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August 13, 2025

Nature's Pharmacy: Exploring the Science Behind Traditional Herbal Medicine

Mladen Golubic, MD, PhD, FACLM

University of CINCINNATI
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UC Health

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OSHER CENTER FOR INTEGRATIVE HEALTH AT THE UNIVERSITY OF CINCINNATI

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University of CINCINNATI | UC Health

Mission & Vision

- Our **MISSION** is to **achieve improved health for ALL** through **clinical practice**, **advanced education**, **innovative research** and **community engagement** focused on **integrative health and wellness**.

- Our **VISION** is to **transform a disease-care system** to a **well-care system**.

Patient Centered

Empowered

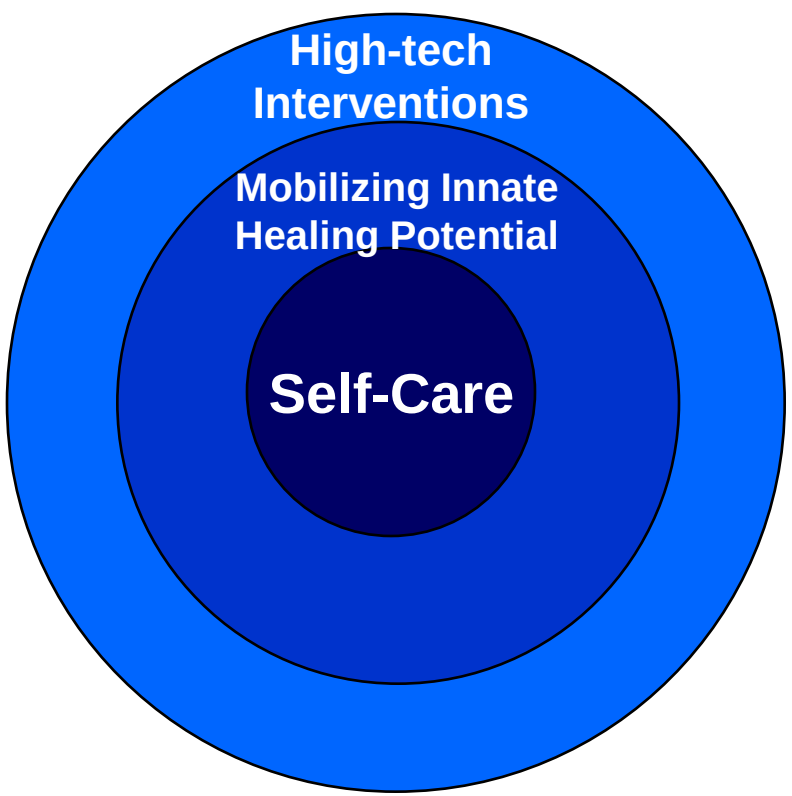
Equitable

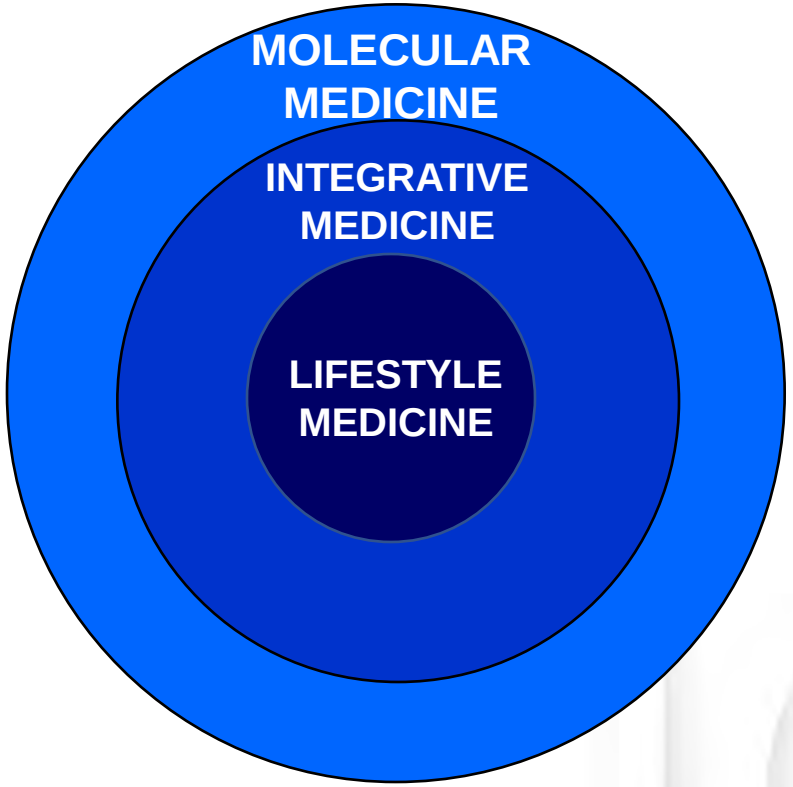
Evidence Based

Integrity

Humility

One Medicine – Evidence-Based Medicine





Snyderman R, Weil AT: *Arch Intern Med*, 162:395-397, 2002
Snyderman R, Dinan MA: *JAMA*, 303:363-364, 2010

NUTRITION

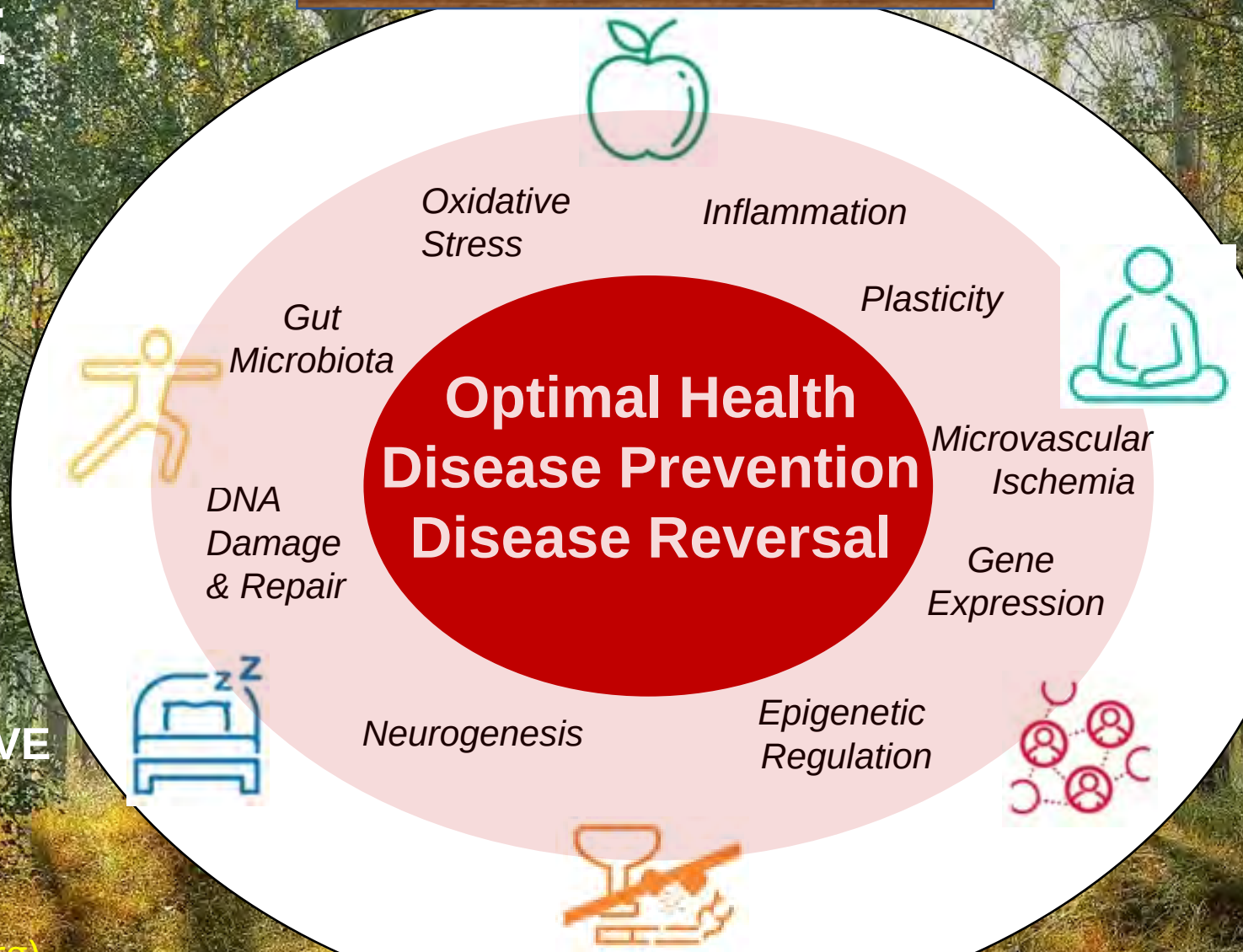
NATURE

PHYSICAL ACTIVITY

RESTORATIVE SLEEP

STRESS REDUCTION

SOCIAL CONNECTIONS



Pillar-Booklet.pdf (lifestylemedicine.org)

AVOIDANCE OF RISKY SUBSTANCES

Healing with Medicinal Plants is As Old As Mankind Itself

Ebers Papyrus

- 2800 BC – China - The Shen Nong Ben Cao Jing - the first compendium of herbal medicine (365 plant species)
- 2400 BC – Sumerian medical clay tablets
- 1500 BC – India Rig Veda - herbal medicine within the broader context of Vedic healing practices
- 1500 BC – Egypt – Ebers Papyrus - 842 formulas and folk remedies

National Center for Complementary and Integrative Health - https://www.nccih.nih.gov/
American Botanical Council - https://www.herbalgram.org/
***Pharmacognosy Reviews* 2012 Jan;6(11):1-5. https://pubmed.ncbi.nlm.nih.gov/22654398/**

News Feature: Animals that self-medicate

Many animal species have created their own pharmacies from ingredients that commonly occur in nature.

Joel Shurkin
Science Writer

- Birds, bees, lizards, elephants, and chimpanzees all share a survival trait: They self-medicate
- These animals eat things that make them feel better, or prevent disease, or kill parasites like flatworms, bacteria, and viruses, or just to aid in digestion

Proc Natl Acad Sci USA, 2014 Dec 9;111(49):17339-41.;
https://pubmed.ncbi.nlm.nih.gov/25492915/

We're Not The Only Animal To Use Plants for Medicine

RESEARCH ARTICLE

Pharmacological and behavioral investigation of putative self-medicative plants in Budongo chimpanzee diets

PLoS ONE 19(6): e0305219, 2024

Elodie Freymann[1☯*], Susana Carvalho[1,2,3], Leif A. Garbe[4,5], Dinda Dwi Ghazhelia[4], Catherine Hobaiter[6,7], Michael A. Huffman[8], Geresomu Muhumuza[7], Lena Schulz[4], Daniel Sempebwa[7,9], Florian Wald[4,5], Eguma R. Yikii[7], Klaus Zuberbühler[7,10], Fabien Schultz[4,11☯*]

JOURNALS

Science

NEWS | PLANTS & ANIMALS

Chimps use more plant medicines than any other animal

Study suggests sick chimpanzees go out of their way to find plants with antibacterial and anti-inflammatory properties

20 JUN 2024 · 2:00 PM ET · BY DENNIS NORMILE

DOCTOR ORANGUTAN: FIRST WILD ANIMAL SEEN USING MEDICINAL PLANT

Nature | Vol 629 | 23 May 2024 | p. 737

The Sumatran orangutan used a plant known to humans for its therapeutic qualities.

By Gayathri Vaidyanathan

open wound on his face, possibly made by

Wounded orangutan seen using plant as medicine

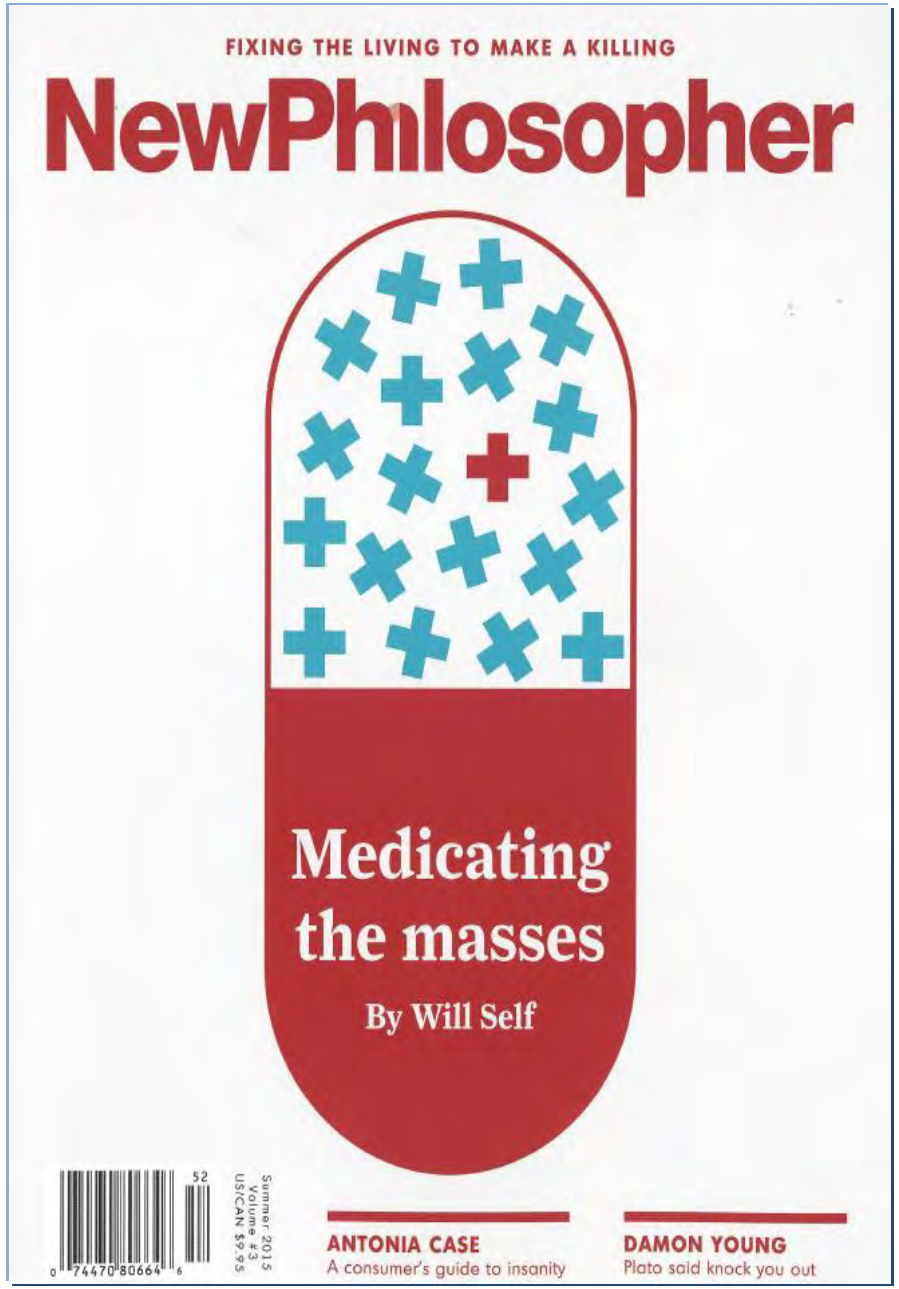
2 May 2024

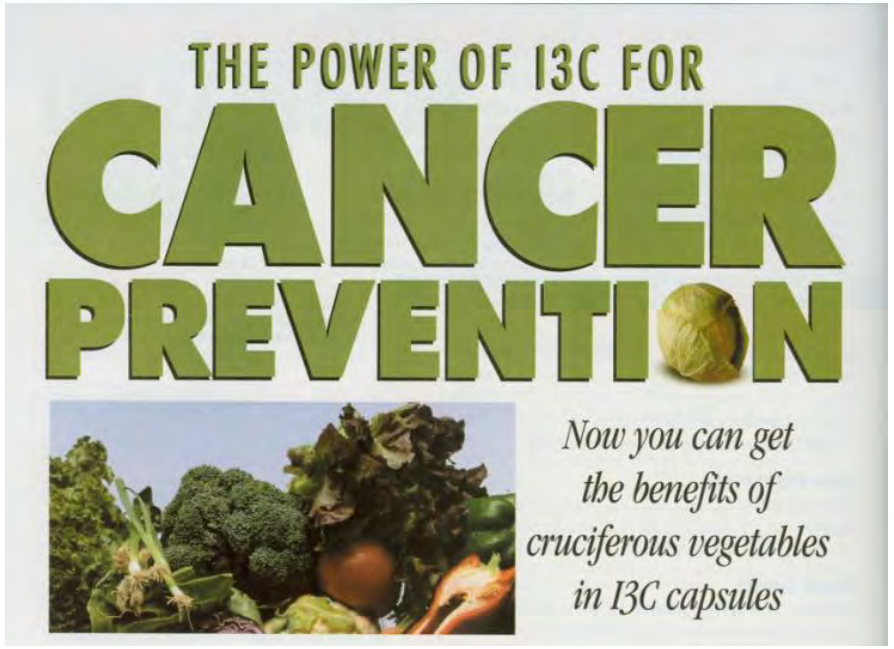
Share Save

Georgina Rannard

BBC Science reporter

Watch: How Rakus healed his own wound


FIXING THE LIVING TO MAKE A KILLING
NewPhilosopher
Medicating the masses
By Will Self
ANTONIA CASE
A consumer's guide to insanity
DAMON YOUNG
Plato said knock you out
Summer 2015
Volume #3
US/CAN $9.95


THE POWER OF I3C FOR
CANCER
PREVENTION
Now you can get the benefits of cruciferous vegetables in I3C capsules

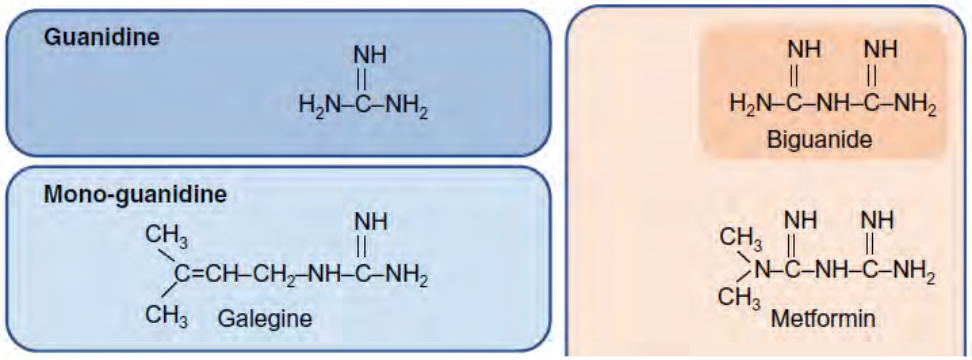
Pharmaceuticals from Plants

- about 25% of the drugs prescribed worldwide are derived from plants, and 121 such active compounds are in use
- of the total 252 drugs in the World Health Organization's (WHO) essential medicine list, 11% are exclusively of plant origin
- majority of plant-derived drugs are used for indications congruent with their original ethno-medical use
- most pharmaceutical drugs are single chemical entities that are highly refined and purified and are often synthesized

Sahoo N et al., *BioDrugs,* 2009;23(4):217-29. Manufacturing of biodrugs: need for harmonization in regulatory standards - PubMed

From Plant to Pill

French lilac or goat's rue (*Galega officinalis*)



The top 4 drugs prescribed in the USA in 2022

1. Atorvastatin –> Total prescriptions: 114,509,814 representing 26,640,141 patients

2. Levothyroxine – 98,970,640 representing 20,225,373 patients

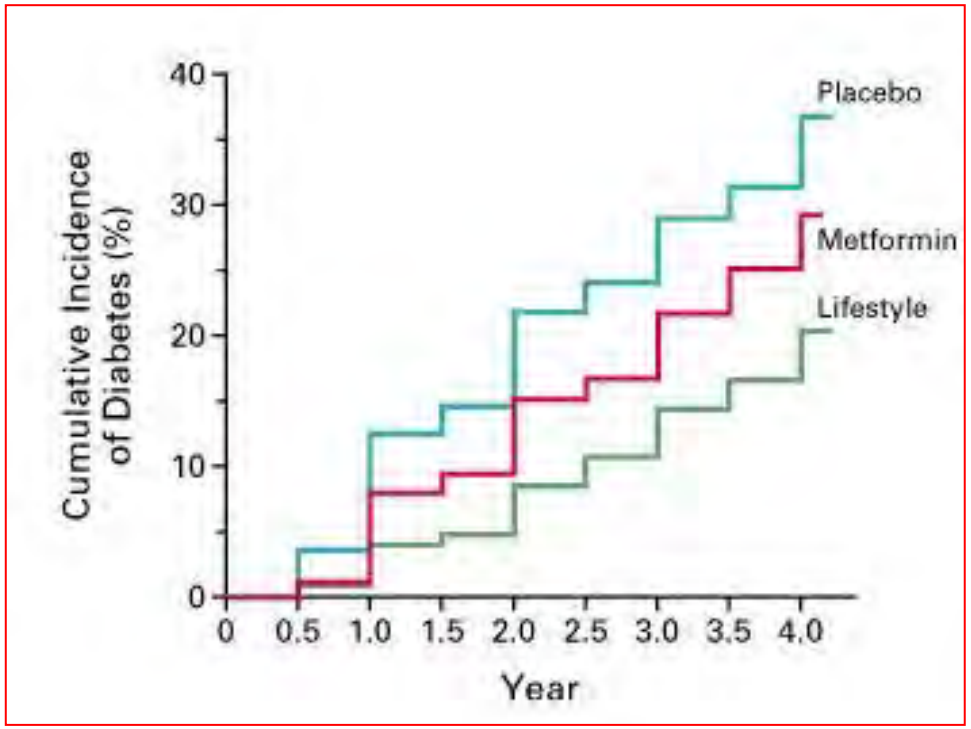
3. Metformin -> 92,591,486 representing 20,122,987 patients

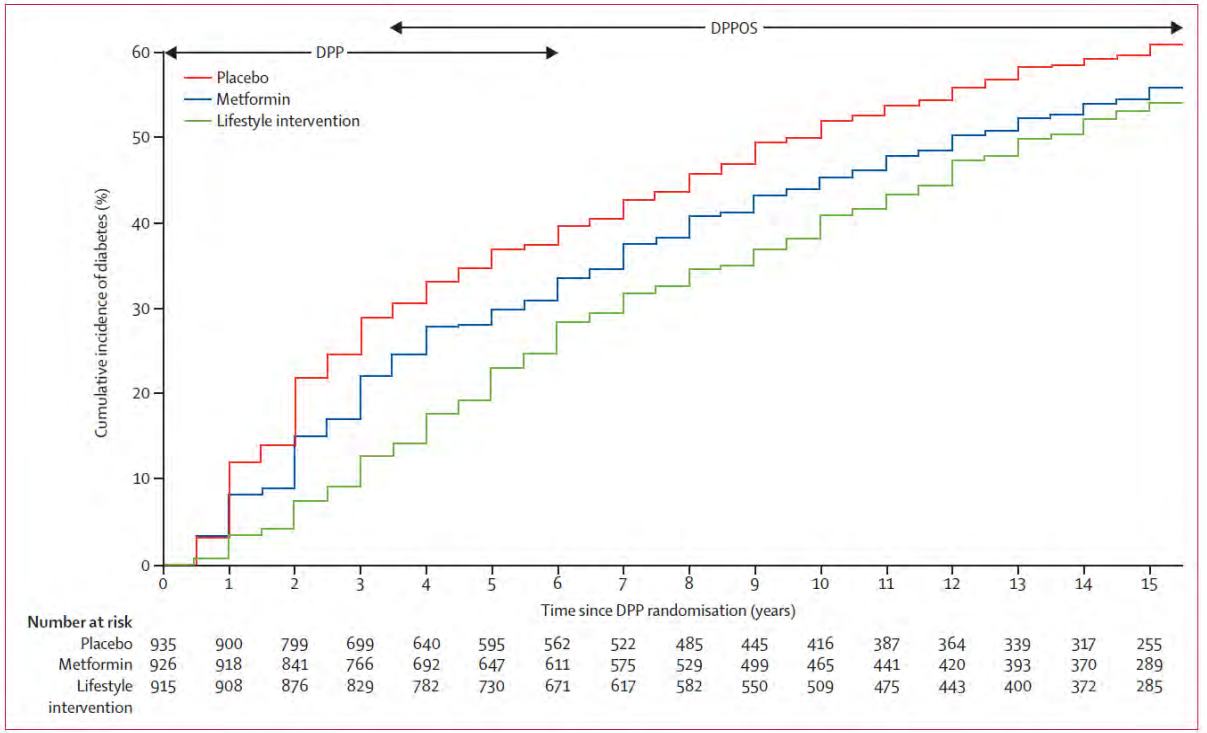
4. Lisinopril --88,597,017 representing 19,816,361 patients

https://resources.healthgrades.com/right-care/patient-advocate/**the-top-50-drugs-prescribed-in-the-united-states**

Bailey CJ. Metformin: historical overview. *Diabetologia* (2017) 60:1566–1576

Prevention of Type 2 Diabetes with Lifestyle Intervention vs. Metformin





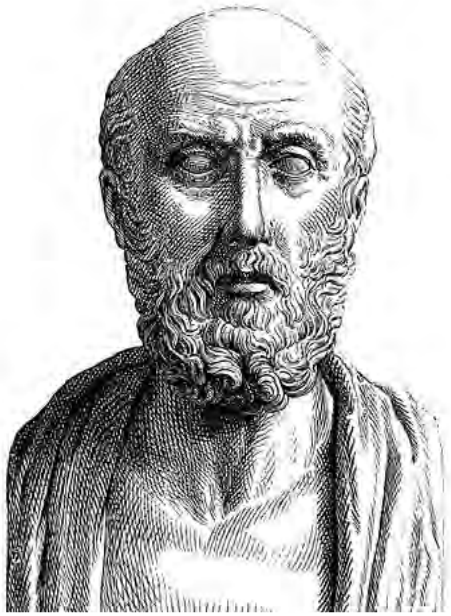
Diabetes Prevention Program Research Group: *New Eng J Med*, 346:393-403, 2002; https://pubmed.ncbi.nlm.nih.gov/11832527/
Diabetes Prevention Program Research Group: *Lancet Diabetes Endocrinol,* 2015 Nov;3(11):866-75. https://pubmed.ncbi.nlm.nih.gov/26377054/

Willow bark was the inspiration for…….

1897

Felix Hoffmann

400 BC



Hippocrates

Willow Bark Tea

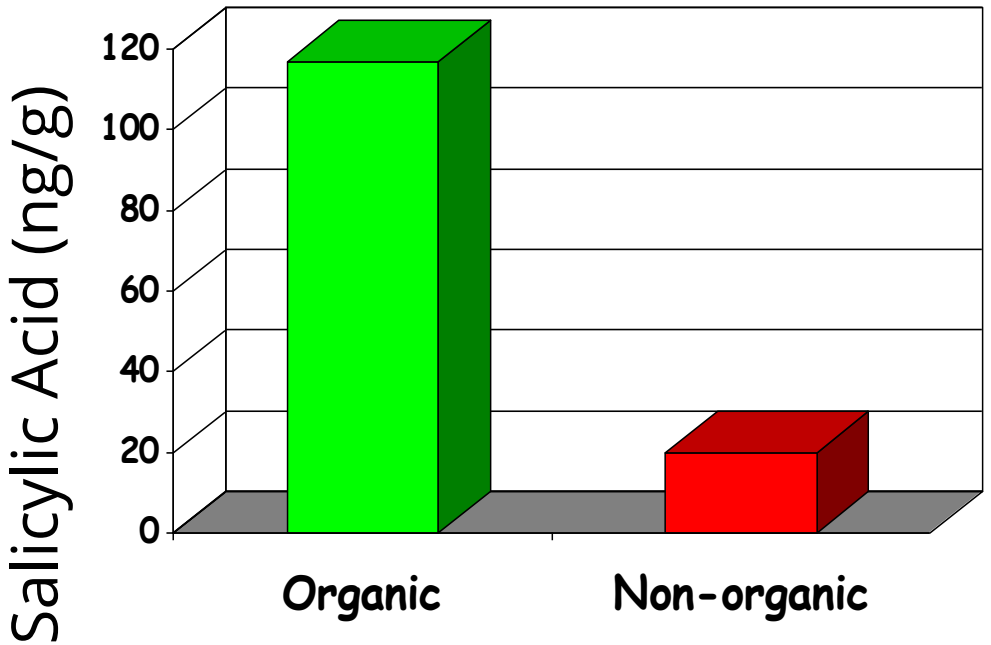
1982 Nobel Prize for Physiology or Medicine

Sune K Bergström

Bengt I Samuelsson

John R Vane

Salicylic Acid in Soups From Organically and Conventionally Grown Vegetables

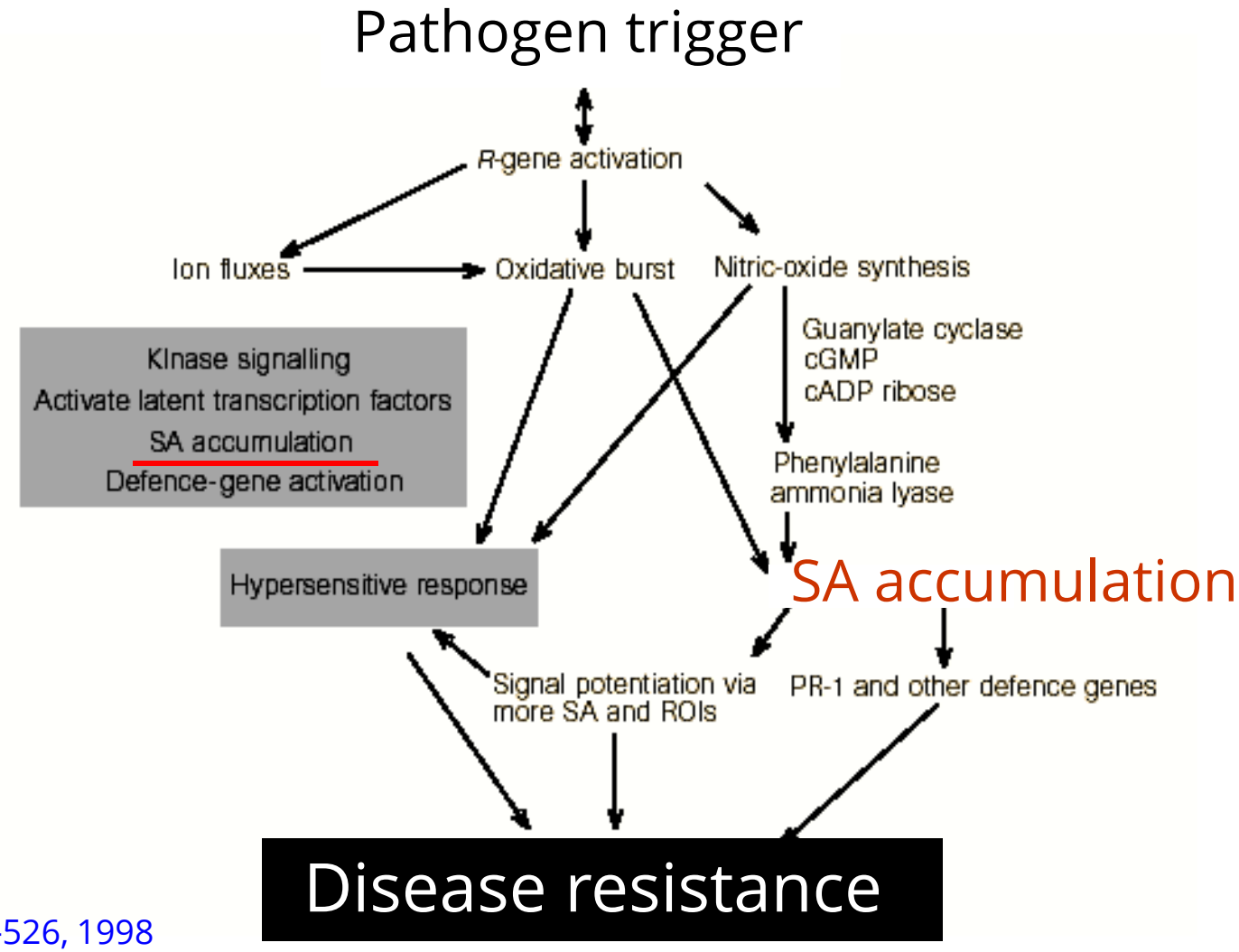


Foods rich in SA

- Rosemary
- Cinnamon
- Thyme
- Oregano
- Nectarine
- Berries

Baxter GJ et al: *Eur J Nutr* 40:289-292, 2001

Salicylic Acid for Plant Defense



Nature 394:525-526, 1998

Malaria

- In 2023, there were an estimated 263 million malaria cases and 597,000 deaths globally, according to the World Health Organization

- sweet wormwood (*Artemisia annua*)

[Cancer, COVID and the Kentucky Economy: How 'Sweet Annie' Could Make an Impact | UKNow]

- **Qinghaosu (artemisinin)-** a key component of **Artemisinin-based Combination Therapies (ACTs)**, the first-line treatment for malaria worldwide

In 2015, Professor Youyou Tu received a Nobel Prize in Physiology or Medicine

Benzie IFF, Wachtel-Galor S, editors. *Herbal Medicine: Biomolecular and Clinical Aspects*. 2nd edition. Boca Raton (FL): CRC Press/Taylor & Francis; 2011.

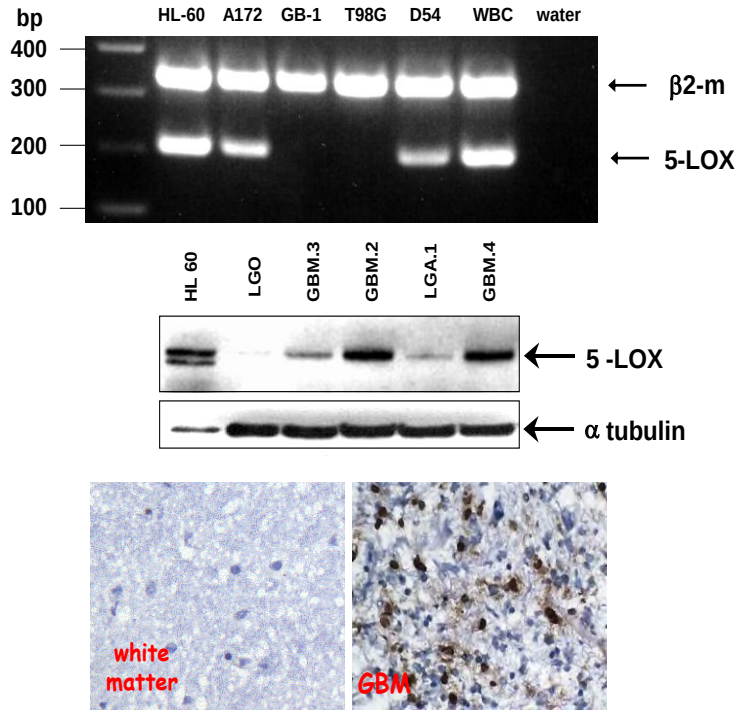
Cancer

- In the US, there were 1,851,238 new cancer cases and 613,349 cancer deaths in 2023, according to the CDC
- Of 177 drugs approved worldwide for treatment of cancer, more than 70% are based on natural products or mimetics, many of which are improved with combinatorial chemistry

- Madagascar periwinkle plant (*Catharanthus roseus*) → vinblastine and vincristine
- Pacific yew tree (*Taxus brevifolia)* → paclitaxel
- Chinese "happy tree" *Camptotheca acuminata* → camptothecin; also irinotecan and topotecan
- Mayapple plant (*Podophyllum peltatum*) → etoposide

Benzie IFF, Wachtel-Galor S, editors. *Herbal Medicine: Biomolecular and Clinical Aspects*. 2nd edition. Boca Raton (FL): CRC Press/Taylor & Francis; 2011.

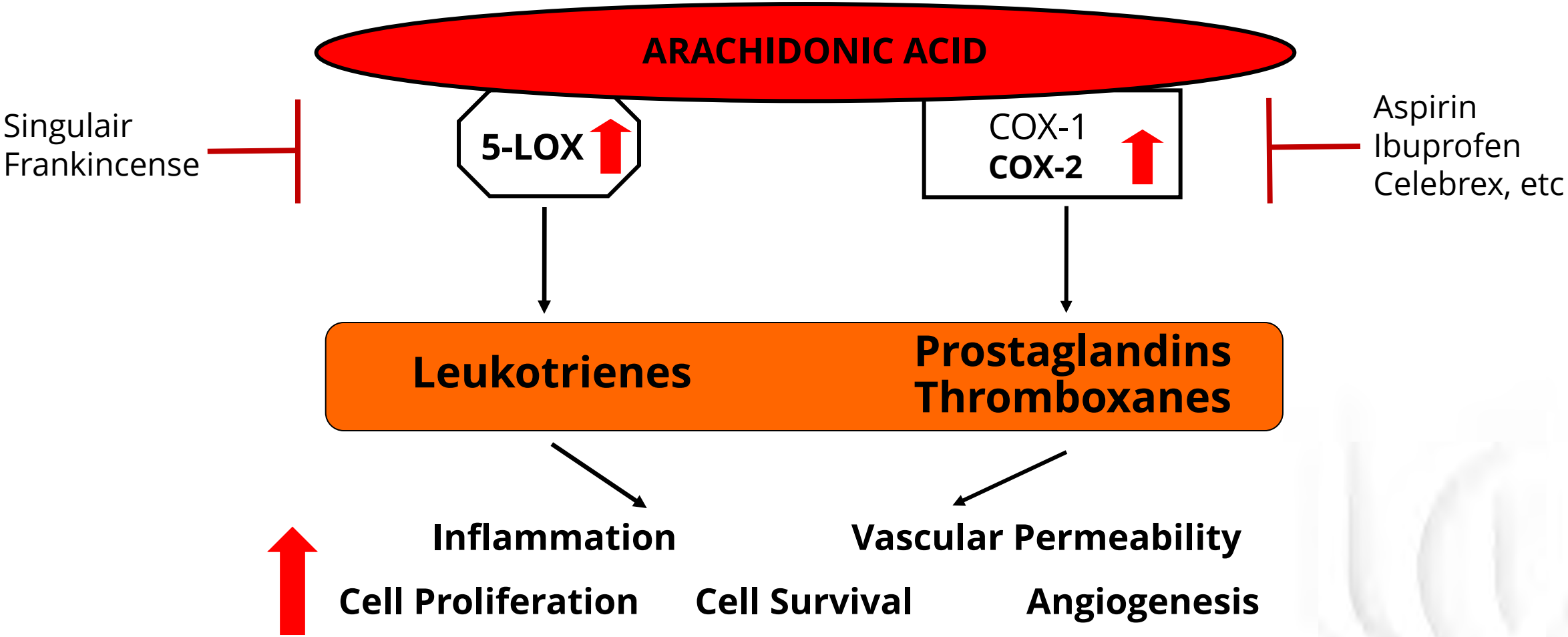
5-LOX (5-Lipoxygenase) is Overexpressed in High-grade Astrocytomas



- Patients with astrocytomas whose tumors expressed 5-LOX protein were:
  - significantly older
  - had lower pre-op Karnofsky Performance Status (KPS)
  - shorter survival

Nathoo N et al., *Neurosurgery.* 2006 Feb;58(2):347-54

Increased Eicosanoid Metabolism in Cancer, including Brain Tumors



Nathoo N et al., *J Clin Pathol.* 2004 Jan;57(1):6-13.

B. serrata Use in Patients With GBM

- ~35% reduction in peritumoral brain edema in 14 patients with gliomas who received a one-week treatment with crude *B. serrata* (H 15) preparation (3 x 1200 mg) (Boeker D-K and Winking M, *Deutsches Arzteblatt*, 1997)
- 3 of 7 patients with GBM treated with H 15 preparation (3 x 1200 mg) showed radiologic and/or clinical response (Streffer JR et al., 2001)

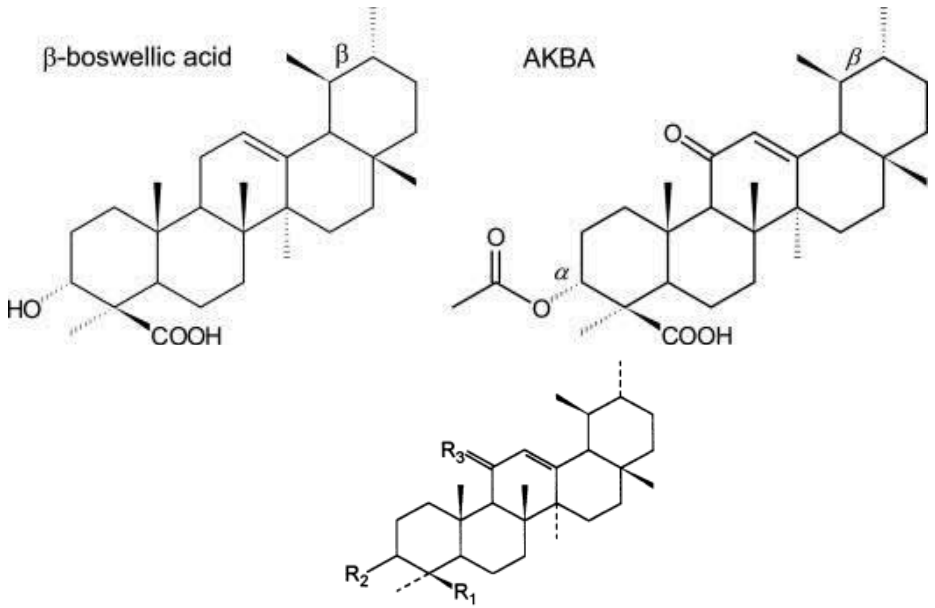
Naunyn-Schmiedeberg's Archives of Pharmacology (2024) 397:1477–1504
https://doi.org/10.1007/s00210-023-02725-w

REVIEW

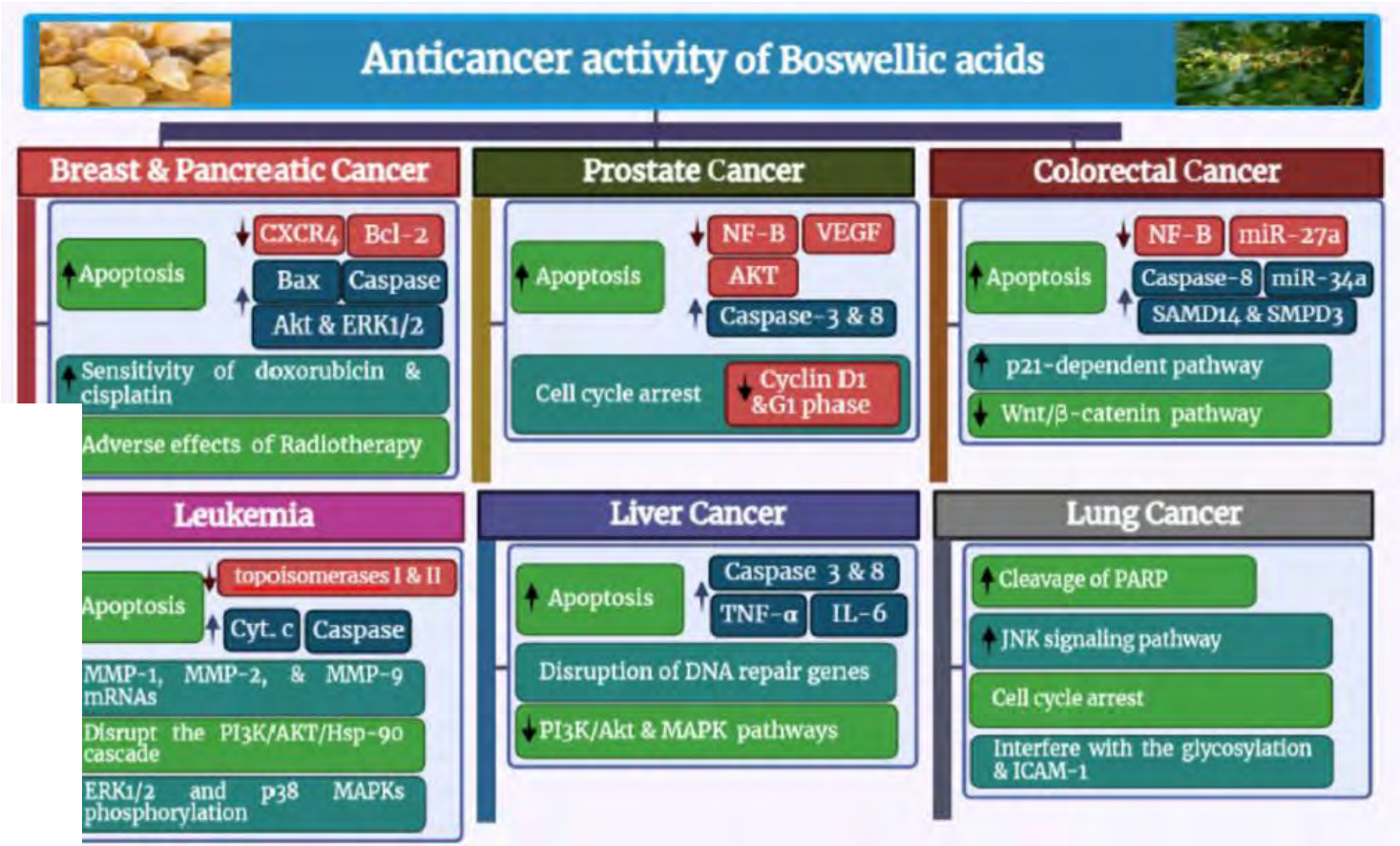
The journey of boswellic acids from synthesis to pharmacological activities

Ehab A. Ragab[1] · Mohammed F. Abd El-Wahab[1] · Ahmed S. Doghish[2,3] · Rania M. Salama[4] · Nermin Eissa[5] · Samar F. Darwish[6]

https://pubmed.ncbi.nlm.nih.gov/37740772/



Compound	R_1	R_2	R_3	IC_{50} (μM) system A	IC_{50} (μM) system B
AKBA (a)	COOH	α-OAc	O	1.5 ± 0.2[a]	7.0 ± 2.2[a]
11-keto-β-BA (b)	COOH	α-OH	O	2.8 ± 0.2[a]	14.6 ± 7.6[a]
β-BA (c)	COOH	α-OH	2H	Partial inhibition	Partial inhibition
11-keto-diol (d)	CH_2OH	α-OH	O	4.5 ± 1.2[a]	45.3 ± 11[a]
3α,24-diol (e)	CH_2OH	α-OH	2H	No effect[b]	No effect[a]
11-keto-β-BA methyl ester (f)	$COOCH_3$	α-OH	O	No effect[b]	No effect[b]
Amyrin (g)	CH_3	β-OH	2H	No effect[b]	No effect[b]
Acetyl-11-keto-amyrin (h)	CH_3	β-OAc	O	No effect[c]	No effect[c]



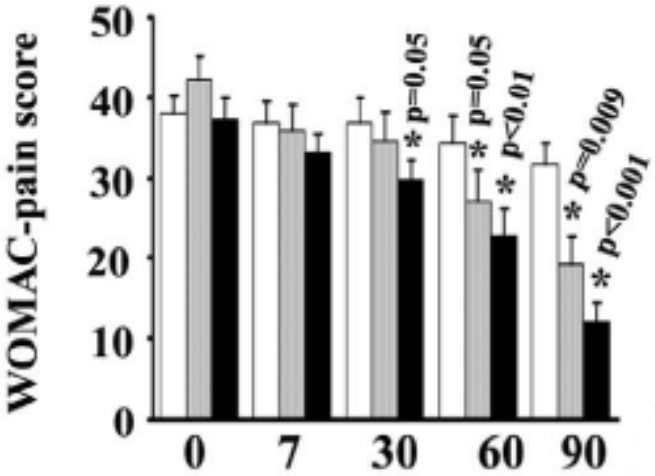
Research article

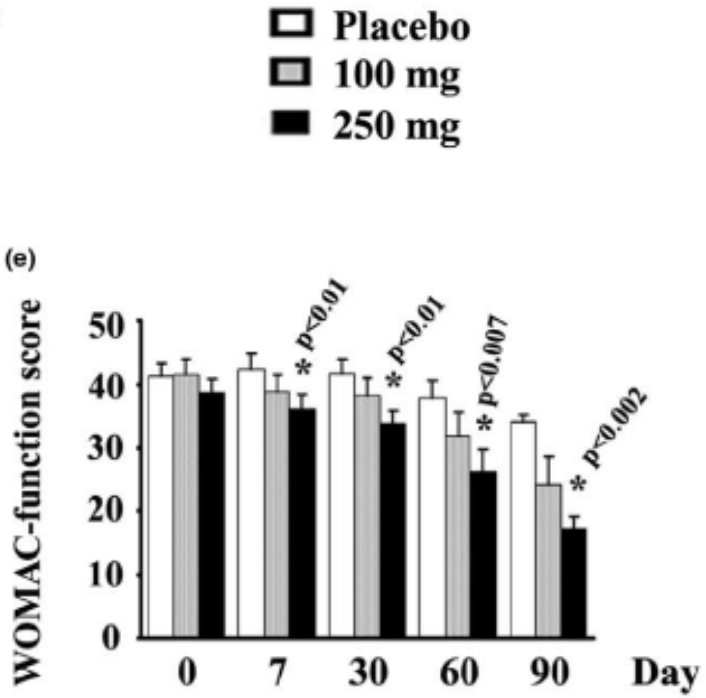
Open Access

A double blind, randomized, placebo controlled study of the efficacy and safety of 5-Loxin® for treatment of osteoarthritis of the knee

Krishanu Sengupta[1], Krishnaraju V Alluri[2], Andey Rama Satish[3], Simanchala Mishra[4], Trimurtulu Golakoti[5], Kadainti VS Sarma[6], Dipak Dey[7] and Siba P Raychaudhuri[8]

Arthritis Research & Therapy 2008, **10**:R85 (doi:10.1186/ar2461)





- **Reduced pain**
- **Improved function**

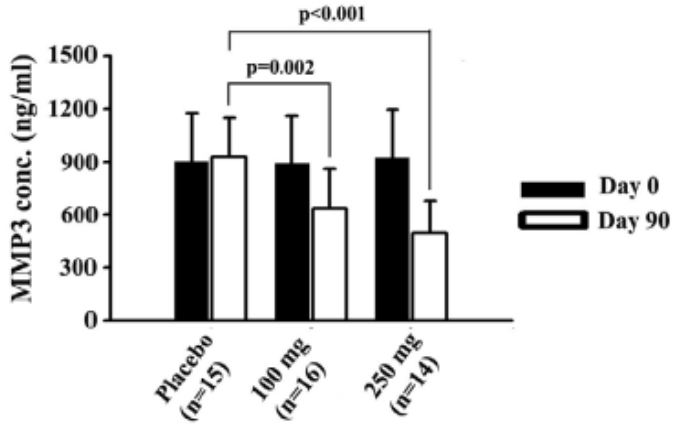
Nature Clinical Practice Rheumatology, 2009 vol 5 no 3, pp.132-133

CLINICAL ADVANCE

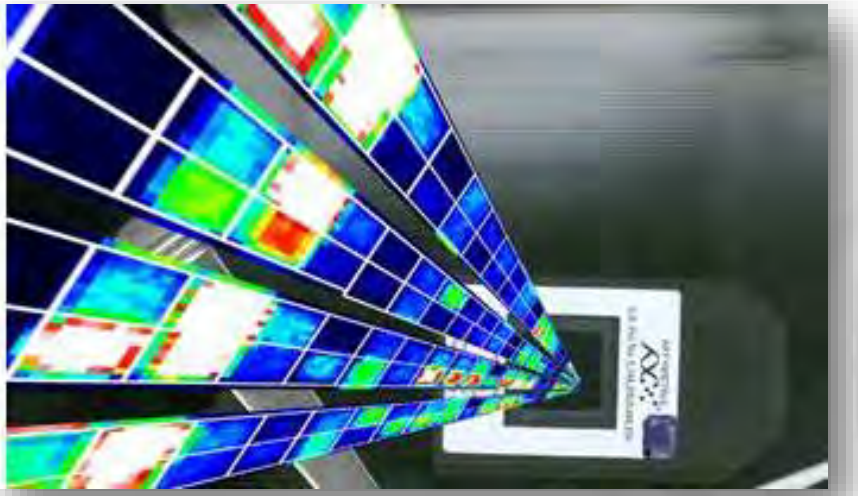
www.nature.com/clinicalpractice/rheum

A new 5-lipoxygenase inhibitor seems to be safe and effective for the treatment of osteoarthritis

Frances MK Williams* and Tim D Spector



- activates the Nrf2/HO-1 pathway which plays a role in protecting against oxidative stress and inflammation
- neuroprotective effects by activating this pathway
- benefits for patients with inflammatory bowel disease



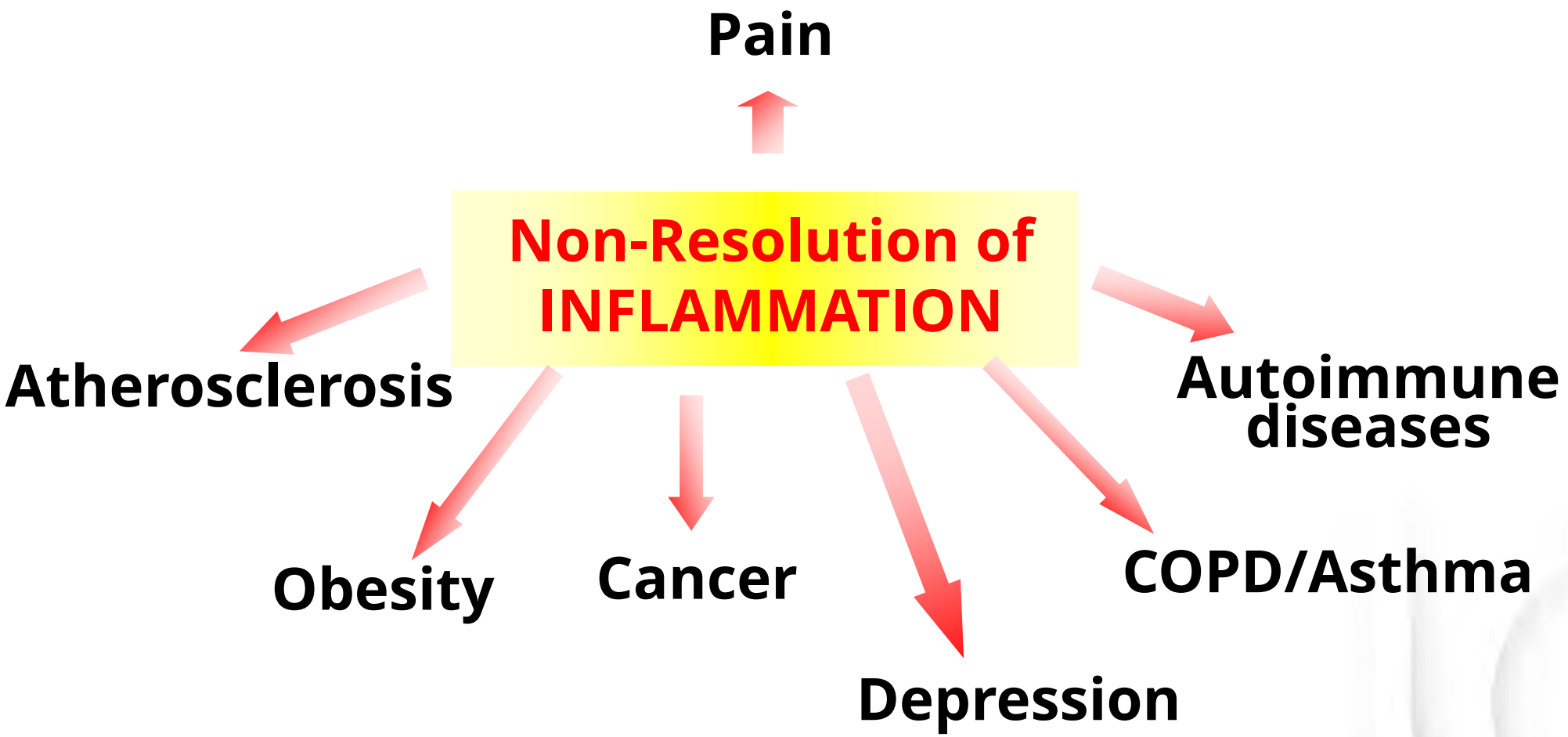
PLACEBOS

Honest fakery

Armed with a clearer understanding of how placebos work, researchers are suggesting that inactive substances might be used to mitigate chronic pain.

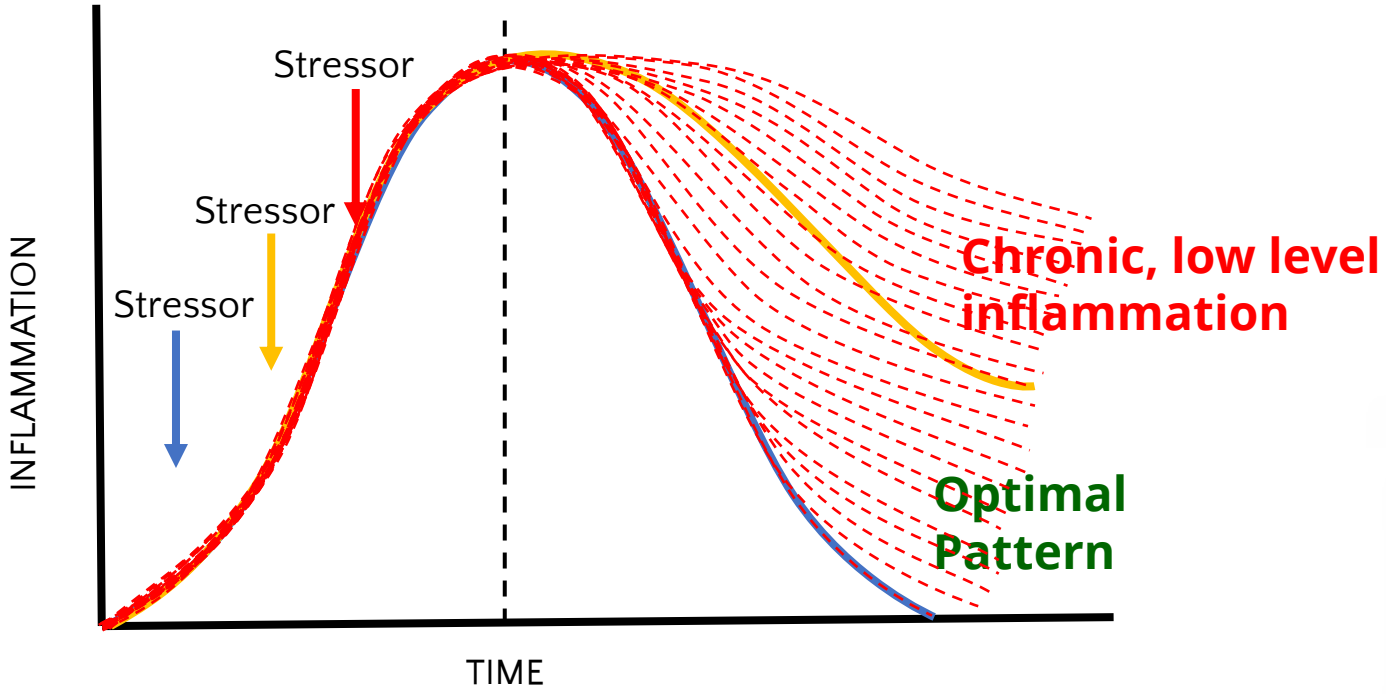
Marchant J. *Nature*, volume 535, pagesS14–S15 (2016) https://pubmed.ncbi.nlm.nih.gov/27410526/

NonResolving Inflammation



Nathan C and Ding A: *Cell* 140:871-882, 2010

Importance of Returning to Baseline



Modified_ Courtesy of Dr. Adi Haramati

Inflammation Inhibitors in Herbs/Spices

		COX-2	5-LOX
Frankincense (Boswellia serrata)	Boswellic acids		+
Rosemary (Rosmarinus officinalis)	Betulinic acid	+	
Ginger (Zingiber officinale)	Melatonin		+
	Gingerols	+	+
Turmeric (Curcuma longa)	Curcuminoids	+	+
Holy Basil (Ocimum sanctum)	Ursolic acid	+	
Oregano (Origanum vulgare)	Apigenin	+	
Green tea (Camellia sinensis)	Catechins	+	+
Baikal skullcup (Scuttelaria baicailensis)	Baicalein	+	+
Hu zhang (Polygonum cuspidatum)	Resveratrol	+	
Barberry (*Berberis vulgaris*)	Berberine	+	

US20060078631A1 - Methods for treating glioblastoma with herbal compositions - Google Patents

5-Lipoxygenase (5-LO) Inhibitors in Ginger *(Zingiber officinale)*

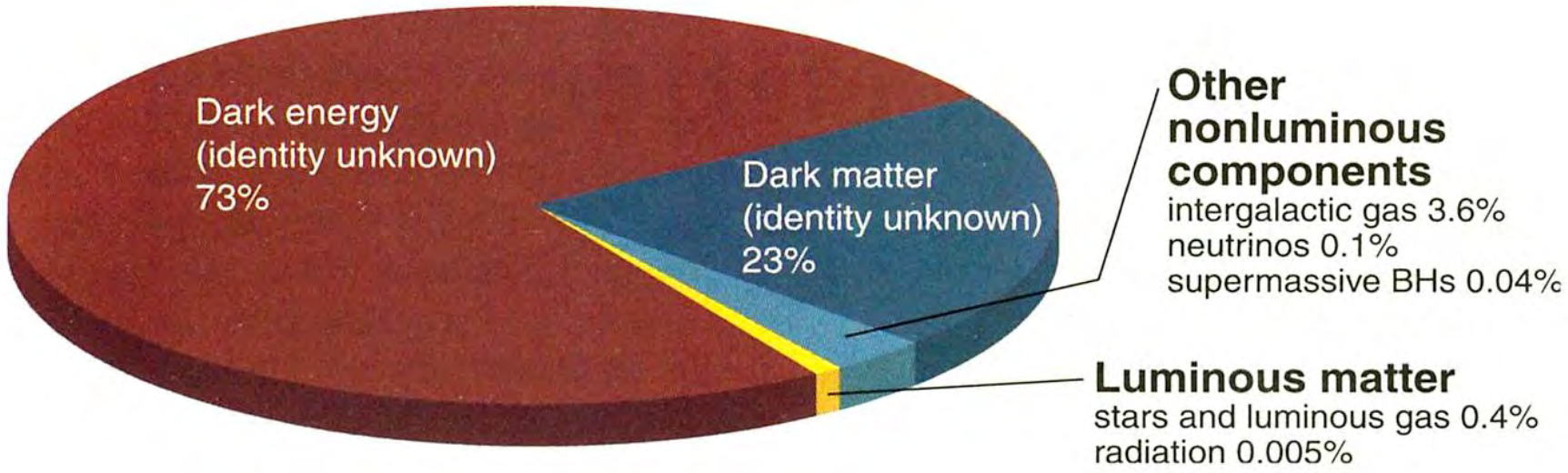
- Caffeic Acid (Kiuchi 1992)
- Capsaicin (USDA)
- Coumaric Acid, Para (Napralert)
- Curcumin (USDA)
- Curcumin, Hexahydro (Napralert)
- Eugenol (Napralert and Ref)
- [2]-Gingerol (Kiuchi 1992)
- [4]-Gingerol (Kiuchi 1992)
- [6]-Gingerol (Kiuchi 1992)
- [8]-Gingerol (Kiuchi 1992)
- [10]-Gingerol (Kiuchi 1992)
- [12]-Gingerol (Kiuchi 1992)
- [14]-Gingerol (Kiuchi 1992)
- [16]-Gingerol (Kiuchi 1992)
- Gingerdione (Flynn 1986)
- Galanolactone (Napralert)
- Kaempferol (USDA)
- LABD-trans-12-ene-15-16-dial,8 beta(17)-epoxy (Napralert)
- LABDA-trans-8(17)-12-diene-15 dial (Napralert)
- Quercetin (USDA)
- Shogaol (Napralert)
- Zingerone (USDA)

Seventeen pungent oleoresin principles of ginger inhibit cyclooxygenase-2 (COX-2)

Where Do We Go From Here?

Prediction is very difficult, especially about the future.

Niels Bohr, Mark Twain, Yogi Berra



The Dark Side by Ostriker JP and Steinhardt P: *Science*, vol: 300, pp. 1909-1913, June 20, 2003

14th Century → Black Death

Antimicrobial Resistance in the Environment and the Food Supply: Causes and How It Spreads | Antimicrobial Resistance | CDC

- Antimicrobial resistance (AR) is one of the most urgent threats to public health
- AR is a One Health issue, meaning the health of people, animals and the environment are connected
- Human activity can introduce antibiotics, antifungals and antimicrobial-resistant germs into the environment

- Antibiotic Resistance
- Avian Flu

Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis

Antimicrobial Resistance Collaborators*

Lancet 2022; 399: 629–55

- deaths attributable to AMR (scenario in which all drug-resistant infections were replaced by drug-susceptible infections)

- In 2019, AMR was directly responsible for 1.27 million deaths globally
- In the United States, over 2.8 million antimicrobial-resistant infections occur each year, with more than 35,000 resulting in death, according to the CDC

- The six leading pathogens for deaths associated with resistance (*Escherichia coli*, followed by *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Streptococcus pneumoniae*, *Acinetobacter baumannii*, and *Pseudomonas aeruginosa*) were responsible for 929 000 deaths attributable to AMR

Article

Nature | Vol 625 | 18 January 2024

A novel antibiotic class targeting the lipopolysaccharide transporter

https://doi.org/10.1038/s41586-023-06873-0

Received: 20 December 2022

Accepted: 16 November 2023

Published online: 3 January 2024

Open access

Check for updates

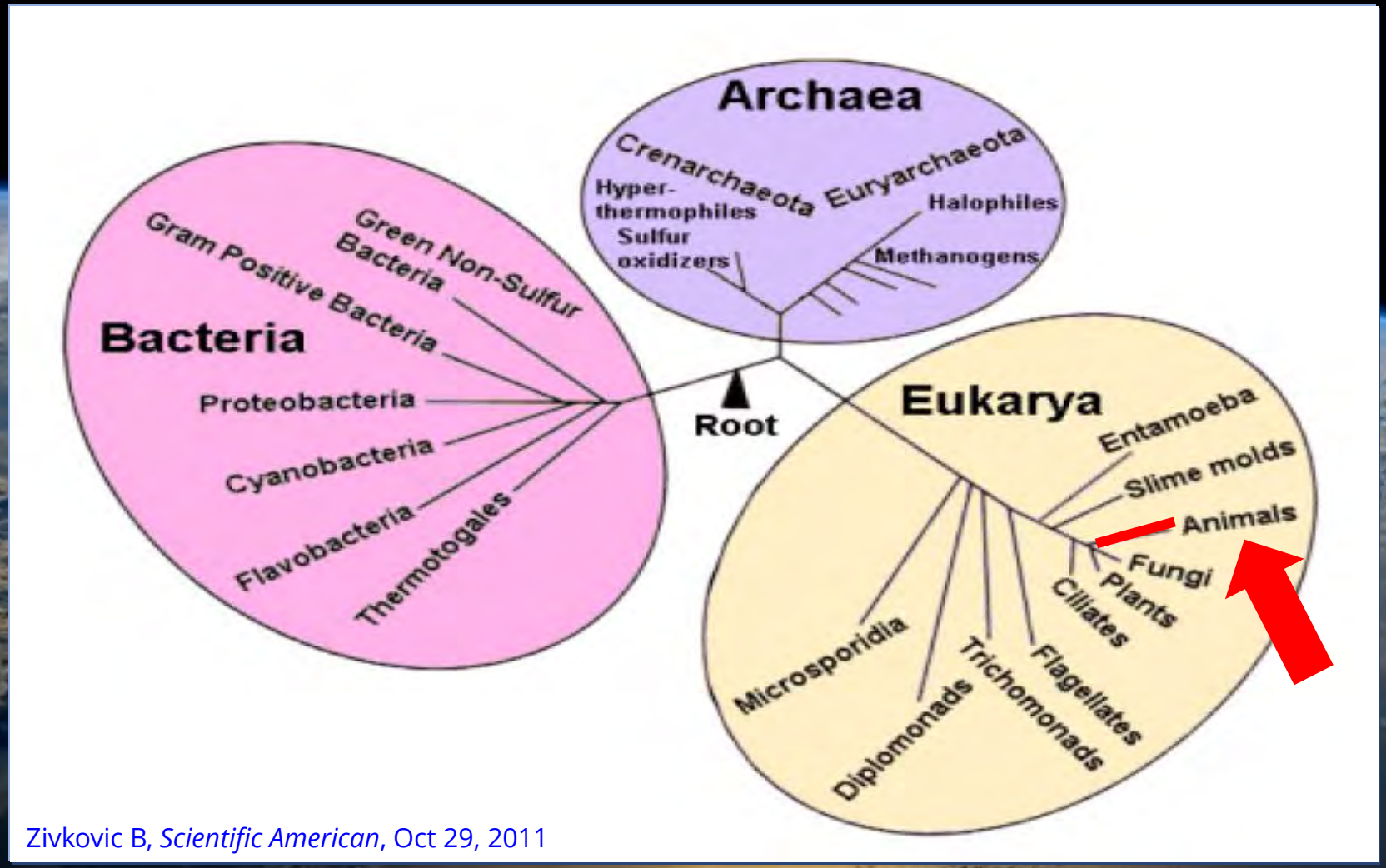
Claudia Zampaloni[1,13], Patrizio Mattei[2,13], Konrad Bleicher[2,3,13], Lotte Winther[4], Claudia Thäte[4,5], Christian Bucher[2], Jean-Michel Adam[2,6], Alexander Alanine[2,7], Kurt E. Amrein[1], Vadim Baldin[8], Christoph Bieniossek[1], Caterina Bissantz[4], Franziska Boess[4], Carina Cantrill[4], Thomas Clairfeuille[2], Fabian Dey[2], Patrick Di Giorgio[2], Pauline du Castel[2], David Dylus[1], Pawel Dzygiel[4], Antonio Felici[9], Fernando García-Alcalde[1], Andreas Haldimann[1], Matthew Leipner[1,4], Semen Leyn[10], Séverine Louvel[1], Pauline Misson[1], Andrei Osterman[10], Karanbir Pahil[8], Sébastien Rigo[1], Adrian Schäublin[2,3], Sebastian Scharf[11], Petra Schmitz[2], Theodor Stoll[2], Andrej Trauner[1], Sannah Zoffmann[2,12], Daniel Kahne[8], John A. T. Young[1], Michael A. Lobritz[1]✉ & Kenneth A. Bradley[1]✉

NATURE PODCAST, 26 March 2025

New lasso-shaped antibiotic kills drug-resistant bacteria

Antimicrobial molecule discovered in soil from lab technician's garden — plus, a huge study assessing the nuances of humans' impacts on biodiversity

- Carbapenem-Resistant Acinetobacter baumannii (CRAB) is so difficult to eliminate that the US Food and Drug Administration has not approved a new class of antibiotic to treat it in more than 50 years
- Researchers from Harvard University and the Swiss health care company Hoffmann-La Roche, show that the new antibiotic, zosurabalpin, can effectively kill CRAB
- Zosurabalpin is currently in phase 3 clinical trial



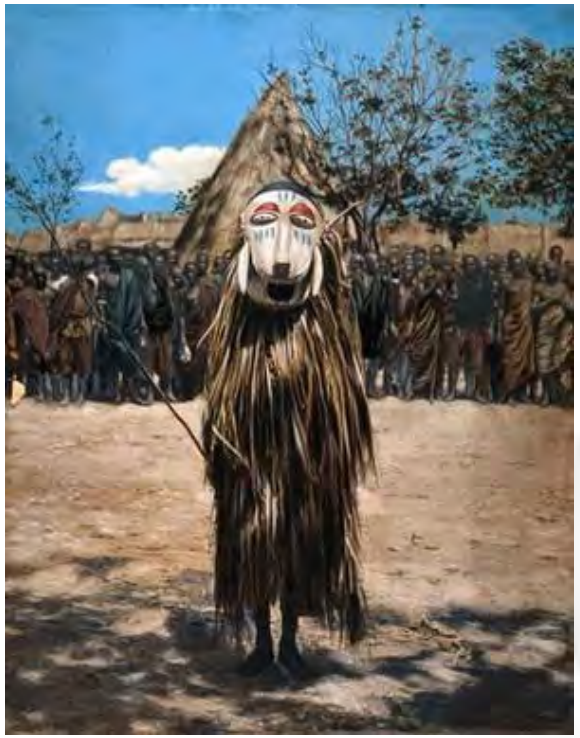
Zivkovic B, *Scientific American*, Oct 29, 2011

Yinda L et al., PLoS ONE 19(9): e0306957, 2024 PLOS ONE

RESEARCH ARTICLE

Antibacterial and antioxidant activities of plants consumed by western lowland gorilla (*Gorilla gorilla gorilla*) in Gabon

The plant bark crude extracts showed antioxidant activities with free radical scavenging and **antimicrobial activities against 10 multidrug resistant *E. coli* (DECs) isolates** and could be a promising novel source for new drug discovery.



Self-medicating gorillas may hold new drugs clues

11 September 2024 Share Save

Helen Briggs

Environment correspondent, BBC News • @hbriggs

Getty Images

Fewer than 150,000 western lowland gorillas survive in the wild in Central and West Africa

What Medicine Can Do?

What Society MUST Do?

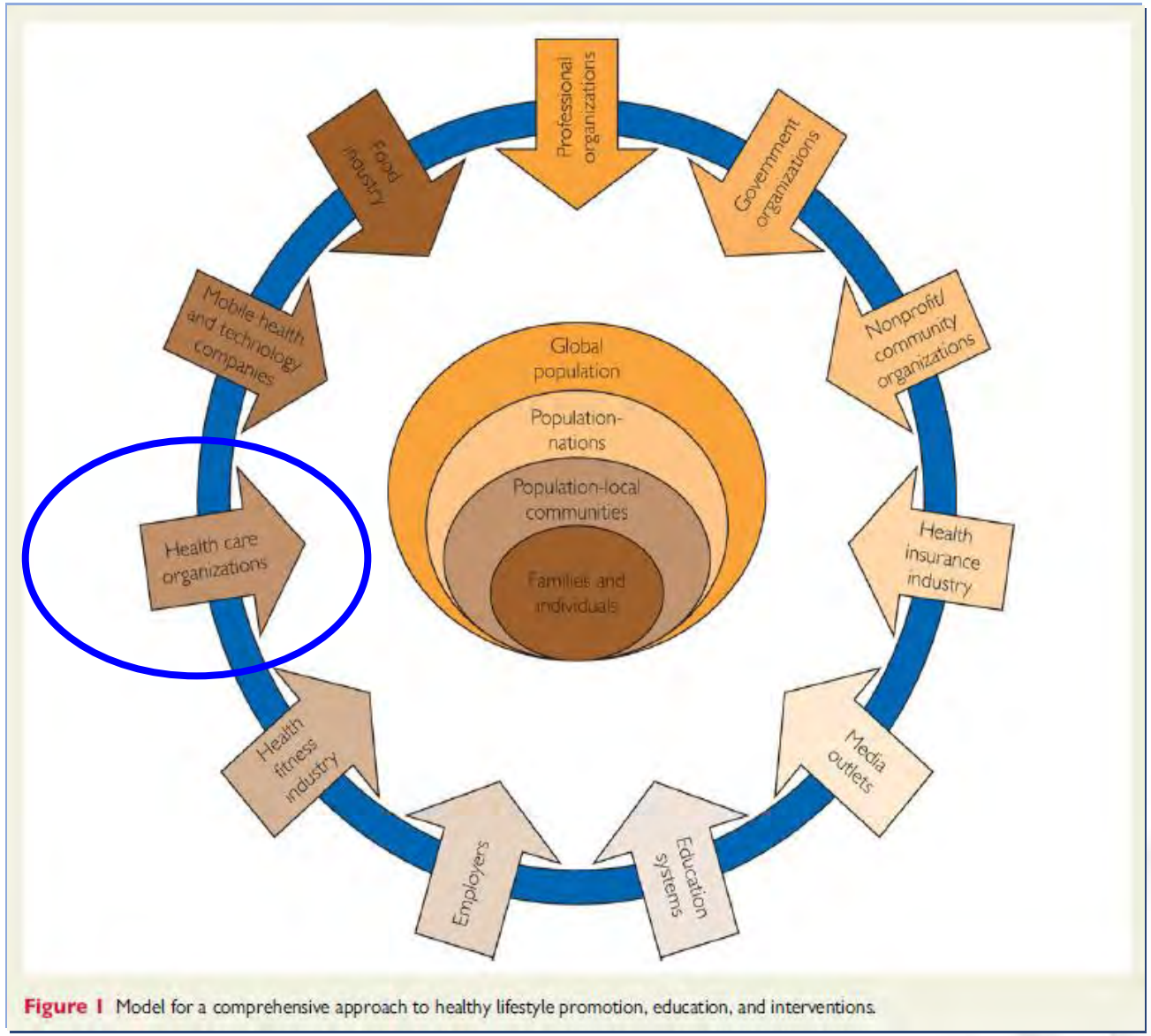


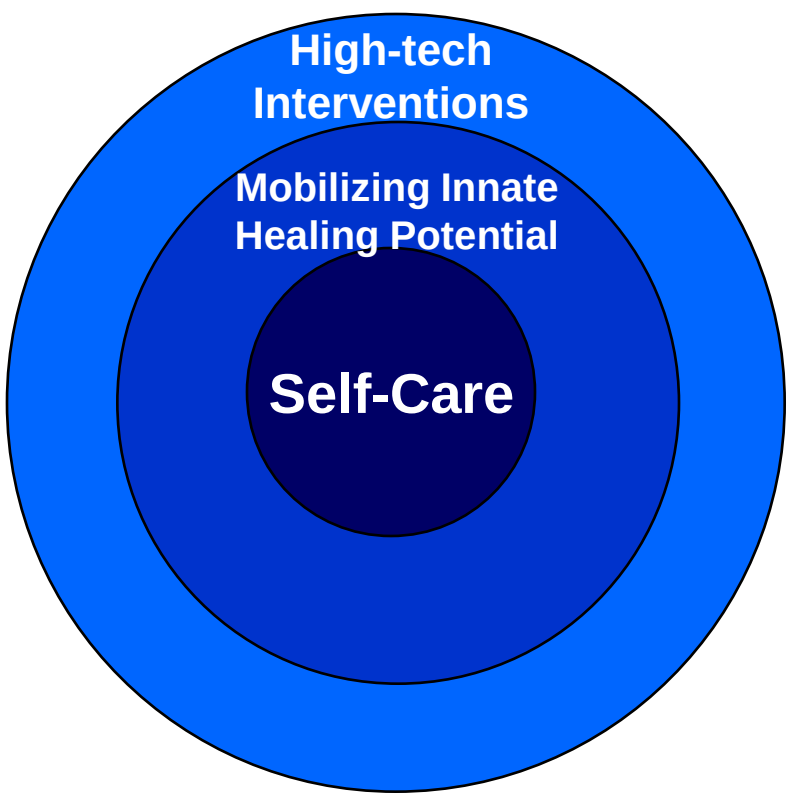
Figure 1 Model for a comprehensive approach to healthy lifestyle promotion, education, and interventions.

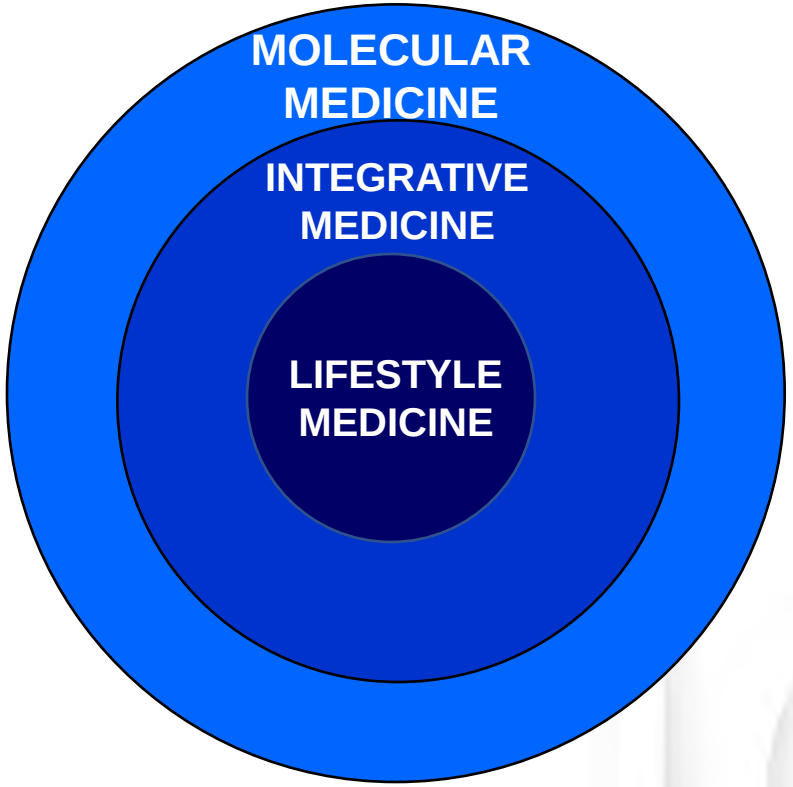
ARENA R ET AL., *EUR HEART J.* 2015 AUG 14;36(31):2097-2109

OSHER COLLABORATIVE

With permission from Dr. Dean Ornish, MD

One Medicine – Evidence-Based Medicine





Snyderman R, Weil AT: *Arch Intern Med*, 162:395-397, 2002
Snyderman R, Dinan MA: *JAMA*, 303:363-364, 2010

NUTRITION

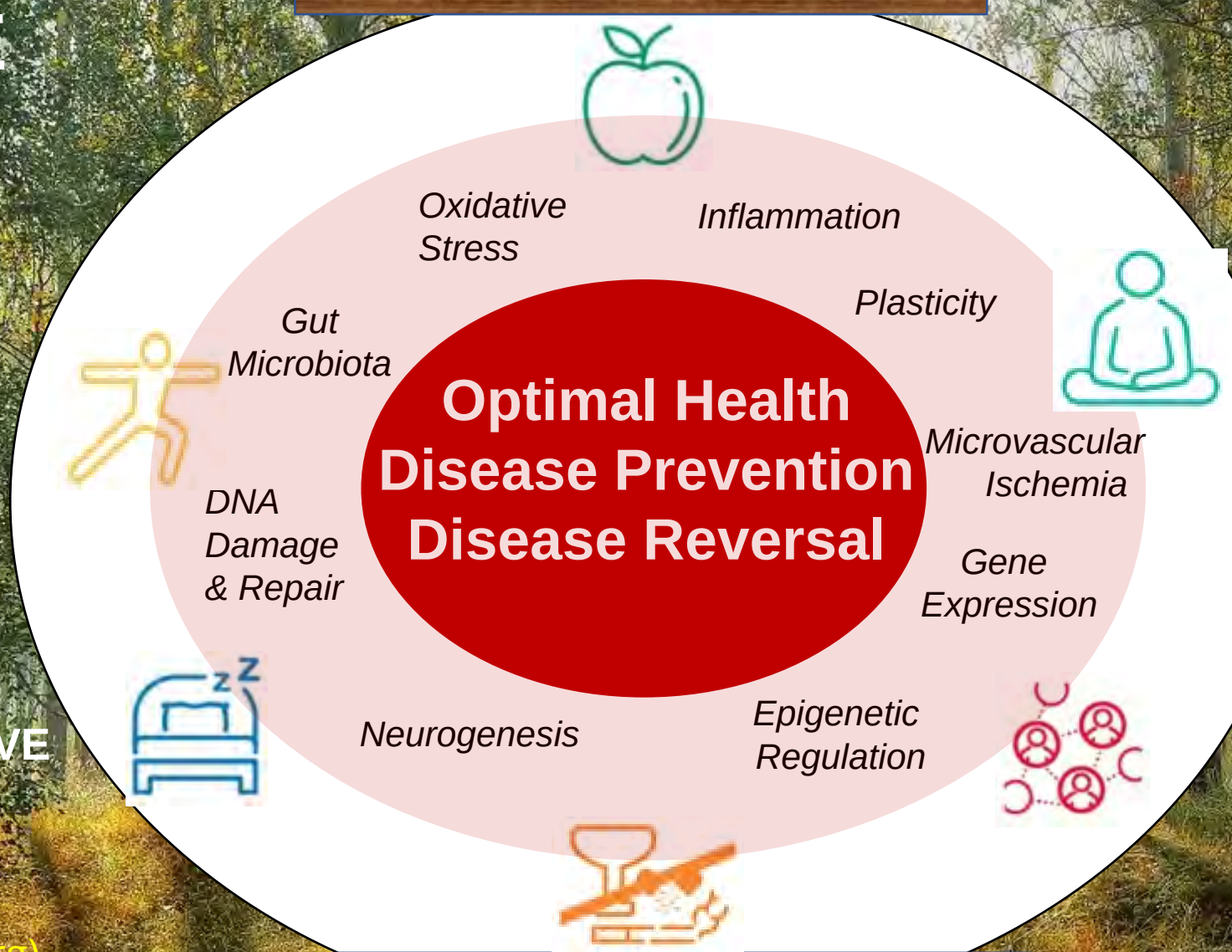
NATURE

PHYSICAL ACTIVITY

RESTORATIVE SLEEP

STRESS REDUCTION

SOCIAL CONNECTIONS



AVOIDANCE OF RISKY SUBSTANCES

Pillar-Booklet.pdf (lifestylemedicine.org)

JAMA.doi:10.1001/jama.2018.14854
Published online November 12, 2018.

Clinical Review & Education

JAMA | Special Communication

The Physical Activity Guidelines for Americans

Katrina L. Piercy, PhD, RD; Richard P. Troiano, PhD; Rachel M. Ballard, MD, MPH; Susan A. Carlson, PhD, MPH; Janet E. Fulton, PhD; Deborah A. Galuska, PhD, MPH; Stephanie M. George, PhD, MPH; Richard D. Olson, MD, MPH

- **moving more and sitting less will benefit nearly everyone**
- individuals performing the least physical activity benefit most by even modest increases in moderate-to-vigorous physical activity
- additional benefits occur with more physical activity

More Trees, More Happiness

Barton J, Rogerson M. The importance of greenspace for mental health. BJPsych Int. 2017 Nov 1;14(4):79-81. doi: 10.1192/s2056474000002051. PMID: 29093955; PMCID: PMC5663018.
Collins RM, et al. A systematic map of research exploring the effect of greenspace on mental health. *Landsc. Urban Plan.* 2020;**201**:103823. doi: 10.1016/j.landurbplan.2020.103823.

Nature as Medicine Team

Barbara Walker, PhD
Director, Nature as Medicine Programs

Kelly Lyle, MHA, MS
Education Director

LLOYD LIBRARY & MUSEUM

FOREST IMMERSION

25 *Oct* 2025

From 10:00 a.m. until 12:30 p.m.

At Burnet Woods

Step into the calm and quiet of Burnet Woods for a transformative Forest Immersion experience, guided by experts from the Osher Center for Integrative Health at the University of Cincinnati. Inspired by the Japanese practice of *shinrin-yoku* ("forest bathing"), this gentle, sensory-based walk invites participants to slow down, reconnect with nature, and experience its profound benefits for mind and body. Barbara Walker, PhD, Director of the Osher Center's Nature as Medicine Program, and Kelly Lyle, MHA, MS—both certified Forest Therapy Guides—will introduce simple yet powerful techniques to deepen your connection with the natural world. Evidence shows that time in nature can help strengthen the immune system, reduce blood pressure and stress hormones, improve sleep and mood, and boost focus, energy, and vitality. No special equipment or experience is needed—just an open mind, comfortable shoes, and a willingness to be present.

Registration Required (Registration opens August 25). Free for members with member link, $5 Non-members.

Food as Medicine

"Eat food, not too much, mostly plants."

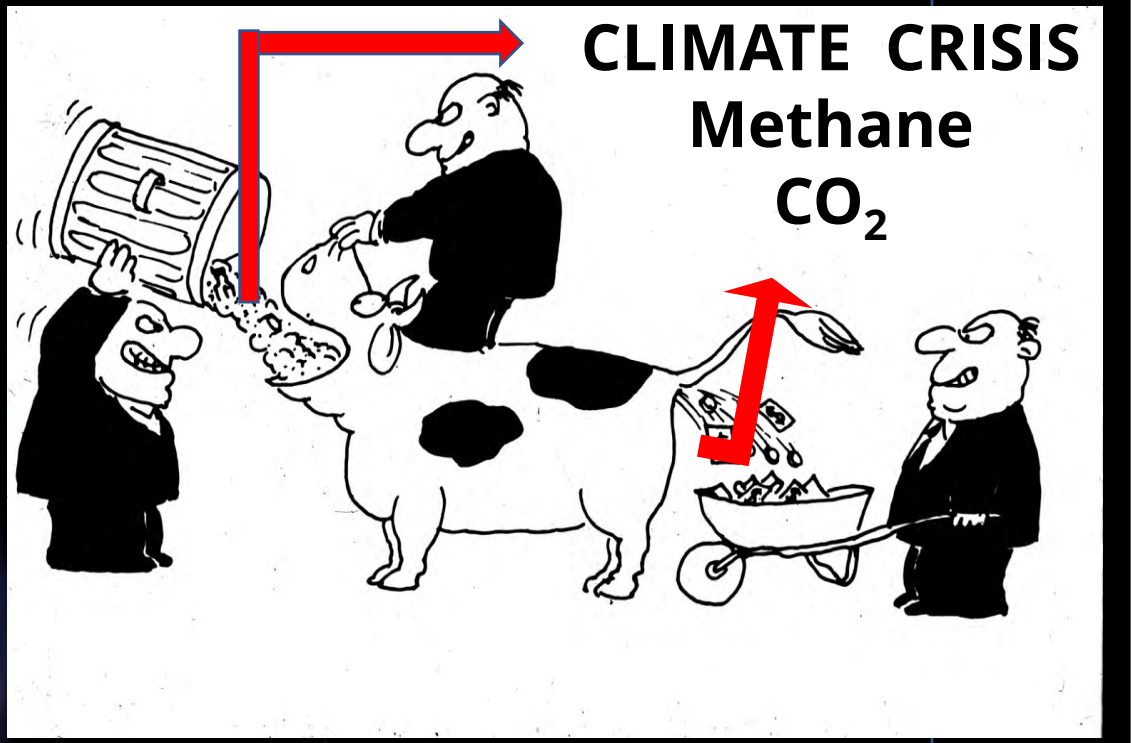
-Michael Pollan, "In Defense of Food"

Safety of Plant-based Diets

"As more people eat high-fiber foods, the gas blasted into the atmosphere is increasing dramatically".

Robert Park of Scotland's Research Institute warning that human flatulence may be contributing to global warming

Vegetarian Times, April 15, 1991

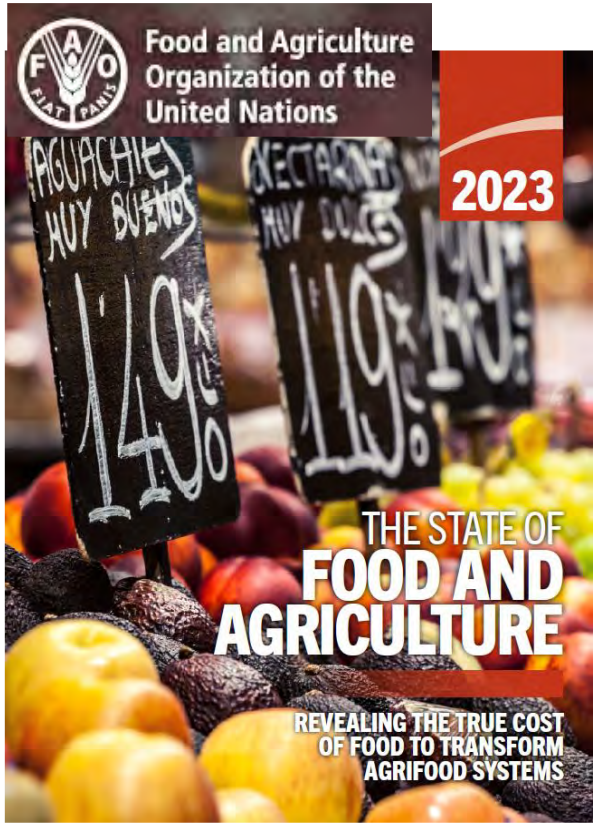


...integrating biogeochemical modeling with existing estimates from FAO, of the total greenhouse gas emissions, animal-based food accounts for 21% of total emissions

Xu X et al., *Nature Food*, vol 2 pages 724-732 (2021)

Animal Agriculture and Environment

- It takes more than 7 pounds of plant protein to produce one pound of beef
- ---- and more than 6,000 gallons of water



[True Price Foundation – We create standards for the adoption of True Prices]

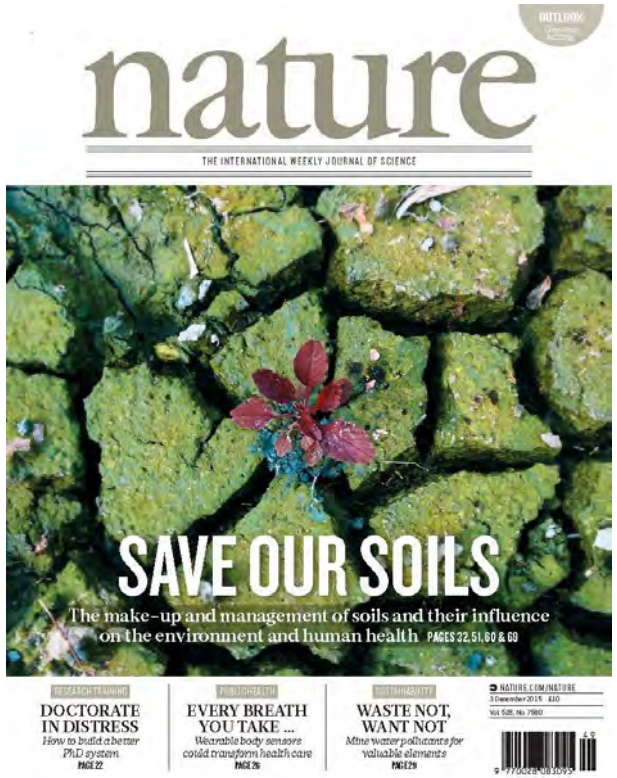
[True Cost of Food: Measuring What Matters to Transform the U.S. Food System (rockefellerfoundation.org)]

OSHER COLLABORATIVE

78% of all agricultural land is used for raising livestock

"The nation that destroys its soil, destroys itself“

Franklin D. Roosevelt



OSHER COLLABORATIVE

Sleep

1. Melatonin – follow circadian rhythm as best as you can
2. Magnesium – green leafy veggies
3. Increase gut microbiome diversity — higher levels are associated with longer, better sleep and fewer nighttime awakenings → eat more diverse types of dietary fiber (legumes, 100% whole grains, veggies, fruits, nuts and seeds)
4. Vitamin D
5. Ashwagandha

It is conservatively estimated that at least 10% of mammalian gene expression is controlled by circadian clock

Factors influencing the rest-activity circadian rhythm and the sleep-wake cycle

Like clockwork (from left): Michael Rosbash, Jeffrey Hall and Michael Young.

MOLECULAR BIOLOGY

Circadian clocks scoop Nobel prize

Jeffrey Hall, Michael Rosbash and Michael Young unpicked molecular workings of the daily rhythms of cells.

Biomolecules, **2021**, 11, 487. https://doi.org/10.3390/biom11040487

RESEARCH ARTICLE

Effect of Ashwagandha (*Withania somnifera*) extract on sleep: A systematic review and meta-analysis

Kae Ling Cheah, Mohd Noor Norhayati, Lili Husniati Yaacob*, Razlina Abdul Rahman

PLoS ONE 16(9): e0257843, 2021

- A total of five randomized controlled trials containing 400 participants were analyzed
- The effects on sleep were more prominent in the subgroup of adults diagnosed with insomnia, treatment dosage > 600 mg/day, and treatment duration >8 weeks
- Ashwagandha extract was also found to improve mental alertness on rising and anxiety level, but no significant effect on quality of life
- Ashwagandha extract appears to has a beneficial effect in improving sleep in adults
- data on the serious adverse effects of Ashwagandha extract are limited
- more safety data would be needed to assess whether it would be safe for long-term use

Ashwagandha: Usefulness and Safety | NCCIH https://www.nccih.nih.gov/health/ashwagandha

Tips for Better Sleep

Pillar-Booklet.pdf (lifestylemedicine.org), page 6

- Use bed for sleep only
- Establish regular sleep schedule (same sleep and wake times)
- Minimize/eliminate bedroom noise and lights
- Increase daytime exposure to sunlight
- Move at least every hour during the day
- Eliminate nighttime caffeine and limit daytime caffeine
- Avoid alcohol within 3 hours of bedtime
- Avoid high-sodium foods close to bedtime
- Eliminate/limit after-dinner and late-night snacking
- Maintain a healthy BMI
- Stay hydrated during the day
- Use Cognitive behavioral therapy for treatment of insomnia
- Increase exercise to 150 minutes of moderate intensity per week
- Include more whole food plant-based dietary choices
- Increase stress reduction/meditation techniques

An example of a positive sleep goal is, “I will begin a new bedtime routine of shutting off the television and instead, reading a book for at least 20 minutes before bed, four nights this week.”

Greatest Stress Reducers

- Friends, Friends, Friends
- Purpose in Life
- Physical Activity
- Breathing and Meditation
  - Formal Daily Practice
  - Mindfulness during everyday activities

Lifestyle Stress Reduction

- Connect with others
- Get involved in activities
- Try different healthy ways to relax (music, exercise, dance, meditation or yoga)
- Take time for fun, creative activities or hobbies

See Stress Differently

- Keep a gratitude journal
- Take care of spiritual needs
- Make time to laugh (comedy, joke books etc)
- Avoid caffeine and alcohol
- Try deep breathing techniques
- Get a massage

Consider "Is there another way to look at this situation?" and remember it's not helpful to focus on what cannot be changed. Try to improve your mood by looking at what is going well in life. Focus on your accomplishments or what you have overcome.

An example of a positive stress reduction goal is, "I will write about what I am thankful for at least 5 minutes three times per week."

Pillar-Booklet.pdf (lifestylemedicine.org), page 4
https://lifestylemedicine.org/wp-content/uploads/2022/07/Pillar-Booklet.pdf

Forming New Social Connections

- Volunteer; helping others improves health, increases happiness and allows you to meet new people
  - Connect with a community resource center to find local options
  - Find online or community groups of those who share the same interests– meetup.com or Facebook groups are a great place to look
- Join a religious or spiritual group
- Help at a local animal shelter or adopt a pet to connect with other animal lovers
- Go to a local sports event, music performance, lecture or art display
- Help organize community events by joining a steering committee or board
- Attend community celebrations like parades or walks
- Take a course at your local library or community college
- Ask your employer for ways to increase social connections at work

TIP: Look for social opportunities that improve other areas of health such as activity groups or healthy cooking classes.

An example of a positive social connection goal is, "I will increase my feeling of social connectedness by joining a group fitness class that meets for an hour, two nights of the week."

Strengthen Social Connections

- Take more care to quickly connect with people you see a lot during the week
- When possible, stay positive while connecting with others
- Share new experiences
- Make and spend time with others
- Be there for those who need you
- Be flexible, supportive and excited about what others are doing in their lives

Specific - What are you going to do to improve feelings of connectedness?
Measurable - How much time, how many sessions?
Achievable - Do you have what it takes to follow through?
Relevant - What can you actually do? (improvement over perfection)
Time-bound - How frequent? How long will you commit?

Pillar-Booklet.pdf (lifestylemedicine.org), page 7

NO-COST WELLNESS CLASSES

ALL ARE WELCOME
Community, Patients & Caregivers, and Employees

SOMETHING FOR EVERYONE!
Virtual & In-Person Options

REGISTRATION REQUIRED
No Experience Necessary!

CLASS SCHEDULE

DAY/TIME	CLASS	LOCATION	INSTRUCTOR
Mondays 8:30-9 am	Mindful Mondays	Virtual	Barbara Walker, PhD
Mondays 10:30-11:30 am	Gentle Yoga Therapy	UC Gardner Neuroscience Institute Auditorium	Tina Walter, C-IAYT
Tuesdays 11:30 am-12:30 pm	Tai Chi for Parkinson's & Other Neurological Disorders	Virtual	Jennifer Woods, Certified Tai Chi Instructor
Wednesdays 11 am-12 pm	Yoga for MS & Other Neurological Conditions (Mat)	Virtual	Sonya Verma, MHSA, MBI, E-RYT 500
Wednesdays 12:30-1:30 pm	Yoga for MS & Other Neurological Conditions (Chair)	Virtual	Sonya Verma, MHSA, MBI, E-RYT 500
Wednesdays 2-3 pm	Tai Chi Therapy	UC Gardner Neuroscience Institute Auditorium	Derek Johnson, L.Ac, Certified Tai Chi Instructor
Wednesdays 4:30-5:30 pm	Gentle Yoga	UC Blood Cancer Healing Center Train Rooms 1-2	Tina Walter, C-IAYT
Thursdays 8:30-9:30 am	Introduction to Mindfulness Meditation	UC Blood Cancer Healing Center Train Rooms 1-2	Barbara Walker, PhD
Thursdays 10:30-11:30 am	Yoga Therapy for Cancer	Virtual	Tina Walter, C-IAYT
Thursdays 11 am-Noon	Mindful Movement with Tai Chi	UC Blood Cancer Healing Center Train Rooms 1-2	Jennifer Woods, Certified Tai Chi Instructor
Thursdays 11:45 am - 12:45 pm	Tai Chi Form	UC Gardner Neuroscience Institute Room 4005	Derek Johnson, L.Ac, Certified Tai Chi Instructor
4-Week Series	Mindfulness Meditation for Restorative Health	Virtual	Barbara Walker, PhD
Second Tuesday of Each Month 4:30-5:30 p.m.	Sound Immersion	UC Blood Cancer Healing Center Train Rooms 1-2	Sonya Verma, MHSA, MBI, Sound Therapist

SCAN TO LEARN MORE & REGISTER

all are welcome! bit.ly/OsherEvents

View our Upcoming Classes & Events Calendar

Meet our Mindfulness Team

Barbara Walker, PhD
4-part mindfulness series

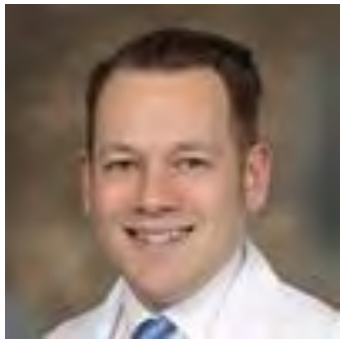
Meriden McGraw, MPH
4-part mindfulness series
Director of Workplace Mindfulness
Certified Mindfulness Based Stress Reduction Instructor

Meera Murthi, PhD
MBSR instructor

Meet our Movement Therapy Team

Tai Chi

Jennifer Woods, Certified Tai Chi Instructor



Derek Johnson, L.Ac Certified Tai Chi Instructor

Yoga Therapy

Tina Walter, C-IAYT

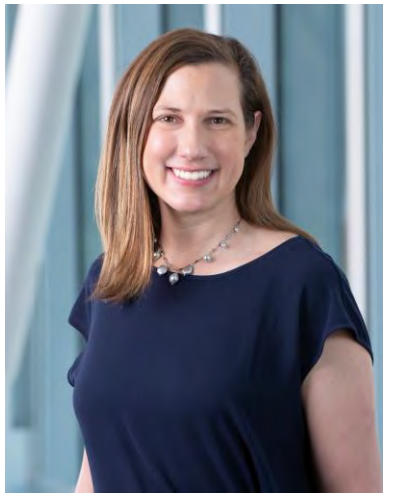
Sonya Verma, , MHSA, MBI, E-RYT 500

Meena Ananth, RN, C-IAYT

Josie Caruso, MA, C-IAYT

Sound, Music, Art Therapy

Sonya Verma, MHSA, MBI
Sound Therapist; Mind-Body Therapist; Yoga RYT



Betsey Zenk Nuseibeh, MM, MeD, MT-BC
Licensed Music Therapist

Meera Rustogi, PhD, ATR-BC, LPAT
Licensed Psychologist, Board Certified & Licensed Art Therapist

Adaptogens

- Adaptogens are natural substances found in herbs and plants that help the body cope with physical, emotional, and environmental stress

- **Ashwagandha** (Withania somnifera), Panax Ginseng (**Asian Ginseng**), Eleuthero (**Siberian Ginseng**), **Schisandra** Chinensis (Chinese Magnolia Vine), **Rhodiola** Rosea (Golden Root)

- Most trials are small, short-term
- Geographically limited
- Doses and extract standardization vary widely, confounding comparisons
- Safety over prolonged use and interactions with medications (e.g., thyroid hormones, immunosuppressants) are not well studied

What Are Adaptogens-and Do They Actually Work?, Medical News Life Sciences, Apr 8, 2025

ARTICLE OPEN

Check for updates

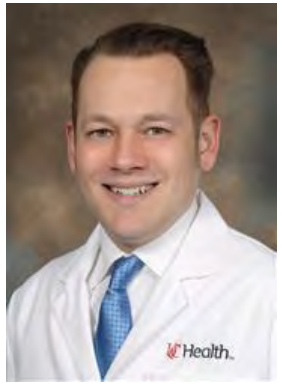
Similarity of drug targets to human microbiome metaproteome promotes pharmacological promiscuity

Christopher A. Beaudoin[1✉], Shannon Norget[2], Ziad Omran[3], Sharif Hala[4,5], Abdullah H. Daqeeq[6], Philip W. J. Burnet[7], Tom L. Blundell[8] and Andries J. van Tonder[9✉]

Pharmacogenomics Journal (2025) 25:9;

- Therefore, herein, sequence and structure alignments between human and pathogen drug targets and representative human gut, oral, and vaginal microbiome metaproteomes were performed
- Both human and pathogen drug targets were found to be similar in sequence, function, structure and drug binding capacity to proteins in diverse pathogenic and non-pathogenic bacteria from all three microbiomes
- The gut metaproteome was identified as particularly susceptible overall to off-target effects. Certain symptoms, such as infections and immune disorders, may be more common among drugs that non-selectively target host microbiota
- These findings suggest that similarities between human microbiome metaproteomes and drug target candidates should be routinely checked

Meet our Acupuncture Team



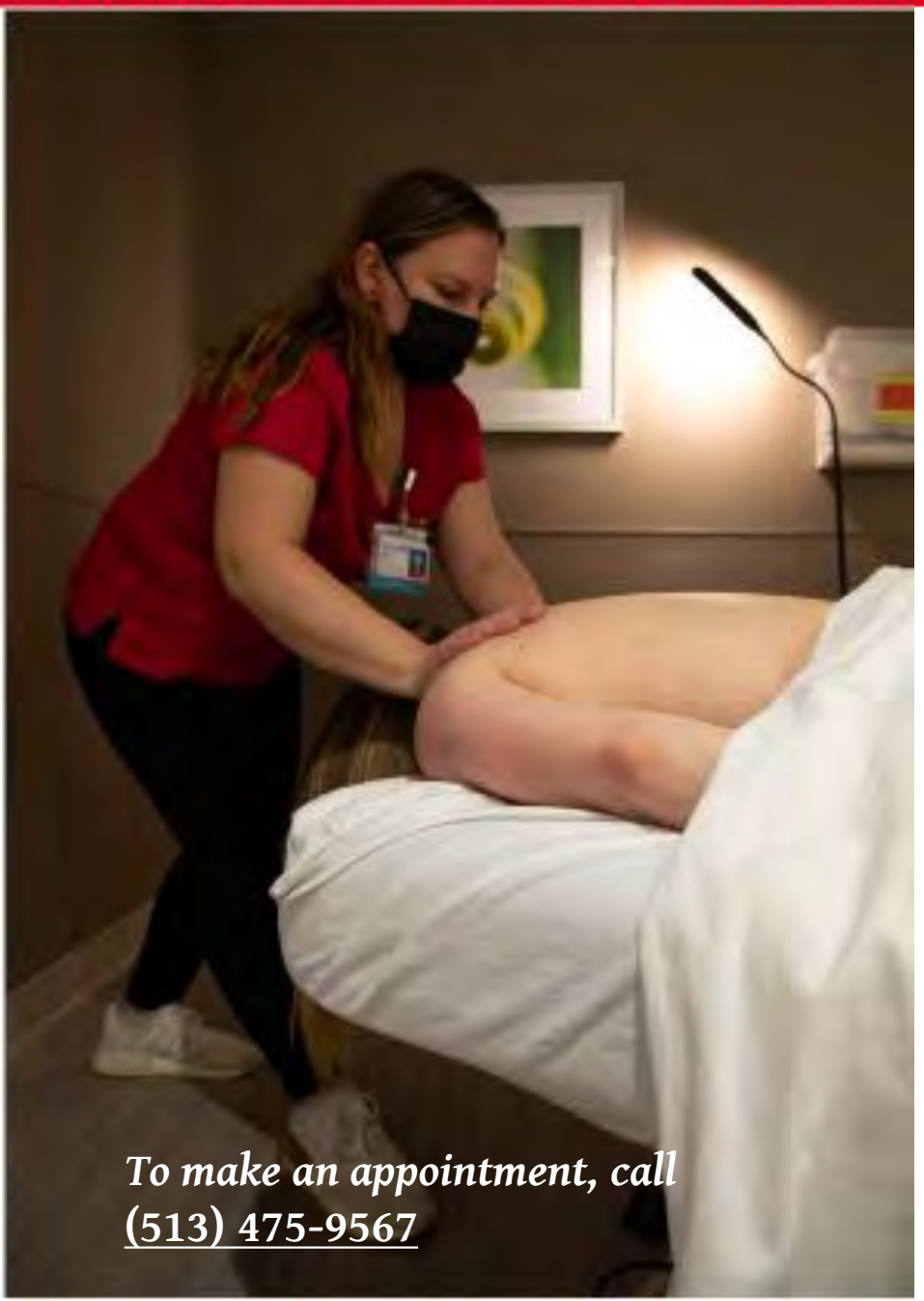
Derek Johnson, L.Ac
UCGNI

Sybil York, L.O.M.
West Chester

David Harmon, L.O.M.
Blood Cancer Healing Center

Gigi Pereira, L.Ac
UCGNI

Angela C. Lai, L.O.M.
Barrett Center

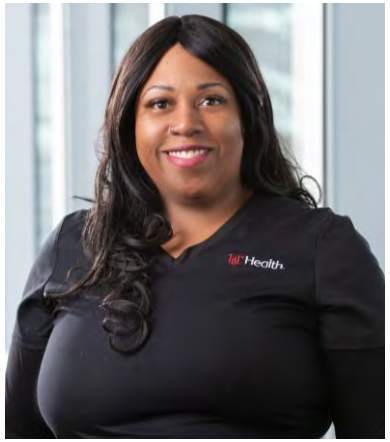


Meet our Massage Therapy Team

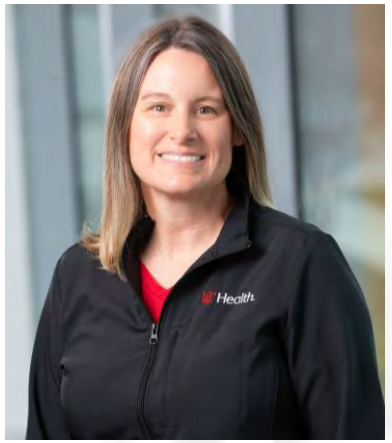
Polly Collins, LMT

David Whitten, LMT

Amy Hartley, LMT



Angela Johnson, LMT



Shannon McKnight, LMT

Integrative/Lifestyle Medicine Consults

Pamela Sharpe, FNP

Mladen Golubic, MD, PhD

1 Hour Appointment ***Covered By Medical Insurance***

- ✓ Learn Details About Patient's Current Lifestyle Behaviors
- ✓ Provide Education About Lifestyle Influences On Chronic Disease(s)
- ✓ Develop, *In Partnership With That Patient*, A Specific Lifestyle Care Plan

eat plants

keep moving

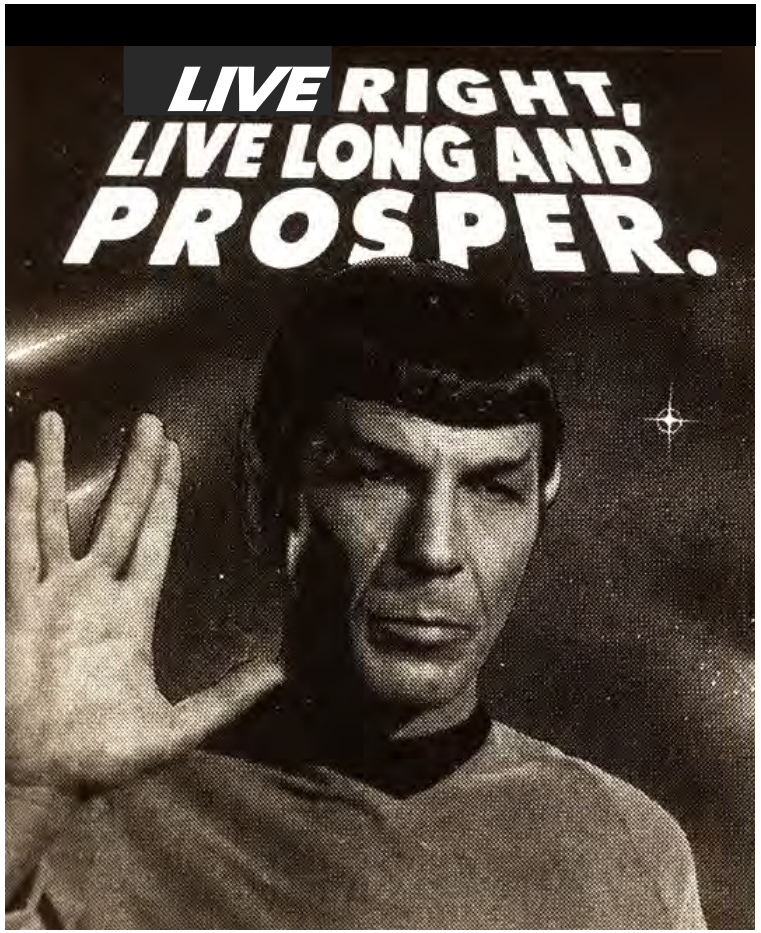
sleep well

be present

stay calm

love people

HTTPS//WWW.LIFESTYLEMEDICINE.ORG/



LIVING RIGHT IS HIGHLY LOGICAL

University of CINCINNATI

OSHER CENTER FOR INTEGRATIVE HEALTH

WITH GRATITUDE

Scan to visit our website, sign up for our newsletter, and become a friend of the center.

osher.integrative@uc.edu