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An Overview of:

Cancer as a Metabolic Disease by Dr. Thomas Seyfried. On the Origin, Management, and Prevention of Cancer

Including texts by Dominic D'Agostino and Travis Christofferson & the Press Pulse Strategy

Revised Transcripts

(final revision of Chapter 1 - by Dr. Thomas Seyfried)

25% of the royalties will go to cancer research, via
The Foundation for Metabolic Cancer Therapies

See Ketoforcancer.net

**ANY REVIEW WOULD BE GREATLY
APPRECIATED TO GET THE MESSAGE OUT!**

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Chapter 1

Dr. Thomas Seyfried: Cancer as Metabolic Disease

Well, thank you very much. I'd like to thank CrossFit and Greg for supporting us. I'd also like to thank Jeff Glassman for the good questions that he asked us in the past, to validate some of our theories. You know, we need people like that, it's good to have people that question the information that you present. It makes us better at explaining this.

For your information: I have no financial disclosures.

Alright, So what I'd like to do to start this off is, basically, to present a report card on our approach to managing cancer.

And as I said, I'm going to speak to you today about cancer in general and also focus on specific types of cancer, in particular glioblastoma. As an illustrative example of our approach to managing the disease.

Now, these are numbers that we can take from the American Cancer Society, and they publish every year data on the overall number of cases and deaths. The war on cancer and the success that we're having is not going well.

So I compiled the data, just over the last five years:

Percentage increase for cancer deaths is greater than the increase for new cases!

Cancer Statistics in the U.S. from 2013-2017

Year	New Cases	Deaths/year	deaths/day
2013	1,660,290	580,350	1,590
2014	1,658,370	585,720	1,605
2015	1,658,370	589,430	1,615
2016	1,685,210	595,690	1,632
2017	1,688,780	600,920	1,646

% Increase 1,7% 3,4% 3,4%

Data from American Cancer Society

This is 2013 to 2017 and as you can see, these are pretty sobering numbers. We break them down into new cases, deaths per year and deaths per day, simply dividing by 365, to give an estimate. And you'll notice that the deaths per day and per year are exceeding that of the new cases. Not good.

Just to put things into perspective: The population increase in the United States over the same period of time was about 2.9 percent. So how is this war on cancer going? You look at the numbers, you can make your own decision. These are numbers you don't see on TV, right? You see Opdivo and Keytruda and that kind of stuff, but you don't see the constant increase in deaths per day.

So the question we have to ask ourselves is: What's going on here? We're not getting success here! This is a failure of monumental proportions, right? These are large numbers! In China it's over 8,000 a day dying from cancer. Cancer's already superseded heart disease in China!

We go out and we raise money for cancer, right? You all know, you run, jump... I don't know if you guys do 'CrossFit for cancer'. But everybody raises money for cancer, it makes them feel good. Nobody asks: How much of the money that we raise goes to cancer research? And what's more important: What kind of research are they doing with all that money?

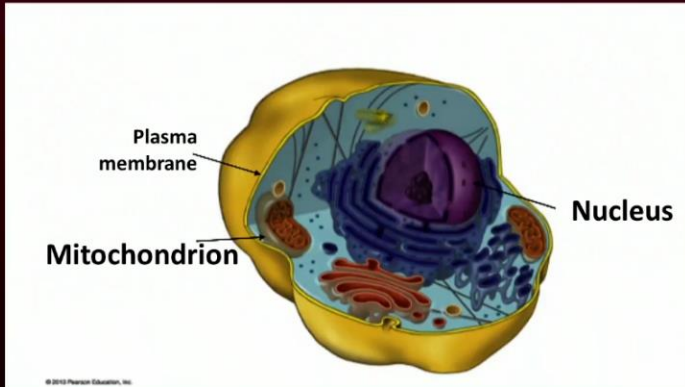
The federal government's spending millions of dollars on cancer research. People are raising money, "Stand up to cancer!" Look, the more money we raise for cancer, the more cancer we get. So you have to say: What is going on here? How do you explain this?

**And it has to do with a fundamental misunderstanding of
what the nature of this disease is.**

We've been led to believe, that this is a genetic disease and I'll present evidence to show that it's not.

Here's a simple cartoon of a cell with a nucleus and a mitochondrion, within a cell membrane:

Conflicting views on the origin of cancer: Is it a nuclear genetic disease or is it a mitochondrial metabolic disease?



So we know there are mutations in the nucleus, but we also know that there are defects in the mitochondria as well. And I'll be showing you data showing that the origin of this disease is a mitochondrial metabolic abnormality. It's not a nuclear genetic disease. The mutations that you see in the nucleus are actually coming from reactive oxygen species (ROS) produced by the mitochondria!

What the entire field has been doing over the last six or seven decades, is chasing red herrings! Consequently, you have 1,600 people a day dying from the disease.

So the current dogma says: **Cancer is a genetic disease.** And this is solidified in this major paper:

Current Dogma

Cancer is a Genetic Disease

Hallmarks of Cancer: The Next Generation

Douglas Hanahan and Robert A. Weinberg

Cell 144, 4. März 2011

Cancer cells carry the oncogenic and tumor suppressor mutations that define cancer as a „Genetic Disease“.

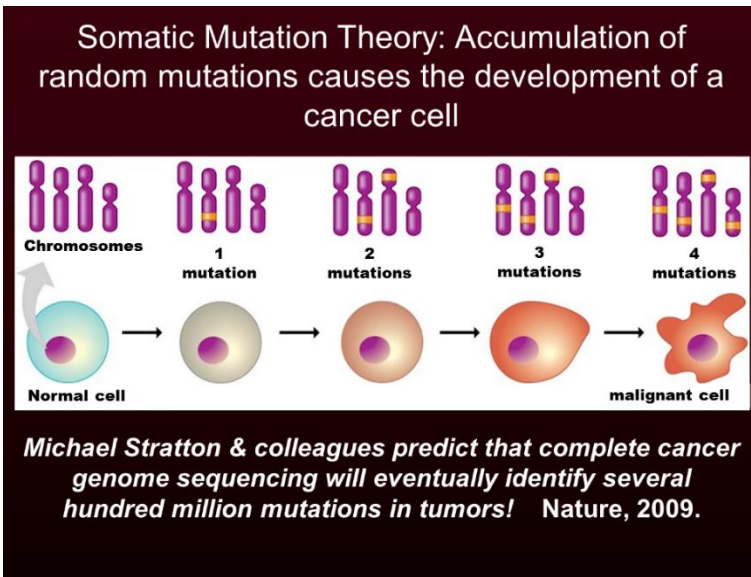
Hallmarks of Cancer by Hanahan and Weinberg, one of the more highly cited papers in the entire cancer field. What they say is: Cancer cells carry the oncogenic and tumor suppressor mutations that define cancer as a genetic disease.

And we say it's a dogma, because it's presented as if it is an irrefutable truth. A dogma is no longer questioned, it's a solidified viewpoint. If you go into any textbook of biology, biochemistry or cell biology and you go to the cancer section, it says "cancer is a genetic disease." You go on to the NCI website, the National Cancer Institute, "cancer is a genetic disease."

There's no discussion about anything other than the fact that cancer is a genetic disease. Many of you went to medical school, you probably learned that cancer is a genetic disease. All the college courses on cell biology: Cancer is a genetic disease.

What this concept has done now, is it has indoctrinated several generations of scientists and physicians into this viewpoint that cancer is a genetic disease.

The somatic mutation theory is the foundation upon which the viewpoint of "cancer is a genetic disease" is based. And, basically, what the somatic mutation theory says, is that "Well, we get random mutations":



Random mutations that accumulate. And eventually, you convert a normal appearing cell into this dysmorphic, mesenchymal kind of cell.

But nobody really knows how many mutations it takes to cause... or how it is related to the formation of a tumor. Is it 1, 2, or 4 mutations?

Michael Stratton from the UK says "We're going to have 100 million genes going to be found," and "look at the deep sequencing coming out of the Broad Institute," and these various places." Thousands and thousands of mutations have been identified.


And then they have to label them with different names, "drivers" and "passengers" and "go-alongs". A whole bunch of stuff is going on there.

And no one talks about those cancers that have no mutations! Kind of non-discussed.

So where does that all lead us to? Where have we come in this journey to manage cancer? We have now come to these terms "personalized therapy", "precision medicine"... all of this is based on the viewpoint that cancer is a genetic disease.

So you have these kinds of images, here:

An individual's cancer cells are genetically tested for „personalized therapy“



Breast cancer cells are being examined to see if they possess extra copies of a particular gene

Observer effect?

Photo credit: Mauro Fermariello/Photo Researchers, Inc.

You have this woman staring into a screen and she's looking at breast cancer information to see if this may possess extra copies of a particular gene. Which would be used, in theory, as a diagnostic tool with possibly some therapeutic application. Now, to get that information usually you do needle biopsy.

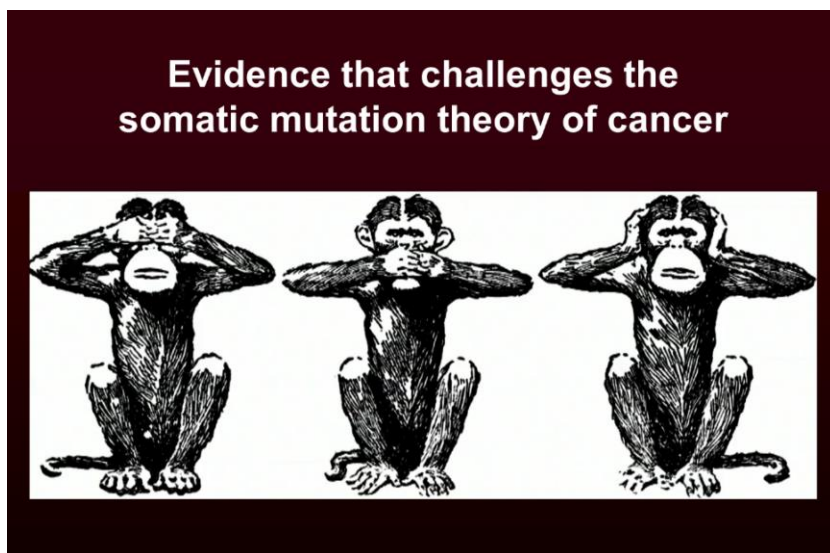
So you have to take a needle biopsy of a particular tissue, in this case it would be a breast cancer. So you stab the tissue and in the process

of stabbing the tissue, to get the information that she's looking at on that screen. Biopsy changes the micro environment of the tissue. You have potentially taken a pre-malignant state and by stabbing it to get this information, you have now put that person at risk.

Now, very interesting: The information that you get for this kind of screening is about \$7,200 to do one of these screenings. To get the information that you can look at and say "Oh, we have this kind of battery of genes." Now, this would be okay if it had any redeeming value, right? But it has no value.


But you put people at risk for cancer by the very process of taking tissue. The phenomena is called inflammatory oncotaxis: It's an observer effect. By looking at it, you've changed it.

Now, I want to talk to you about the evidence that does not support the somatic mutation theory of cancer. And whenever you challenge any kind of a solidified dogma you always get the same response. We saw one of these images yesterday. This comes from Nikko, Japan. These are the Nikko monkeys:



I went to Japan, actually. They have carvings of them that are a little bit different than this, but it's basically similar: You don't want to look at the data, you don't want to talk about it, you don't want to hear about it. Anything that challenges your world view. I don't care if it's a religion, a political philosophy or a scientific concept. You generally get this kind of a response. I know it's hard, it's hard for people to look at things differently.

So what I did in chapter 11 of my book... This is a paper that I wrote a couple of years after the book, to update more and more of the issues associated with information that does not support the somatic mutation theory:



The image shows the front cover of a journal article. At the top left is the 'frontiers' logo with the text 'in Cell and Developmental Biology'. At the top right, it says 'HYPOTHESIS AND THEORY', 'published: 07 July 2015', and 'doi: 10.3389/fcell.2015.00043'. The title 'Cancer as a mitochondrial metabolic disease' is centered in a large, bold font. Below the title is the author's name 'Thomas N. Seyfried *' and his affiliation 'Biology Department, Boston College, Chestnut Hill, MA, USA'. The main text paragraph discusses the somatic mutation theory and the Warburg effect. At the bottom, there is a 'Keywords' section listing 'Warburg effect, fermentation, oxidative phosphorylation, mitochondria, microenvironment, cybrids, tumorigenesis, carcinogenesis'.

frontiers
in Cell and Developmental Biology

HYPOTHESIS AND THEORY
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Cancer as a mitochondrial metabolic disease

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Cancer is widely considered a genetic disease involving nuclear mutations in oncogenes and tumor suppressor genes. This view persists despite the numerous inconsistencies associated with the somatic mutation theory. In contrast to the somatic mutation theory, emerging evidence suggests that cancer is a mitochondrial metabolic disease, according to the original theory of Otto Warburg. The findings are reviewed from nuclear cytoplasm transfer experiments that relate to the origin of cancer. The evidence from these experiments is difficult to reconcile with the somatic mutation theory, but is consistent with the notion that cancer is primarily a mitochondrial metabolic disease.

Keywords: Warburg effect, fermentation, oxidative phosphorylation, mitochondria, microenvironment, cybrids, tumorigenesis, carcinogenesis