

# The Cancer Principle-V: Cancer Prevention and Therapeutics

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## Abstract

Organisms evolve in attempting to evade cancer while they perish ultimately by succumbing to it because cancer, being at the very core and source of life and evolution is simply undefeatable and is destined to win in the long run. Rather, due to the depth and versatility of cancer that they aim to counter, they end up causing many other diseases due to wholesale systemic dysfunction in the organism. Every cancer cell therefore has its own independent aberration profile and as such can be treated as an independently evolving organism with its own inbuilt mechanisms of survival and perpetuation. There is as fundamental feature of immortality associated with cancer which is its primordial origin. Therefore therapeutic strategies fail invariably to contain cancer progression and metastasis.

**Keywords:** *Cancer therapeutics, Cancer prevention, meditation, Immortality*

## Introduction

Cancer as a killer disease seems to be but the tip of the iceberg that lies hidden from our view because of an error in our perception of the true causes behind any phenomenon. A gross physiological effect such as a tumor has its origins not just at the genetic levels but beyond the submicroscopic physical, at the metaphysical level of a principle. The rational quest ingrained in the curiosity of human intelligence truly rests satisfied when it reaches the metaphysical realm of the fundamental principles behind all observed phenomena. We elevate cancer to the status of a fundamental principle that serves to increase disorder and opposes the cosmic ordering principle (COP) in its operations at every moment everywhere. The survival of cancer cells *in vitro* and *in vivo* that has been observed experimentally is thus only a negligible facet of its immortality.

Cancer progression has been likened to asexual proliferation of micro-organisms<sup>[1]</sup>. Was evolution of life up to the asexually reproducing micro-organisms any way different from that of cancer? The aberration profiles of no two tumors match due to differences in genetic and epigenetic factors<sup>[2]</sup>. But the timing and

location of mutations in a pair of cancer cells belonging even to the same tumor are random and continuous. Thus, it becomes difficult to adopt any particular suppression mechanism to effectively tackle cancerous proliferation.

Acquiring random mutations is an adaptation of the cancer cell to gain multidimensional fitness to strengthen the functional aspect of its genetic niche<sup>[3]</sup>. Metastasis adds to such fitness. Intra-tumor differences following mutation burden difference among cells increases their ability to hide the reasons behind their heterogeneity. Further, if one oncomutation is figured out, several such mutations develop and make it impossible to trace the exact reason behind specific driver mutations.

## Immortality of cancer cells

The canine sarcoma CTVT (Canine Transmissible Venereal Tumour) has now been updated to be carrying a continuously evolving strain since more than 11000 years<sup>[4]</sup>. Its inter-individual metastasis is an adaptation which makes it survive beyond one affected body to infect another, as if it were a free living species, like bacteria or other living pathogens. This shows again that cancer has evolved and simultaneously led to the evolution of the canine species in fighting it away. Its survival by immune suppression since such a long time by genetic, epigenetic and extra-genetic mechanisms and its viral origins show that cancer alone is immortal while all else is mortal.

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Its ability to sustain and replicate using anaerobic glycolysis pathway to metabolism shows that it has the requisite functional machinery from the time of its presence in and as an anaerobic life-form when conditions were anoxic or hypoxic. From this perspective, it ranks among the most ancient pre-oxic life on earth. It existed at first as a biomolecule like free floating RNA or DNA fragments (oncogenes), and then became a virus (family of oncoviruses) and then became an anoxic organism and then entered its hosts from bacteria onwards up to humans. Such is the ancientness of cancer.

### Population explosion and Species extinction

They say, development of cancer in the individual has evolutionary significance, but we have proposed that individuals (and species) have emerged from, evolved through, and ultimately dissolve in the lap of cancer! The Lotka-Volterra type oscillations in prey-predator interactions are rather idealistic dynamical variations in interdependent species populations<sup>[5,6,7,8]</sup>. Even in these, the fall in species population follows a boom in that population that creates a local and temporary imbalance in the ecosystem. Dinosaurs were very abundant before going extinct. Any population that goes for an over-growth invites such balancing forces of nature that the proliferation is effectively checked, and even at times, entire population is wiped out. There are species where cannibalism or mass suicide is in place precisely for the same purpose. The species don't consciously do it for bringing down population by census or consensus and resource availability calculations, but are driven by their instinctive nature to do so. This is like programmed cell death in case of cells. They are simply programmed that way by nature to avoid cancerous over-growth.

Thus we find that just like bamboo blooms before death, all species, all individuals, all cells may suffer the cancerous boom before the death of that particular line. This succumbing to overgrowth seems to be the common fate of all of them. The booming of cells before death is called tumor and the organism is said to succumb to cancer. Cancer is the natural death process of all life-forms. They struggle and they survive only to finally succumb to cancer in some form or the other.

### Therapeutic approaches to cancer

One of the primary therapeutic interventions in cancer is surgical removal of the tumor, but cancer is powerful enough to induce several peri-operative processes *viz.* increased shedding of motile cancer

cells into blood, suppression of anti-tumor immunity, upregulation of adhesion factors in new target sites for metastasis, modulation of cells in the target site for fresh tumor formation, utilization of immune cells to trap cancer cells for metastasis, enhancing motility and invasion ability of cancer cells etc.<sup>[9]</sup>. This is as true of surgery as of radiation therapy, chemotherapy, immunotherapy, stem cell therapy, hormone therapy and other targeted therapies.

Anticancer chemotherapy, for example, acts to enhance ROS-dependent apoptotic pathways for cancer cells. But ROS are like the proverbial "double-edged sword" in the sense that they can in addition lead to disruption of redox homeostasis in normal cells and tissues leading to additional complications of an irreversible nature<sup>[10]</sup>. ROS have both pro- and anti- tumorigenic potential. Fine tuning of the redox homeostasis depends on the antioxidant defense system which is paralyzed by cancer<sup>[11]</sup>.

Numerous are the side effects of any form of cancer treatment. Further, if cancer of one type is targeted to be treated, it switches to another type or to another site as if it were having an answer inbuilt to any therapeutic intervention.

### Prevention of cancer

Cancer being a manifestation of a tremendous primordial urge for unrestrained proliferation can be completely eradicated by a reversal of such an urge through the adoption of the principles of submission to the cosmic ordering principle which envisages life as an ordered movement towards a realization of the fundamental unity underlying all diversity. Living in accordance with the COP that ever endeavors to mould creatures in the direction of unification can only reverse the cancerous propensity of multiplication and diversification. For the human beings this can be effectively implemented by resorting to practices such as concentration and meditation as individuals or in groups which have realization of unity of consciousness as their goal<sup>[12]</sup>. There has already been ample published evidence of efficacy of such practices in halting and reversing the progress of cancer<sup>[13,14,15,16]</sup>.

It seems that meditation, not medication, may be the final and complete solution to cancer<sup>[17]</sup>. Success in meditation requires as a prerequisite a balanced approach to life in its daily movements. This balance is the conscious approach towards more and more order in

the system such that ultimately there can be successful meditation. Meditation becomes effortless for one having a well-concentrated serene mind devoid of too many bubbling and crowding thought-forms as a result of too many desires. Thus the very exercise of meditation is a conscious willful enhancement of order in one's living and thinking.

### Theories of cancer

The important theories of cancer origin are tabulated and explained below.

**Table-I: Theories of cancer origin and their evolution**

Sl. No.	Theory	Proposer(s) and time of proposal
1	Humoral origin theory	Hipocrates (300 BC)
2	Lymphatic origin theory	F. Hoffman and G. Stahl
3	Chronic irritation theory	R. Virchow (1858)
4	Trauma theory	H. Ribbert (1899)
5	Somatic Mutation Theory	T. Boveri (1914)
6	Viral origin theory	Huebner and Todaro (1969)
7	Tissue Organisation Field theory	Sonnenschein and Soto(1991)
8	Atavistic Theory	Davies and Lineweaver (2011)
9	Disorder theory	Tripathy and Pradhan (2019)

According to **the Humoral origin theory** the time of probable cancer origin must date back to the emergence of triploblasts which branched into different phyla having distinct so called 'humors' (blood, phlegm, yellow bile, black bile). The timing of triploblasts has been estimated to be around 600 to 700 million years ago<sup>[18]</sup>. **The lymphatic theory** ascribes malignant tumor to the fermentation and degeneration of accumulated lymph leaked from the lymphatic vessels<sup>[19]</sup>. The timing of cancer origin according to this theory dates back roughly to the same era as in the humoral theory. **The chronic irritation theory** proposes chronic irritation of tissue as the cause of malignancy. The origin of cancer thus dates back to the emergence of animal's having distinct organized tissue systems<sup>[20]</sup>. Somewhat related to the chronic irritation theory is **the trauma theory** of Hugo Ribbert which proposes traumatic tissue injury as the cause of malignancy which has however little support till date<sup>[21]</sup>. The injured tissue can be considered to be the

site of chronic irritation and can evolve to a malignant tumor, though the possibility of such development is not very frequent. The series of modern theories of cancer started in the early 20<sup>th</sup> century when the seeds of **The Somatic Mutation Theory (SMT)** were sown by Boveri who proposed the idea that combination of chromosomal defects can lead to cancer<sup>[22]</sup>. Bauer gave the specific proposal that mutations can cause cancer<sup>[23]</sup>.

Failures of SMT to account for all types of carcinogenesis led Sonnenschein and Soto to propose **Tissue Organization Field Theory (TOFT)** that sees tumorigenesis as a reaction to the spatial limitations of tissue organization against the default state of proliferation inherent in every cell<sup>[24]</sup>. This theory dates the origin of cancer to the time of appearance of multicellularity (complex metazoan) around 600 million years ago. According to **the atavistic theory** cancer is a relapse to phylogenetic capabilities of an earlier age corresponding to evolution of simple metazoans with

multicellular features and dates the origin of cancer back to around 0.5 to 1.5 billion years<sup>[25]</sup>. Huebner and Todaro hypothesized that the viral information responsible for converting normal cells to cancer cells is transmitted and preserved in all the cells of all vertebrates by inheritance. Though the initial proposal was in connection with C-type RNA-viruses in vertebrates, later on with the identification of many DNA-viruses responsible for carcinogenesis, the viral oncogenesis hypothesis has been extended to include all eukaryotes<sup>[26]</sup>. About 20% of all cancers is of viral origin. Since fossil records show the period of evolution of eukaryotes from prokaryotes to be around 1.5 to 2 billion years ago, the origin of cancer in this theory roughly dates back to this period.

**Disorder theory of Cancer:** We propose a new theory of origin and progression of cancer in which evolution is the interplay of order and disorder, with cancer being the primary agent of disorder. Cancer as the tendency for unrestrained proliferation has been there at the very roots of creation of the universe. But the COP in trying to restrain it has led to the current state of the universe as discussed in detail in these essays<sup>[27,28,29,30]</sup>. In an earlier work we have discussed the interplay of order and disorder in general in the dynamical evolution of all physical and biological systems, where it is proposed that it is consciousness that acts as the COP but the agency of disorder (POD) was as such not identified apart from its role as entropy in all systems<sup>[31]</sup>. Here we identify POD manifest as cancer and entropy, the physical facet of it. The successive actions of order and disorder in the evolution of life and species and how cancer has evolved to its present invincible status is discussed in detail in the previous essays. We name it **the disorder theory of cancer**. It makes cancer a primordial operative principle that is as old as the universe itself and thus the game of finding the date of its first appearance comes to a venerable closure.

### Conclusion

The disorder theory views cancer as an agent of cosmic disorder which was at the very origin of the universe itself and has all along acted towards unrestrained proliferation by multiplication and diversification as opposed to the organizing actions of the ordering principle at all levels.

Appearance of cancer is thus inevitable as it is inbuilt into every particle, nay, every point of space, as the tendency for proliferation. But by means of moving

towards more and more order in all levels of one's being one can strengthen the ordering principle in oneself and can keep away cancer which is the agent of disorder. Our finite life-span of can be filled with order in all levels of our being by meditating and attuning ourselves to the cosmic order that is the all-pervading consciousness. This is possible because the consciousness in us can only be aware of this cosmic consciousness and can consciously attune itself with it. The human being alone has this endowment of conscious practice of attunement and it will keep away cancer till one ends one's life-span, thereby effectively eradicating it from one's life. Ultimately order only can counter the disorder that cancer is.

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