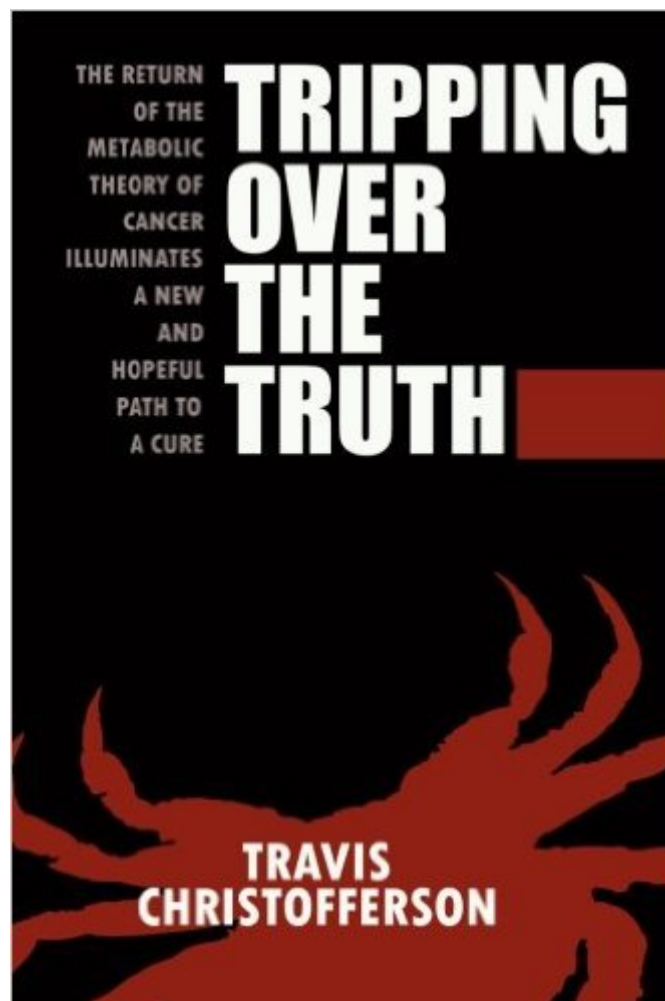


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Tripping Over The Truth: The Return Of The Metabolic Theory Of Cancer Illuminates A New And Hopeful Path To A Cure



Synopsis

A masterful synchronization of history and cutting-edge science shines new light on humanities darkest diagnosis. In the wake of the Cancer Genome Atlas project's failure to provide a legible roadmap to a cure for cancer, science writer Travis Christofferson illuminates a promising blend of old and new perspectives on the disease. Tripping over the Truth follows the story of cancers proposed metabolic origin from the vaunted halls of the German scientific golden age, to modern laboratories around the world. The reader is taken on a journey through time and science that results in an unlikely connecting of the dots with profound therapeutic implications. Transporting us on a rich narrative of humanities struggle to understand the cellular events that conspire to form malignancy, it reads like a detective novel, full of twists and cover-ups, blind-alleys and striking moments of discovery by men and women with uncommon vision, grit and fortitude. Ultimately we arrive at a conclusion that challenges everything we thought we knew about the disease, suggesting the reason for the failed war against cancer stems from a flawed paradigm that categorizes cancer as an exclusively genetic disease. For anyone affected by this terrifying disease, and the physicians who struggle to treat it, Tripping Over the Truth provides a fresh and hopeful perspective. It explores the new and exciting non-toxic therapies born from the emerging metabolic theory of cancer. Therapies that may one day prove to be a turning point in the struggle against our ancient enemy. We are shown how the metabolic theory redraws the battle-map, directing researchers to approach cancer treatment from a different angle, framing it more like a gentle rehabilitation rather than all-out combat. In a sharp departure from the current "targeted" revolution occurring in cancer pharmaceuticals, the metabolic therapies highlighted have one striking feature that sets them apart -the potential to treat all types of cancer because they exploit the one weakness that is common to every cancer cell: dysfunctional metabolism.

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Customer Reviews

This is a must read for those interested in cancer. The author uses a historical framework to explain the science, and makes a strong case for cancer as a metabolic disease (as contrasted to a genetic one). More importantly, cures are to come from studies of metabolism, rather than from narrowly targeted treatments aimed at particular mutations. The treatment is historical, telling the story through the great researchers and their findings, using their stories to explain the science. This makes the book very readable. Telling these stories is not necessary to understanding the science, but it may be necessary to understanding why, and when it was accepted. After running through various historical figures, such as Warburg (who got his Nobel prize for demonstrating the metabolic abnormality of cancer), the story moves to various interesting modern figures. By page 93, he reaches the research in Pedersen's lab at John Hopkins University, and the story of the bright Korean biochemist, Young He Ko. She discovers that a simple chemical, 3-bromopyruvate, kills cancer cells better and quicker than most chemotherapy drugs. She achieves the almost unprecedented feat of curing cancers in all of 19 rats, who remain free of their original cancers to the end of their natural life. One would expect to learn how she got a professorship, fame, and lots of research money. Instead, the academic politics at John Hopkins results in her being terminated, and a law suit, leaving the breakthrough unexploited. (Some believe that this will provide the plot for a movie, and speculate as to which actress should play Dr. Ko). For now, it just makes part of the book read like a novel. There is drama (starting on p. 109) when the father of a teenager near death from liver cancer hears of the new drug, and obtains approval for it to be administered in Germany (approved only because it was his only hope of evading his impending death). The unemployed biochemist travels there, and waits nervously while the first human receives it. He was being kept alive by tube feeding. There are no serious side effects, and he asks to eat. The outcome is that instead of not surviving to his 17th birthday as the doctor's predicted, he recovers enough to go to John Hopkins Medical school to lecture, reaches his 18th birthday (a party which the still unemployed Dr. Ko attends). Alas, he eventually dies from an unrelated pneumonia, but the drug had achieved a "miraculous" cure. Heart breaking drama here. The story then moves on to the cutting edge research on the genetics of cancer, and how when the genomes of various tumors

were sequenced, there was found there was no pattern to the mutations, creating an embarrassment for those whose careers had been based on the genetic theory of cancer. Naturally those who had dedicated their career to cancer as a genetic disease were disappointed, and elaborate new theories, but several of the leaders have shifted their focus to metabolism. Although it is easy to say the hundreds of millions spend on genetic research was wasted, it was something that should have been done, and it appears we now know approaches that do not work. As a subplot (p152) is the story of James Watson (whose Nobel prize was for discovering the genetic code) and his shift from emphasis on genetics (which naturally served his self interest), to efforts to get the Ko formulation, and him expressing support for the metabolic theory (when famous geneticists abandon the genetic theory, it is more convincing). The story moves on to Dr. Seyfried (p. 167) and how he drifts into cancer research on discovering that starving mice slowed tumor growth, and a drug that seemed effective against cancer actually seemed to work by stopping the mice from eating as much (the control mice not given the drug died much quicker, but control mice restricted to eating only as much as the treated mice chose to eat, did just as well). This resulted in the publication of a path breaking book, *The Metabolic Theory of Cancer*. " While this is a very good book, and a must read for professional cancer researchers, the biochemistry is tough for non-professionals. For laymen, one can get an understanding from "Tripping over the Truth" with much less work. Even the professional may find that the historical narrative of this book makes it easier to understand Seyfried's book (*Cancer as a Metabolic Disease: On the Origin, Management, and Prevention of Cancer*), with much less work, and without being lost in the details. Such reader's may wish to skip the first two parts, which provide historical and scientific background).

Christofferson's book is cheaper, slightly more up to date (in a field that is moving fast, partially due to Seyfried's recent book), and more fun to read. After reading Christoffer's account of how Seyfried came to write his book, and what he found, the professionals will be motivated to read the more technical book written by the great scientist himself. Dr. Seyfried explores ketones as the explanation for why calorie restriction works, and shows that a ketogenic diet can be effective (at least in mice). The story moves on to the history ketogenic diets, and to a Florida researcher, D'gostino (p.211), who gets good results in mice from such a diet, especially when combined with hyperbaric oxygen therapy. Small scale human tests of ketogenic diets for brain cancers begin (p. 196) and produce encouraging results. Since many reading this review will be those suffering from cancer, what are the conclusions for such patients The first is the high potential of 3-bromopyruvate. Patients should not rush out and try to get this and treat themselves. If incorrectly formulated, it could be fatal. However, they should keep their eyes open for trials (which are overdue, but virtually

certain to come). Those with advance, metastatic cancer should try to be included, even if this requires traveling overseas, and paying their own expenses. The preliminary evidence is that a ketogenic diet is beneficial, and the book includes an appendix on "Putting Metabolic Therapy to Work". If I was dying from cancer, I would certainly try this. What are the weak points in the book? One is that it lacks an index (so those interested in a particular topic can find it). Even the chapter headings and table of contents are non-informative. This is why I mentioned page numbers above. While it has a list of sources in the back, it is not as well documented as a researcher would want. Fortunately, more can be found in Seyfried's book. It is clear from the sources he gives, that much of his information derives from traveling around the country interviewing the researchers themselves. This permits him to provide the background that makes the book so readable (even novel like). A benefit of these interviews is that he sometimes mentions results that have not yet been written up and published. This could be valuable to researchers and funders wanting to know what is going on in a fast moving field. Those interested in the history and politics of science will enjoy the stories of the researchers, and how what should have been obvious leads and inconsistencies were not followed up on. It also becomes clear how problems of funding, human egos and ambitions, and desire not to confess to having wasting time on exploring a blind alley (even though this may keep others from wasting time by going down the same blind alley) has impeded research. Possible cures that are hard to make money from such as 3-bromopyruvate (a known chemical that cannot be patented) and nutritional approaches are not as promptly followed up on as those that can result in a highly profitable drug of marginal use (and he points just how marginal many of the hyped drugs are). Those in funding positions (government, foundations, and those with money to donate) would benefit from reading this book and thinking about the implications. Drug companies naturally would like funding decisions that lead to new drugs them to patent and market, and research that shows the utility of their products (and lobby for such). However, much higher returns should result from research private firms are unlikely to pursue, research on unpatentable molecules like 3-bromopyruvate, and nutritional therapies.

A review of *Tripping On The Truth* by Travis Christoferson
An engaging book to read for layman as well as professionals!
For the layman, it is readable, fun and packed with information that applies cancers forefronts and your health in general. For the professionals, it will give you a clearer understanding of what is going on behind and beyond the day to day news on cancer research and treatments. I could not put it down and finished it in 2 days-it reads like a suspense mystery yet has the full impact of what is really going on with the research and problematic issues both in the basic

science and clinical practice of cancer biology and future clinical management. Sandwiched within these topics, the reader will have a glimpse of the intrigue, politics, and the fierce competition that most of us never see or understand in the struggles of big research, big players, and huge financial implications in the industry of cancer health. As a doctor and surgeon, I kept the discipline of examining with my surgical pathologist every cancer operation I performed, hoping to uncover its behavior. What doctors see on H & E stains for microscopic slides are the cancer with strange nucleus containing the DNA and its cell division, mitosis. But if microscopic examination could have shown the strange and abnormal mitochondria energy packets in these cancer cells (seen only with the costly electron microscopy) perhaps we would have, long time ago, embraced the issues of cancer energy abnormalities and not have chased the nuclear DNA as much as we have. In parts of the book on Peter Pedersen and Young Ko and the discovery of Hexokinase 2 and ultimately 3-Bromo pyruvate, the politics and intrigue reminds me of the heavily debated conflicts that we saw with Rosalind Franklin and James Watson and Francis Crick on the discovery of the structure of DNA (Rosalind Franklin, *The Dark Lady of DNA* by Brenda Maddox) and Candace Pert and Solomon Snyder (*Molecules of Emotion* by Candice Pert) on the opiate receptor discovery. Both discoveries involved severe competition with a touch of gender discrimination. Could this happen with the discovery of 3-Bromo pyruvate anticancer molecule? Young Ko and Peter Pedersen have not been dealt unfairly or unjustly and this book brings out all these ugly issues and conflicts often seen in high power science as in all other human endeavors. TCGA the cancer genome atlas project and the obvious pathway revealed by the PET scans showing another cancer feature. With failures of the billion dollar chase to uncover the gene mutations of all types of cancers (TCGA), most of us were frustrated and deflated by the futility of the gene mapping approach for future treatment options. So why not look at something obviously staring at us clinicians! We, as clinical surgeons and oncologists deal with diagnostics daily on patients with localized and advanced cancers managements, we use CAT and PET scans to see the extent of the cancer spread. But rarely did we question how this PET scan came to being. It turns out that what we practicing doctors use to see cancer function is nothing more than the uptake of FDG sugar in the cell and in the mitochondrial hexokinase 2 deformity (almost universal in all cancers with only a few exceptions). After all the PET scan is simply the cancer's need for sugars and fuel by glycolysis (fermentation) and in the hexokinase 2 in cancer mitochondria discovered by Peter Pedersen. The review by Ralph Moss in *Advances in Cancer Treatment* October 2012, a patient cancer advocacy, presented a beautifully written summary and critique of the whole new approach to cancer but actually an old concept with a new trust upon the discovery of the uses of molecules such as

Dichloroacetate and 3 Bromopyruvate. More will come to notice in the next five years. What is also tied to the energy abnormalities of cancers in general is the long history of the study of Caloric Restriction consistently decreasing the growth of cancers seen in animal studies. On a human level, there groups of people and institutions claiming good successes and practice with low calorie high nutrition (1800 calories per day) diets both for cooked and raw foods such as The Caloric Restriction Society, Optimal Health, Hippocrates Institute, Ann Wigmore institute, and Kushi Macrobiotic Institutes etc. In essence most of these organizations have probably been practicing a form of energy deprivation of cancer cells for over 50 years and still going strong, but not accepted by the medical community except in study scenarios at the National Cancer Institute. I recommend two books if the readers are really interested in the science behind the popular paradigm shift on cancer research and future cancer patient care. Tom Seyfried's book, *Cancer as a Metabolic Disease*, is a well written narrative of studies done in the last 50 years point to one simple concept. The analogy of the fly fisherman is what we call cast to the upstream problem to have a better chance of landing a fish hook up instead of downstream when the fish already have passed the fly. The metabolic abnormality of these cancers could be the upstream effect which then leads to nuclear gene instability and mutations- not DNA mutations first but the mitochondrial energy packets as the first abnormality. The second book by Jiri Neuzil, Shazib Pervaiz and Simone Fulda, *Mitochondria: The Anti-cancer Target for the Third Millenium* is an international consortium of research on targeting energetic metabolism of cancer biology. It is heavier reading than the Seyfried book

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