Cancer Webinar

May 28, 2025

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IMA Chief Scientific Officer

INDEPENDENT™ MEDICAL ALLIANCE

The Current Cancer Epidemic!

Year	New Cases	DEATHS/ Year	DEATHS/ Day
2013	1,660,290	80,350	1,590
2014	1,665,540	585,720	1,605
2015	1,658,370	589,430	1,615
2016	1,665,210	595,690	1,632
2017	1,688,780	600,920	1,646
2018	1,743,350	609,640	1,670
2019	1,762,450	606,880	1,663
2020	1,806,590	606,520	1,662
2021	1,898,160	608,570	1,667
2022	1,918,030	609,360	1,670
2023	609,360	609,360	1,671
2024	609,360	611,720	1,676
Increase	17%	5.1%	5.1%

The Current Cancer Epidemic!

Risk of Turbo Cancers

- Epidemiological data from the USA, UK and Japan indicate that there has been **an abrupt increase in the incidence of cancers beginning in 2021 and continuing into 2023** (following the widespread use of the COVID-19 vaccination).
- As **Covid-19 vaccination is a "systemic disorder",** cancer may develop in any organ system, including those traditionally considered rare.
- According to Craig Paardekooper's analysis of the VAERS database the risk of cancer is greatest for the appendix, followed by breast cancer, colorectal cancer laryngeal cancer, endometrial cancer and hepatic cancer.

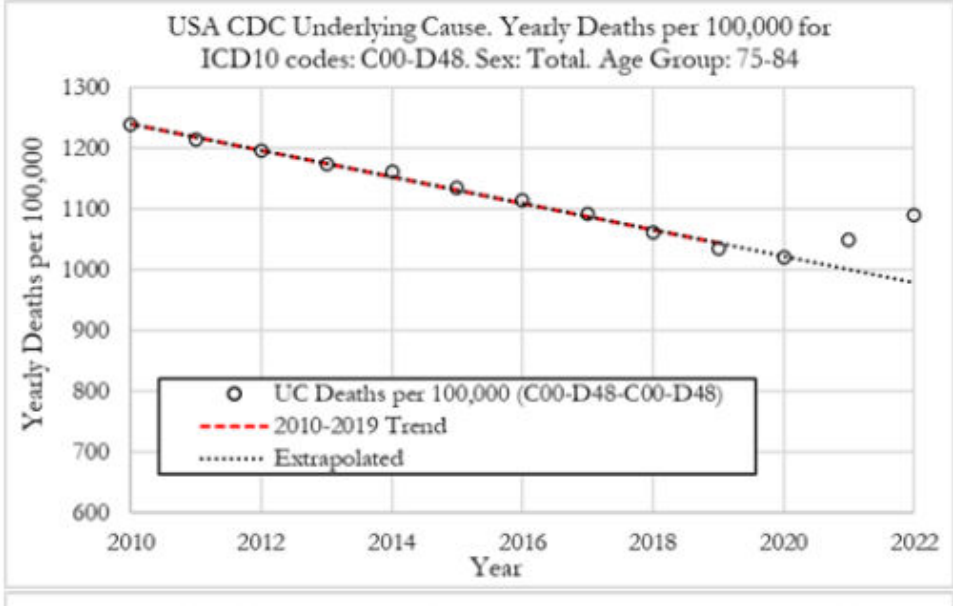
The Current Cancer Epidemic!

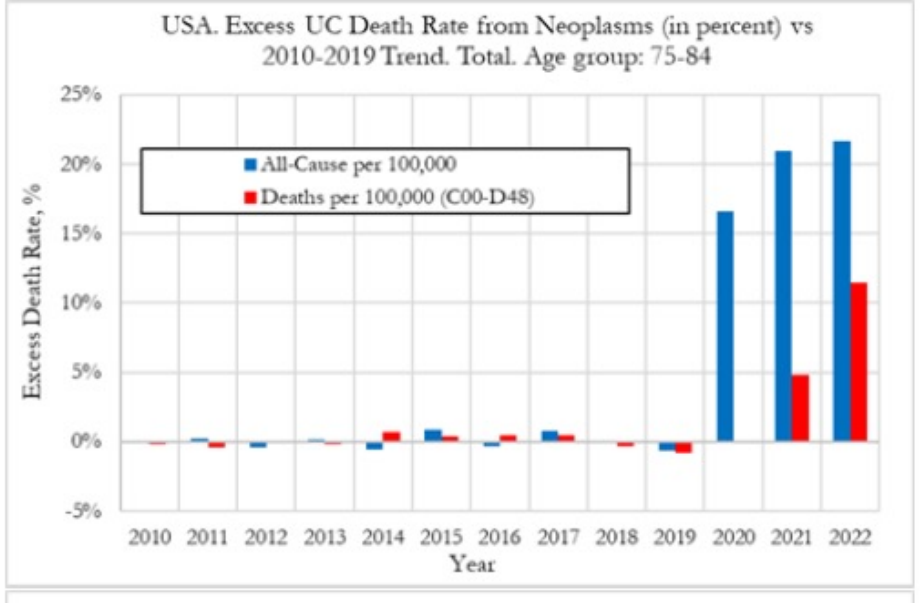
References:

1. Alegria C, Nunes Y. Trends in death rates from neoplasms in the US for all ages and detailed analysis for 75-84. ResearchGate. 2024.
2. Alegria C, Wiseman DM, Nunes Y. US - Death Trends for Neoplasms ICD codes: C00-D48, Ages 15-44. Research Gate. 2024.
3. Alegria C, Nunes Y. UK - Death and Disability Trends for Malignant Neoplasms, Ages 15-44. Research Gate. 2024.
4. Paardekooper C. Cancer and COVID vaccines. Medrxiv. 2023.
5. Akkus E, Karaoglan B, Akyol C, Ünal AE, Kuzu MA, Savaş B, et al. Types and Rates of COVID-19 Vaccination in Patients With Newly Diagnosed Microsatellite Stable and Instable Non-Metastatic Colon Cancer. Cureus. 2024;16(6):e61780.
6. Gibo M, Kojima S, fujisawa A, Kikuchi T, Fukushima M. Increased Age-Adjusted Cancer Mortality After the Third mRNA-Lipid Nanoparticle Vaccine Dose During the COVID-19 Pandemic in Japan. Cureus. 2024;16:e57860.

The Current Cancer Epidemic!

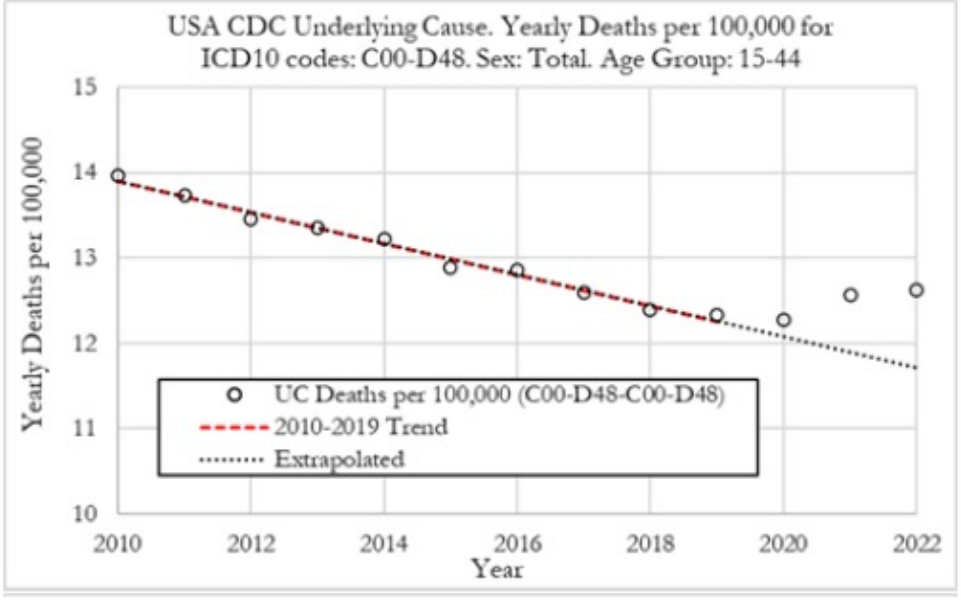
Excess Deaths

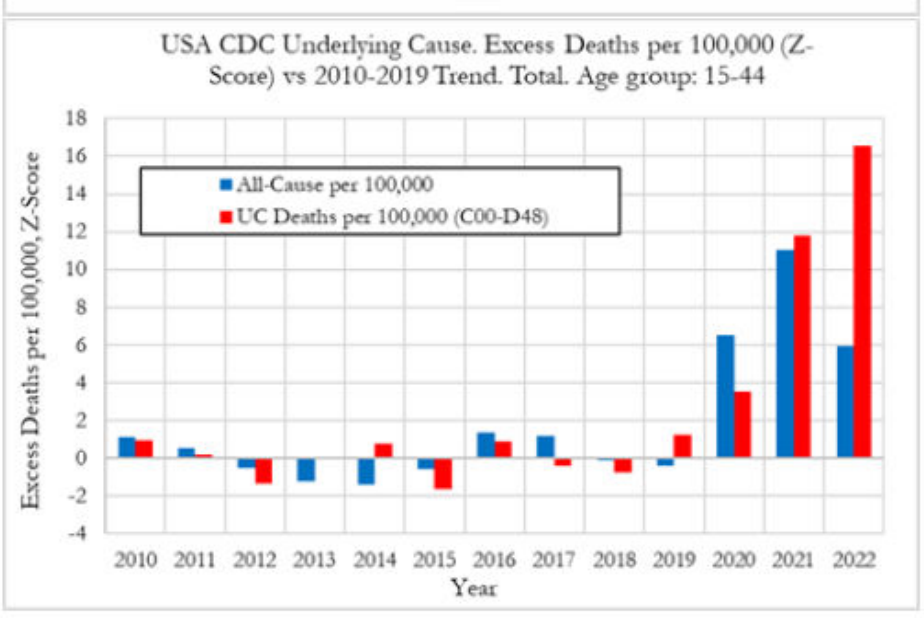




The Current Cancer Epidemic!

Excess Deaths





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Conventional Theory of Cancer

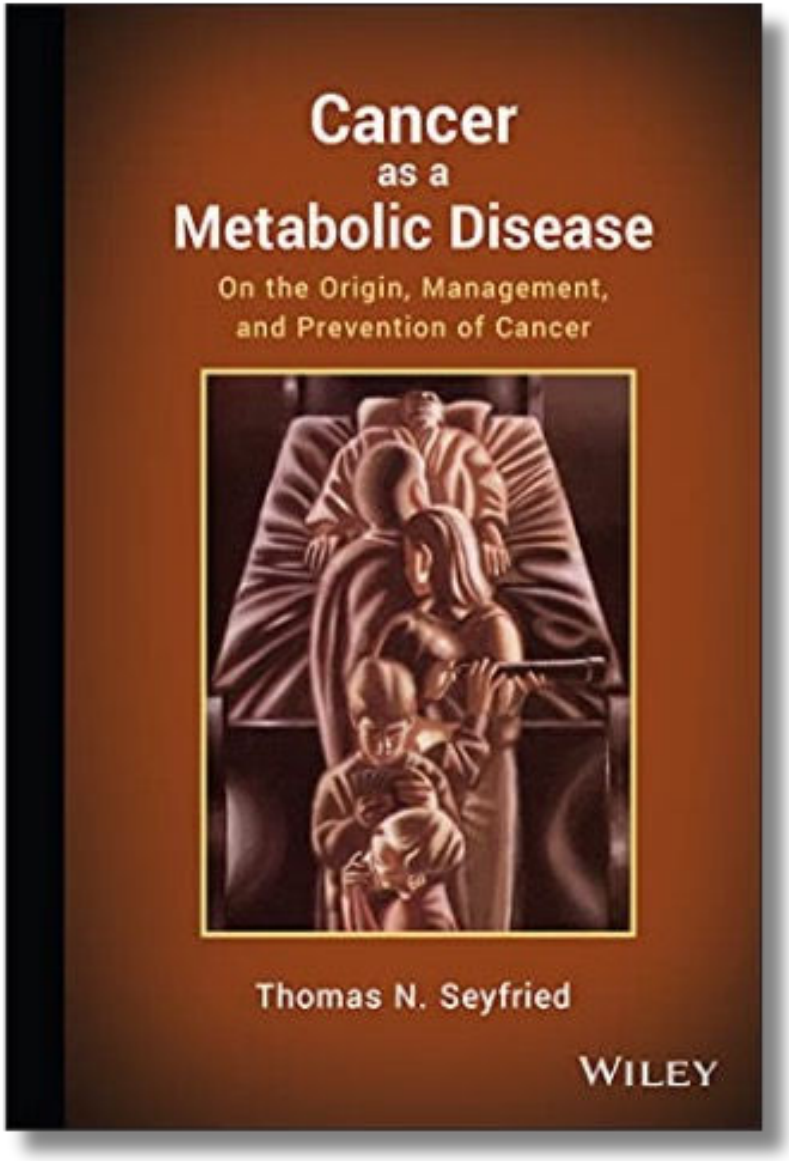
The conventional theory is that cancer is caused by genetic mutations/genomic instability, which drives a population of cells with the following six “classic” biological properties

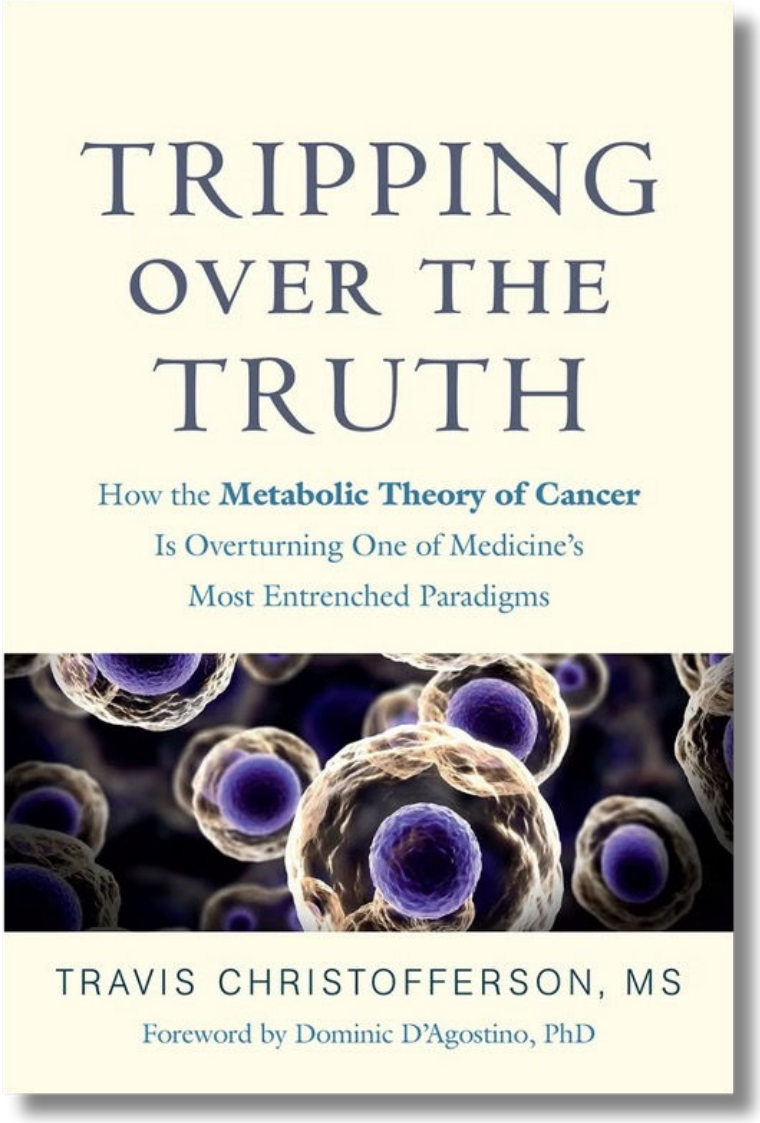
1. Sustaining proliferative signaling
2. Evading growth suppressors
3. Resisting cell death (apoptosis)
4. Enabling replicative immortality
5. Inducing angiogenesis
6. Activating invasion and metastasis

Cell, Vol. 100, 57–70, January 7, 2000, Copyright ©2000 by Cell Press

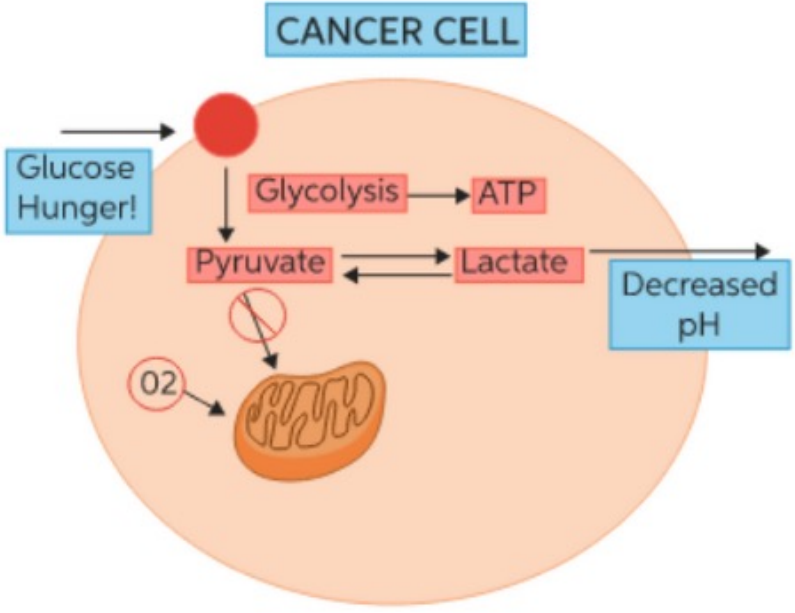
The Hallmarks of Cancer

Douglas Hanahan* and Robert A. Weinberg†

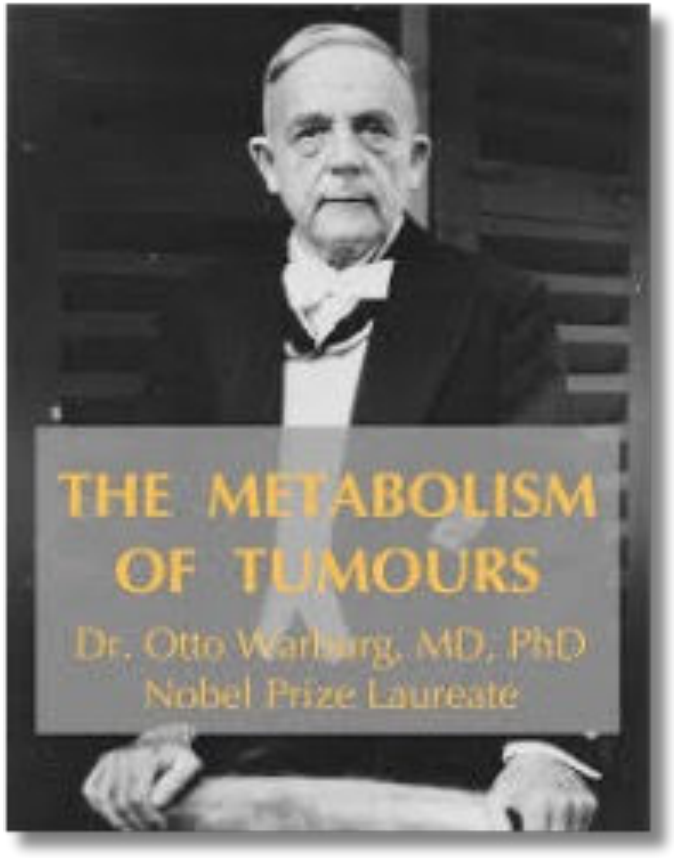

Cancer
as a
Metabolic Disease
On the Origin, Management,
and Prevention of Cancer
Thomas N. Seyfried
WILEY


TRIPPING
OVER THE
TRUTH
How the Metabolic Theory of Cancer
Is Overturning One of Medicine's
Most Entrenched Paradigms
TRAVIS CHRISTOFFERSON, MS
Foreword by Dominic D'Agostino, PhD

Warburg Effect

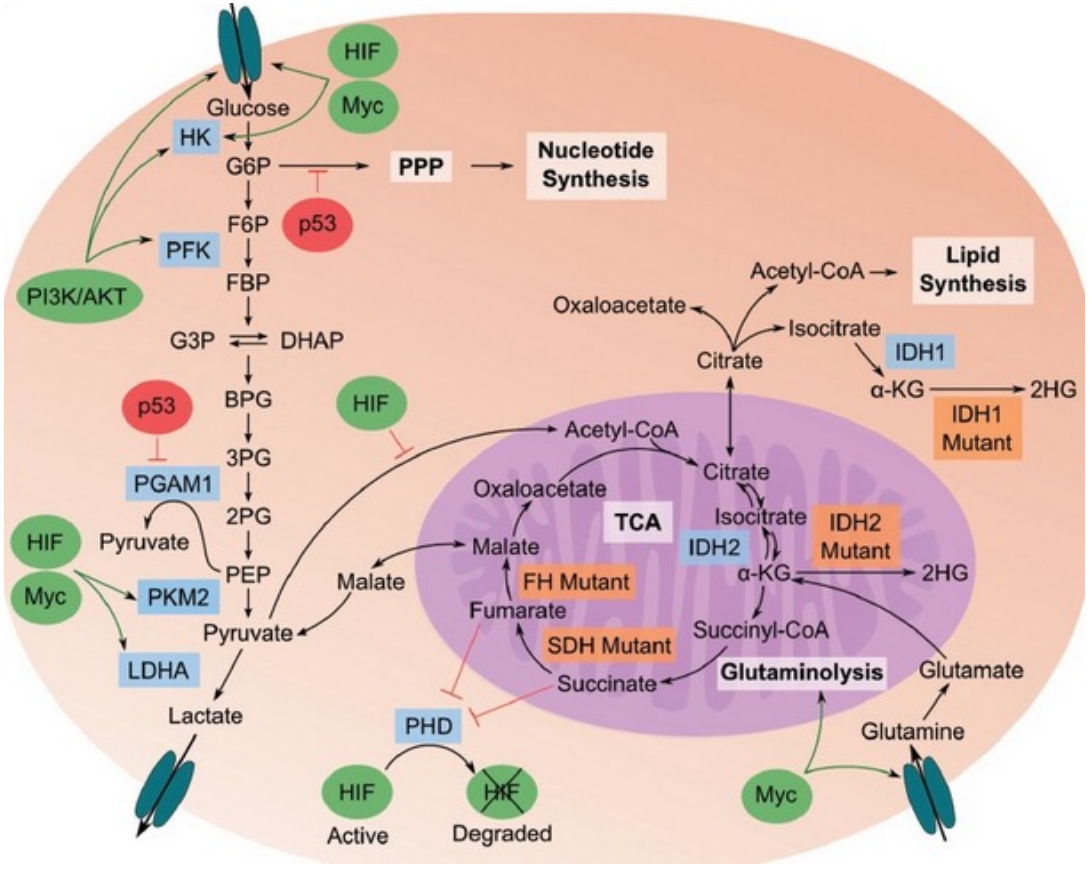


Aerobic Glycolysis Defective Mitochondria



Warburg Effect

The Warburg effect is characterized by metabolic reprogramming in cancer cells, favoring glycolysis over oxidative phosphorylation even under aerobic conditions.
This shift involves upregulation of glycolytic enzymes and downregulation of tumor suppressors that normally restrict glycolysis.



PGAM1
Phosphoglycerate Mutase 1

LDHA
Lactate Dehydrogenase A

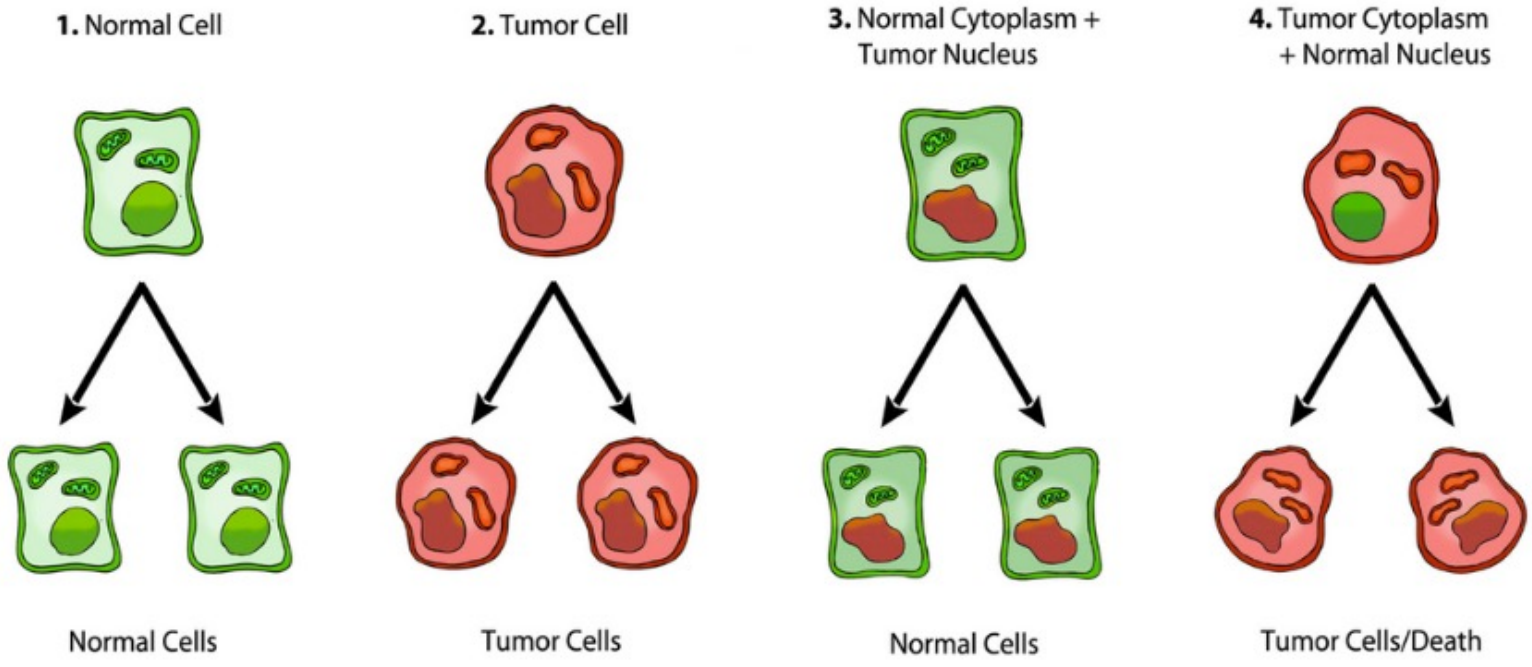
PKM2, an isoenzyme of pyruvate kinase

PFK
Phosphofructokinase

Warburg Effect

Enzyme/ Regulatory Factor	Normal Role	Change in Warburg Effect	Functional Impact
GLUT1/GLUTs	Glucose transporters Phosphorylates	Upregulated	Enhances glucose uptake to fuel glycolysis glycolysis
HK2	glucose to glucose-6 phosphate	Upregulated	Traps glucose in cells, committing it to
PKM2	Catalyzes PEP to pyruvate (glycolysis)	Upregulated	Less active isoform allows glycolytic intermediate accumulation for biosynthesis
LDHA	Converts pyruvate to lactate	Upregulated	Regenerates NAD to sustain glycolysis and exports lactate to acidify the microenvironment
PDK	Inhibits pyruvate dehydrogenase (PDH)	Upregulated	Reduces acetyl-CoA entry into TCA cycle, favoring lactate production
PGAM1	Converts 3-phosphoglycerate to 2-phosphoglycerate	Upregulated	Supports alternative glycolytic flux without ATP generation
PFK	Rate-limiting enzyme in glycolysis	Upregulated	Accelerates glycolytic flux
HIF-1α	Hypoxia-inducible transcription factor	Upregulated	Activates glycolytic genes (e.g., GLLUT1, LDHA) under low oxygen
c-Myc	Transcription factor	Upregulated	Drives expression of HK2, LDHA, PDK1, and GLUT1
p53	Tumor suppressor	Downregulated	Loss of function reduces inhibition of glycolysis and promotes TIGAR downregulation

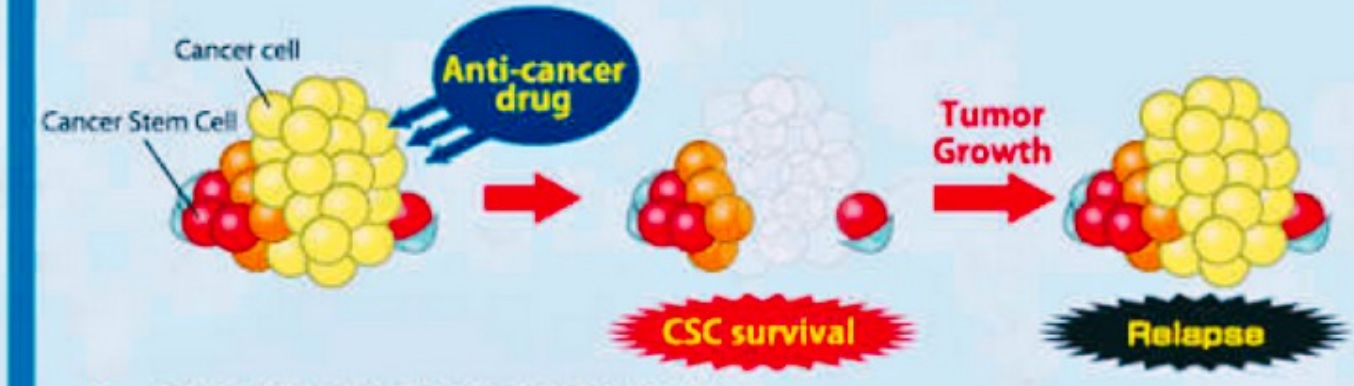
Role of the Nucleus and Mitochondria in the Origin of Cancer



Seyfried, Cancer as a Metabolic Disease, 2012 John Wiley Press;
Seyfried et al., 2015, Frontiers Cell & Dev. Biol.

Cancer Stem Cell [CSC] Characteristics

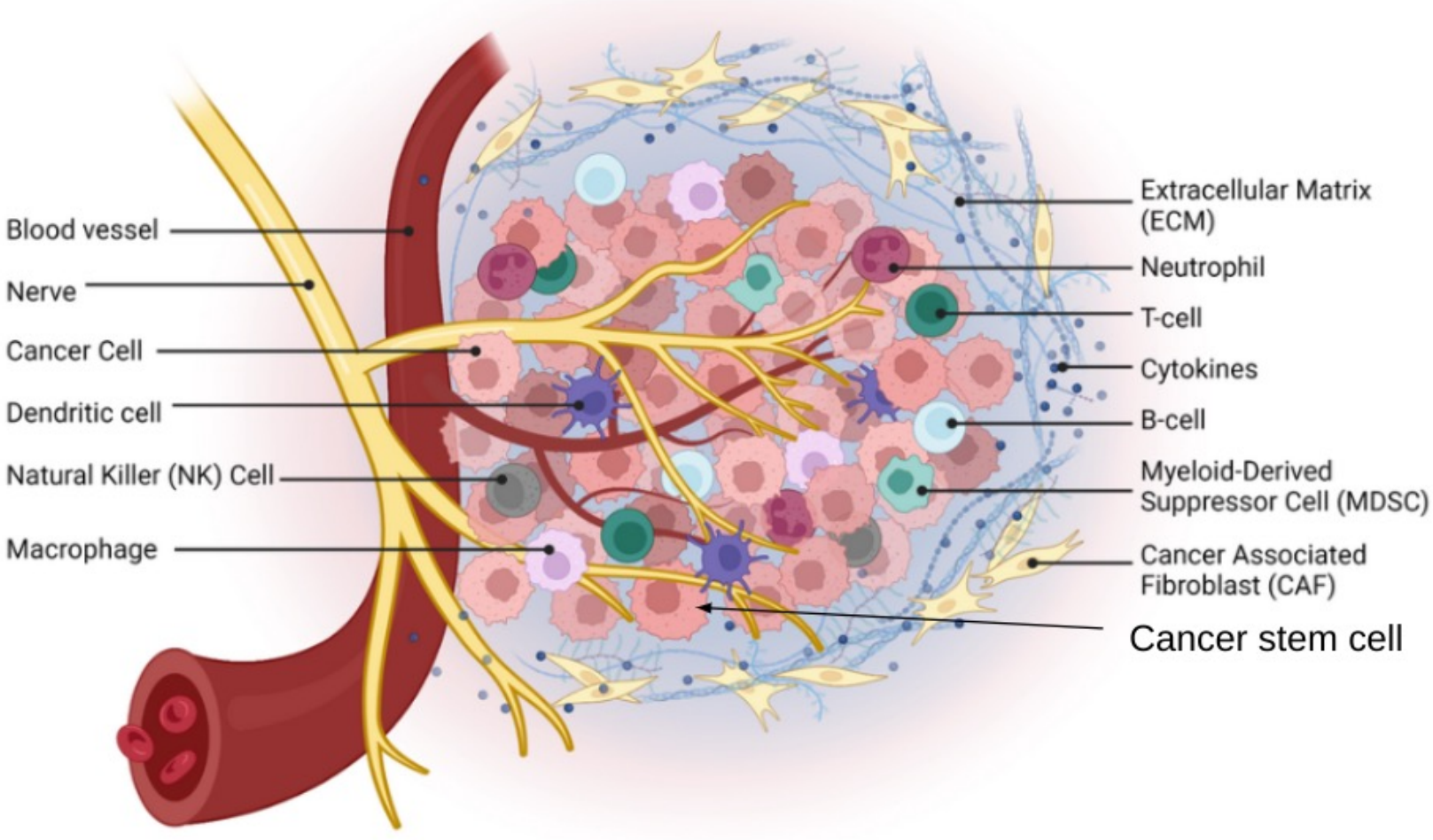
- Minor population in tumor : 0.1 - a few percent
- Self-renewing; infinite proliferative potential.
- Enhanced resistance to drugs, radiation, cell stress.
- Tumorigenic; give rise to other cell types in tumor.
- Associated with **metastasis** and **relapse.**



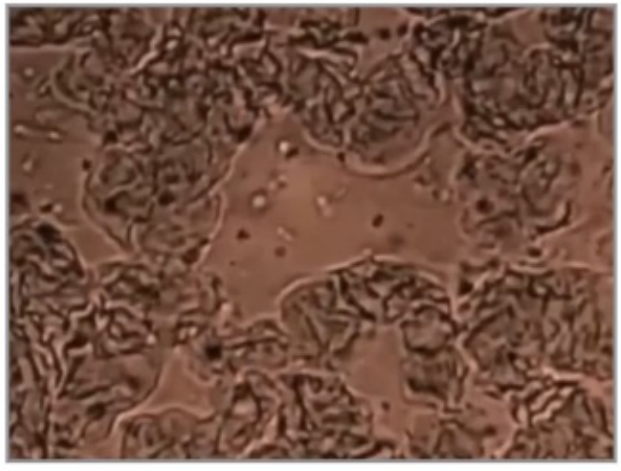
Metastasis and relapse are involved in more than 90% of all cancer deaths

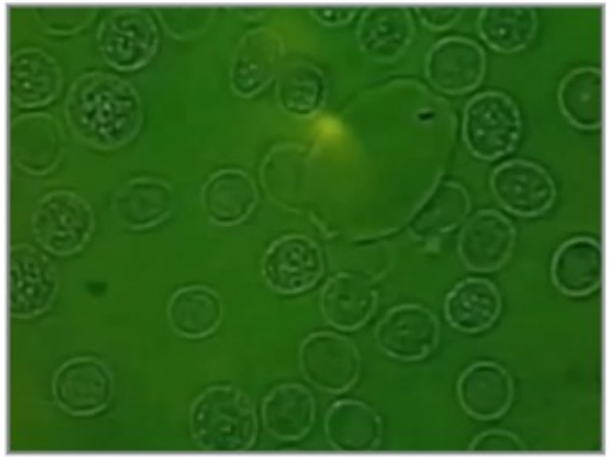
Strategies to eradicate CSCs are an urgent topic in cancer research

Tumor Microenvironment

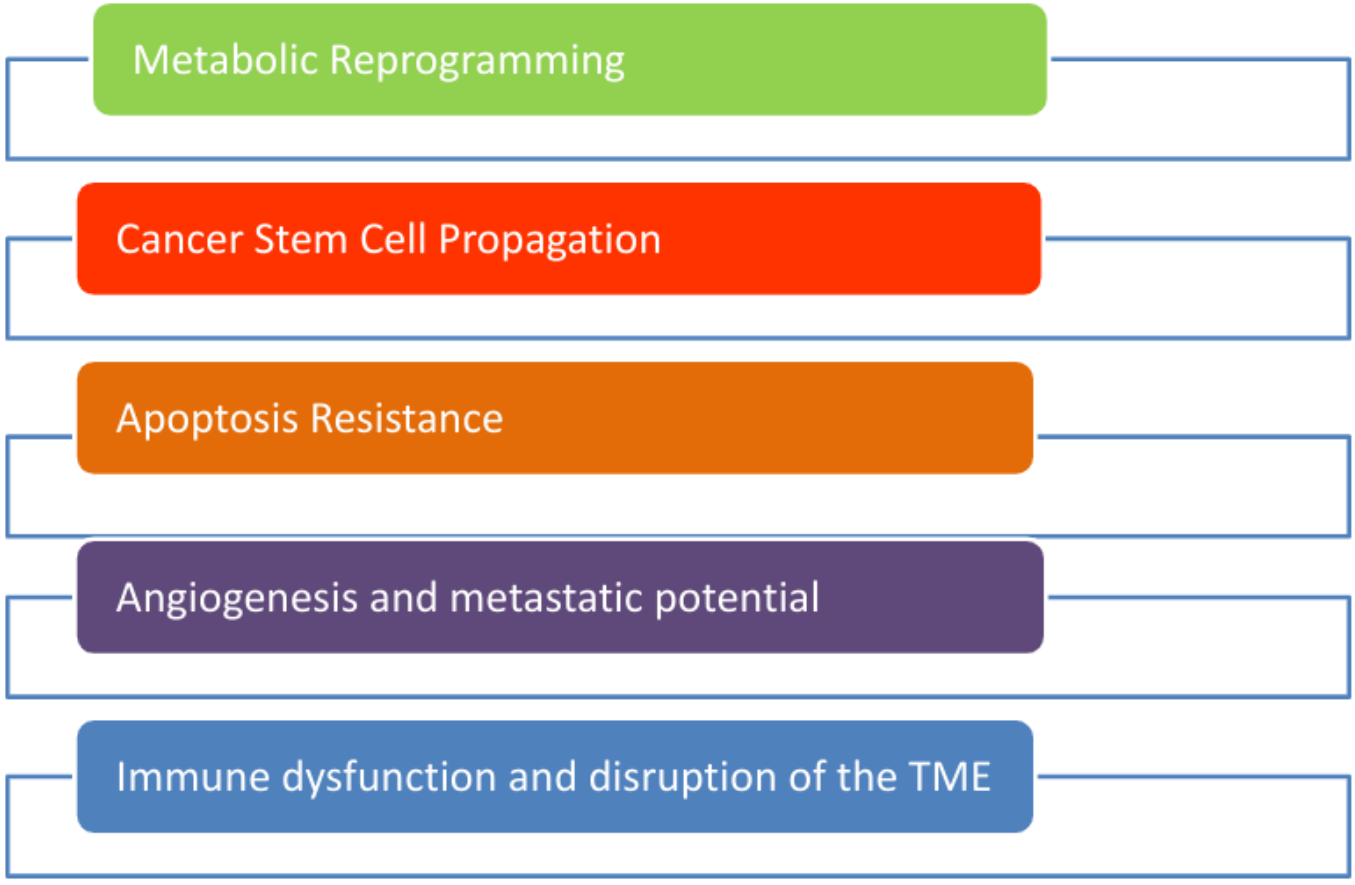


Cancer: (NOT) A Parasitic Disease?





The Hallmarks of Cancer
Marik & Hope 2025



Ranking of Agents Targeting Glycolytic Enzymes (Warburg Effect)

Rank	Agent	Effectivness	Key Enzyme Targeted
1	EGCG	High	GLUT1, HK2, PKM2, HIF-1a
2	Salforaphane	High	HK2, PKM2, LDHA, GLUT 1
3	Ivermectin	High	GLUT4, HK2, PDK, HIF-1a
4	Resveratrol	High	HIF-1a, PDK1
5	Melatonin	High	GLUT1, ENO1, LDHA
6	Vitamin D	Moderate High	GLUT1, HK2, LDHA

Ranking of Agents Targeting Glycolytic Enzymes (Warburg Effect)

Rank	Agent	Effectivness	Key Enzyme Targeted
7	Fembendazol	Moderate	GLUT1, HK2, LDHA
8	Metformin	Moderate	PDK, HIF-1a
9	Vitamin C	Moderate	GLUT1, LDHA
10	Quercitin	Moderate	HK2, LDHA
11	Docycyclin	Low	Indirect
12	Mebendazole	Low	Indirect

AI Ranking Top 10 – Cancer Stem Cell Activity

Rank	Compound	Pathways Blocked (Strength of Evidence)	Safety
1	Ivermectin	Wnt, Hedgehog, Notch, NFκB, STAT3, P13K/Akt	Safe
2	Curcumin	Wnt, Hedgehog, Notch, NFκB, STAT3, TGF-beta	Safe
3	Sulforaphane	Wnt, Hedgehog, NFκB, STAT3	Safe
4	Doxycycline	Wnt, Hedgehog, Notch	Safe
5	EGCG	Wnt, STAT3, NFκB, Notch, P13K/Akt	Safe
6	Resveratrol	NFκB, STAT3, TGF-beta, P13K/Akt	Safe
7	Omega-3 (DHA)	STAT3, JAK-STAT, NFκB, Wnt	Extremely Safe
8	Mebendazole	Hedgehog	Safe
9	Metformin	P13K/Akt	Extremely Safe
10	Vitamin D	Notch, Hedgehog	Extremely Safe

AI Ranking Top 5 Anti-Cancer Drugs

Rank	Compound	Pathways Targeted	Safety Category
1	Ivermectin	WNT, Notch, Hedgehog	Safe
2	Mebendazole	WNT, Hedgehog	Safe
3	Fenbendazole	WNT, Hedgehog	Safe
4	Curcumin	All except JAK/STAT	Safe
5	Resveratrol	WNT, Notch	Safe

Curcumin, EGCG, Resveratrol, and Quercetin Effects Natural Killer T Cells in Cancer

Compound	Direct T Cell Effects	Indirect Mechanisms	Key Pathways/Cytokines Affected
Curcumin	Expands CD8 + T cells, enhances cytotoxicity	Converts Tregs to Th1, inhibits TGF-β/IL-10	Granzyme/Perforin, IFN-γ, P13K/Akt
EGCG	Boosts T-cell proliferation at high doses	Activates macrophages/NK cells	P13K/Akt/mTOR, ROS pathways
Resveratrol	Activates CD8+ T cells via IL-18	Reprograms TAMs, enhances NK activity	IL-18, PD-1/PD-L1
Quercetin	Sensitizes tumors to T cell killing	Inhibits PD-1/PD-L1, induces apoptosis	STAT-3, mitochondrial apoptosis

These phytochemicals collectively enhance anti-tumor immunity by targeting both cancer cells and immune suppression mechanisms.

Ivermectin Anti-cancer Pathways

Apoptosis Induction

- Upregulating Proapoptotic proteins like Bax and downregulating antiapoptotic Bcl-2
- Activating caspase – 3/7
- Blocking the Wnt/B-catenin pathway

Autophagy via PAK1/Akt/mTOR inhibition

- Ivermectin expressed in 72% cancers degrades PAK1

Cell Cycle Arrest

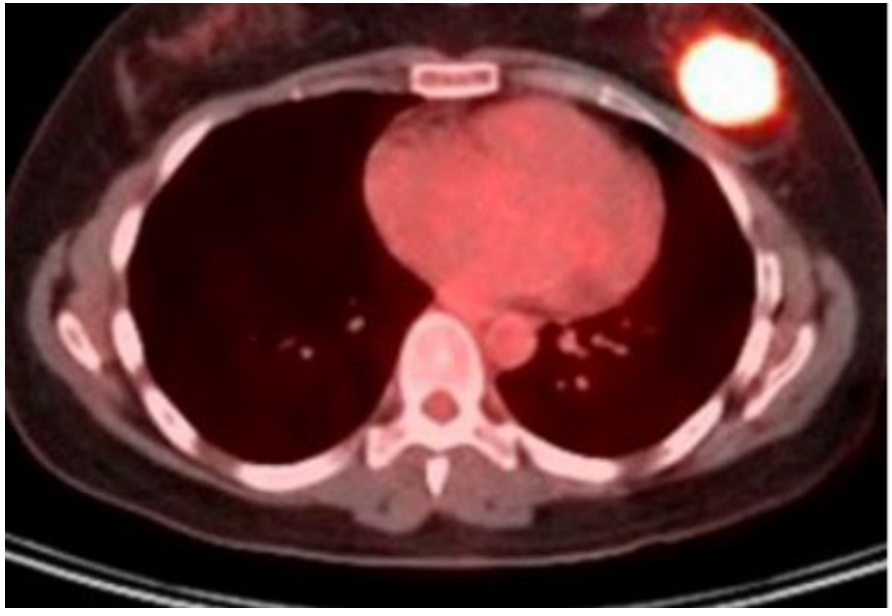
- S-phase arrest
- GO/G1-phase arrest

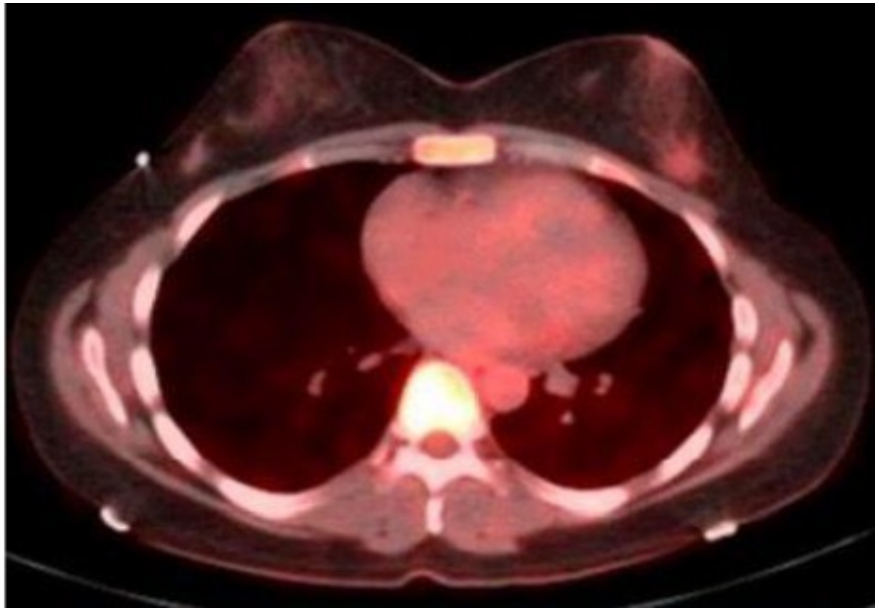
Immunogenic cell death

- Ivermectin converts “Cold” tumors to Hot” tumors by reducing immunosuppressive cells like Tregs and myeloid-derived suppressor cells

34-year Female Stage III Breast Cancer

Ketogenic diet + Ivermectin 60 mg/day for 4 months





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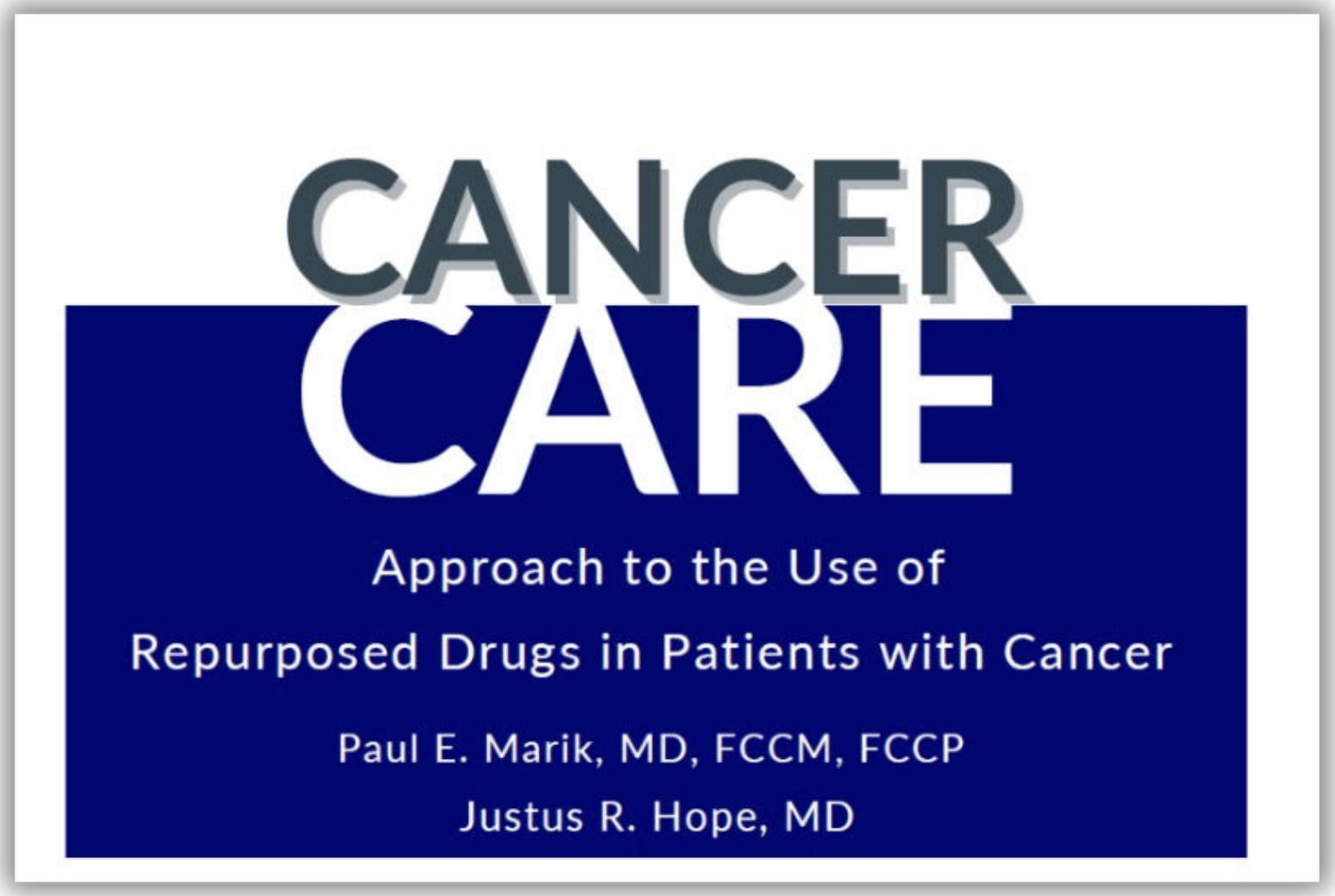

CANCER
CARE
Approach to the Use of
Repurposed Drugs in Patients with Cancer
Paul E. Marik, MD, FCCM, FCCP
Justus R. Hope, MD

Limited Therapy

1. Low carbohydrate, Low Glycemic Broccoli sprouts 2x to 3x per week (sulforaphane), brewed green tea (< 4 cups/day)
2. Ivermectin 2-0.4 mg/kg/day (0.3 mg/kg/day).
3. Doxycycline 50 mg daily taken together with 2 g oral vitamin C (consider cycling after 6 months)
4. Vitamin D 10 000 U daily and Vitamin K2 100 ug (monitor 25-OH Vit D and PTH levels)
5. Curcumin extract twice daily (high bioavailability). Daily dose of 2 -4 g titrate up to 8 g/day
6. Melatonin 20 mg at night (titrate up from 5 mg)
7. Resveratrol 500 mg twice a day (high bioavailable)
8. Green tea extract (EGCG) twice a day (< 800 mg/day)

Aggressive Therapy

1. Low Glycemic “ketogenic diet” (add broccoli sprouts 2x to 3x per week).
2. Ivermectin 0.4-0.8 mg/kg/day (0.6 mg/kg/day). Increase the dose as tolerated up to 1 mg/kg/day if the response is
3. Mebendazole 200 mg daily
4. Doxycycline 50 mg daily taken together with 2g oral vitamin C (consider cycling after 6 months)
5. Vitamin D 10 000 U daily and Vitamin K2 100 ug (monitor 25-OH Vit d and PTH levels). Titrate to achieve a low normal PTH level (Coimbra Protocol)
6. Curcumin extract twice daily (high bioavailability)
7. Metformin 500 – 1000 mg twice daily
8. Green tea extract (EGCG) twice a day (< 800 mg/day)
9. Melatonin 20 mg at night (titrate up from 5 mg)
10. Resveratrol 500 mg twice a day (high bioavailable)
11. Modified Citrus Pectin (Pectasol 14.4 g/day; 6 tablets three times a day)
12. Sulforaphane (free stabilized sulforaphane extracted from broccoli seeds); dosage varies
13. Omega 3 fatty acids 2-4 g/day
14. Atorvastatin 40-80 mg daily or simvastatin 40 mg daily (do not use long term or cause a precipitous reduction of LDL due to increased risk of dementia)
15. Propranolol 20-40 mg twice daily
16. Quercetin 500-1000 mg twice daily

Therapies by Cancer

PROSTATE CANCER

1. Doxycycline (plus vitamin C)
2. EGCG
3. Ivermectin
4. Sulforaphane
5. Curcumin
6. Metformin
7. Modified Citrus Pectin (Pectasol 4 g/day; 6 tablets three times a day)
8. Mebendazole
9. Resveratrol
10. Zinc 15mg (dose < 20mg) for nonmetastatic See caution below*
11. Quercetin (synergizes with EGCG)

COLORECTAL CANCER

1. Ivermectin
2. Curcumin
3. Sulforaphane
4. Metformin
5. Atorvastatin/simvastatin
6. Modified Citrus Pectin
7. Resveratrol
8. EGCG

BREAST CANCER

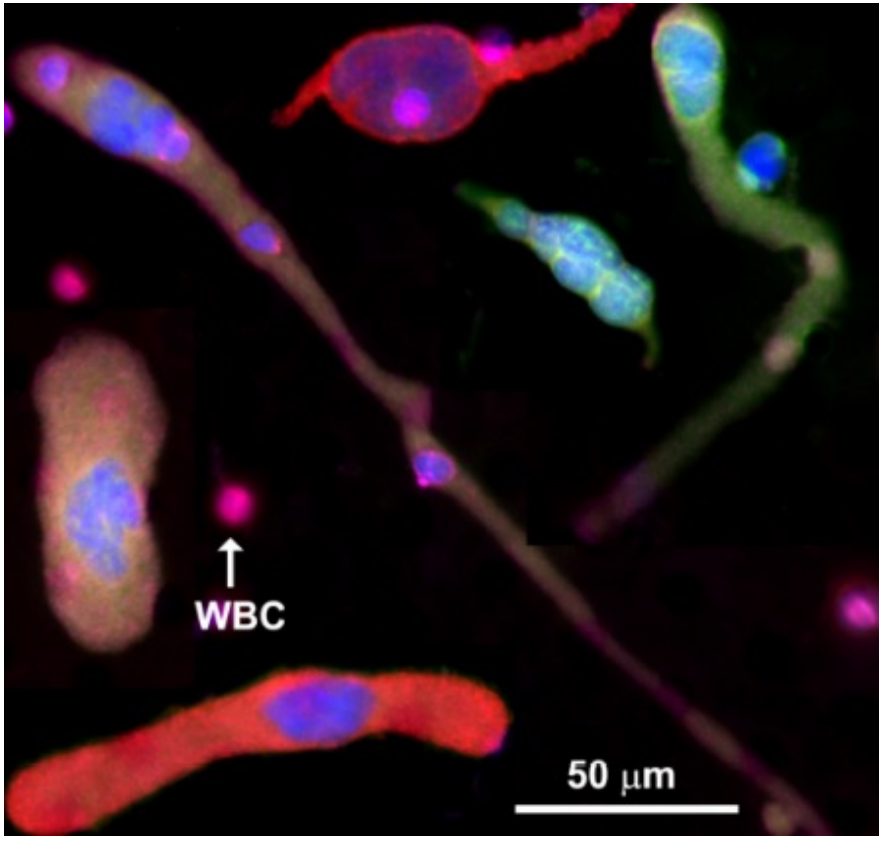
1. Mebendazole
2. Ivermectin
3. Curcumin
4. Doxycycline and vitamin C
5. Sulforaphane
6. Modified citrus pectin
7. Atorvastatin/simvastatin
8. Resveratrol
9. EGCG

LUNG CANCER (SMALL CELL)

1. Curcumin
2. EGCG
3. Metformin
4. Mebendazole
5. Sulforaphane
6. Atorvastatin/Simvastatin
7. Doxycycline and vitamin C

Review

Clinical Applications of Cancer-Associated Cells Present in the Blood of Cancer Patients



Cancer-associated macrophage-like cells (CAMLs)

Circulating tumor cell (CTC)

Circulating Cancer DNA (ctDNA)