Bactérias encontradas nos tecidos cancerosos – causa ou contaminação
CWD , L-formas

**Human Bacteria In The Production Of Human Cancer**

**A Short Report With Photographic Evidence**

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One of the most remarkable medical findings in the new 21st century is the recognition that 90% of the cells that make up our body are not human cells. On the contrary, most of our cells are the trillions of microbial cells (primarily bacteria) that inhabit our bodies and share our lives. According to microbiologist Brett Finlay: "We really are a superorganism. From the moment we are born until we die, we live in a symbiotic relationship with our microbes."

The National Institutes of Health has launched a $115-million Human Microbiome Project to identify, analyze and catalog the hundreds of microbial species residing in or on the human body. Modelled after the Human Genome Project, which decoded most of the human genes in the 1990s, the goal of the microbiome project is to determine which microbes are harmful and to figure out ways to prevent or treat diseases they cause.

"Pleomorphic" bacteria and human cancer

It is peculiar that the trillions of bacteria that are part of us do not appear in textbooks of histology (the microscopic study of normal tissue) and pathology. And there is no pathology textbook of cancer that illustrates bacteria in cancerous tissue. This is strange because bacteria, even with their small size, can be seen with a light microscope, unlike viruses which cannot be visualized microscopically due to their smaller size. If human bacteria were implicated in the production of human cancer, they would undoubtedly be visible microscopically in cancer tissue. This report suggests that bacteria are indeed implicated in cancer, and that they can be seen in cancerous tissue.

The idea that bacteria might be connected in some way to cancer was totally rejected a century ago by the medical establishment. Since that time any association between bacteria and cancer has been largely regarded as medical heresy. Nevertheless, a few foolhardy investigators (including myself) have continued to report on pleomorphic bacteria as a possible cause of cancer.

"Pleomorphism" means the ability of a microbe to exhibit more than one forms. For more than a half-century, bacteria associated with cancer have been described as having a "life cycle" comprised of virus-sized forms,
filterable granules, larger granules the size of ordinary cocci, "globoidal forms," rod-like forms, much larger fungus-like forms, and other forms. To traditional microbiologists who believe in the "monomorphic" nature of bacteria, that is the ability of a microbe to reproduce by merely splitting in half, the idea of a cancer germ with a life cycle is considered anathema. Despite this tremendous controversy, the proposed microbiology of cancer cannot be understood without considering so-called pleomorphic bacteria. Highly recommended is microbiologist Milton Wainwright's "Extreme pleomorphism and the bacterial life cycle: A forgotten controversy," available on the Internet.

Despite the widespread rejection of the bacterial theory of cancer, Australian researchers Barry Marshall and Robert Warren discovered in 1982 that bacteria (now called Helicobacter pylori) were frequently the cause of stomach inflammation (gastritis) and stomach ulcers. They were awarded the Nobel Prize in Medicine in 2005 for this pioneering work. Ulcers can sometimes lead to stomach cancer; and doctors now accept H. pylori as a bona fide cause of this type of cancer. Prior to the acceptance of bacteria-caused ulcers and cancer, it was firmly believed that bacteria could not exist and thrive in the acid environment of the stomach. H. pylori can now be easily identified microscopically, provided a special stain (like a silver or a Giemsa stain) is applied to the stomach biopsy tissue. The microbe is pleomorphic, having both a spiral and a coccoid intracellular form.

Cancer bacteria research

Despite the general non-acceptance of a bacterial cause of cancer, there is a wealth of research dating back to the late nineteenth century on this subject. The most important contributions to the bacteriology of cancer were reported by a team of four women, beginning in the 1950s. These included physician Virginia Livingston, microbiologist Eleanor Alexander-Jackson, cell cytologist Irene Diller and biochemist and tuberculosis icon Florence Seibert.

Livingston's cancer work actually began in 1947 when she discovered tuberculosis-like acid-fast bacteria in a non-cancerous connective tissue disease called scleroderma, a systemic disease in which the skin hardens due to thickening and abnormalities of the collagen portion of the skin. This scleroderma research quickly led her and her co-workers into cancer research in which similar acid-fast bacteria were found and studied extensively over the next three decades. Livingston believed the cancer microbe was essentially a "connective tissue parasite." In scleroderma tissue the microbes are seen in their most naked form infiltrating the collagen fibers and bundles (Fig.6)

My mentors Livingston and Alexander-Jackson were the first to discover that bacteria could be detected in cancer biopsy material if a special "acid-fast" stain was applied to the tissue specimens. The women also realized that cancer bacteria survived in the body in the "cell wall deficient form", thus enabling these microbes to escape detection and/or eradication by the
immune system. Such bacteria were derived from "ubiquitous bacteria" normally residing in all human beings.

Various researchers have reported the cancer germ as an intracellular and an extracellular parasite, meaning that the bacteria can be found both within and outside the cell. The shape of the bacteria is usually the round coccus-like form. These coccal forms vary in size from the size of ordinary staphylococci to extremely tiny granular forms barely visible with the light microscope. These forms in tissue are compatible with pleomorphic forms of cell wall deficient bacteria. Some CWD bacterial forms have the ability to pass through laboratory filters designed to hold back bacteria. Thus, some growth forms of cancer bacteria are virus-sized and submicroscopic. The relationship, if any, of these submicroscopic virus-like forms of CWD cancer bacteria to the "true" viruses has not been studied.

Cancer cytologist Irene Diller and her co-workers demonstrated that these intracellular bacteria could also be found within the nucleus of the cell. Seibert stressed that this was an extremely important finding because it indicated these bacteria could have access to the genetic information stored within the cell nucleus, thereby inducing cancerous cell changes via transfer of genetic information.

The appearance of bacteria in cancerous tissue

It is not possible to easily visualize cancer bacteria in the routine tissue stain (hematoxylin-eosin stain) employed to diagnose cancer. (This was also the reason that stomach bacteria were never detected in ulcers and stomach cancer.) Although most physicians cringe at the idea of a "cancer microbe", such bacteria can be seen in cancerous tissue sections by using the highest magnification of the light microscope and oil immersion, as well as a suitable stain like the "acid-fast" stain. The acid-fast stain is a time-honored stain used to detect acid-fast (red-stained) forms of tuberculosis (Tb) bacteria. In addition to the typical purple-stained or blue-stained intra and extracellular coccoid forms characteristic of the cancer microbe, one can occasionally encounter large bizarre forms of pleomorphic cell-wall-deficient bacteria in tissue sections. Such forms are known to microbiologists as "large bodies." They can attain the size of red blood cells and even larger. These may be the forms described in cancer tissue in the late nineteenth century by Scottish pathologist William Russell, who termed such elements as "the parasite of cancer." (For more details on "Russell bodies" and "large bodies" and their implications in the cancer process, see my internet article "The Russell body: The forgotten clue to the bacterial cause of cancer").

A century ago microbiology was in its infancy and cell wall deficient bacteria and "large bodies" were unknown. But experts nevertheless totally discredited Russell's "parasites" as mere cellular degenerations of no great import. His so-called cancer parasites are now widely known by pathologists as "Russell bodies," who consider them as non-microbial in nature. The
possibility that they could represent pleomorphic forms of bacteria is never considered. Various recent reports confirm the existence of a new pathologic condition of the stomach, associated with Helicobacter pylori infection and numerous Russell bodies and Russell body-containing plasma cells. The new entity is called "Russell body gastritis."
Physicians often argue that any bacteria associated with cancer are merely "secondary invaders"—bacteria which can easily proliferate in cancer-damaged tissue after the cancer has formed. However, a careful study of "pre-cancerous" lesions, such as sun-damaged skin, will reveal that the bacteria are present prior to the development of full-blown skin cancer. Additionally, a study of breast cancer tissue supposedly "clear" of cancer cells can show the presence of these bacteria in cancer-free tissue areas. One of my reported patients with Hodgkin's disease (lymphoma) was cured of his cancer, but the bacteria that were associated with his cancer were still present at autopsy, indicating that radiation does not kill human bacteria, although it can destroy cancer cells and eliminate cancer tumors. It is likely that these primordial bacteria that have grown side by side with human cells for eons will prove to be the hardiest life forms on earth, perhaps even achieving immortality.
The purpose of this brief report is to remind people interested in the cause of cancer that bacteria have been detected and reported in major forms of cancer, such as breast cancer, prostate cancer, AIDS-related Kaposi's sarcoma, lung cancer, Hodgkin's lymphoma, as well as in certain other cancerous and non-cancerous diseases. Photos of this cancerous tissue (Figures 1-5) illustrate the appearance of bacteria encountered in acid-fast stained tissue sections. Figure 6 shows these coccoid forms most clearly in the dermis portion of skin in scleroderma, the disease which originally led to Virginia Livingston's discovery of the "cancer microbe." Whether bacteria can be demonstrated in every form of cancer and in every patient from whom cancerous tissue is available, is not known.
Figure 1: In center, intracellular round tightly-packed coccoid forms in breast cancer. Acid fast stain, magnification times 1000, in oil.

Figure 2. Intracellular coccoid forms in prostate cancer. Acid-fast stain, x1000, in oil.
Figure 3. Arrows point to extracellular coccoid forms in the dermis of the skin of AIDS-related Kaposi's sarcoma. In the insert are staphylococci cultured from the tumor. Acid-fast stain, x1000, in oil.
Figure 4. Arrows point to intracellular and extracellular coccoid forms in the lymph node showing Hodgkin's lymphoma. Acid-fast stain, x1000, in oil.

Figure 5. Intracellular tightly-packed coccoid forms in lung cancer at the edge of the tumor. Acid-fast stain, x1000, in oil.
Figure 6. "Naked" coccoid forms nestled between the collagen fibers of the skin of scleroderma. Acid-fast stain, x1000, in oil.

**New developments in 21st century microbiology**

The discovery of trillions of "human bacteria" should lead to renewed interest in their role as possible cancer-producing agents and agents of chronic disease. The Human Microbiome Project (HMP) is currently characterizing these communities of bacteria (called the "metagenome") and studying their collective influence on human development, physiology, immunity, and nutrition. As a result, new insights into the production of disease are beginning to emerge. Proal and co-workers (2009) in their study of bacteria in chronic autoimmune disease write: "As our knowledge of the genes associated with the disease states expands, we understand that humans
must be viewed as superorganisms in which a plethora of bacterial genomes - a metagenome - work in tandem with our own." Some of the 90% of microbial cells in Homo sapiens create metabolites that interfere with the expression of genes associated with autoimmune disease. More and more research suggests that bacteria share and exchange genes with one another in a process known as "horizontal transfer of genes." Can bacteria transfer their genes to human cells? Could transfer of bacterial genes to human cells induce cancerous change?

In this regard, Agrobacterium tumefaciens is a bacterium that produces tumors (crown gall) in plants by inserting a bit of its DNA into the plant cell. The Agrobacterium host range is not limited to the plant kingdom; the microbe has been shown to also transform many species of fungi and even prokaryotes (cells that lack a nucleus). The ability of Agrobacterium to genetically transform human-derived cancerous HeLa cells further widens the range of potential hosts of Agrobacterium to include humans and perhaps other animal species (Tzfira et al. 2006).

One of the century-old stumbling blocks causing widespread rejection of a bacterial cause of cancer has also been the inability of researchers to precisely identify the type and species of so-called cancer microbes. The intermittent acid-fastness of cancer bacteria suggests a close relationship to the mycobacteria, the most important species of which is Mycobacterium tuberculosis, the cause of human Tb. However, in general, bacteria cultured from cancer are highly pleomorphic and are impossible to classify precisely. This is also consistent with CWD bacteria found universally in the blood of both healthy and diseased individuals. Such blood bacteria have been shown to be a hodge-podge of staphylococcal and streptococcal-like bacteria, as well as cocco-bacilli.

The inability to precisely characterize cancer germs is also in keeping with the current revolution in microbiologic thought regarding the classification of bacteria. In a recent essay in Nature, Goldenfeld and Woese (2007) state that the "emerging picture of microbes as gene-swapping collectives demands a revision of such concepts as organism, species and evolution itself. The available studies strongly indicate that microbes absorb and discard genes as needed, and in response to their environment. Rather than a discrete spectrum, we see a continuum of genomic possibilities, casting doubt on the validity of the fundamental concept of species, extended into the microbial realm. The lack of usefulness of the species concept is inherent in the recent forays into metagenomics."

**Bacteria and "the cause of cancer"**

If one googles "the cause of cancer", the American Cancer Society website provides a laundry list of well-accepted causes, including the most obvious: smoking, diet, radiation, excessive sun exposure, environmental carcinogens, inherited genetic abnormalities, to name only a few. Human bacteria of the kind discussed and illustrated in this report are nowhere on the list. This is because they are not taken seriously by the medical establishment. Like the
bacteria in stomach ulcers that were unrecognized for a century, these bacteria comprise the best kept secret in medical science. How could unrecognized bacteria cause cancer? All cancer-causing agents injure tissue and cells. Radiation, for example, can also transform the genetic structure of cells. And human bacteria could easily proliferate in damaged pre-cancerous tissue. In addition, inflammation has long been associated with cancer; and bacteria are frequently associated with inflammation. It seems reasonable to assume that the trillions of bacteria in our bodies could play some role in the abnormal tissue and cellular environment that precedes the development of cancer.

It is hoped that this communication will stimulate further thought, open mindedness, and investigation into the role of bacteria in human cancer. The century-old experience with undetected stomach bacteria indicates the dangers of dogmatism in medical thought. It is possible that a recognition of these primordial and human bacteria will lead to new ways to prevent and treat cancer by eliminating and/or lessening the proliferation of these microbes in diseased tissue.

The idea that "human bacteria" might play a role in cancer is both sobering and frightening. How do we restore healing when our own germs "act-up"? However, knowledge of these bacteria is essential if we are to deal with this reality. As Walt Kelly of Pogo fame once wrote: "We have met the enemy and he is us." Sobering indeed!

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This communication is dedicated to the memory of Lucia Cabrera, R.N. [1968-2011], cancer victim.

Alan Cantwell is a retired dermatologist who has studied the microbiology of cancer for over 40 years. He is the author of "The Cancer Microbe" and "Four Women Against Cancer: Bacteria, Cancer, and the Origin of Life." His Internet writings can be found by Googling: alan cantwell articles. His scientific papers are recorded at the PubMed website (Key word: Cantwell AR). For a bibliography of cancer microbe research, email: alancantwell@sbcglobal.net.