliminating parasites and their eggs. Cloves also contain other compounds like beta-caryophyllene, which contribute to their antimicrobial properties. Cloves are believed to act by killing parasites and their larvae or eggs, thus helping to clear infections from the digestive tract.

***FORMS AND DOSAGE:***

- **Whole Cloves:** You can chew whole cloves or use them in cooking. The flavor is strong, so they are often used in small amounts.
- **Clove Oil:** Clove oil is highly concentrated and should be used carefully. Typically, a few drops diluted in a carrier oil (like coconut or olive oil) can be applied topically, but it's not commonly used internally without professional guidance.
- **Clove Powder:** Clove powder can be added to foods or beverages. It's important to use it in moderation due to its potency.
- **Capsules/Tablets:** Available as dietary supplements, these provide a standardized dose of clove extract. Follow the dosage instructions on the product or those given by a healthcare provider.

## DR. STEVEN GUNDRY

*"Cloves, which I call the ultimate immune booster. Why do I call it that? Because cloves are the most powerful antioxidant known to man. You see in 2010, world famous Tufts University in Boston released their updated listing of the most powerful antioxidants in the world.*

*They used a complex process to determine which ones actually protected us from oxygen damage at the cellular level, meaning they had the power to boost immune system, improve skin, boost eyesight, improve heart health, and even boost memory and brain function. In short, antioxidants are one of the most important aspects of health, period.*

*Well, Tufts tested every antioxidant known to man. Turmeric, cocoa beans, even legendary acai berries. These berries scored 100,000 points on the antioxidant scale. Good enough to make the top 10, but when they tested ground cloves, it crushed all other ingredients with an antioxidant score of a whopping 314,000, the most powerful antioxidant by far. That was a mind-blowing result and after the study was released, I began taking clove extract twice a day. It makes me feel great."*

## Neem (Azadirachta indica)

Neem (Azadirachta indica), also known as Indian neem or the "village pharmacy," has been traditionally used in various cultures for its potential medicinal properties, including its antiparasitic effects. Neem is thought to interfere with the growth and reproduction of parasites, potentially expelling them from the body. It may also have a mild laxative effect that aids in removing parasites from the digestive tract.

***ACTIVE COMPOUNDS:***

- **Azadirachtin:** One of the primary active compounds in neem, believed to have antiparasitic properties. It disrupts the life cycle of parasites.
- **Nimbin and Nimbidin:** Other compounds in neem with antimicrobial and antiparasitic effects.

***FORMS AND DOSAGE:***

- **Neem Leaves:** Fresh neem leaves can be chewed or brewed into a tea. Neem leaf tea can be consumed daily, but the dosage should be moderate due to its potent nature. The tea is made by steeping fresh or dried neem leaves in hot water for several minutes.
- **Neem Powder:** Dried neem leaves are ground into a powder. It can be mixed with water or other liquids and consumed. It can also be added to smoothies or juices. Typically, a teaspoon to a tablespoon daily is used, but it's best to start with a smaller amount and adjust as needed.
- **Neem Capsules/Tablets:** Available as dietary supplements, these provide a standardized dose of neem extract. Follow the dosage instructions on the product label or those given by a healthcare provider.
- **Neem Oil:** While neem oil is more commonly used for topical applications, it may also be taken in very small amounts under professional supervision. It's usually applied to the skin for its antimicrobial properties.

## Dandelion (Taraxacum officinale)

Dandelion (Taraxacum officinale) is a common herb known for its various health benefits, including potential antiparasitic properties. Dandelion is thought to aid in the removal of parasites through its diuretic effect, which helps flush out toxins and potentially parasites from the body. It also supports liver and digestive health, which can be crucial in managing and eliminating parasitic infections.

***ACTIVE COMPOUNDS:***

- **Taraxacin:** A compound found in dandelion that may have antiparasitic effects.
- **Inulin and Polysaccharides:** These compounds support digestive health and may enhance the body's ability to expel parasites by promoting a healthy gut environment.
- **Antioxidants:** Dandelion contains antioxidants that support overall immune function, which can be beneficial in fighting infections, including parasitic ones.

***FORMS AND DOSAGE:***

- **Dandelion Tea:** Dandelion root or leaf can be brewed into a tea. This is a common way to consume the herb and support overall digestive health. Steep 1-2 teaspoons of dried dandelion root or leaf in hot water for 10-15 minutes. Drink 1-2 cups per day.
- **Dandelion Root Tincture:** A concentrated liquid extract that can be taken in small amounts. Typically, 20-30 drops in water, 2-3 times a day, but follow the specific product instructions.
- **Dandelion Capsules/Tablets:** Available as dietary supplements, these provide a standardized dose of dandelion extract. Follow the dosage instructions on the product label or those provided by a healthcare provider.
- **Dandelion Powder:** The dried root or leaf can be ground into powder and added to smoothies, juices, or other foods. Typical doses are about 1-2 teaspoons per day.

# Natural Cleansing Protocols

Understanding how to effectively cleanse parasites is crucial for restoring and maintaining optimal health. There are many natural protocols for parasite cleansing from garlic, and black walnut hull, to fibers such as psyllium husk.

## Black Walnut Hull (Juglans nigra)

Black walnut hull (Juglans nigra) is often cited in traditional medicine for its potential antiparasitic properties. Black walnut hull contains juglone, a compound believed to have antiparasitic and antimicrobial effects. It's traditionally used to help expel intestinal worms and other parasites. Commonly used for treating intestinal parasites such as pinworms, roundworms, and tapeworms. It may also support digestive health by promoting regular bowel movements and acting as a mild laxative.

***FORMS AND DOSAGE:***

- **Tinctures:** Black walnut hull tinctures are liquid extracts that can be taken in small doses, typically a few drops diluted in water. Dosage should follow product instructions or a healthcare provider's recommendation.
- **Capsules/Tablets:** Available as dietary supplements, these provide a standardized dose of black walnut hull extract.
- **Powder:** The dried hull can be ground into powder and added to foods or beverages. It's important to follow dosage recommendations.
- **Tea:** Less common, but black walnut hull tea can be brewed, though its strength and effectiveness compared to tinctures and capsules might vary.

## DR. PETER KAN

*"Now, traditionally, what I have used in the past to help people with parasites is things like black walnut hull. This is something that is in most of your anti-parasitic formulas, and it's a staple in helping people to get rid of parasites and other things that we use with this would be wormwood."*

## Garlic (Allium sativum)

Garlic (Allium sativum) is widely recognized for its broad-spectrum health benefits, including its potential antiparasitic properties. The primary active compound in garlic, allicin, is formed when garlic is crushed or chopped. Allicin has been shown to have antimicrobial and antiparasitic effects.

Garlic also contains compounds like ajoene and diallyl sulfide, which contribute to its antiparasitic activity. Garlic is thought to help in eliminating parasites by disrupting their metabolism and life cycle. It may also enhance the immune response to help the body fight off infections.

***FORMS AND DOSAGE:***

- **Fresh Garlic:** Consuming raw garlic is considered one of the most effective ways to benefit from its antiparasitic properties. Two to three cloves per day is a common recommendation, though this can vary based on individual tolerance.
- **Garlic Supplements:** Available in various forms, including capsules, tablets, and garlic oil. Follow the dosage instructions on the product or those given by a healthcare provider. Look for supplements that specify their allicin content, as this is the key active component.
- **Garlic Oil:** Garlic oil can be taken in small amounts or used topically. For internal use, it should be used with caution and under guidance due to its concentrated nature.
- **Garlic Powder:** Can be added to foods or taken as a supplement. Ensure the powder is derived from high-quality garlic to retain its active compounds.

This study, Efficacy of Allium sativum (garlic) against experimental cryptosporidiosis, evaluated the efficacy of garlic (Allium sativum) in preventing and treating Cryptosporidium infection, (cryptosporidium, sometimes called crypto, is an apicomplexan genus of alveolates which are parasites that can cause a respiratory and gastrointestinal illness). Mice were infected with Cryptosporidium oocysts and received garlic, either prophylactically or therapeutically. Results showed that garlic significantly reduced oocyst counts in the stools and intestines of treated mice, particularly when administered two days before infection. The treatment also improved intestinal health and reduced myeloperoxidase (MPO) activity, indicating reduced inflammation. Immunosuppressed mice had higher parasite loads and MPO activity compared to immunocompetent mice. Overall, garlic proved to be an effective prophylactic and therapeutic agent against Cryptosporidium, showing promise as an alternative treatment for this infection. [32]

## Papaya Seeds (Carica papaya)

Papaya seeds (Carica papaya) are a traditional remedy with potential antiparasitic properties.Papaya seeds are thought to help eliminate intestinal parasites by breaking down their structure and aiding in their removal from the digestive system.

***ACTIVE COMPOUNDS:***

- **Papain:** An enzyme found in papaya seeds that helps break down proteins, which may aid in the digestion and expulsion of parasites.
- **Carpaine:** A compound in papaya seeds believed to have antiparasitic effects.

***FORMS AND DOSAGE:***

- **Raw Seeds:** Fresh papaya seeds can be eaten directly. Start with a small amount, such as a teaspoon per day, and gradually increase as tolerated. They have a strong, peppery flavor. Seeds can be ground into a powder to make them easier to consume or added to smoothies and salads.
- **Papaya Seed Powder:** Dried and powdered seeds are available as dietary supplements. Follow the dosage instructions on the product label or consult with a healthcare provider.
- **Papaya Seed Extract:** Available in supplement form, which provides a concentrated dose of the active compounds in papaya seeds. Dosage should follow the product's recommendations or professional advice.

In a study, Effectiveness of dried Carica papaya seeds against human intestinal parasitosis: a pilot study, of 60 Nigerian children with intestinal parasites, an elixir made from air-dried Carica papaya seeds and honey (CPH) was tested against honey alone (placebo). After 7 days, 77% of children who received the CPH elixir had their parasites cleared, compared to only 17% of those who received honey. The CPH treatment was effective across different parasite types, with clearance rates between 71% and 100%, while honey had much lower effectiveness. No adverse effects were reported. The findings suggest that C. papaya seeds offer an effective, natural, and affordable treatment for intestinal parasites, especially in tropical regions, and further research is recommended to compare it with standard treatments. [33]

## Pumpkin Seeds (Cucurbita pepo)

Pumpkin seeds (Cucurbita pepo) are often praised for their health benefits, including their potential antiparasitic properties. The compounds in pumpkin seeds are thought to disrupt the life cycle of intestinal parasites and help expel them from the digestive tract.

***ACTIVE COMPOUNDS:***

- **Cucurbitacins:** These are compounds found in pumpkin seeds that are believed to have antiparasitic effects. Cucurbitacins may help to paralyze and expel intestinal worms.
- **Zinc and Other Nutrients:** Pumpkin seeds are rich in zinc, which supports the immune system and overall digestive health, potentially aiding in the body's ability to fight off parasites.

***FORMS AND DOSAGE:***

- **Raw Seeds:** Consuming raw pumpkin seeds is a common method. A typical recommendation is to eat a handful (about 1/4 cup) per day. Seeds can be eaten as a snack or added to salads, smoothies, or other dishes.
- **Roasted Seeds:** Roasted pumpkin seeds are also effective and can be a tasty way to consume them. Be cautious with added salt or seasonings, as excessive salt may not be beneficial.
- **Pumpkin Seed Oil:** Available as a supplement or culinary ingredient, pumpkin seed oil provides some of the same benefits. It can be used in salads or taken in capsule form.
- **Pumpkin Seed Powder:** Ground pumpkin seeds can be added to foods or beverages. It can be mixed into smoothies, yogurt, or baked goods.

## Bentonite Clay

Bentonite clay, a naturally occurring volcanic ash has gained attention for its potential health benefits, particularly detoxification and gastrointestinal health. This clay is rich in minerals and has unique properties that effectively combat parasites.

***ACTIVE COMPOUNDS:***

- **Montmorillonite:** The main mineral in bentonite, known for its high surface area and ability to adsorb toxins, heavy metals, and pathogens.
- **Silica:** Contributes to the structural integrity of the clay and may play a role in detoxification.
- **Aluminum:** Present in small amounts, it can also bind to toxins but should be consumed cautiously.
- **Iron:** Contains trace amounts, which can support overall health, though it's not a primary mechanism for detoxification.
- **Calcium, Magnesium, and Potassium:** These minerals help restore nutrient balance in the body and support overall health.
- **Trace Elements:** Bentonite clay can contain small amounts of other minerals like manganese, sodium, and zinc, which may contribute to its health benefits.

***FORMS AND DOSAGES:***
For Internal Use:
**Powder Form:**

- Standard Dose: 1-2 teaspoons (about 5-10 grams) mixed with 8 ounces of water, taken once daily.
- Cleansing Protocol: Some may increase to 1 tablespoon (about 15 grams) per day for short-term cleansing (up to 1-2 weeks), but it's important to listen to your body and adjust as needed.
- Capsules/Tablets: Typically 2-4 capsules (follow manufacturer instructions) taken once daily.
- Always check the specific dosage on the product label, as formulations may vary.

For External Use:
**Clay Packs:**

- Mix enough powder with water to create a thick paste and apply to the skin.
- Leave on for 20-30 minutes, then rinse with warm water.

## DR. RUSSELL MARZ

*"Those are all excellent things to be using. Bentonite clay, to my knowledge, has the highest adsorptive properties of any substance that we know."*

## Silica

Silica nanoparticles can carry antiparasitic drugs, such as artemisinin, and release them in a controlled manner. This sustained release helps maintain drug efficacy and reduces the likelihood of parasites developing resistance. Combining silica nanoparticles with ions like calcium, magnesium, and copper has been shown to enhance their activity against parasites, such as those causing leishmaniasis.

Forms:
Silica Nanoparticles:

- **Colloidal Silica:** A stable dispersion of silica nanoparticles in liquid, often used for drug delivery.
- **Powdered Silica Nanoparticles:** Dry form that can be formulated into tablets or capsules.
- **Silica Gel:** Sometimes used in topical applications to enhance the absorption of other antiparasitic agents.
- **Silica-based Composites:** These incorporate silica nanoparticles with other treatments (like artemisinin) to enhance stability and controlled release.

Dosages:
Dosage recommendations for silica nanoparticles can vary widely based on the specific formulation, the protocol being delivered, and the intended use.

However, general guidelines include:

- **Silica Nanoparticles:** Dosages will depend on the formulation and the target species; dosing may range from 1 to 10 mg/kg body weight in animal studies.
- **Combination with Antiparasitic Drugs:** Dosages of the active drug (e.g., artemisinin) may vary; for example, standard oral doses for malaria range from 2 to 4 mg/kg body weight, which may be adjusted based on the nanoparticle delivery system.
- **Topical Applications:** For gel or cream formulations that include silica, the concentration might be around 1-5% silica, but specific dosages should be based on the formulation and the targeted condition.

***IMPORTANT CONSIDERATIONS:***

- **Safety and Efficacy:** Always consult with a healthcare professional or researcher for specific dosing guidance, especially in clinical settings or for human applications.
- **Research Context:** Most current data comes from laboratory studies, and real-world applications may require further clinical testing to determine optimal dosages.
- **Regulatory Approval:** Products using silica nanoparticles for medical purposes must undergo regulatory approval processes, which include safety and efficacy evaluations.

Malaria and leishmaniasis are serious parasitic diseases found mainly in tropical areas, causing many health problems and deaths. This study, Effect of Silica Based Nanoparticles against Plasmodium falciparum and Leishmania infantum parasites, looks at using silica nanoparticles as new tools for treating these diseases. These tiny particles can easily enter cells, control how drugs are distributed, and deliver medications right where they are needed.

Some silica nanoparticles, enhanced with ions like calcium, magnesium, and copper, have shown effectiveness against Leishmania parasites. Additionally, nanoparticles loaded with artemisinin (a common malaria treatment) demonstrated strong antiparasitic effects by releasing the drug steadily. This steady release not only helps keep the drug effective but also may reduce the risk of the parasites developing resistance to the treatment. [34]

## Ginger

Ginger is a well-liked herb with many health benefits, including anti-inflammatory and digestive support. Research has shown that ginger extracts can inhibit the growth and proliferation of certain parasites in laboratory settings. For example, ginger root extract (GE) and its specific fractions have demonstrated significant antiparasitic activity against T. gondii.

***ACTIVE COMPOUNDS:***

- Ginger contains bioactive compounds, such as gingerol and shogaol, which are believed to contribute to its medicinal effects.

***FORMS AND DOSAGES:***

- **Fresh Ginger Root:** 1–2 inches (about 2–4 grams) of fresh root per day, grated or sliced.
- **Ginger Tea:** Steep 1–2 teaspoons of fresh grated ginger in hot water for 10 minutes. 2–3 cups per day.
- **Dried Ginger Powder:** 1–3 grams (about 1/2 to 1 teaspoon) per day, mixed into food or beverages.
- **Ginger Capsules:** 500–1,000 mg, taken 1–2 times daily.
- **Ginger Extract (Tincture):** 1–2 ml (about 30–60 drops) taken 1–3 times per day.
- **Ginger Oil (for topical use):** Dilute with a carrier oil and apply to the skin, not to exceed a few drops.

This study, Antiparasitic effects of Zingiber officinale (Ginger) extract against Toxoplasma gondii, explored the medicinal properties of ginger (Zingiber officinale) against Toxoplasma gondii, a parasitic infection. Researchers tested ginger root extract (GE) and a specific fraction (GE/F1) to see how well they could inhibit T. gondii in laboratory conditions (in vitro) and in living organisms (in vivo).

***KEY FINDINGS INCLUDE:***

- **Effectiveness:** GE/F1 significantly reduced the growth of T. gondii-infected cells and the parasite itself in a dose-dependent manner, outperforming the common medication sulfadiazine.
- **Cell Death Mechanism:** After T. gondii infected cells, markers related to programmed cell death (like caspase-3 and p53) were activated. GE/F1 was effective in reducing the expression of these markers, suggesting it protects the host cells from dying.
- **Cytokine Levels:** In infected mice treated with GE/F1, levels of certain inflammatory markers (INF-γ and IL-8) remained stable or increased, indicating that GE/F1 might also help regulate inflammation.

Overall, the study concluded that GE/F1 has strong antiparasitic effects against T. gondii, reducing cell death in infected cells and controlling inflammatory responses in living organisms. [35]

## Black Cumin Seeds

Black cumin seeds, derived from the plant Nigella sativa, are known for their anti-parasitic qualities, black cumin seed aids in general detoxification. It helps the body's natural detoxification processes and works well against a variety of parasites, all while enhancing general health and well-being.

Active Compounds:

- **Thymoquinone (TQ):** The primary active compound, known for its anti-inflammatory, antioxidant, and antiparasitic properties.
- **Nigellone:** Exhibits anti-inflammatory effects and may enhance immune response against infections.
- **Alpha-hederin:** A saponin that may have antiparasitic and antimicrobial effects.
- **Carvacrol:** Has antimicrobial properties and can aid in reducing the viability of certain parasites.

- **Melanthin:** Another compound with potential therapeutic effects, though less studied.
- **Fatty Acids:** Includes linoleic acid and oleic acid, contributing to overall health benefits.
- **Vitamins and Minerals:** Rich in antioxidants, vitamins (such as Vitamin B and C), and essential minerals that support immune function.

***FORMS AND DOSAGES:***

- **Whole Black Cumin Seeds:** 1–2 teaspoons (about 2–5 grams) per day. These can be eaten raw or added to food.
- **Black Cumin Seed Powder:** 1–3 grams (about 1/2 to 1 teaspoon) daily, mixed into smoothies, yogurt, or other foods.
- **Black Cumin Seed Oil:** 1–2 teaspoons (about 5–10 ml) per day. This can be taken directly or used in salad dressings.
- **Black Cumin Extract:** Follow the manufacturer's instructions, typically around 500–1,000 mg taken 1–2 times daily.

## DR. JACK WOLFSON

*"And there are fantastic strategies again to really destroy those parasites. And again, products that typically are well-known, black walnut, wormwood, those are all fantastic strategies. Clover, black cumin seed, a lot of these different things can be very useful to combat parasites. Parasites are well-known to impact the cardiovascular system. I love different strategies that go after the parasites, go after the toxins, help you mobilize these toxins, and then put them into the gut. And then, we need the binders in there to bind them up and excrete them out the other side."*

## Probiotics

Probiotics are live microorganisms that can provide health benefits to the host, including potential antiparasitic effects. Recent research has shown that specific probiotic strains may help control parasitic infections, particularly those caused by gastrointestinal parasites like helminths and protozoa.

***MECHANISM OF ACTION:***

- **Competitive Exclusion:** Probiotics can compete with parasites for nutrients and binding sites in the gut, potentially preventing their establishment.
- **Immune Modulation:** Probiotics may enhance the host's immune response, helping the body to fight off parasitic infections more effectively.
- **Production of Antimicrobial Substances:** Some probiotics produce substances like bacteriocins that can directly inhibit parasite growth.

This study, The Anti-parasitic Effect of Probiotic Bacteria via Limiting the Fecundity of Trichinella Spiralis Female Adults, explored the protective effects of specific probiotic strains against the zoonotic parasite Trichinella spiralis. Researchers tested six probiotic strains to see how they influenced the intensity of infection and the reproductive capacity of female T. spiralis. Mice were given daily doses of these probiotics and then infected with 400 T. spiralis larvae. Results showed that three strains—E. faecium CCM8558, E. faecium CCM7420, and E. durans ED26E/7—significantly reduced the number of adult parasites in the intestines. Additionally, several probiotic strains lowered the number of larvae in muscle tissue, with E. faecium CCM8558 and E. durans ED26E/7 showing the strongest effect on reducing female reproductive capacity by 94%. Other strains also decreased the production of newborn larvae. The study found a direct relationship between the concentration of probiotics and their effectiveness in inhibiting the parasite's reproductive capacity. [36]

# Herbal Antiparasitic Oils

## Grapefruit Seed Oil Extract

It is well known that grapefruit seed extract has antibacterial qualities. This supplement is often used in programs that aim to rid the body of parasites and may help prevent a number of illnesses. There is a liquid form that is thought to disrupt the life cycles of parasites, making it easier for the body to expel them.

## Oregano Oil

Another effective technique for clearing parasites is oregano oil. Carvacrol is a substance that has strong antibacterial properties. This supplement comes in liquid or capsule form, and is used to treat parasitic diseases. Its active ingredients support general gut health by specifically targeting and eliminating parasites.

# Ivermectin

Ivermectin is a widely used antiparasitic medication that has proven effective against various parasitic infections. Initially developed for veterinary use to treat livestock, it has since become a crucial treatment option for several human parasitic diseases. Its broad-spectrum activity makes it a valuable tool in the fight against parasitic infections that pose significant public health challenges, especially in tropical and subtropical regions.

The mechanism of action of ivermectin involves binding to specific receptors in parasites' nervous and muscular systems. This binding leads to paralysis and eventual death of the parasites, making it particularly effective against roundworms (nematodes) and ectoparasites such as lice and scabies. By disrupting the normal functioning of these parasites, ivermectin can help eliminate infections and reduce disease transmission.

Ivermectin is particularly well-known for its role in treating onchocerciasis, commonly called river blindness, which is caused by the Onchocerca volvulus parasite. It is also utilized in mass drug administration programs for lymphatic filariasis, a mosquito-borne disease caused by filarial worms. Additionally, ivermectin effectively treats strongyloidiasis, an infection caused by Strongyloides stercoralis, and topical applications for scabies and lice infestations.

The drug is typically administered as a single oral dose, with the specific dosage varying based on the type of infection and the patient's weight. Generally, ivermectin is well-tolerated, though some patients may experience side effects such as dizziness, itching, or gastrointestinal disturbances. Its ease of administration and favorable safety profile enhance its appeal as a frontline treatment for parasitic infections.

A review, Antiparasitic activity of ivermectin: Four decades of research into a "wonder drug", discussed how parasitic diseases remain a significant threat to human and animal health, especially in low-income countries, and how this prompted ongoing research for effective antiparasitic drugs.

Ivermectin, a macrocyclic lactone introduced in 1981, has shown broad antiparasitic activity and low toxicity, making it widely used for various parasitic infections in both humans and animals. It is approved for treating river blindness and strongyloidiasis in humans, as well as roundworm and arthropod infestations in animals, and is often used off-label for other parasitic diseases.

Over four decades, research has demonstrated ivermectin's effectiveness against a range of parasites and even potential efficacy against viruses and bacteria. Its introduction has notably reduced the prevalence of river blindness in endemic areas through mass administration starting in the 1990s. [37]

## Dietary Adjustments

***INCREASE FIBER INTAKE***

Increasing dietary fiber can be a highly effective strategy for supporting antiparasitic treatments. Fiber enhances gastrointestinal health by promoting regular bowel movements, which helps to expel parasitic organisms and their eggs more efficiently from the digestive tract. Additionally, a high-fiber diet supports a healthy gut microbiome, which plays a crucial role in defending against infections, including parasitic infestations. By creating a less favorable environment for parasites and fostering a balanced gut flora, fiber can aid in minimizing symptoms and accelerating recovery during antiparasitic therapy. Moreover, fiber's ability to absorb toxins and maintain intestinal health further complements the body's natural defenses against parasites, contributing to a more effective and comprehensive approach to treatment.

***STAY HYDRATED***

Hydration plays a crucial role in enhancing the effectiveness of an antiparasitic program by supporting the body's natural detoxification processes and maintaining optimal gastrointestinal function. Adequate water intake helps flush out toxins and metabolic byproducts produced by the parasites and the body's response to them, which can alleviate symptoms and aid recovery. Proper hydration also ensures that the digestive tract remains well-lubricated, facilitating smoother bowel movements and more effective expulsion of parasites and their eggs. Staying well-hydrated supports overall cellular health and immune function, empowering the body to resist and combat parasitic infections. Water is a vital component that complements antiparasitic treatments by promoting efficient waste removal and enhancing overall wellness.

***AVOID SUGARY AND PROCESSED FOODS***

Avoiding sugary and processed foods is a valuable aspect of an antiparasitic treatment plan, as it helps the body effectively combat and expel parasites. These foods can contribute to an imbalance in the gut microbiome by fostering an environment conducive to parasitic growth and proliferation. High sugar intake, in particular, can weaken the immune system and provide a readily available energy source for parasites, potentially exacerbating infections. Processed foods, often rich in unhealthy fats and artificial additives, can also disrupt digestive health and inflammation, hindering the body's natural ability to fight parasites. By eliminating these foods, individuals can reduce inflammation, promote a healthier gut environment, and support the immune system, thus enhancing the overall effectiveness of antiparasitic treatments and contributing to faster recovery and better overall health.

## Lifestyle Practices

***MAINTAIN GOOD HYGIENE***

Maintaining good hygiene is vital for avoiding parasitic infections because it significantly reduces the risk of exposure to harmful organisms and their eggs. Proper handwashing with soap and water before eating, after using the restroom, and after handling animals or soil can eliminate potential parasites and their cysts from the skin, preventing their entry into the body. Cleanliness in food preparation, including washing fruits and vegetables thoroughly and ensuring proper cooking temperatures, further minimizes the risk of ingesting parasitic larvae or eggs. Additionally, maintaining clean living environments, including regularly washing bedding and avoiding contact with contaminated water or soil, helps to reduce the likelihood of parasitic infestations. By adhering to rigorous hygiene practices, individuals can create an inhospitable environment for parasites and protect themselves from infections, thereby supporting overall health and well-being.

***REGULAR EXERCISE***

Regular exercise is essential for removing and preventing parasites as it enhances overall bodily functions that contribute to a healthier, more resilient system. Physical activity stimulates circulation, efficiently transporting immune cells throughout the body and bolstering the immune response against parasitic infections. Exercise also promotes regular bowel movements and effective digestion, which helps to flush out parasites and their eggs more efficiently from the gastrointestinal tract. Additionally, physical activity supports a healthy metabolism and maintains optimal body weight, reducing the likelihood of conditions that might make the body more susceptible to infections. By improving overall health and boosting immune function, regular exercise is vital in preventing parasitic infestations and supporting the body's natural mechanisms for expelling parasites.

## DR. BRYAN ARDIS

*"When you're actually removing parasites or any toxins from the body, they have to come out. Typically people have parasites or heavy metals inside of them, and you have just been enduring what it feels like to be normal now, being either full of toxins or riddled with infection. That new normal is going to change the moment that the actual parasites start to die off. And you will experience emotions as a result of the die-off of the parasites. You actually will experience the emotions of the organism as they die off. And I used to warn patients, when we start doing this parasite cleanse, as they die, these are living creatures by the way,*

*they will actually have moments of terror, they will have moments of threat of death. And you yourself may have emotional upheaval occur inside of you as a reaction to their emotional release of their fear, panic, and torture, as they're dying. So that occurs. And then there's actually the process of actually degrading or tearing down the parasites as your body tries to eliminate those. And they're often full of bacteria, they're often full of other toxins. And you will feel symptoms of toxicity, nausea, diarrhea, vomiting, you name it, rashes.*

*There's only so many ways that God created the human body to eliminate things that are poisonous, toxic, or infectious to it. Now, your body's either going to eliminate it through your bowels, through your urinary tract, through your skin, through your lungs, through breathing, or coughing, or mucus. And then in females, it's going to be through the uterine lining, bleeding it directly out. You're gonna see changes in any of those systems as your body is eliminating toxins or parasites of any kind. So we just prepare patients to expect to see some of those moments occur where you're going to feel symptoms. The only reason why you even get body aches, and chills, and joint pain, and muscle and body pain when you have a flu, is because that's what your body feels like as it's eliminating something that is infectious inside the body or toxic to the body. So those are the symptoms as you're eliminating the actual toxin or poison. And you just have to get through that and then you come out on the other side and you'll feel great."*

# Chlorine dioxide

Chlorine dioxide ($ClO_2$) is a chemical compound that has recently garnered attention for its potential antiparasitic properties. It functions by releasing reactive oxygen species, which can damage the cellular structures of parasites, including their membranes and proteins, ultimately disrupting their metabolic processes and leading to their death. Research has particularly focused on its effectiveness against protozoan parasites such as Giardia and Cryptosporidium, with ongoing studies evaluating its impact on helminths and other parasitic infections.

## DR. ANDREAS KALCKER

*"So 26% of the cancer cases there was parasites presence. We don't know if it's cause or effect. It can be both. In any way, chlorine dioxide eliminates parasites in blood. We know that because malaria, it's the old, old malaria, Jim Humble, 100% efficiency.*

*We have to understand that parasites is not the same like worms. If you have a big worm or a parasite, I'm speaking here mostly about a single cellular parasite like trophozoites of malaria or Giardia lamblia or whatever. Most of the parasites are single-celled, and this is actually a much, much more- It has nothing to do with the worms inside. It's not that the worms are eating you up. No, it might be the case, but it's the last case or 1 in 1,000, if so. And basically, we have to understand chlorine dioxide eliminates by size…*

*Anything you want to burn, size is important. If you have- for example, whatever steel you have, a piece of steel, you put the light out, nothing happens. But you have steel wool, like very fine wool, you put the light out, it then burns directly. So we have to understand size matters in this case. And the smaller the aggressor,*

*the easier it is to oxidize. So compared to our cells that are enormous, microbes, bacterias or virus, even much smaller, they have no chance against these amount of oxidation as I explained. And if there are processes that are creating hydroxyls, so the other way around, they have no chance either because it can do both."*

## DR. BRYAN ARDIS

*"But I'm going to tell you right now, the names of those tests are comprehensive stool analysis test for parasites. Each of them say comprehensive. And every time the medical doctor is going to get your stool sample report and it's going to say you're negative for parasites. Those tests are only screening for one of the four classified versions of parasites. They only screen for one in America, one. That one is called protozoa. Well, there's three other types called flukes, roundworms, and tapeworms. So just say no, every MS patient has been found to have roundworms and none of those labs are screening to see if you have any of those in your body.*

*They're only looking for protozoa, which is professed to be the number one parasite infection in Americans. So I'm telling you, if you do those tests, they're extremely limited. I said there's four classifications of parasites, four different types. Within those types, there are thousands, hundreds of thousands of different named parasites in each of those categories of the four.*

*When you're looking at Lab Corps, Genova Labs, and Quest, they're only testing for one protozoa of the hundreds of thousands. They're only looking for one. So if they don't see that one, they're going to tell you, "You don't have parasites." So, guess why the majority of your medical professionals don't see positive results in these parasite screenings they are screening? Of the millions of various kinds of parasites they're only looking for one. But the MDs aren't trained about parasites in med school. They're told parasites only exist in third-world countries. So parasites are a bigger deal than your medical professional knows and bigger than you know. The reason they're called parasites is because they have learned to successfully avoid being detected and being killed. So if you went to the average infectious disease clinic and said, "Do I have parasites?"*

*You got a 99 % chance of being told, "No." Because they're not going to find them. They're not hanging out in your gut. They climb in, they burrow into the wall of the gut or the wall of the bladder, or the wall of the lungs. I mean, they can go anywhere. And they hide in that wall. And that's where they lay their eggs all right and only if an adult happens to come out in the colon will you see the adult form come out in the stool but other than that you're not going to see that.*

*Can you understand if you have an egg and then the egg is going to start to develop a body, that body is going to be made of our tissue, so basically our immune system says, "That's us, that's not them" There's no other that's. And it doesn't, and so it's not immunogenic, and otherwise it doesn't stimulate the immune system. If you under-treat them, in other words, you give not enough medicine to kill them, then they get disturbed and they'll migrate to another organ. Keep in mind there are multiple ways to do a cleanse.*

# CHAPTER 8
# TESTIMONIALS

Nicole Pavlik's health took a sharp turn a year ago, characterized by high liver enzymes, intense exhaustion, nerve pain, and recurrent eye infections. Nicole suspected the parasite trichinosis, which was connected to her symptoms, despite conventional therapies and her holistic doctor's unwillingness to test for parasites. Both conventional and holistic doctors refused to treat her, dismissing her worries and claiming her problems were caused by an autoimmune disease. Nicole, who was desperate for solutions, looked into parasite detoxification techniques and chose to attempt homeopathy. Her spouse supported her in taking this course of action, and she discovered that eliminating parasites really improved her health. Nicole is an advocate for parasite detoxification as a means of achieving improved health since she thinks that parasites are a major factor in many chronic illnesses, including autoimmune diseases.

## NICOLE PAVLIK

*"I wanna talk about what happened to me this time last year and exactly why I think that it was parasites and why I feel like it's so important for you to look into parasitic infections being the root cause of all of your problems. So, this time last year, I had perfect health, and then just a few days later, everything started rearing its ugly head. So I had elevated liver enzymes. I had a lupus rash. I had extreme fatigue. I couldn't lift my head off the pillow. I was having nerve pain up and down my arm. Some days I was so weak I couldn't lift my arms. There were times when I couldn't even type, or write, or use my hands. Sometimes my hands weren't working. My face was swollen, it was red, it was jaundice. One of the key things that was going on with me was that I had reoccurring eye infections that homeopathy would normally help with, and that was not even helping.*

*I was getting swollen eyes. Some days, my eyes were swollen shut, lots of drainage, specifically in my right eye. And I had done research on parasites a while back, and parasites kept coming up for me in various ways. I had such bad brain fog that it was really hard to do the research and look into the help that I needed, but I was pushing myself because I wanted to figure it out so that I could get through it and then I can help other people. So I thought, "Let me just do parasite detox. Let me look into it. Let me look into homeopathy for parasites." When I looked up homeopathy for parasites, there was a list of different parasites and what remedies you could use, and one specific one came up and that was trichinosis. So trichinosis is a parasite that they say you get from eating undercooked pork.*

*One of the key symptoms of trichinosis is reoccurring pink eye infections. Another thing that trichinosis does is it forms cysts in your body and it can go into your muscles and cause muscle weakness and fatigue. They can stay up there for up to 10 years. This is debilitating. This could be causing so many symptoms that we don't know. So how do you know if you have a parasite? So, I went to my holistic doctor whom I've been seeing for over 10 years with the hopes that she would run any test that I asked her to because she always had before. So I went into her office and asked her, I said, "I think I have trichinosis and I want you to run the test for me. She said, "It's not that easy to run the test." She says, "I have to get CDC approval."*

*I said, "What do you mean?" I said, "I think that I have this and I want you to run the test." She said to me, "I think it's your autoimmune disease and I think we should focus on healing that first and then see later if*

*you're still having problems." And I said, "But what if these parasites are causing my autoimmune disease? Why am I sick all of a sudden again, when I was doing just fine?" I've been seeing her for 10 years. "Why did I just now crash? What changed? What was different?" So I said to her, "I really, really would like to look into this further." She tells me, "Trichinosis is rare. People don't get that anymore because they're educated about pork." I said, "Is trichinosis rare or is it rarely diagnosed because it's so hard to get the test?" And she kind of looked shocked at me, and I left her office that day, kind of feeling defeated because she wouldn't run the test for me.*

*Then I decided I was gonna look on the CDC website to see if what she was saying was true. At that time last year, conveniently, all the parasite testing was pulled down. They were apologizing for recently having this parasite testing pulled down and they were just adding some of them back and trichinosis was one of them that they did not add back yet. So then I decided that I was gonna go to a conventional walk-in doctor with a textbook story. So I walk into this doctor and I say, "Oh, I ate some undercooked pork a couple of weeks ago and I had some GI issues. And now look at me, look where I'm at." And the doctor looks at me and he says, he knows nothing about me. I've never seen him before, "I think you have autoimmune disease." And I'm like, "Crap, I do have an autoimmune disease.*

*I do have lupus. But why?" He says, "I don't think this is trichinosis. I think we're going to run some autoimmune labs." So I couldn't get a holistic doctor to order the test for me. I couldn't get the conventional doctor to order the test for me. And I thought about it and I asked myself, are parasites causing the symptoms of all autoimmune diseases? Are they causing the autoimmune disease? But nobody's doing anything about it because we're labeling it an autoimmune disease. There are no tests for autoimmune disease other than just a collection of symptoms, and then it's a diagnosis. So what if parasites were the cause of all autoimmune diseases? And that's where I started thinking, "What if detoxing from parasites was going to help other people heal?" So I decided from there that I was going to look into detoxing from the parasites on my own.*

*So I started detoxing with homeopathy. And my husband was the one that encouraged me because I still wanted a diagnosis, I wanted answers. And my husband said to me, "If homeopathy doesn't have any side effects, what have you got to lose?" And from the research that I've done in the past, I know about parasites and what they do, and what they do is they hold on to heavy metals and toxins and viruses and all of these things that keep us sick. And so, one of the things that I started thinking, and this is just a theory, I can't prove it. I don't know if I'm right or wrong, but I thought, "What if just what if they're poisoning us intentionally with parasites? What if the parasites are being sprayed in the chemtrails? What if they're putting them in the water? What if it's not just food?*

*What if we're being exposed to them on a daily basis? What if when they inject us, what if they're injecting parasites?" Wouldn't that be a perfect storm? If I said to you the parasites hold on to heavy metals and toxins. What's in a vaccine? Heavy metals and toxins. Aluminum, formaldehyde, polysorbate 80. What if they're injecting parasites right in with those very toxins that are gonna keep you sick? Because why? Parasites gonna hold onto them. And if you don't know they're inside of you and they're holding on to this toxic cocktail, you just were injected with, how are you ever going to get better? And if they're not looking*

*for parasites because they don't wanna do the tests and they're blaming your symptoms on autoimmune disease, even conventional doctors now are saying it's an autoimmune disease. And what are the answers for autoimmune disease?*

*You either in the holistic world, you have to make a lifestyle change where there's a lot of people who get better, but they're not fully healed. A lot of them do. Why? Because something's still in there holding onto those toxins. I've found with homeopathy, a lot of people that do better but aren't completely well, once they detox the parasites, then these protocols that I use start working better. For me, personally, I had a skin issue for years that I was using homeopathy for. Once I detoxed the parasite, the skin issue went away.*

*So, is there this connection? In the conventional world, what are we doing for autoimmune diseases? We're going to give them a steroid. We're going to suppress more and they're just going to stay sick. It's a perfect medical business model for them. So for me, you can't tell me any different. You cannot convince me different that parasites are not a huge part of this. That's my message to you guys. I think everybody needs to be looking into this. Don't worry about getting a test because they're hard to get and a lot of times they're inaccurate, but you can detox from them. And there's various ways to detox from parasites. There's a lot of holistic ways to detox from parasites with herbs and other therapies, carbons, and all of these things that you need to detox from parasites. But what I'm doing personally, is I'm using homeopathy because anybody can do it. And that's what held me back for years, was that I was pregnant or breastfeeding. And anybody can do it. Anybody can detox from parasites, pregnant, breastfeeding, the elderly, children, babies, and pets. We can all detox from parasites with homeopathy, with no side effects, no die-off symptoms, and then you can heal."*

Parasitic infections can significantly impact both physical and mental health, leading to a variety of symptoms often associated with conditions such as autism. The presence of parasites in the body can release neurotoxic substances. In cases of a leaky gut, these substances can travel beyond the digestive tract to the brain, causing brain damage and exacerbating symptoms like fear, anxiety, and depression. Other common signs of parasitic infections include gastrointestinal issues such as constipation, alternating constipation, and diarrhea.

Effective parasite treatment protocols are essential for children and adults who may show signs of parasitic infection. For instance, pica, a condition where individuals feel compelled to put non-food items in their mouths-can be a sign of parasitic infection. Treatments like mebendazole, a broad-spectrum antiparasitic medication with minimal absorption and toxicity, are being used to target large intestinal parasites and have shown potential for combating tumors at the stem cell level.

In addition to medication, dietary changes, and detox protocols, including chlorine dioxide, methylene blue, and black seed oil, can help clear parasites from the body and improve overall health outcomes. There have been significant improvements in ATEC scores (a measure of autism symptoms), indicating that even adults diagnosed with autism can experience substantial recovery with the right interventions.
In the next testimonial, we hear from Kerri Rivera as she shares her successes with chlorine dioxide in treating parasites that caused autism.

## KERRI RIVERA

*"Parasites cause symptoms of- So, autism really is just a label and it's a group of symptoms and there's damage in the body from these pathogens that are living in the body. So they're releasing a lot of neurotoxic substances. And when you have a leaky gut, things don't just stay in the gut, for example, they travel to the brain and they can cause brain damage, but they can also cause symptoms. So, for example, with parasites, fear, anxiety, and depression are three of the main symptoms that people get from having parasitic infections. Another big red flag for parasitic infection is constipation or combination, constipation/diarrhea that can wane and flow. So, there's different things. But we're seeing these, typically with autism, as well as other disorders.*

*Again, I feel like it's just the biggest pathogen. So for example, chlorine dioxide destroys virus, kills Candida, bacteria, and parasites. But because the parasites are so large and chlorine dioxide, methylene blue are good for getting, black seed oil as well are good for getting them in the blood because it's a gas, goes to the blood. But when it comes to the gut, the parasites are usually pretty large. So in my protocol, we're using mebendazole, a non-systemic broad-spectrum, parasite-killing medicine. It doesn't- it's not absorbed, it has a 3% absorption, so there's no liver toxicity or anything like that with mebendazole. And mebendazole has also been known to actually destroy tumors at the stem cell level the same way that it destroys parasites. So it's kind of a win-win situation as well using the mebendazole.*

*But parasites are definitely a big problem. And usually when I'm working with families you can almost always see that the parents have issues as well. Like parents with their pens or fingers in their mouths. So this idea of pica, which means you're putting things into your mouth that are not food for example, like fingernails or pens or the whole finger or whatever. It's like everybody needs to do this parasite cleanse. And I just know myself having done all the parasite cleanses over the years and I've done many different ones, I was thinking, I've worked with so many different practitioners and I always did everything that my son did. And I think that's what keeps us balanced at the end of the day as far as our mind and the strength of our mind is concerned. Because a lot of people say, "Oh how do you tolerate the attacks?" Or these kind of things. But I think having done so many detox protocols really helps keep your mind sharp and keep you in the game.*

*Well the protocol is based in- diet is first and foremost with autism. I mean the first thing you really want to start is, clean that diet up…*

*We had a 10% recovery in 4 months from that little test group. And again, it wasn't a scientific test group, but it was us watching these kids and using the same scoring system for them. And then now- it doesn't matter the age of the child, I have a 21-year-old in the UK and we use a testing scoring system called ATEC, which stands for Autism Treatment Evaluation Checklist. And a zero to 10 ATEC is a person who's recovered. It's a typical person.*

*So the other day, 6 months ago, started working with a family in UK, and this just is a couple of examples that I can tell you that just make me so motivated to share this, 21-year-old fella, his ATEC was 70, so he was bad but he wasn't so bad because 160 is terrible. So, he's kind of halfway between good and bad. His ATEC now*

*is 26, and that was only in a 6-month period of time with a 21-year-old. And a lot of people will tell you, "Oh, after 3 or 4 years old, if you don't recover them, they're not recoverable." So not true.*

*And then another mom, these are just examples, I've worked with thousands of people on a regular basis. So in September, and we're November now, but middle of September we had our first consultation. She started the diet immediately and started on chlorine dioxide and was only half dose of chlorine dioxide. When she texted me about 3 weeks later and she says, "Hey Kerri," she started asking me some other questions and then she started telling me all these great things that were happening with her son. I was like, "Wow." And I was sitting doing nothing. So I'm like, "Hey listen, do the ATEC score and let me know." Cause usually we do it every 3 months just to see the changes. And it went from also 70 down to 26, 27, 20-something like that. So you could imagine almost fully recovered in 3 weeks, like 75% recovery in 3 weeks. It was mind-blowing.*

### NATALIYA VOLOSHIN

*"I would say this one, for me it's bible for my health journey. So after that, you know already everything, when you did everything here, you can go further. For example, I did test for a diagnostic solution like stool test, DNA test and then work already one by one with particular parasites what they found. But in the beginning, this program, you can't imagine what is difference after this, is what it shows here. It's improvement. Improvement, my sedimentation rate and inflammation level. It's from 140, less, less, practically right now in the border of normal. But for me it took seven months. It didn't happen in two months, but I understand that my cases, serious cases of myositis, rheumatoid arthritis, vasculitis, Hashimoto's. So it's combination. In the beginning it was only one, but autoimmune usually they just add one to another. Because of illness. Because of medication. But my thyroid gland also was so bad that I was almost two years on medication. Not anymore."*

# CONCLUSION

Parasites are organisms that live on or within a host, extracting nutrients without offering any benefit, which can have severe health implications. They come in various forms, including single-celled protozoa, multicellular helminths (such as roundworms and tapeworms), and ectoparasites like fleas and ticks. Each type employs unique survival strategies, often evading the immune system and manipulating the host's body to continue its life cycle. Understanding these complex interactions and maintaining hygiene and preventative measures to minimize infection risks is essential.

Recent research has revealed a troubling connection between parasitic infections and cancer. Some parasites can contribute to cancer through chronic inflammation, immune system suppression, and direct cellular damage. For example, liver flukes are linked to bile duct cancer, and Schistosoma haematobium is associated with bladder cancer. These parasites can disrupt cellular signaling and lead to uncontrolled cell growth. Recognizing these links highlights the need for effective prevention and treatment strategies, especially in regions where these parasites are endemic.

Some parasites are recognized as potent carcinogens. Schistosoma haematobium, Helicobacter pylori, and liver flukes such as Opisthorchis viverrini and Clonorchis sinensis are known to cause or exacerbate cancer through chronic inflammation and cellular damage. These findings emphasize the importance of addressing parasitic infections to reduce cancer risk, particularly in areas with high prevalence.

Diagnosing parasitic infections can be challenging due to their diverse and often subtle symptoms, which can overlap with other health conditions. Symptoms may include persistent fatigue, weight loss, gastrointestinal issues, skin problems, and more. Because these symptoms are varied and can mimic other conditions, parasitic infections are frequently misdiagnosed. This highlights the need for awareness and consideration of these infections in unexplained or persistent health issues.

In conclusion, proactive parasite prevention and treatment are essential for maintaining health. Regular detoxification is crucial, especially for those with frequent exposure to potentially contaminated environments. Natural alternatives like wormwood and dandelion root extract and methods like dry brushing and fiber supplementation can support detoxification and overall health. Understanding the potential physical and emotional effects during a cleanse can help manage expectations and ensure effective parasite management. By combining regular cleansing, awareness of possible exposures, and natural and medicinal methods, individuals can better maintain a balanced and parasite-free body.

# REFERENCES

1. https://archive.cdc.gov/www_cdc_gov/media/releases/2015/p1104-parasite-tumors.html
2. https://www.cancer.gov/about-cancer/understanding/what-is-cancer#:~:text=Pittsburgh%20Cancer%20Institute-,The%20Definition%20of%20Cancer,up%20of%20trillions%20of%20cells.
3. https://www.immunopaedia.org.za/breaking-news/2016-articles/the-link-between-malaria-and-cancer/#:~:text=Researchers%20have%20found%20that%20the,linked%20with%20malaria%20endemic%20areas.
4. https://www.sciencedirect.com/science/article/pii/S2667114X22000127
5. https://www.researchgate.net/figure/The-life-cycle-of-Ascaris-lumbricoides_fig17_5886493
6. https://www.researchgate.net/figure/Life-cycle-of-Entamoeba-histolytica-Available-online-http-enwikipediaorg_fig1_236920230
7. https://www.researchgate.net/figure/Life-cycle-of-Entamoeba-histolytica-Available-online-http-enwikipediaorg_fig1_236920230
8. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5233816/
9. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3671432/
10. https://www.sciencedirect.com/science/article/pii/S2352396416305515
11. https://jeffreydachmd.com/2016/05/cancer-as-a-parasitic-disease/
12. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5945254/#:~:text=The%20%E2%80%9Cliver%20fluke-cholangiocarcinoma%E2%80%9D%20carcinogenesis%20pathways%20are%20consisting%20of%20mechanical%20damages
13. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9917787/#:~:text=Helicobacter%20pylori%20(H.%20pylori)%20is%20the%20main%20risk%20factor%20for
14. https://pubmed.ncbi.nlm.nih.gov/21178421/#:~:text=Schistosoma%20haematobium%20is%20a%20parasitic%20flatworm%20that%20infects%20millions%20of
15. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5233816/#:~:text=The%20helminth%20diseases%20schistosomiasis%2C%20opisthorchiasis,both%20carcinogenic%20and%20anticancer%20properties
16. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3671432/
17. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9938995/#:~:text=The%20Schistosoma%20haematobium%20eggs%20were,%25
18. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5233816/
19. https://www.ncbi.nlm.nih.gov/books/NBK304354/#:~:text=There%20is%20sufficient%20evidence%20in,chronic%20infection%20with%20Clonorchis%20sinensis

20. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9558922/
21. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5618997/#:~:text=Cognitive%20disturbances%20are%20one%20of,87%25%20of%20patients%20with%20NCC.&text=One%20such%20study%20found%20dementia,cognitive%20decline%20in%20approximately%2045%25.
22. https://pubmed.ncbi.nlm.nih.gov/29055271/
23. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6246907/
24. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6036084/
25. https://www.ncbi.nlm.nih.gov/books/NBK513239/
26. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2677559/
27. https://heart.bmj.com/content/103/9/651
28. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9128718/
29. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10021524/
30. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3598369/
31. https://www.tandfonline.com/doi/full/10.1080/20477724.2023.2179454#abstract
32. https://www.sciencedirect.com/science/article/pii/S209050681100128X
33. https://pubmed.ncbi.nlm.nih.gov/17472487/
34. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8628922/
35. https://www.sciencedirect.com/science/article/abs/pii/S1214021X1460079X
36. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6799552/
37. https://www.sciencedirect.com/science/article/pii/S022352342300805X

# ABOUT JONATHAN OTTO

Jonathan Otto is an investigative journalist, natural health researcher, documentary filmmaker, and humanitarian.

In addition to serving as a producer for ***The Truth About Cancer*** and ***The Truth About Vaccines***, Jonathan has created several highly-acclaimed, groundbreaking docuseries — ***Depression, Anxiety & Dementia Secrets, Autoimmune Secrets, Natural Medicine Secrets,*** and ***Autoimmune Answers*** — covering innovative, effective natural remedies for autoimmune disease, neurodegenerative disease, mental health, cancer, and heart disease.

These docuseries — watched by millions around the world — represent Jonathan's unceasing quest to discover the root causes of debilitating diseases by interviewing over 120 world-renowned natural medicine doctors, scientists, natural health experts, and patients.

In response to this life-saving knowledge, Jonathan created **Well of Life**, a line of doctor-formulated, 100% natural supplements specially designed to detox and fortify the body.

When the global elite took away the human and medical rights of people around the world — and coerced billions into taking the toxic, experimental COVID "vaccines" — Jonathan was determined to get the truth out, despite being repeatedly censored and deplatformed.

He interviewed the world's top medical doctors, health experts, and legal experts on vaccine injuries who risked their own careers to expose the lies behind the deadly COVID "vaccines" — which have caused deaths and injuries to millions of people — to create his newest docuseries, ***Vaccine Secrets, COVID Secrets,*** and ***Unbreakable: Destined to Thrive***.

Jonathan's greatest reward has been hearing the testimonials from people whose lives have literally been saved with the protocols he developed.

His work has been featured in international TV broadcasts, print media, national news, and radio broadcasts. He received the awards, **Young Citizen of the Year** and **International Volunteer of the Year**, by the Australian government for international humanitarian contributions, which he continues to support.

Jonathan and his wife, Lori, welcomed their first son, Asher, in January 2019 and their second son, Arthur, in May 2021.