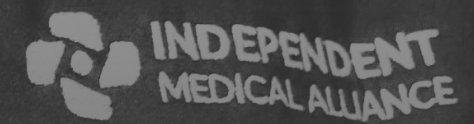




**CANCER CARE:
PREVENTING CANCER –
THE ROOT PROTOCOLS**



Dr. Paul Marik
IMA Chief Scientific Officer and Co-Founder





PREVENTING CANCER: THE ROOT PROTOCOLS

With

Dr. Paul Marik

MD, FCCM, FCCP

Preventing Cancer: The ROOT Protocols

Paul Marik¹, Justus Hope²


Abstract

In 2022, approximately 20 million new cancer cases and 9.7 million cancer deaths occurred worldwide. By 2050, new cases are projected to double, driven by population growth, aging, and increased exposure to risk factors. Up to 40% of cancers may be preventable by addressing lifestyle and environmental risk factors. Numerous nutraceuticals and repurposed drugs exhibit chemoprophylactic properties. Epigallocatechin gallate (EGCG), a polyphenol in green tea, appears to be the most effective agent against multiple cancers, followed by curcumin, a

polyphenol derived from turmeric (*Curcuma longa*), vitamin D, and omega-3 fatty acids. Using artificial intelligence and leveraging synergistic effects among these compounds, we developed the ROOT 3, ROOT 4, ROOT 5, ROOT 6, and ROOT 9 chemoprophylactic protocols. The mechanistic activity of each nutraceutical is described, along with the estimated risk reduction for the most common types of cancer. These protocols may offer a low-risk and accessible strategy to reduce cancer incidence.

Keywords: Cancer prevention, chemoprevention, nutraceuticals, epigallocatechin gallate, curcumin, vitamin D, omega-3 fatty acids

President Nixon declares War on Cancer Launching a \$1.6 Billion Crusade



Public Law 92-218
92nd Congress, S. 1828
December 23, 1971

An Act

To amend the Public Health Service Act so as to strengthen the National Cancer Institute and the National Institutes of Health in order more effectively to carry out the national effort against cancer.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

The National
Cancer Act of
1971.

SHORT TITLE

SECTION 1. This Act may be cited as "The National Cancer Act of 1971".

FINDINGS AND DECLARATION OF PURPOSE

SEC. 2. (a) The Congress finds and declares—

(1) that the incidence of cancer is increasing and cancer is the disease which is the major health concern of Americans today;

(2) that new scientific leads, if comprehensively and energetically exploited, may significantly advance the time when more

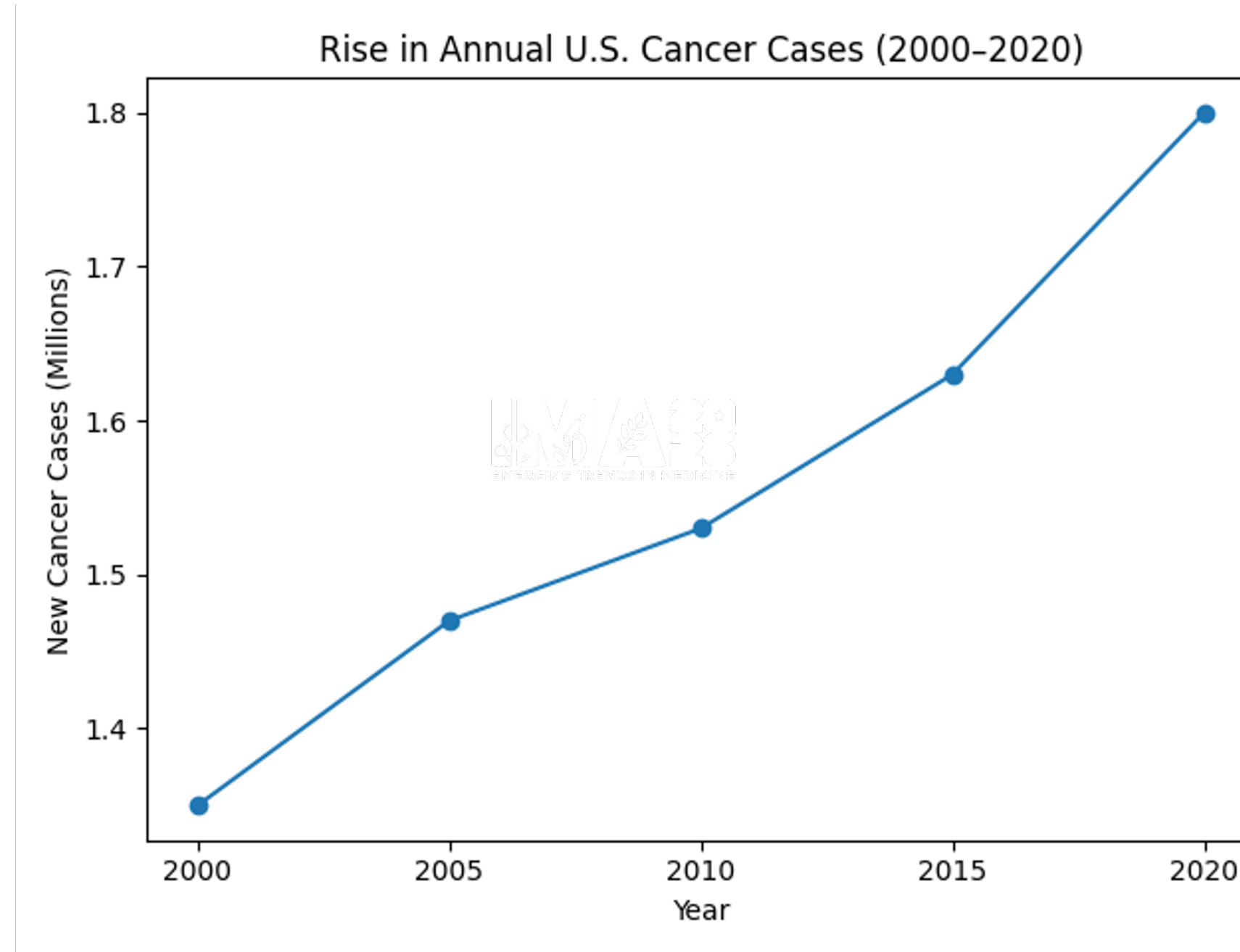
85 STAT. 778
85 STAT. 779

The Current Cancer Epidemic!

Year	New Cases	DEATHS/year	DEATHS/day
2013	1,660,290	580,350	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	1,958,310	609,820	1,671
2024	2,001,140	611,720	1,676
Increase	17.0%	5.1%	5.1%

Data from American Cancer Society

Rise in U.S. Cancer Cases (2000–2020)



Source: American Cancer Society & SEER data summaries (approximate annual new cases).

Most Common Cancers 2025

- Breast: 316,950 cases (women)
- Prostate: 313,780 cases projected
- Lung and bronchus: 234,580 cases
- Colorectal: 152,810 cases

Kim et al. *Biomarker Research* (2025) 13:114
<https://doi.org/10.1186/s40364-025-00831-w>

Biomarker Research

1-year risks of cancers associated with COVID-19 vaccination: a large population-based cohort study in South Korea

Data from 8,407,849 individuals between 2021 and 2023 were obtained from the Korean National Health Insurance database

The HRs of thyroid (HR, 1.351), gastric (HR, 1.335), colorectal (HR, 1.283), lung (HR, 1.533), breast (HR, 1.197), and prostate (HR, 1.687) cancers significantly increased at 1-year post-vaccination.

Review

COVID vaccination and post-infection cancer signals: Evaluating patterns and potential biological mechanisms

Charlotte Kuperwasser^{1,2} and Wafik S. El-Deiry^{3,4,5}

Table 1: Summary of reports linking COVID-19 vaccination or infection to cancer

Study type	<i>N</i>	% of Total (<i>N</i> = 69)	Comments
<i>Case reports</i>	50	72%	Dominant study type; mostly single-patient descriptions
<i>Case series</i>	5	7%	Typically 2-several patients
<i>Systematic/narrative reviews</i>	3	4%	Summaries or literature syntheses
<i>Cohort/retrospective/ observational population studies</i>	8	12%	Larger-scale data (e.g., population cohort, single center cohort)
<i>Mechanistic/translational studies (tissue, organoids, mouse)</i>	3	4%	Experimental or preclinical mechanistic work

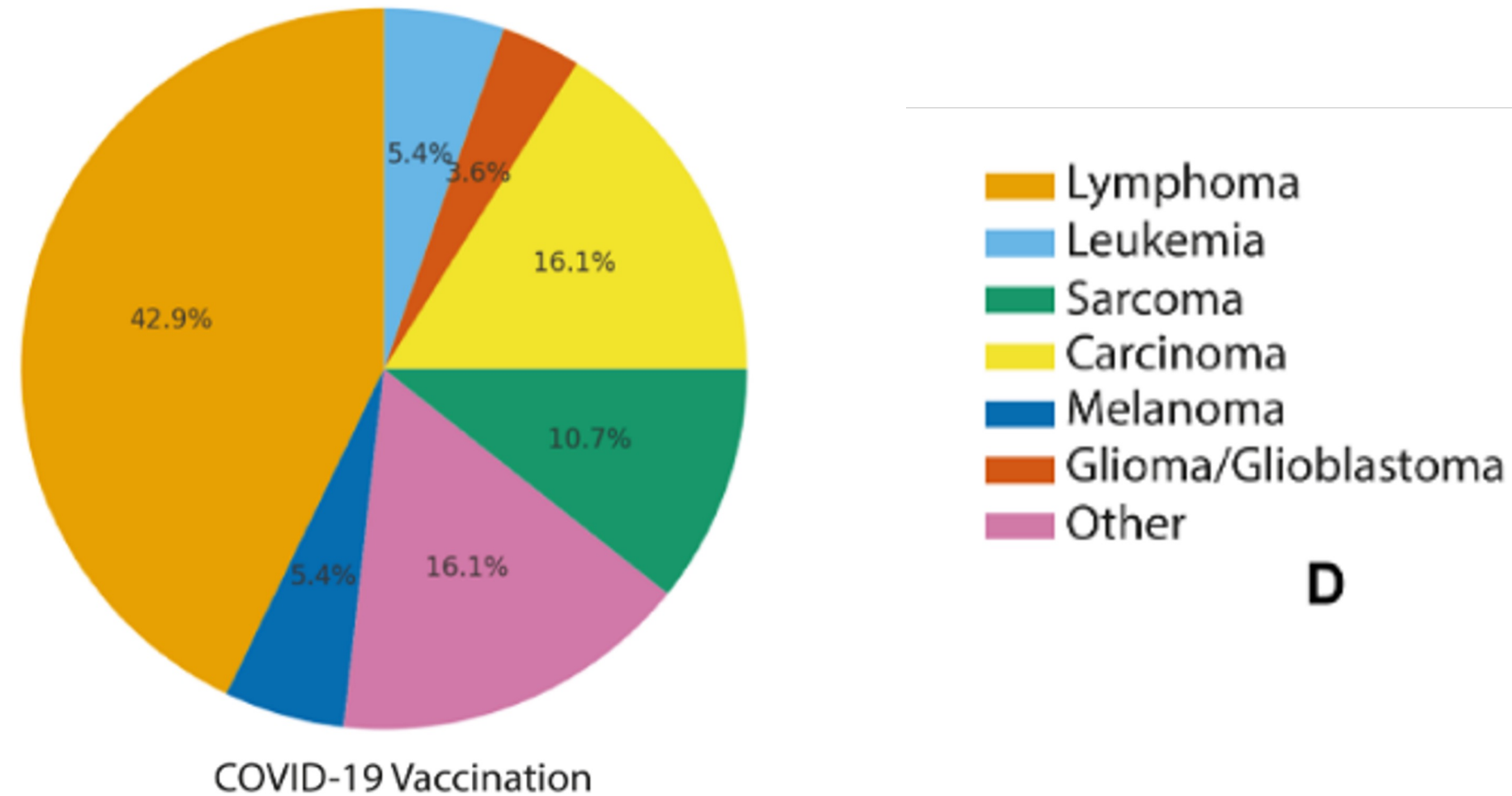
A total of 69 publications met inclusion criteria: 66 article-level reports describing 333 patients across 27 countries

www.oncotarget.com Oncotarget, 2026, Vol. 17, pp: 1-29

Review

COVID vaccination and post-infection cancer signals: Evaluating patterns and potential biological mechanisms

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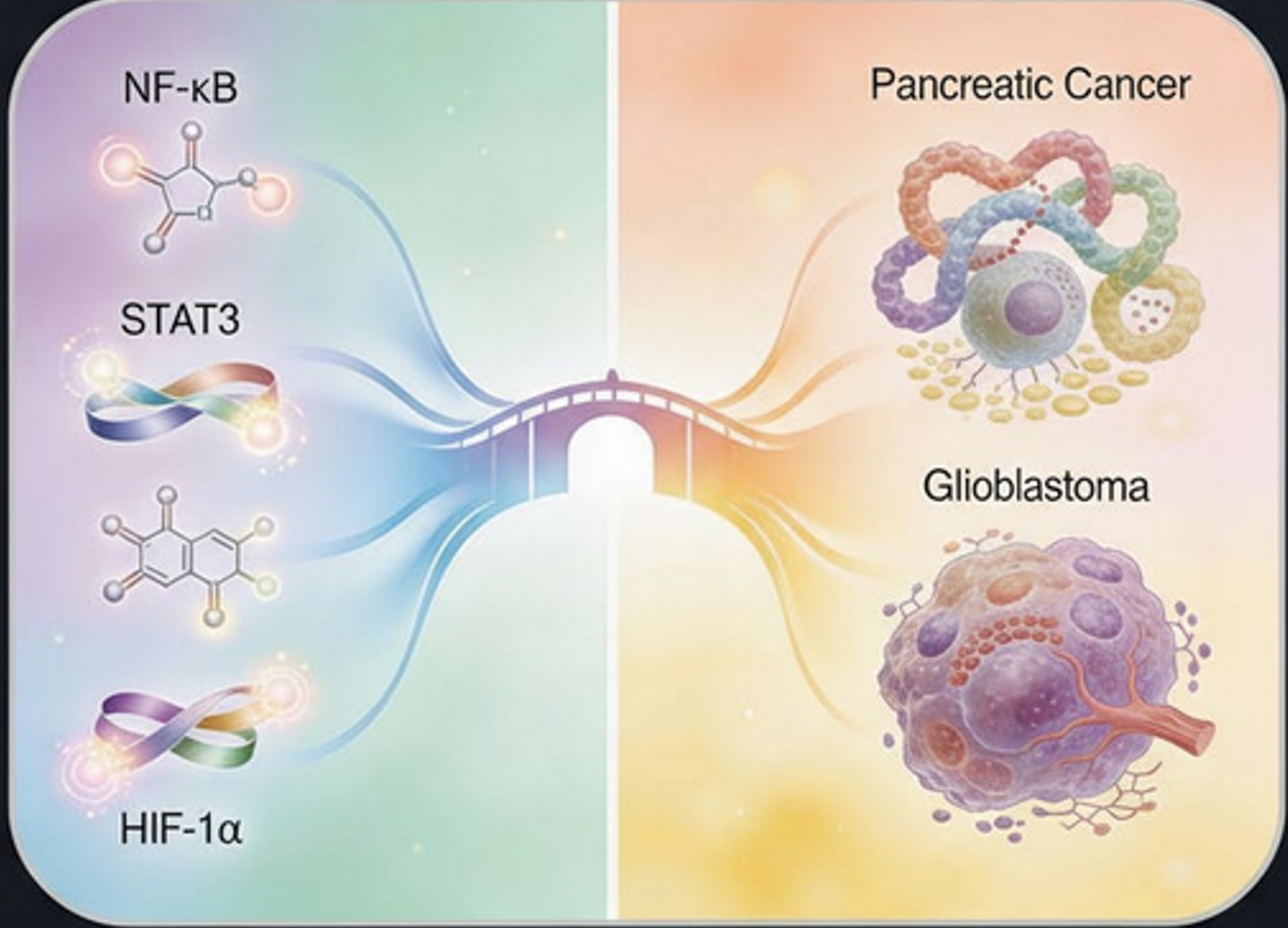
COVID vaccination and post-infection cancer signals: Evaluating patterns and potential biological mechanisms

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Table 3: Summary of case series describing malignant lymphoma following mRNA COVID-19 vaccination

Case N	Gender/ Age (Year)	Time from Vaccination to Onset of Lymphoproliferative Disorder	Histopathological Examination	Type of COVID-19 Vaccine	Site and Diameter of Lymphadenopathy	Treatment of Lymphoma
1	M/67	1 day after 1 dose	DLBCL	BNT162b2	Left axilla 6.0 cm	Chemotherapy plus rituximab
2	F/80	2 days after 1 dose	DLBCL	BNT162b2	Left axilla 4.1 cm	Chemotherapy plus rituximab
3	F/58	7 days after 2 dose	DLBCL	BNT162b2	Left cervical area 4 cm	Radical surgery plus radiotherapy
4	M/53	3 days after 1 dose	Extranodal NK/T-cell lymphoma	BNT162b2	Erosive lesions upper lip up to 5 mm	Chemotherapy plus radiotherapy
5	M/51	7 days after 1 dose	EBV-positive DLBCL	ChAdox1 nCOV-19	Mediastinal mass 5 cm	Rituximab
6	F/28	"A few days after 1 dose"	SPTCL	Ad26 viral-vector-based	Injection site, upper arm	Cyclosporine plus prednisone
7	F/80	1 day after 1 dose	EMZL	BNT162b2	Right temporal mass	No treatment
8	M/76	10 days after the booster dose	PC-ALCL	mRNA-1273*	Right arm upper-external surface 6 cm	No treatment

Post Immune Response to Vaccination



Top Cancers Most Driven by NF- κ B Pathway

Ranked by constitutive activation/prognostic impact
(genetics/inflammation driven)

Rank	Cancer	Key Evidence
1	Multiple Myeloma	Mutations (NFKB1/2, CYLD); bortezomib target; >90% active
2	Diffuse Large B-Cell Lymphoma (DLBCL)	ABC subtype NF- κ B addiction; 40% mutations
3	Pancreatic Ductal Adenocarcinoma	Chronic pancreatitis infl.; KRAS \rightarrow NF- κ B; 80%+
4	Breast Cancer	ER-/HER2+; TRIM32/IKK β ; poor prognosis, 2
5	Non-Small Cell Lung Cancer (NSCLC)	DDX24/TRIM32; smoking infl.; 70% active
6	Colorectal Cancer	MUC13/EGFR; APC loss \rightarrow NF- κ B
7	Melanoma	p65/SPP1/VEGF; UV infl.; resistance

Differences in cancer rates among adults born between 1920 and 1990 in the USA: an analysis of population-based cancer registry data



Hyuna Sung, Chenxi Jiang, Priti Bandi, Adair Minihan, Miranda Fidler-Benaoudia, Farhad Islami, Rebecca L Siegel, Ahmedin Jemal



A recent American Cancer Society study highlights a troubling trend: 17 types of cancer are becoming more prevalent in younger generations, with death rates also rising.

The cancers include:

- Uterine corpus
- Gallbladder and other biliary
- Kidney and renal pelvis
- Pancreas
- Myeloma
- Non-cardia gastric
- Testicular
- Leukemia
- Kaposi sarcoma in men
- Gastric cardia
- Small intestine
- Estrogen receptor-positive breast
- Ovarian
- Liver and intrahepatic bile duct in women
- Non-HPV-associated oral and pharynx cancers in women
- Anal
- Colon and rectal

Lancet Public Health 2024;9:e583



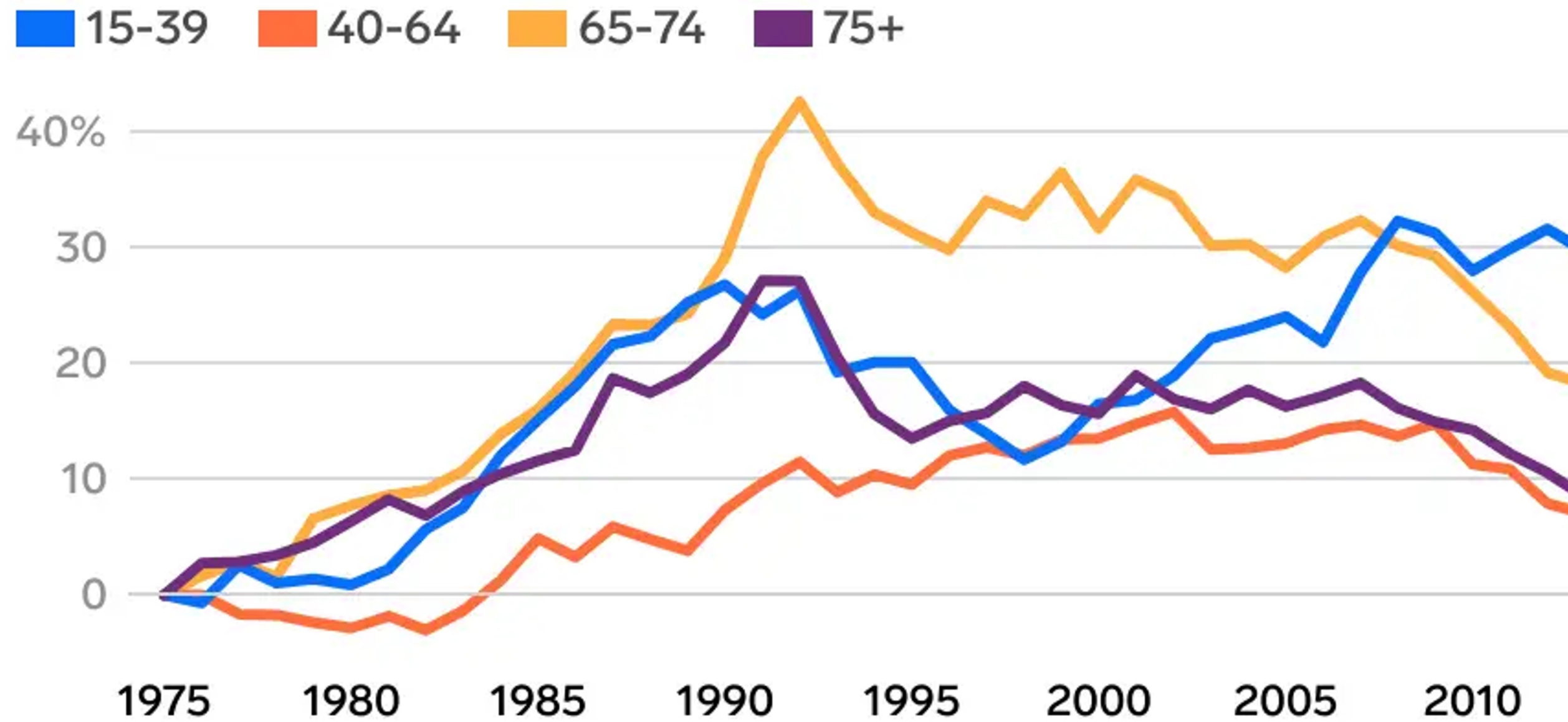
Original Investigation | Global Health

Patterns in Cancer Incidence Among People Younger Than 50 Years in the US, 2010 to 2019

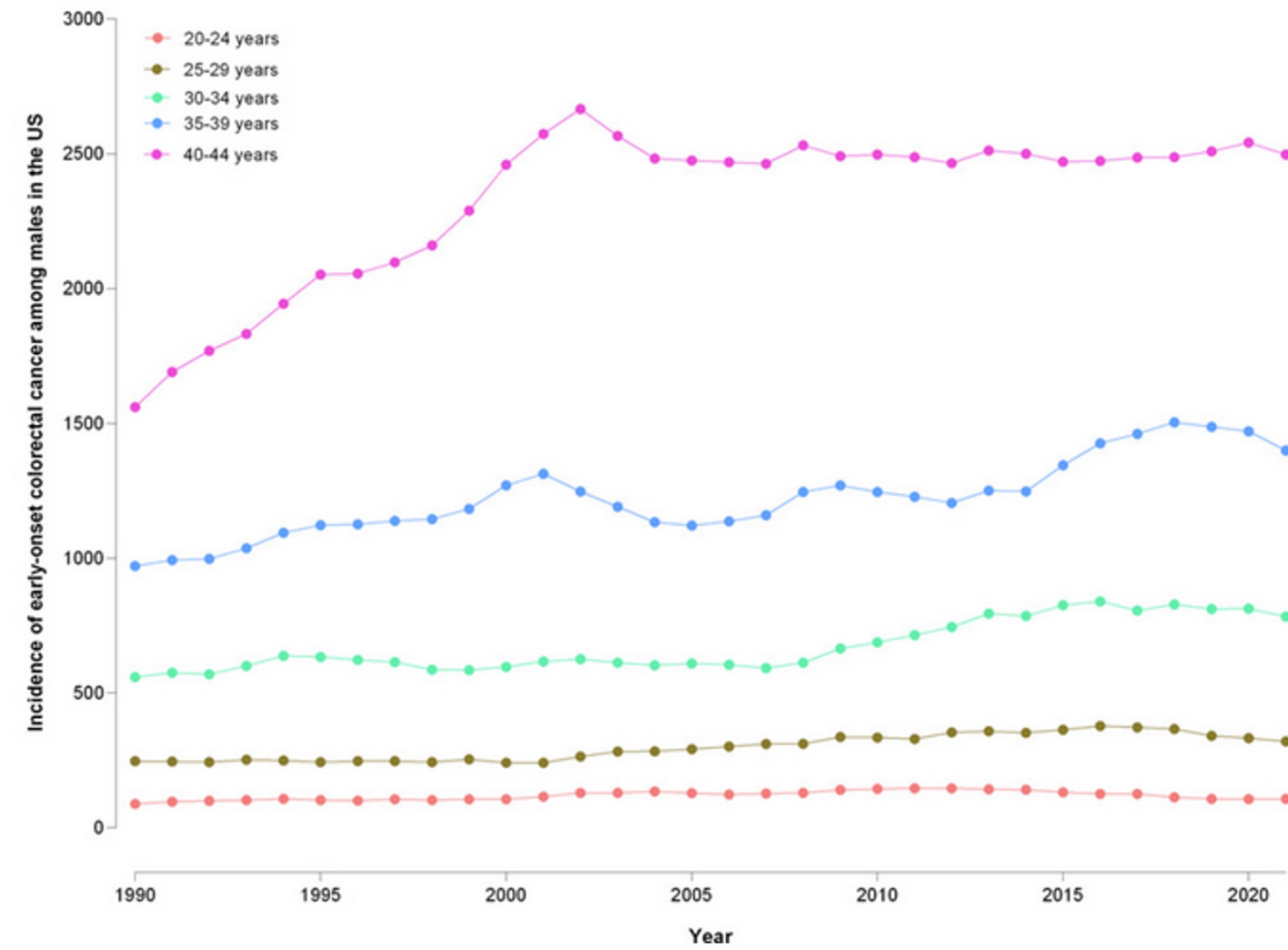
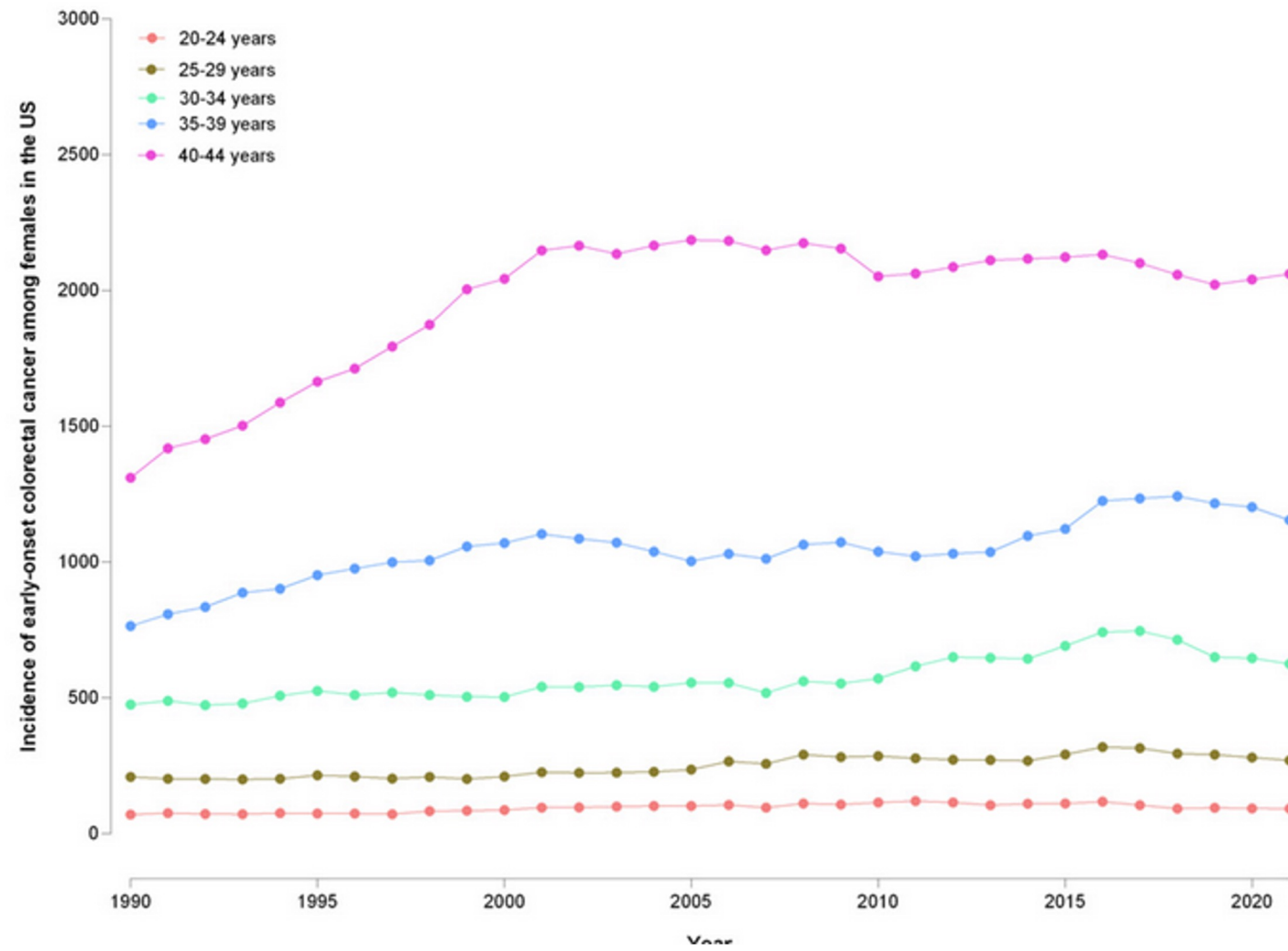
Benjamin Koh; Darren Jun Hao Tan; Cheng Han Ng, MBBS; Clarissa Elysia Fu; Wen Hui Lim; Rebecca Wenling Zeng; Jie Ning Yong; Jia Hong Koh, MBBS; Nicholas Syn, MBBS; Wang Meng, MBBS; Karn Wijarnpreecha, MD; Ken Liu, PhD; Choon Seng Chong, MBBS; Mark Muthiah, MBBS; Hung N. Luu, PhD; Arndt Vogel, MD; Siddharth Singh, MD; Khay Guan Yeoh, MBBS; Rohit Loomba, MD; Daniel Q. Huang, MBBS, MMED

CONCLUSIONS AND RELEVANCE In this cohort study, the incidence rates of early-onset cancer increased from 2010 to 2019. Although breast cancer had the highest number of incident cases, gastrointestinal cancers had the fastest-growing incidence rates among all early-onset cancers. These data may be useful for the development of surveillance strategies and funding priorities.

Increasing Incidence of Cancer by Age Group



Increase in Colorectal Cancer

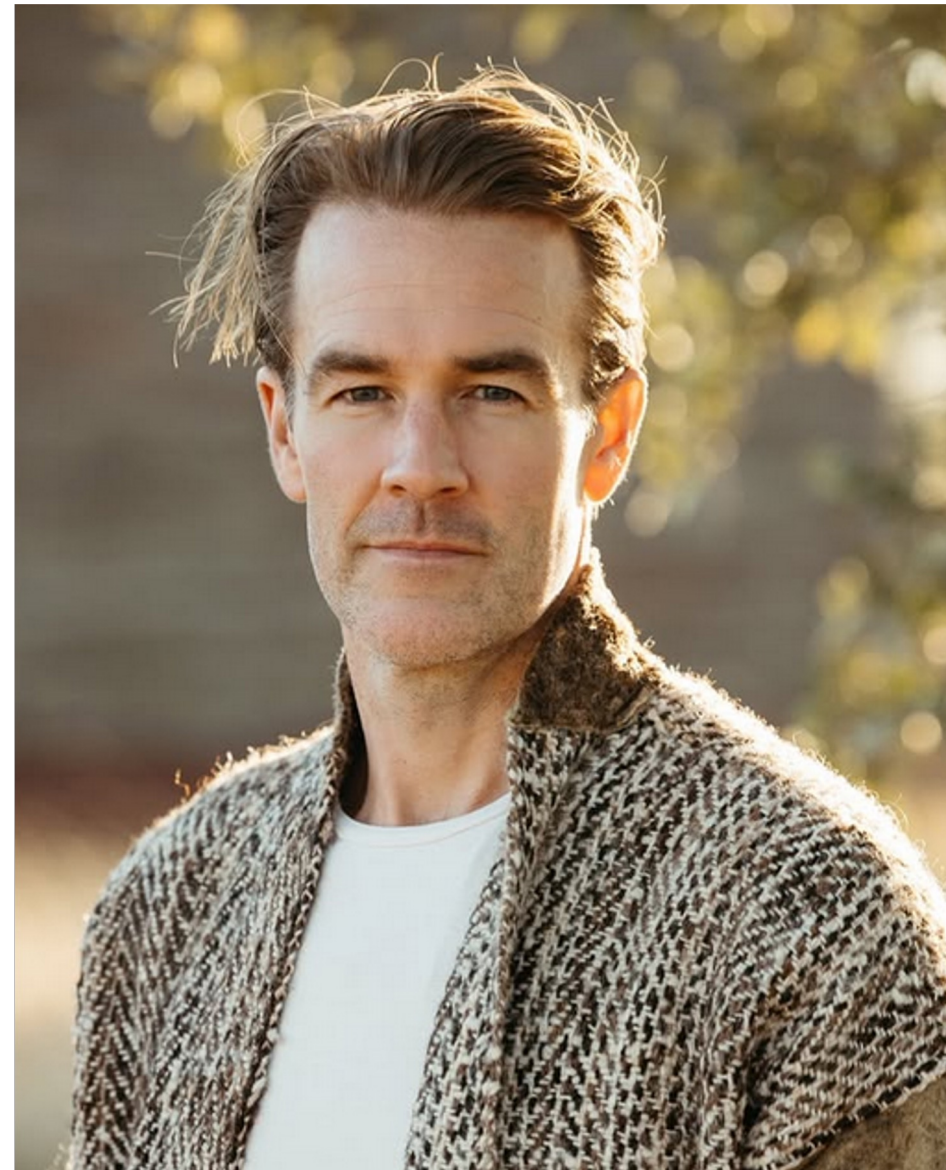


James Van Der Beek, 'Dawson's Creek' and 'Varsity Blues' star, dead at 48

James Van Der Beek had been fighting stage 3 colorectal cancer

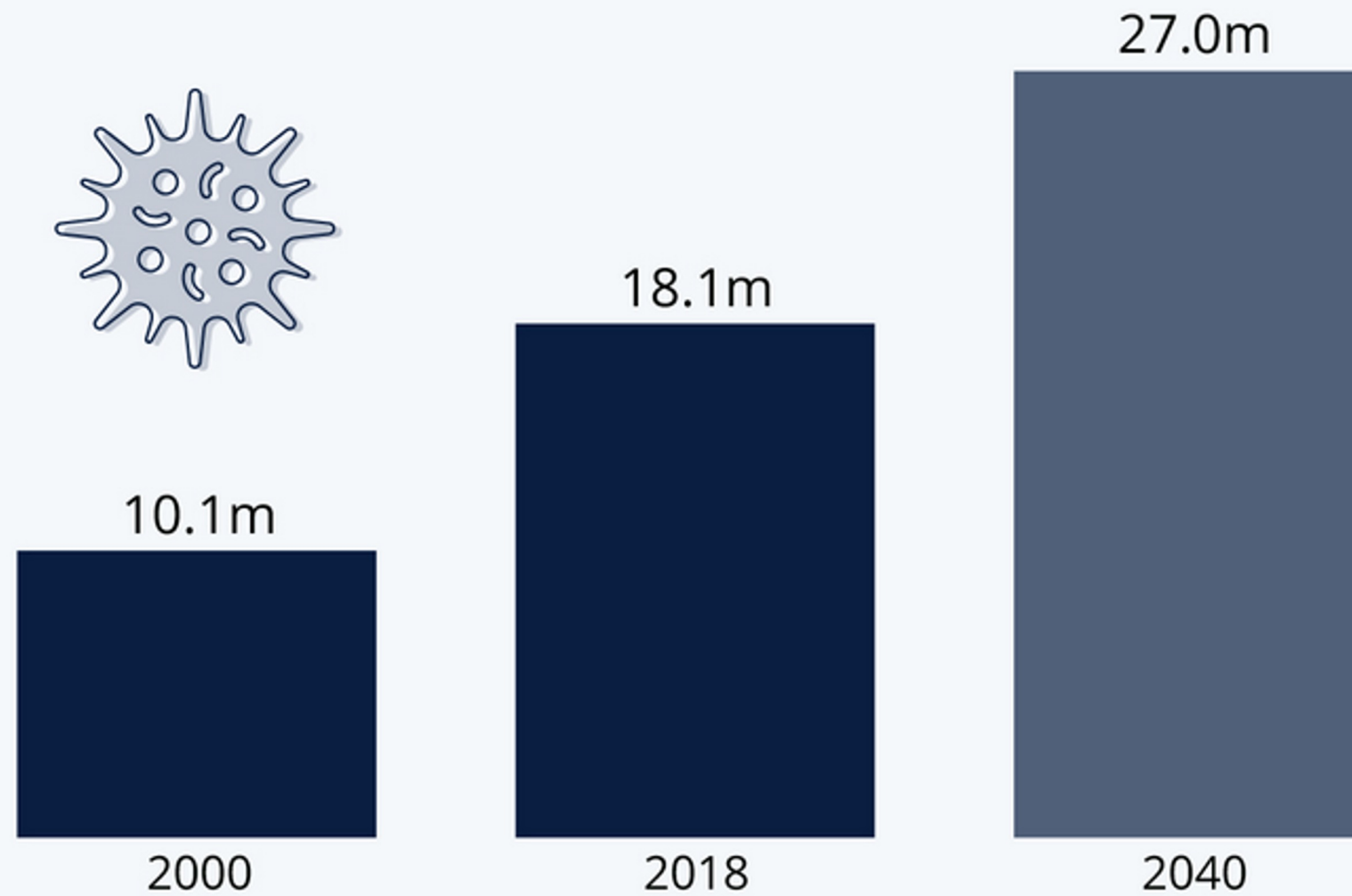
By [Christina Dugan Ramirez](#) · Fox News

Published February 11, 2026 2:43pm EST | Updated February 13, 2026 5:46am EST



Global Cancer Burden Continues to Rise

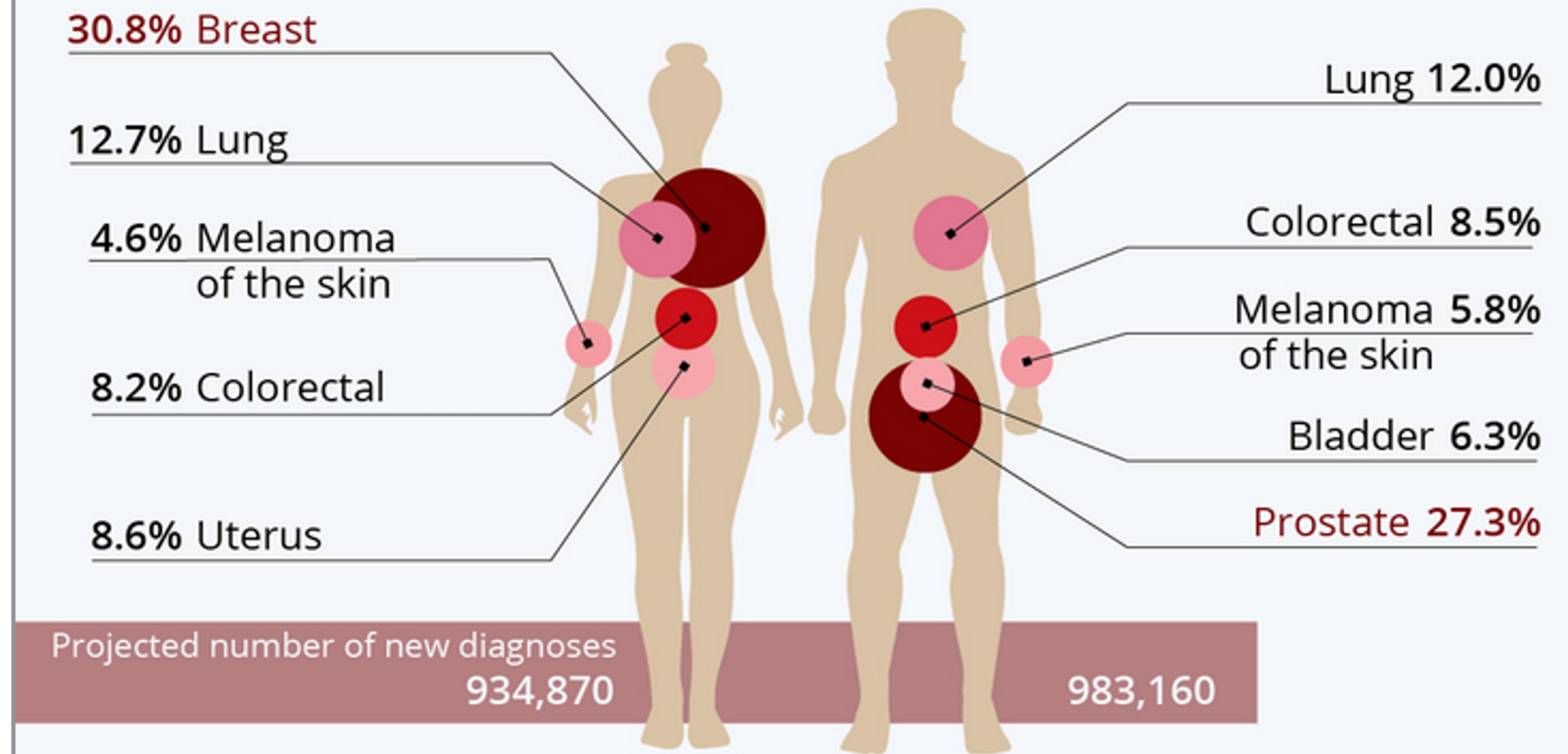
Estimated number of new cancer cases globally per year



Source: International Agency for Research on Cancer

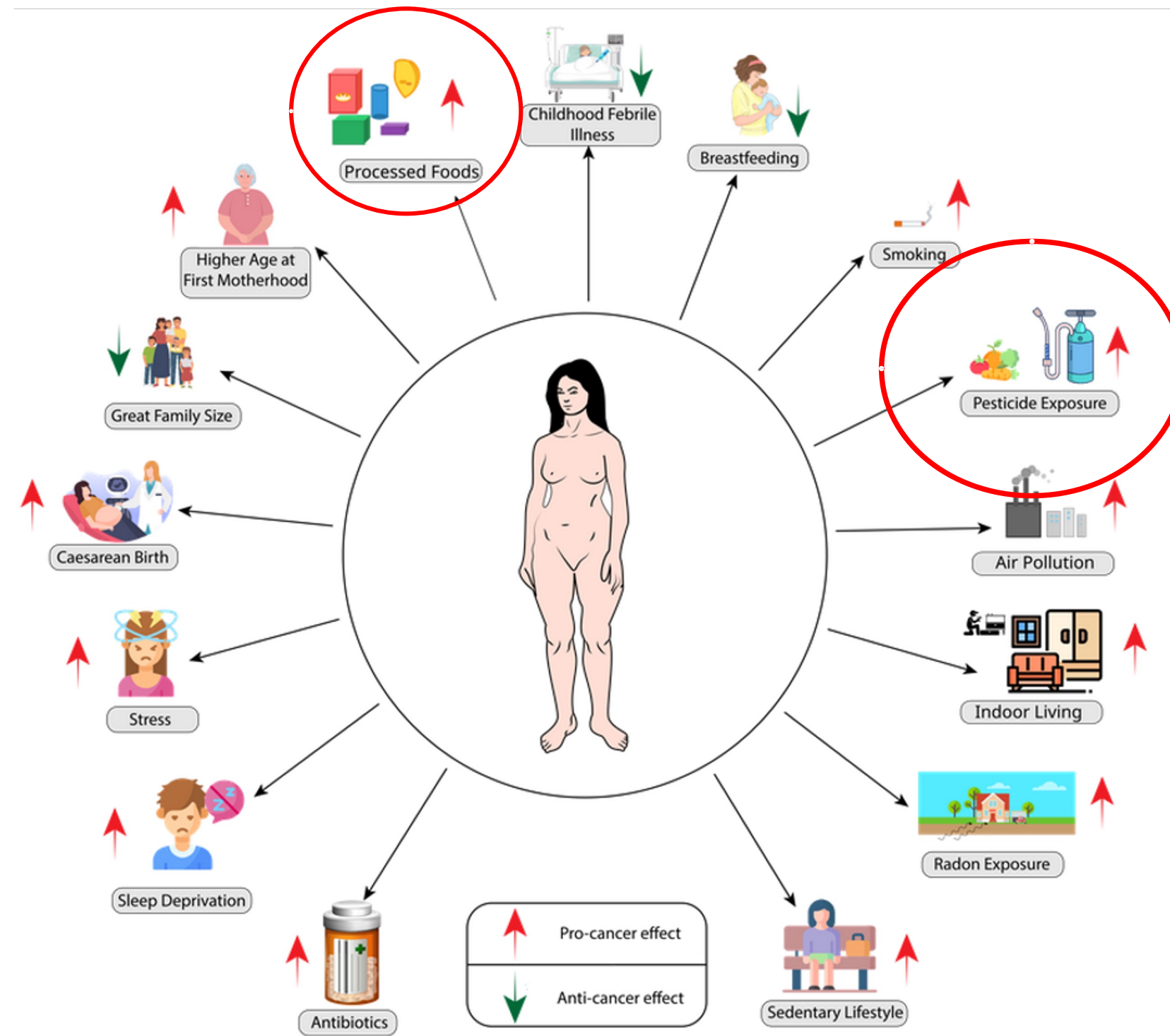
The Most Common Types of Cancer in the U.S.

Projected share of new cancer diagnoses in the U.S. in 2022, by gender



Source: American Cancer Society

Risk Factors



JAMA Oncology

Ultra processed Food Consumption and Risk of Early-Onset Colorectal Cancer Precursors Among Women

Findings In this cohort study of 29 105 female nurses younger than 50 years who underwent lower endoscopy, those with the highest quintile of UPF intake had a statistically significant 45% higher odds of early-onset colorectal conventional adenomas compared with the lowest quintile.

Meaning Results of this study suggest that reducing UPF intake may be an effective dietary strategy to prevent early-onset colorectal tumorigenesis.

JAMA Oncol

Published Online: November 13, 2025

doi: 10.1001/jamaoncol.2025.4777

[Home](#) > [Science News](#) > [Featured news](#) > [Pesticides potentially as bad as ...](#)

Pesticides potentially as bad as smoking for increased risk in certain cancers

Comparable Risk to Smoking: Recent comprehensive studies in the United States have found that exposure to agricultural pesticides can increase the risk of several cancers to a degree comparable to that of tobacco smoking for certain cancer types. These include non-Hodgkin's lymphoma, leukemia, bladder, colon, pancreatic, and lung cancers.

Cancer is a Preventable Disease

- ~ 30-40% of cancers are preventable.
 - Insulin resistance
 - Quit smoking
 - Limit alcohol
 - Get enough Vitamin D
 - Avoid processed foods
 - Avoid sugary drinks and pure fruit juice
 - Get enough exercise (aerobic and resistance training)
 - Stress reduction
 - 8 hours quality sleep
 - + ROOT Protocols

Combined Vitamin D, Omega-3 Fatty Acids, and a Simple Home Exercise Program May Reduce Cancer Risk Among Active Adults Aged 70 and Older: A Randomized Clinical Trial

Design: The DO-HEALTH trial is a three-year, multicenter, $2 \times 2 \times 2$ factorial design double-blind, randomized-controlled trial to test the individual and combined benefit of three public health interventions.

Interventions: Supplemental 2000 IU/day of vitamin D3, and/or 1 g/day of marine omega-3s, and/or a simple home strength exercise (SHEP) program compared to placebo and control exercise.

Results: In total, 2,157 participants (mean age 74.9 years; 61.7% women. For the three individual treatments, the adjusted hazard ratios were 0.76 (0.49–1.18) for vitamin D3, 0.70 (0.44–1.09) for omega-3s, and 0.74 (0.48–1.15) for SHEP. For all three treatments combined, the adjusted HR was 0.39 (0.18–0.85).

Combined Vitamin D, Omega-3 Fatty Acids, and a Simple Home Exercise Program May Reduce Cancer Risk Among Active Adults Aged 70 and Older: A Randomized Clinical Trial

Mechanistic Integration Framework

● Vitamin D₃ (2000 IU/day)

VDR activation → transcriptional modulation

- ↓ NF-κB signaling
- ↓ Pro-inflammatory cytokines (IL-6, TNF-α)
- ↑ Innate immune regulation
- ↑ Muscle fiber function

Downstream:

Immune resilience · Reduced inflammaging tone

● Omega-3 (EPA+DHA 1 g/day)

Membrane incorporation → lipid mediator shift

- ↑ Specialized pro-resolving mediators (resolvins, protectins)
- ↓ Arachidonic acid-derived eicosanoids
- ↑ Mitochondrial membrane fluidity
- ↓ Oxidative stress

Downstream:

Inflammation resolution · Metabolic stabilization · Epigenetic modulation

● Strength Exercise (Home Program)

Mechanical loading → AMPK–PGC-1α activation

- ↑ Mitochondrial biogenesis
- ↑ Insulin sensitivity
- ↑ Muscle mass & neuromuscular integrity
- ↑ Myokine secretion (IL-6 transient anti-inflammatory pulse)

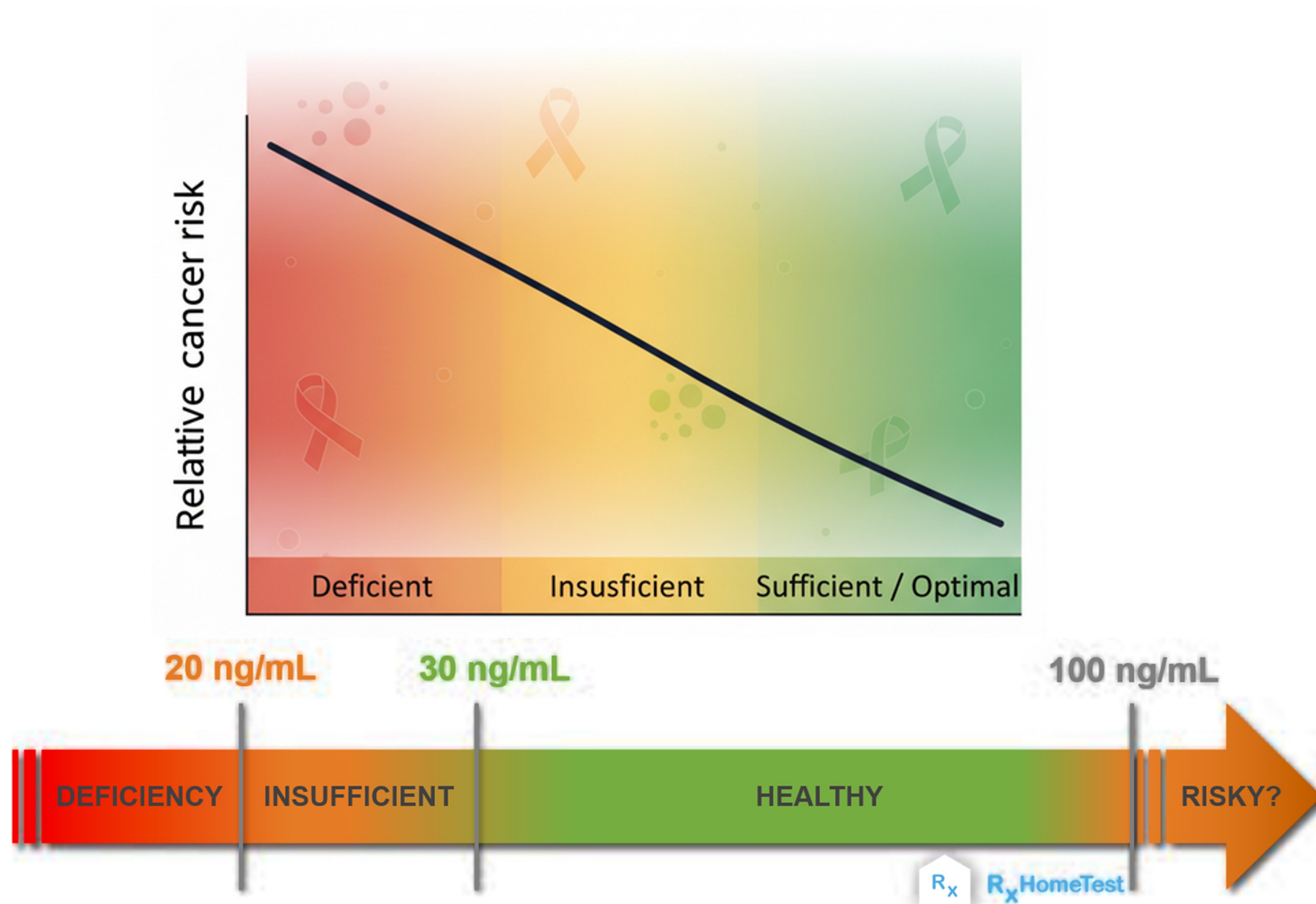
Downstream:

Improved physical resilience · Reduced frailty trajectory

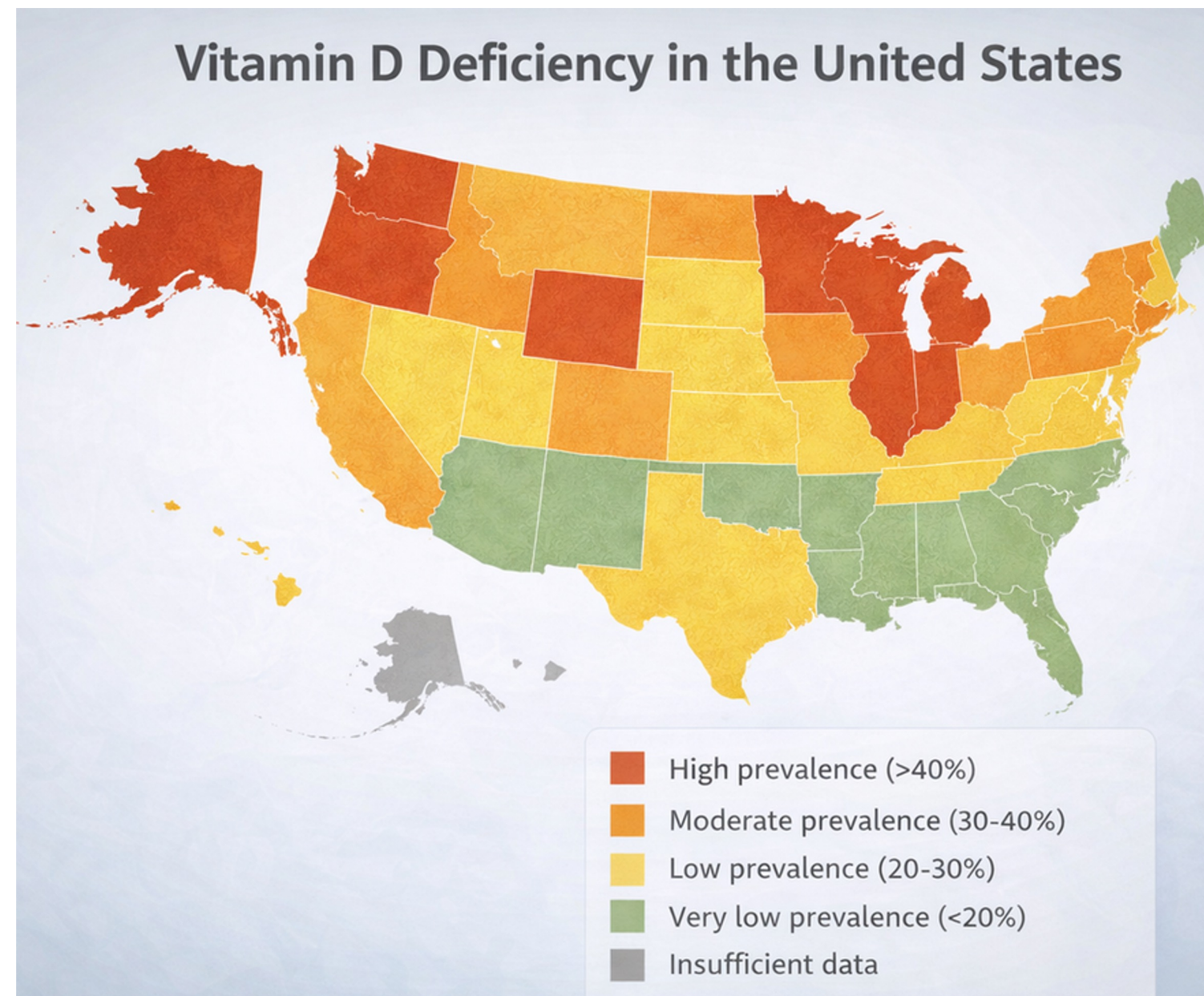
Combined Vitamin D, Omega-3 Fatty Acids, and a Simple Home Exercise Program May Reduce Cancer Risk Among Active Adults Aged 70 and Older: A Randomized Clinical Trial



Relationship between Vitamin D levels and Risks of Cancer



Wimalawansa SJ. Vitamin D's Impact on Cancer Incidence and Mortality: A Systematic Review. *Nutrients* 2025;17:233



Wimalawansa SJ. Vitamin D's Impact on Cancer Incidence and Mortality: A Systematic Review. *Nutrients* 2025;17:233

Multistep Pathways to Malignancy (Systems-Level Overview)

■ Genetic & Epigenetic Initiation

- DNA damage (ROS, radiation, toxins)
- Germline mutations (BRCA, TP53, APC)
- Somatic mutations
- Epigenetic silencing (DNA methylation, HDAC activity)



■ Metabolic Reprogramming

- Warburg effect (↑ glycolysis)
- ↑ Glutaminolysis
- ↑ Lipid synthesis
- Mitochondrial dysfunction
- HIF-1 α activation



■ Chronic Inflammation

- NF- κ B activation
- IL-6 / TNF- α signaling
- COX-2 / PGE2
- Oxidative stress amplification

■ Tumor Microenvironment Remodeling

- Angiogenesis (VEGF)
- Fibroblast activation
- M2 macrophage polarization
- Immune suppression (Tregs, MDSCs)



■ Cancer Stem Cell Emergence

- Wnt/ β -catenin
- Hedgehog
- STAT3
- EMT induction






■ Invasion & Metastasis

- Matrix metalloproteinases (MMPs)
- EMT
- Circulating tumor cells
- Immune escape (PD-1/PD-L1)





Wimalawansa SJ. Vitamin D's Impact on Cancer Incidence and Mortality: A Systematic Review. *Nutrients* 2025;17:233

ROOT PROTOCOL PROGRESSION



ROOT 3

- EGCG 
- Curcumin 
- Vitamin D 







ROOT 4

- EGCG 
- Curcumin 
- Vitamin D 
- Omega 3 










ROOT 5

- EGCG 
- Curcumin 
- Vitamin D 
- Omega 3 
- Berberine 

ROOT 6

- EGCG 
- Curcumin 
- Vitamin D 
- Omega 3 
- Berberine 
- Sulforaphane 

ROOT 9

- EGCG 
- Curcumin 
- Vitamin D 
- Omega 3 
- Berberine 
- Sulforaphane 
- Celecoxib 
- Ivermectin 
- Mebendazole 

ROOT 3

EGCG



Curcumin



Vitamin D



ROOT 4

EGCG



Curcumin



Vitamin D



Omega 3



ROOT 4

EGCG

Targets:

- \perp Wnt/ β -catenin
- \perp NF- κ B
- \perp STAT3
- \perp VEGF
- \perp GLUT1 / HK2
- \perp Cancer stem cells
- \perp PD-1 axis modulation

Primary Effects:

Metabolic disruption + immune reactivation

Curcumin

Targets:

- \perp PI3K/AKT/mTOR
- \perp NF- κ B
- \perp STAT3
- \perp β -catenin
- \perp COX-2
- \perp EMT

Primary Effects:

Inflammation suppression + apoptosis induction

Vitamin D

Targets:

- \uparrow DNA repair genes (TP53, BRCA1, ATM)
- \perp NF- κ B
- \perp MAPK
- \perp VEGF
- \perp EMT
- Immune polarization \rightarrow M1 macrophages

Primary Effects:

Genomic stability + immune recalibration

Omega-3 Fatty Acids

Targets:

- \perp PGE2 / COX-2
- \perp NF- κ B
- \perp EGFR / MAPK
- \perp VEGF
- \uparrow Ferroptosis
- Membrane raft remodeling

Primary Effects:

Anti-angiogenic + pro-apoptotic + anti-inflammatory

ROOT 5

EGCG



Curcumin



Vitamin D



Omega-3



Berberine



ROOT 6

EGCG



Curcumin



Vitamin D



Omega 3



Berberine



Sulforaphane



Patients at high Risk of Developing Cancer

- Major hereditary cancer syndromes
 - **BRCA1 or BRCA2 variants**; markedly increases risk of breast (female and male), ovarian/fallopian tube, prostate, pancreatic cancer, and melanoma.
 - **Lynch syndrome**; raises risk of colorectal, endometrial, ovarian, stomach, small intestine, hepatobiliary, urinary tract, brain, and some skin cancers.
 - **Li-Fraumeni syndrome**: Caused by TP53 variants; greatly increases risk of soft-tissue and bone sarcomas, breast cancer, brain tumors, leukemias, and adrenocortical carcinoma, often at young ages.
 - **Familial adenomatous polyposis (FAP)** and attenuated FAP: Due to APC variants; causes hundreds to thousands of colorectal polyps and a very high colorectal cancer risk, plus increased risk of stomach, small bowel, pancreatic, thyroid, brain, liver, and other cancers.
- Environmental, occupational and medical exposures
 - Long-term exposure to ultraviolet (UV) radiation
 - Exposure to carcinogenic chemicals such as asbestos, benzene, arsenic
 - Ionizing radiation (radiation treatment)
- Strong family history (multiple relatives with the same or related cancers, especially at young ages)
- Chronic infections with certain viruses and bacteria—including human papillomavirus (HPV), hepatitis B and C, Helicobacter pylori, Epstein–Barr virus, HIV.

ROOT 9

EGCG



Curcumin



Vitamin D



Omega 3



Berberine



Sulforaphane



Celecoxib



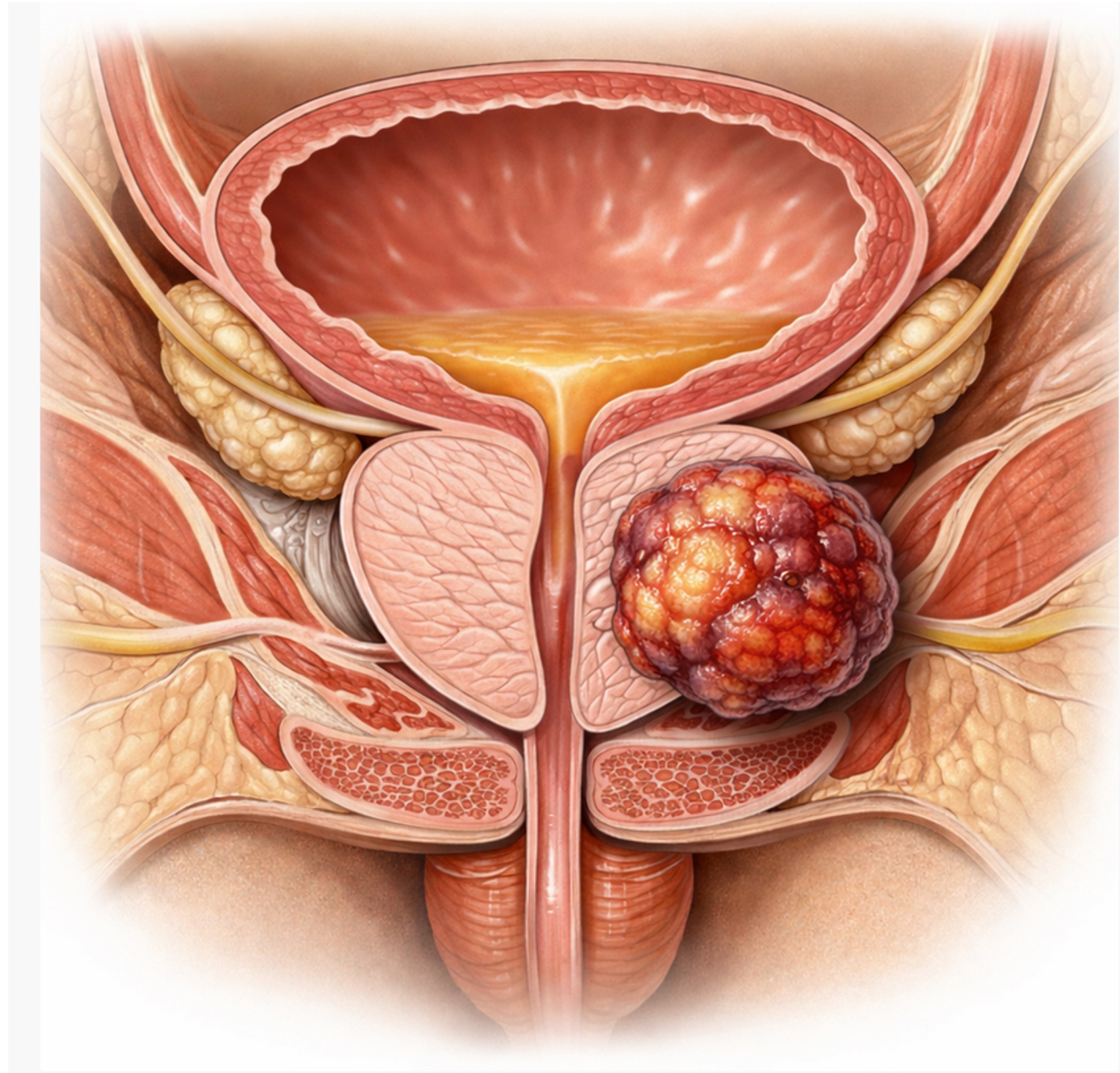
Ivermectin



Mebendazole



Large Prostate Cancer



Risk Factors For Developing Prostate Cancer

Risk Factor	Category/Description	Relative Risk vs Baseline	Notes
Age 50-59	Middle age	Baseline-Moderate	Risk increases with age
Age 60-69	Older age	Moderate-High	Substantially elevated risk
Age ≥70	Elderly	Very High	Highest age-related risk
Family History	One 1st-degree relative	2.0-2.5	Moderate familial risk
Family History	Multiple 1st-degree relatives	4.0-5.0	Strong familial clustering
Race/Ethnicity	Black/African ancestry	1.5-2.0	Increased incidence/mortality
Race/Ethnicity	Asian ancestry	0.6-0.8	Lower risk vs White
Pathogenic Germline Variant	e.g., BRCA2	2.0-5.0	For clinically significant PCa
Obesity	BMI ≥30	1.2-1.3	For advanced/lethal PCa
Current Smoking	Active smoker	1.2-1.4	For PCa mortality
Diet	High animal fat/red meat	1.1-1.3	Weaker/inconsistent evidence

Preventing Prostate Cancer



Treat metabolic syndrome/obesity



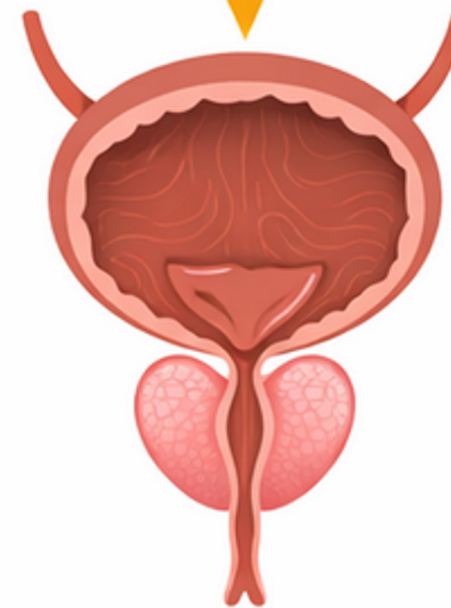
Exercise



Mediterranean Style Eating



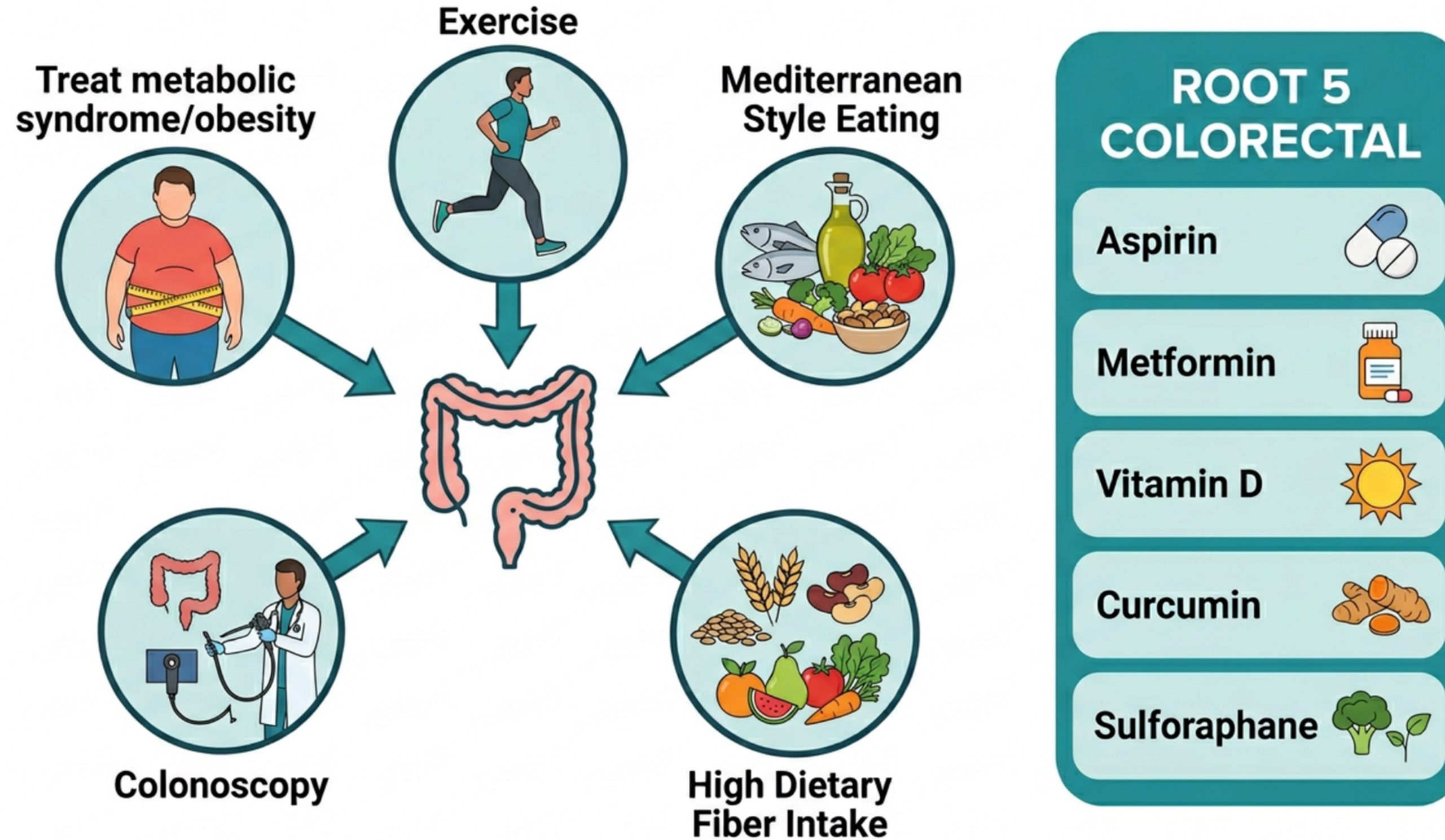
Avoid Smoking & Alcohol



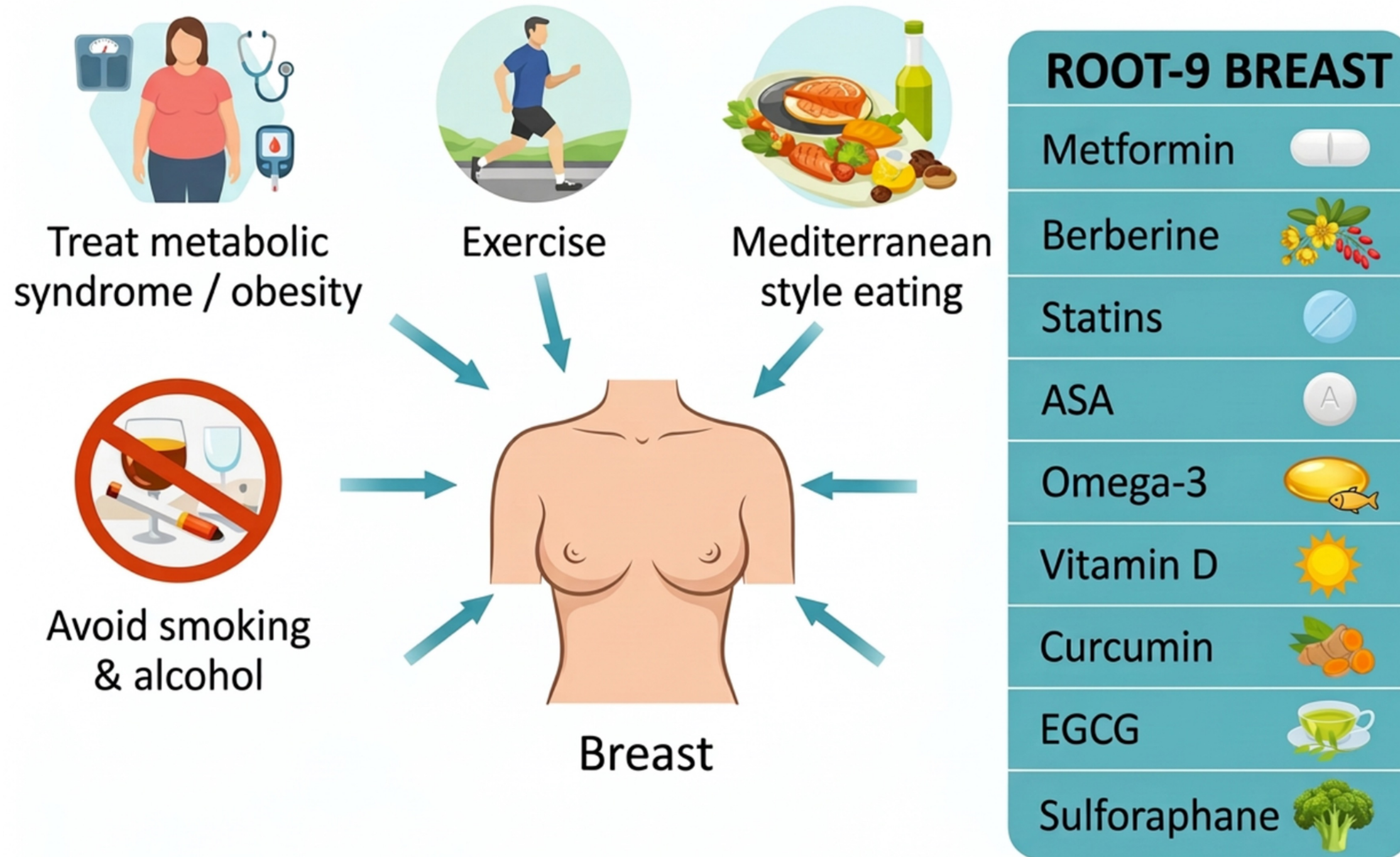
Prostate

ROOT 4 PROSTATE	
EGCG	
Curcumin	
Vitamin D	
Sulforaphane	

Preventing Colorectal Cancer



Preventing Breast Cancer



EGCG Mechanism of Action in Cancer Prevention

- Immune system modulation
 - Enhances cytotoxic immune response
 - Suppresses immunosuppressive cells
 - PD-1 axis and TLR4 pathway
 - Reprograms tumor-associated macrophages
- Metabolic disruption of cancer cells
 - Inhibits glucose metabolism
 - Targets glutamine and fatty acid pathways
- Direct antitumor effect
 - Induces apoptosis and cell cycle arrest
 - Inhibits angiogenesis via VEGF
 - Inhibits oncogenic signaling
 - Modulates epigenetics
 - Targets cancer stem cells



Adv Nutr 2020;11:1437–1452;

Tea Consumption and Risk of Cancer: An Umbrella Review and Meta-Analysis of Observational Studies

An umbrella review and meta-analysis by Kim et al, which included 64 observational studies demonstrated that ECGC significantly reduced the risk of gastrointestinal cancer (oral, gastric, colorectal, biliary tract, and liver), breast cancer, and gynecological cancer (endometrial and ovarian cancer) as well as leukemia, lung cancer, and thyroid cancer.

Int. J. Cancer: 106, 574–579 (2003)
© 2003 Wiley-Liss, Inc.

Green Tea and the Risk of Breast Cancer in Asian Americans

The significant inverse association between risk of breast cancer and green tea intake remained after further adjustment for other potential confounders; adjusted odd ratio 0.57 (0.36–0.90).




Cancer Res 2006; 66: (2). January 15, 2006

Chemoprevention of Human Prostate Cancer by Oral Administration of Green Tea Catechins in Volunteers with High-Grade Prostate Intraepithelial Neoplasia

In a randomized, double-blind, placebo-controlled study, treatment with 600 mg/day of green tea catechins reduced the risk of prostate cancer from 30% to 3% in men with high-grade prostate intraepithelial neoplasia.

THE ROOT PROTOCOLS

ROOT 3

- 1. EGCG 
- 2. Curcumin 
- 3. Vitamin D 

ROOT 4

- 1. EGCG 
- 2. Curcumin 
- 3. Vitamin D 
- 4. Omega 3 

ROOT 5

- 1. EGCG 
- 2. Curcumin 
- 3. Vitamin D 
- 4. Omega 3 
- 5. Berberine 

ROOT 6

- 1. EGCG 
- 2. Curcumin 
- 3. Vitamin D 
- 4. Omega 3 
- 5. Berberine 
- 6. Sulforaphane 

ROOT 9

- 1. EGCG 
- 2. Curcumin 
- 3. Vitamin D 
- 4. Omega 3 
- 5. Berberine 
- 6. Sulforaphane 
- 7. Celecoxib 
- 8. Ivermectin 
- 9. Mebendazole 

Percentage Cancer Reduction with Roots Protocols

Cancer Type	Root 3	Root 4	Root 5	Root 6	Root 9
Prostate	45	55	70	75	88
Breast	40	50	65	70	85
Lung	35	45	60	65	80
Colon	50	60	75	80	92
Pancreatic	30	40	65	65	82
Generic	40	50	70	75	90

Risk Reduction with Basic Root 4 Protocol

Cancer Type	Risk Reduction (%)	Key Pathways Targeted	Synergistic Mechanisms
General	50%	NF- κ B \downarrow , STAT3 \downarrow	EGCG (ROS scavenging) + Curcumin (anti-inflammatory)
Colon	60%	Wnt/ β -catenin \downarrow , COX-2 \downarrow	Curcumin (APC restoration) + EGCG (Wnt inhibition)
Prostate	55%	Androgen receptor \downarrow , Notch3 \downarrow	Vitamin D (Notch suppression) + EGCG (STAT3 inhibition)
Breast	50%	HER2 \downarrow , ER α \downarrow	Curcumin (ER α modulation) + EGCG (HER2 suppression)
Lung	45%	EMT reversal, ROS \uparrow	Curcumin (EMT reversal) + EGCG (ROS scavenging)
Pancreatic	40%	Hedgehog/Gli1 \downarrow	Curcumin (Hedgehog inhibition + Vitamin D (immune boost)

Root 4 Mechanistic Synergies

Pathway	Root4 Components	Mechanism
Wnt/ β -catenin	EGCG + Curcumin	APC restoration, β -catenin degradation
NF- κ B/STAT3	EGCG + Omega-3	Suppresses pro-inflammatory cytokines (IL-6, TNF- α)
Angiogenesis	Curcumin + Omega-3	Reduces VEGF and microvessel density via resolvin-mediated effects
Immune Modulation	Vitamin D + Omega-3	Enhances T-cell activation and reduces immunosuppressive IL-10

Root Protocol Dosages

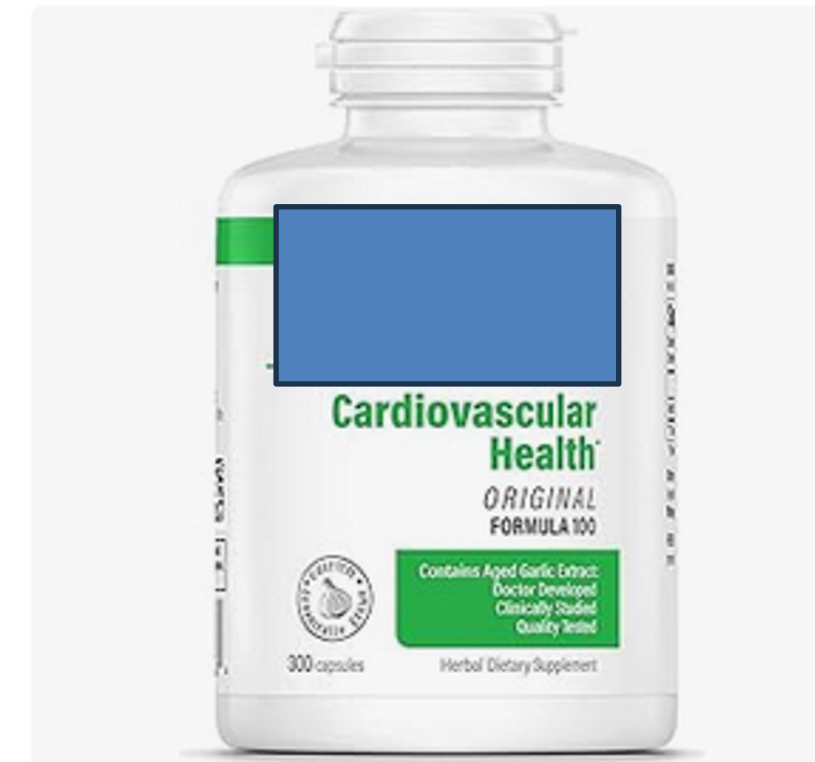
Compound	Dose
EGCG	Twice a day (< 800 mg/day)
Curcumin	Curcumin extract twice daily (high bioavailability). Daily dose of 2-4 g titrate up to 8 g/day
Vitamin D	Vitamin D 2000-5000 U/daily and Vitamin K2 50 ug/day (monitor 25-OH Vit D)
Omega 3 - FA	2-4 g/day DHA/EPA
Berberine	500 mg twice daily
Sulforaphane	Sulforaphane (free stabilized sulforaphane extracted from broccoli seeds) 10-40 mg daily
Celebrex	200 mg three times/week
Ivermectin	0.2-0.4 mg/kg/day (0.3 mg/kg/day) three times per week
Mebendazole	100mg twice daily three times per week

Anticancer activity of Aged Garlic Extract (AGE)

- AGE inhibits the proliferation and invasion of various cancer cell types, including those from colorectal, breast, gastric, and lung cancer model
- AGE promotes apoptosis in cancer cells by regulating key molecules such as p53, Bax/Bcl-2
- AGE stimulates immune cells such as macrophages and natural killer (NK) cells
- AGE inhibits angiogenesis

Cancer types impacted by AGE

- Colorectal cancer
- Breast cancer
- Prostate cancer
- Lung cancer
- Pancreatic cancer
- Skin tumors
- Other digestive system cancers



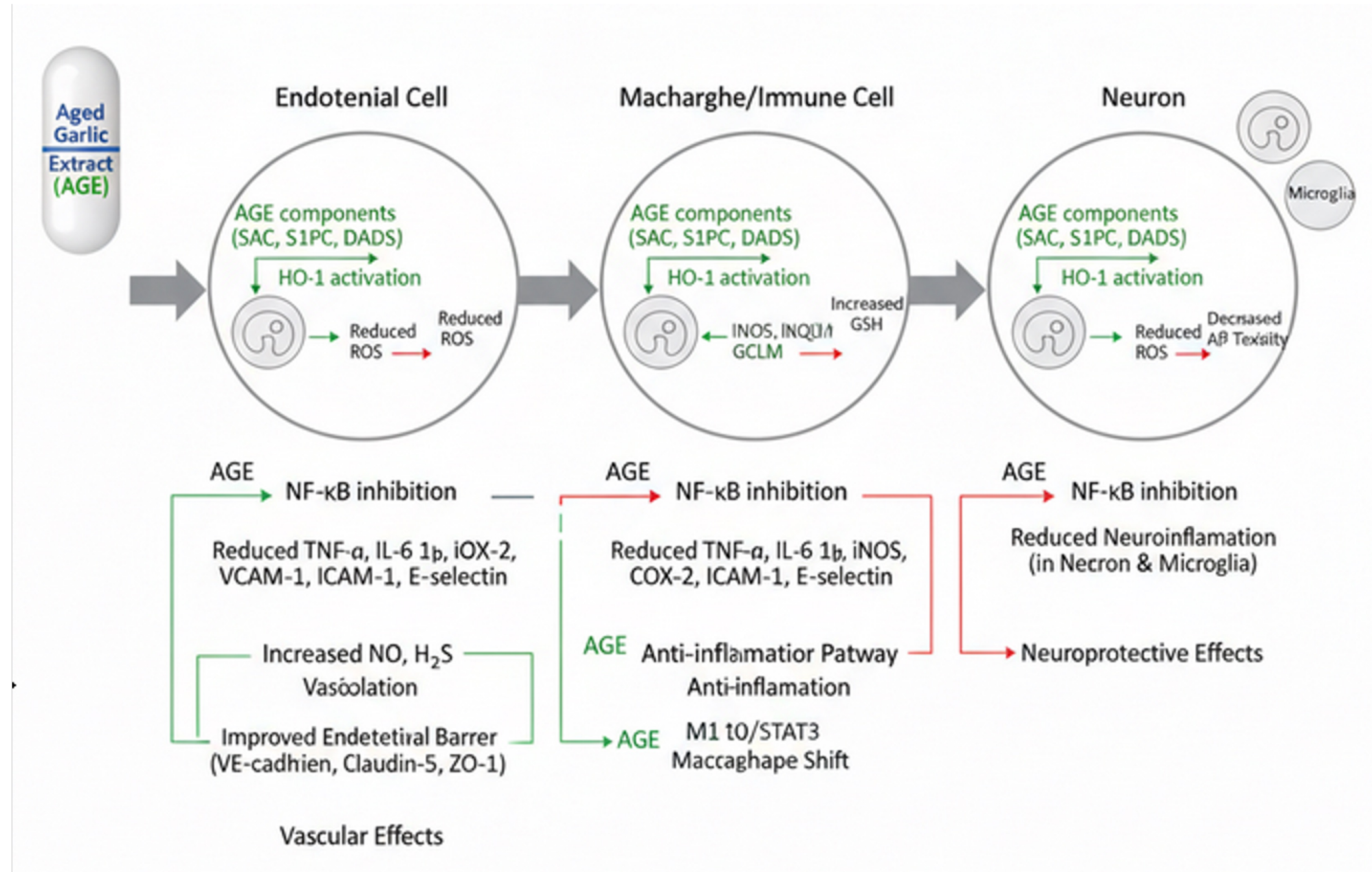
■ Aged Garlic Extract Formula 100, Cardiovascular Health*, 300 Capsules.

J. Nutr. 136: 821S–826S, 2006.

Aged Garlic Extract Has Potential Suppressive Effect on Colorectal Adenomas in Humans¹

The number of adenomas increased linearly in the control group from the beginning (the baseline), but AGE significantly suppressed both the size and number of colon adenomas in patients after 12 months of high-dose treatment ($P = 0.04$). The results suggest AGE suppresses progression of colorectal adenomas in humans. It appears that AGE has multiple pathways to reduce cancer incidence and suppress its growth and proliferation.

Aged Garlic Extract- Pathways



Thank you

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