



DoctorMurray.com
YOUR NATURAL MEDICINE RESOURCE

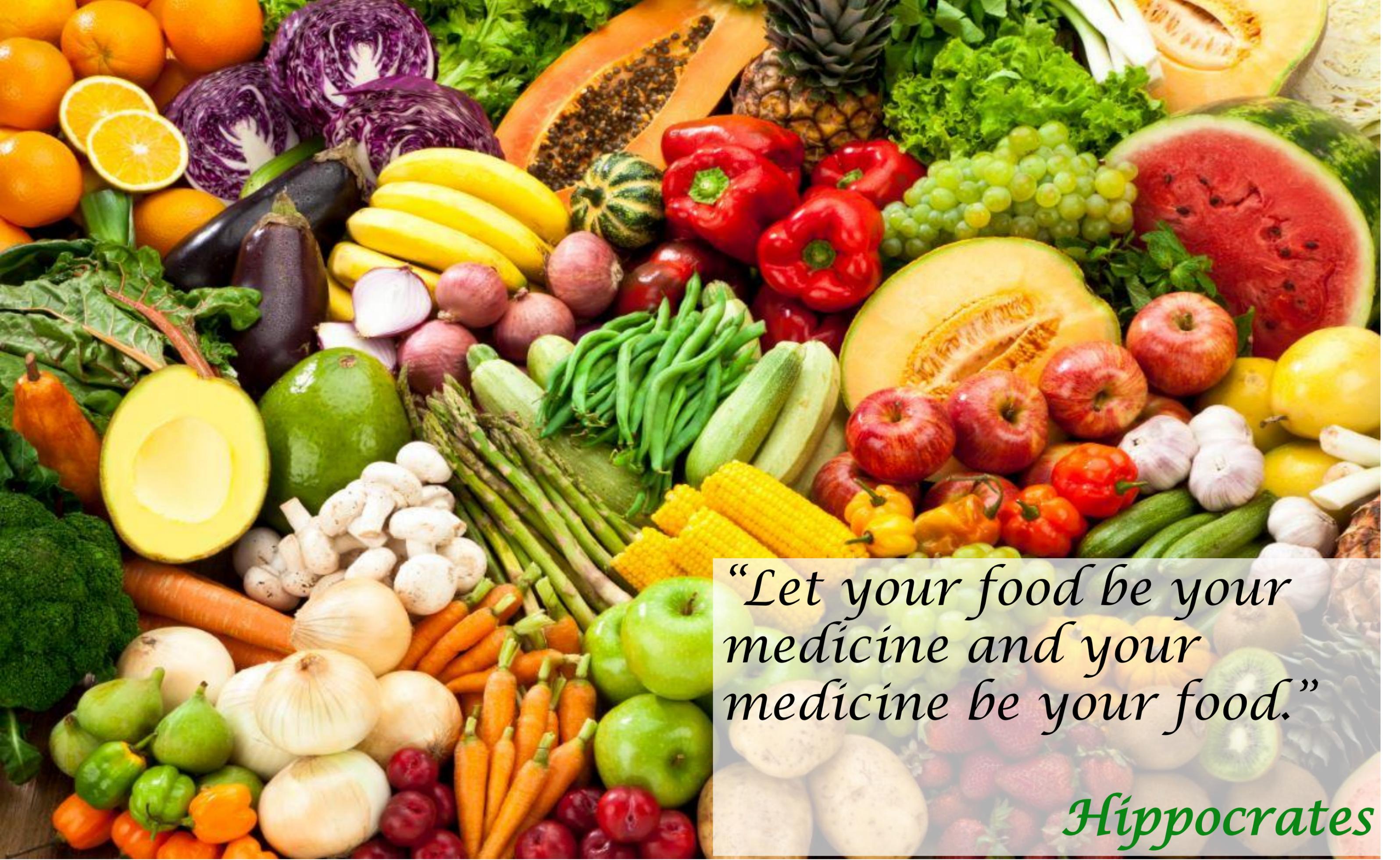


The
MAGIC
of
FOOD

How to
Live Longer, Better
and Lose Weight
with the
Synergetic Diet

Michael T. Murray, N.D





*“Let your food be your
medicine and your
medicine be your food.”*

Hippocrates

Which is the Greater Technology?





Sir Arthur C. Clarke
1917-2008

Clarke's Third Law:
“Any sufficiently advanced technology is indistinguishable from magic.”



**YOU ARE WHAT YOU EAT,
SO DON'T BE FAST, EASY, CHEAP, OR FAKE!**

YOU ARE WHAT YOU EAT

By **VICTOR H. LINDLAHR**

HOW TO WIN AND KEEP HEALTH WITH DIET

REDUCING . . . Learn how to lose weight quickly by eating the right kind of food

THE MIDDLE YEARS . . . A balanced diet can help ease you through those trying "middle years"

RHEUMATISM—ARTHRITIS . . . A high Vitamin C diet often brings relief from these painful symptoms

VITAMINS—MINERALS . . . Learn how to get health-giving vitamins and minerals from the foods you eat

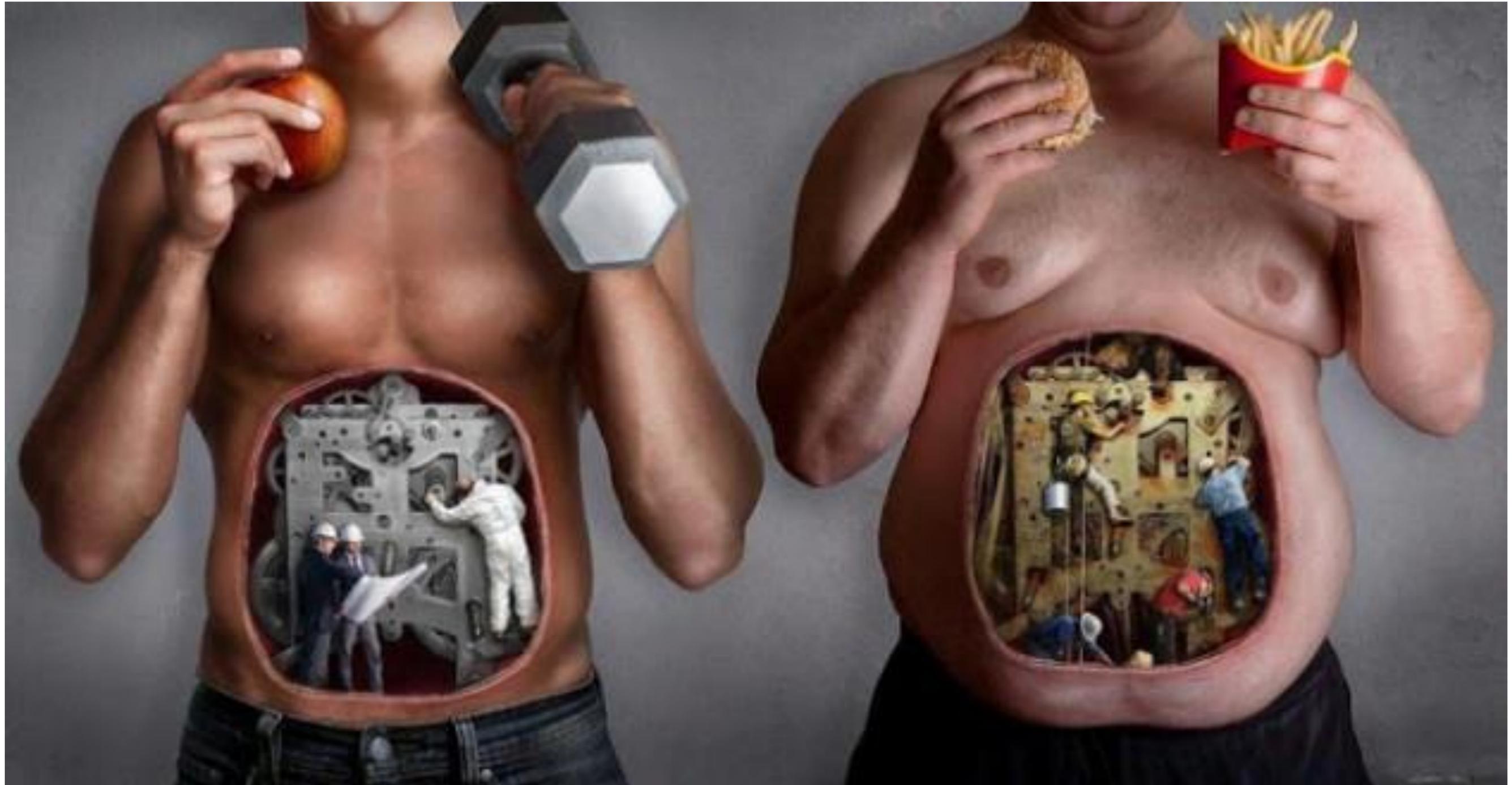
INDIGESTION—HEARTBURN . . . Learn which foods to eat and which to avoid to prevent annoying troubles

17 FOOD CHARTS AND TABLES . . . How to select fruits and vegetables; how to prepare them, appetizingly and economically for the maximum in health benefit

Price \$1.00

*Let America's Foremost Authority on Diet
Show You How to Eat for Your Health's Sake!*

Our Genes Do Not Entirely Determine our Health Destiny



A Tale of Two Mice



These two mice are genetically identical. Why is one mouse fat, yellow, diabetic, and at risk for cancer?

Human Genome Project

Goals:

- Identify all the approximate 30,000 genes in human DNA
- Determine the sequences of the 3 billion chemical base pairs of human DNA

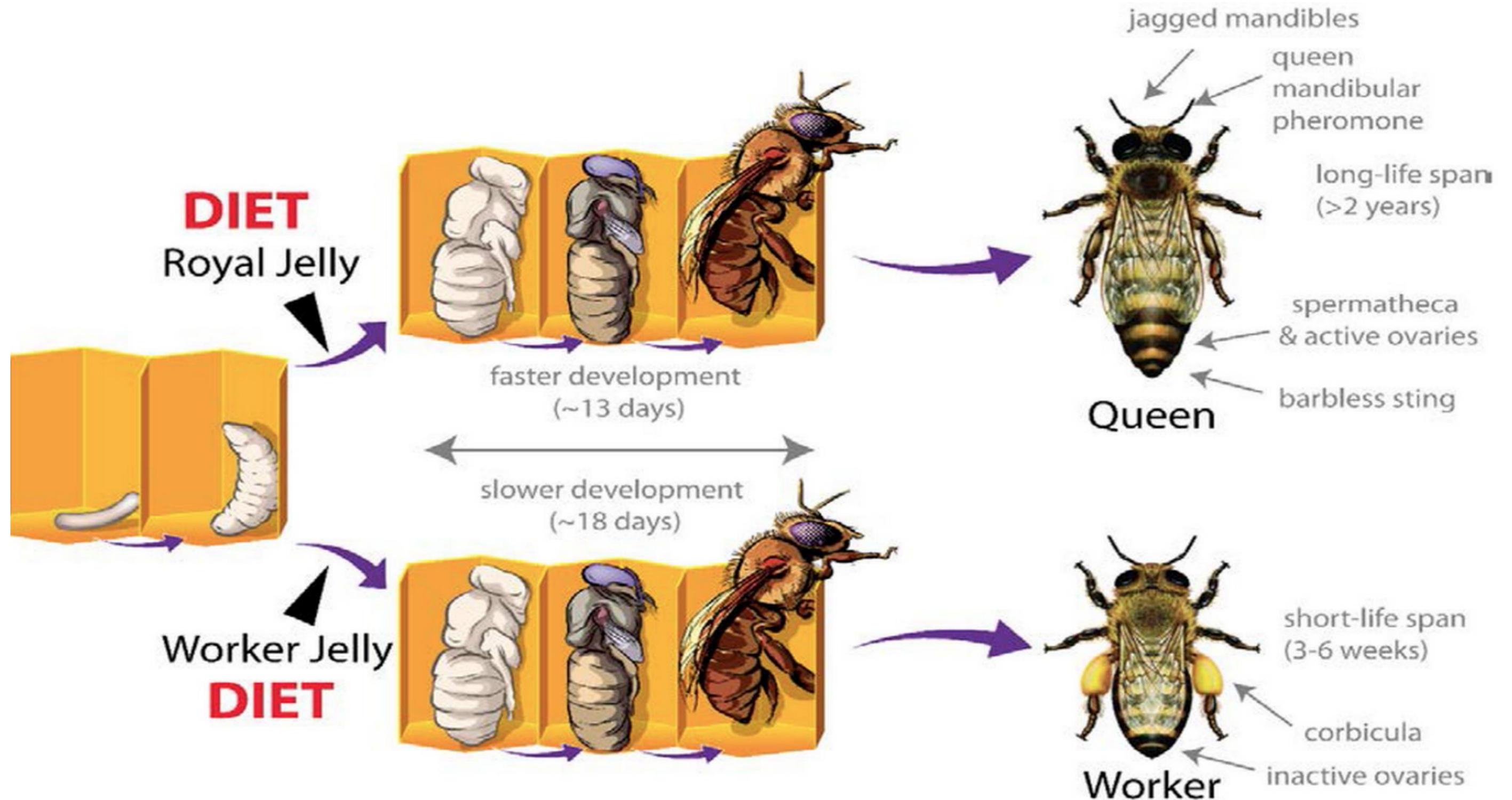
Milestones:

- 1990: Project initiated as joint effort of the U.S. Department of Energy and the National Institutes of Health
- June 2000: Completion of a working draft of the entire human genome
- February 2001: Analysis of the working draft are published
- April 2003: Sequencing is completed and Project is declared finished two years ahead of schedule

Epigenetics and Nutrigenomics

- Epigenetics:
 - The expression of genetic programming is influenced by non-genetic factors
- Nutrigenomics:
 - The influence of nutrition on genetic expression that is primarily related to its epigenetic factors

The Best Example of Nutrigenomics?



Hirschi KD, Pruss GJ, Vance V. ***Dietary delivery: a new avenue for microRNA therapeutics?***

Trends Biotechnol. 2015 Jun 22.



Litter Hypomethylated



Yellow Mouse

- High risk cancer, diabetes, obesity
- Reduced lifespan

*Maternal
Supplements
with*



**zinc
methionine
choline
folate
B12**

Litter Hypermethylated



Agouti Mouse

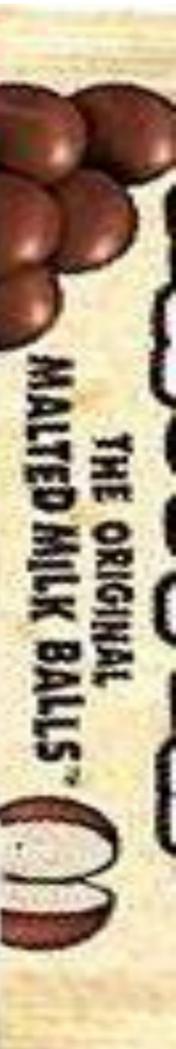
- Lower risk of cancer, diabetes, obesity
- Prolonged life

Caffeine intake, CYP1A2 genotypes and heart attack risks

<u>Number of cups per day</u>	Fast Metabolizers (<u>CYP1A2*1A</u>)	Slow Metabolizers (<u>CYP1A2*1F</u>)
<i><1</i>	<i>1.00</i>	<i>1.00</i>
<i>1</i>	<i>0.48</i>	<i>1.24</i>
<i>2-3</i>	<i>0.57</i>	<i>1.67</i>
<i>4</i>	<i>0.83</i>	<i>2.60</i>

JAMA 2006;295:1135-41.

Are We Overfed, but Undernourished?



AMP-activated protein kinase: A Target for Modern Humans

Consequences of Low AMPK Activity

- Increased abdominal fat (visceral obesity)
- Increased systemic inflammation
- Insulin resistance and elevated blood sugar levels
- Elevated blood lipids (cholesterol and triglycerides)
- Decreased numbers and function of mitochondria
- Cellular degeneration (e.g., neurodegeneration)

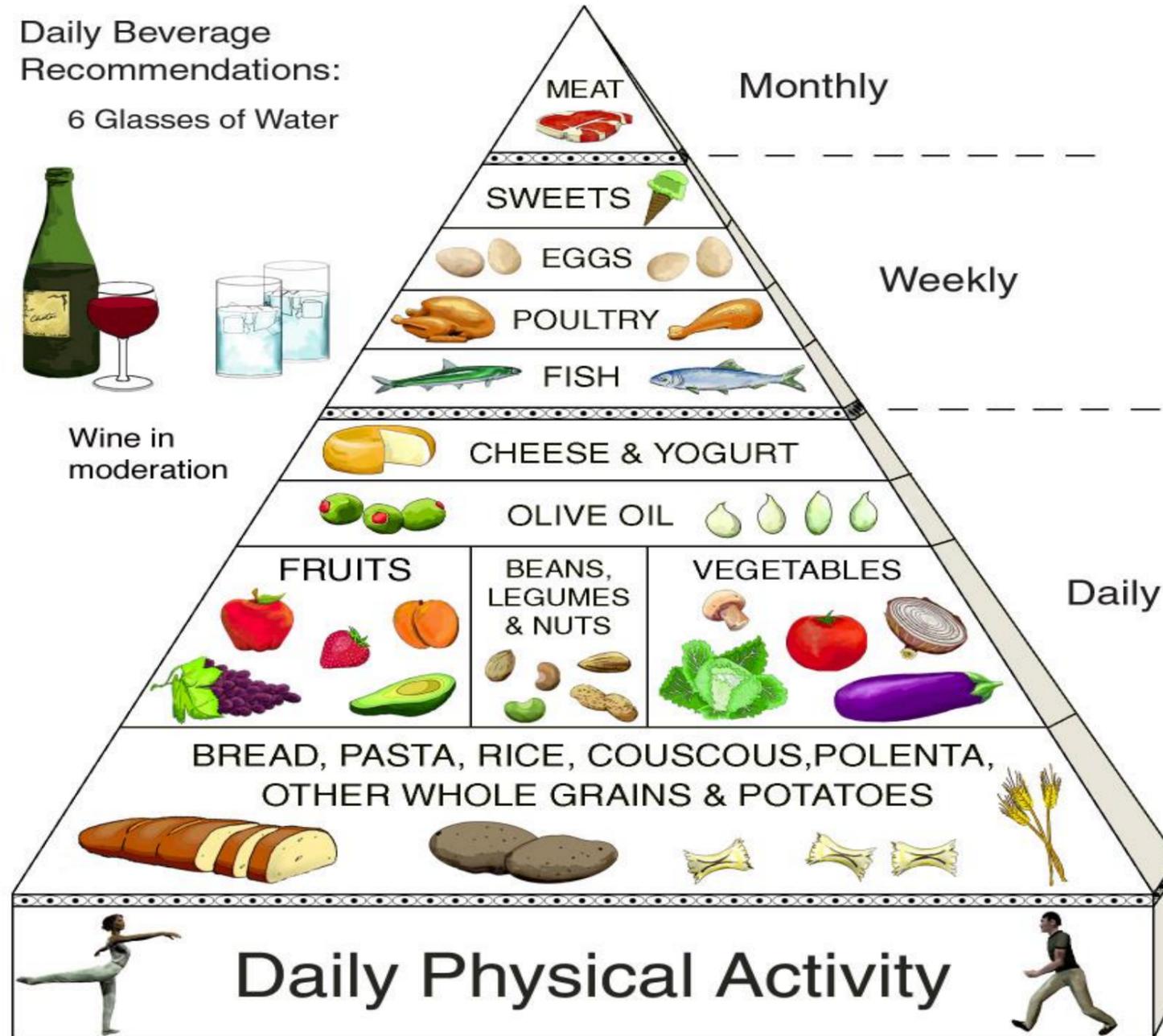
Activators of Peripheral AMPK

- Intense exercise
 - Calorie restriction
 - Thyroid hormone
 - Adiponectin
 - **Highly viscous dietary fiber**
 - Good oils
 - Olive oil (and polyphenols)
 - EPA+DHA
 - Mitochondrial enhancers
 - Creatine
 - Carnitine
 - Alpha lipoic acid
 - Coenzyme Q10
 - Various flavonoids/ polyphenols
 - Green tea (EGCG)
 - Resveratrol
 - Curcumin
 - Genistein
 - Anthocyanins and PCOs
 - Chlorogenic acid (green coffee extract)
 - Numerous botanicals
 - Mulberry leaf
 - Cinnamon
 - Berberine
- ## Inhibitors of AMPK
- High fat diet
 - Caloric excess
 - Sedentary lifestyle
 - Aging

Key Dietary Strategies for Health

- Eat to improve insulin sensitivity, eat a low carbohydrate load diet.
- Eat a “rainbow” assortment of fruits and vegetables. 5 servings of vegetables, 2 servings of fruit each day.
- Reduce exposure to pesticides, and eat to enhance detoxification reactions and elimination.
- Reduce the intake of meat and other animal foods.
- Eat the right types of fats .
- Keep salt intake low, potassium intake high.
- Spice it up!

The Traditional Healthy Mediterranean Diet Pyramid

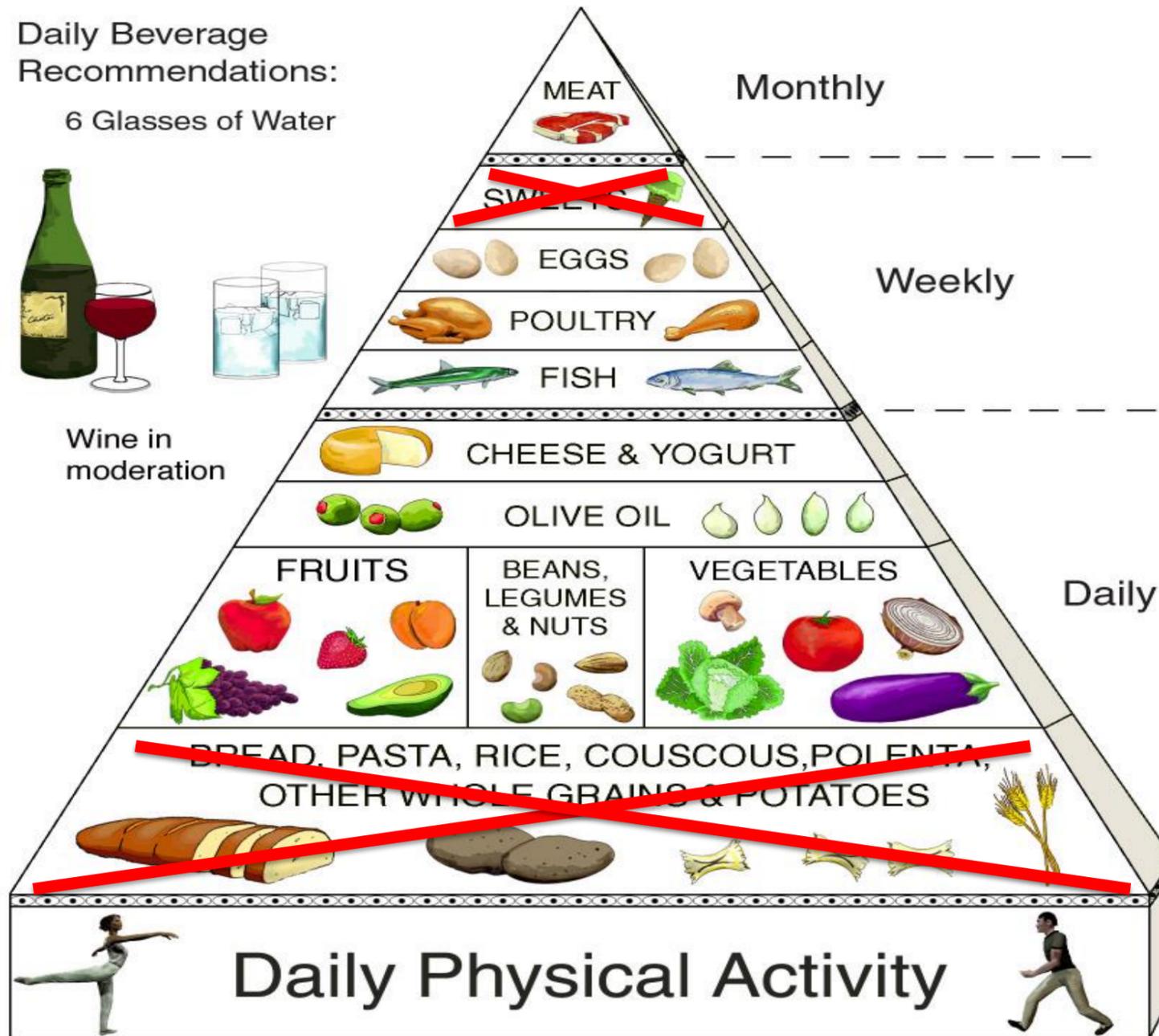


The Traditional Healthy Mediterranean Diet Pyramid

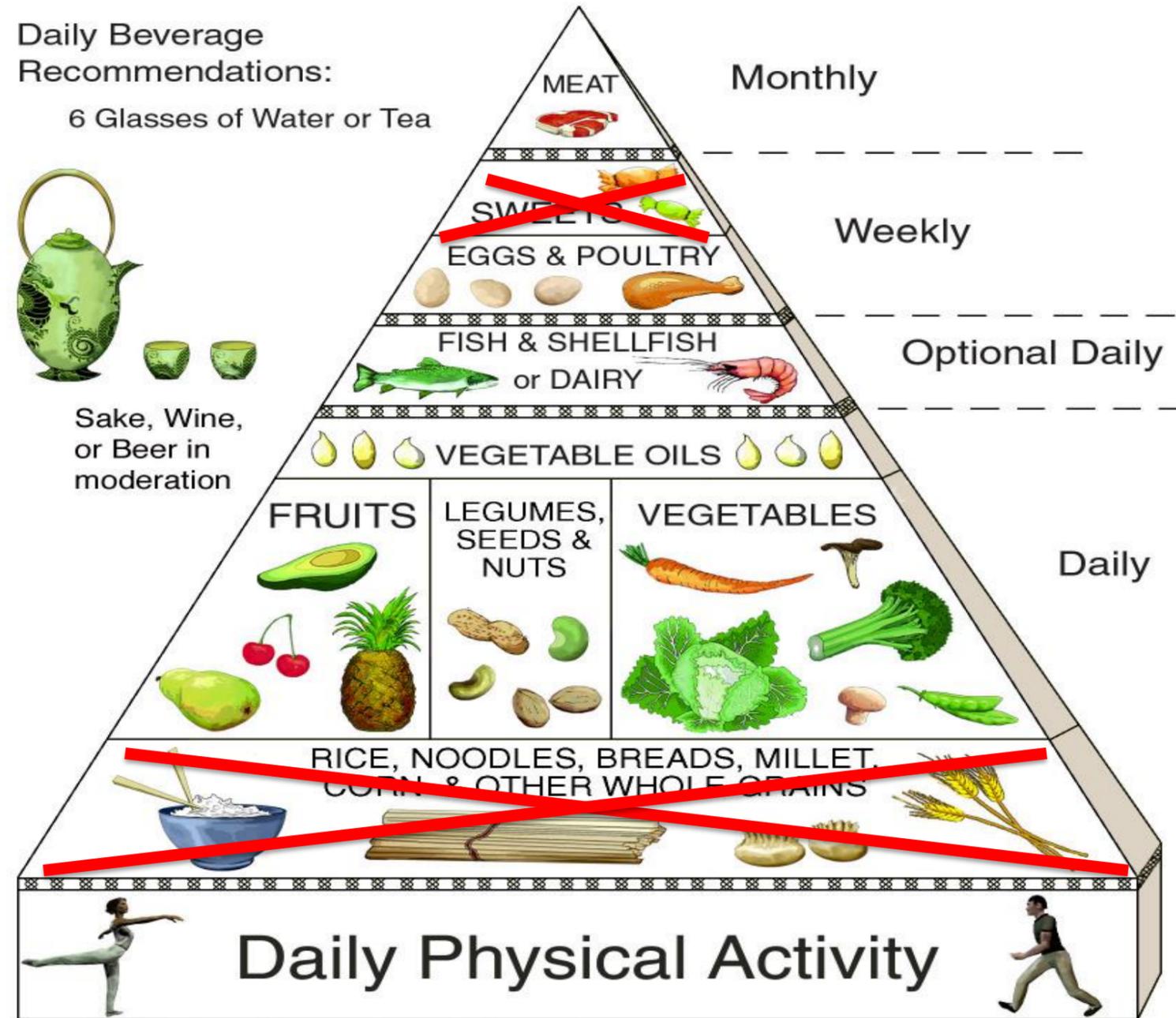
Daily Beverage Recommendations:
6 Glasses of Water



Wine in moderation



The Traditional Healthy Asian Diet Pyramid



The New Nordic Diet Pyramid



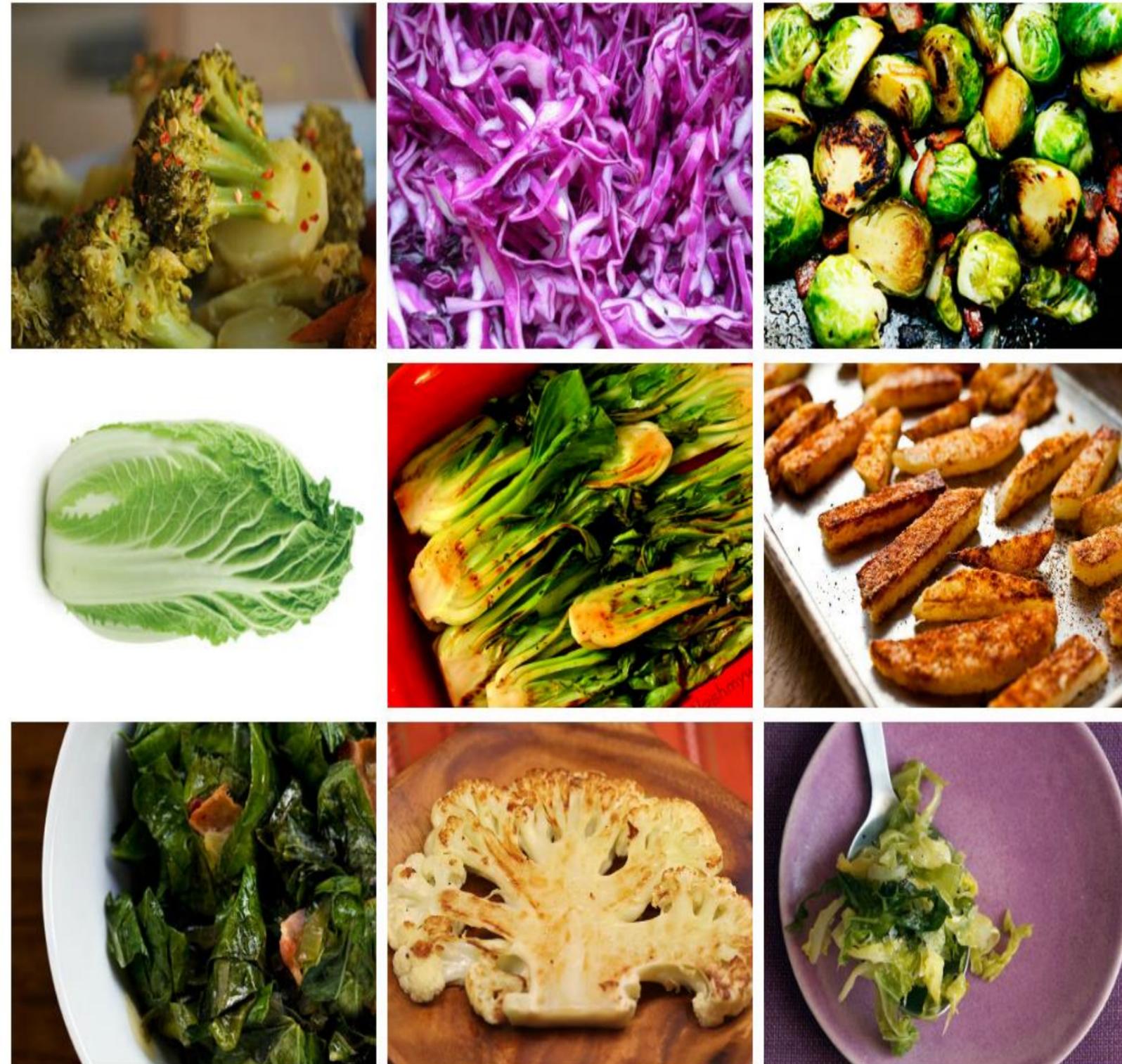
For High Blood Pressure, Just Beet It?



Health Benefits Noted:

- *Betacyanin* is a powerful cancer-fighting agent
- Natural source of nitrates
- Fresh beet juice lowers BP by up to 10 mm Hg in healthy subjects.
- Peak drop in BP occurring 3 to 4 hours after ingestion.

Kale, Broccoli, & Other Cruciferous Veggies



Health Benefits Noted:

- Nutrient dense and rich in phytochemicals
 - Very important to bone health
- Powerful detoxification aids
- Reduce risk of cancer, especially breast and prostate
- Promote intestinal healing

Which has More Bone Building Nutrients?



It is Nuts to Avoid Nuts*



Health Benefits Noted:

- Rich in “good fats” and nutrients
- Reduce risk of obesity, type 2 diabetes, heart disease, and many forms of cancer
- Lower cholesterol
- Increase nitric oxide formation
- Improve insulin sensitivity

Mediterranean Diet Plus Nut Consumption Reduces Mortality by 63%

7,447 older men and women 50–80 years were assigned to 1 of 3 interventions: a Mediterranean diet enriched with extra-virgin olive oil, a Mediterranean diet supplemented with mixed nuts, or advice on a low-fat diet (control diet).

- During a median follow-up of 4.8 years, subjects consuming nuts at a level of >3 servings/week (32% of the study group) had a 39% lower mortality risk.
- Participants following the Mediterranean diet who consumed nuts >3 servings/week at baseline had a whopping 63% reduced risk.
- Consuming >3 servings per week of walnuts was associated with a greater than 50% reduced risk of dying from cancer.

The “Good” High-Fat Foods



© Wadsworth – Thomson Learning

© Wadsworth – Thomson Learning

Can an Apple a Day Keep the Dr. Away?



Health Benefits Noted:

- Rich in polyphenols, pectin
- Lowers total and LDL cholesterol
- Prevents heart disease and strokes
- Reduces risk of Alzheimer's disease
- Raw > processed

Nutrients **2015**, *7*, 3959–3998; doi:10.3390/nu7063959

OPEN ACCESS

nutrients

ISSN 2072-6643

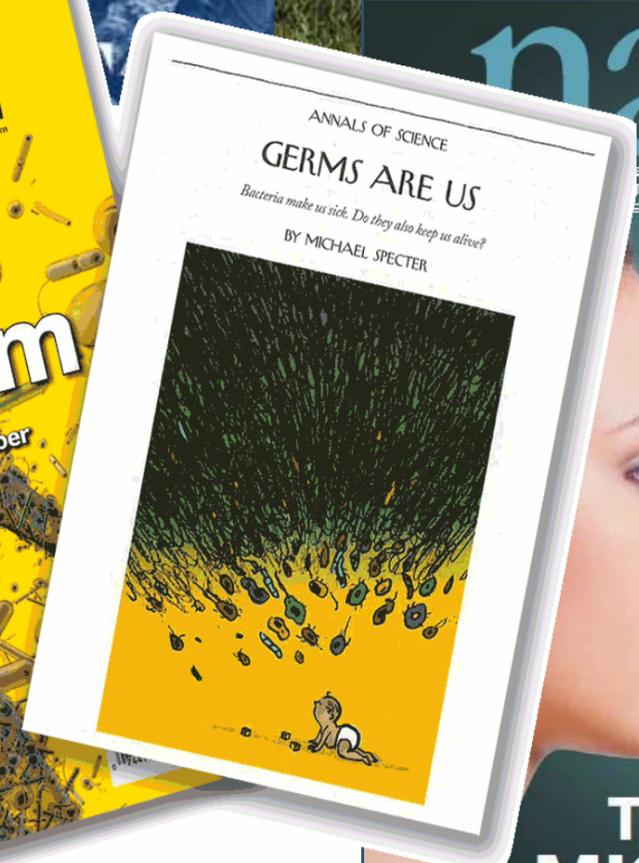
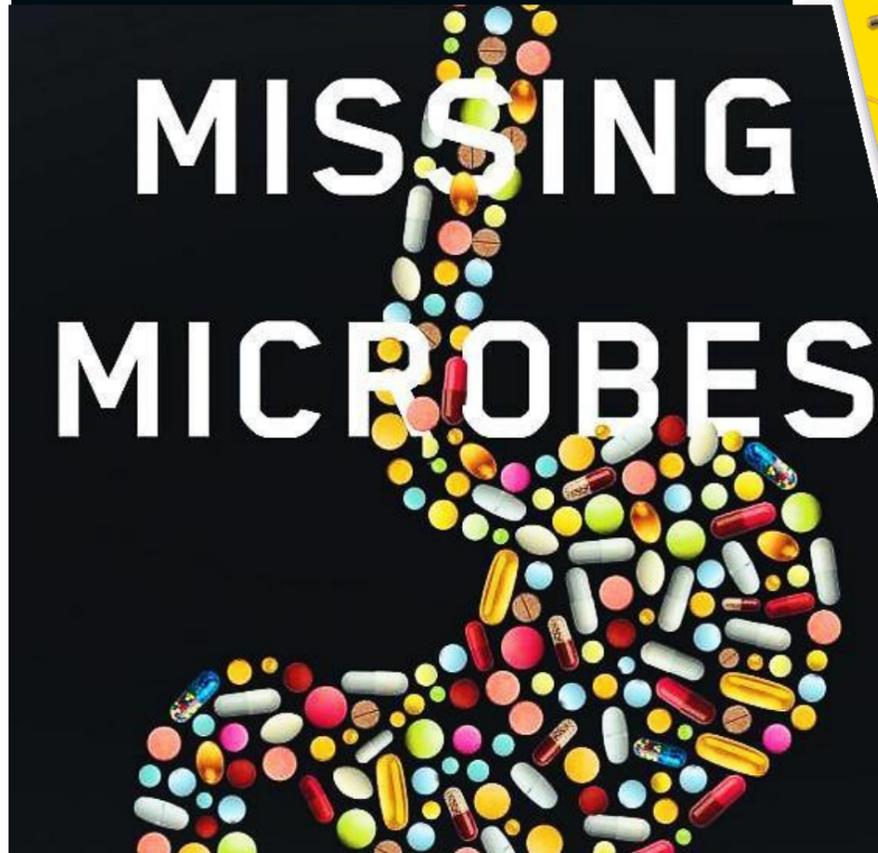
www.mdpi.com/journal/nutrients

Review

Apples and Cardiovascular Health—Is the Gut Microbiota a Core Consideration?

Athanasios Koutsos ^{1,2}, Kieran M. Tuohy ² and Julie A. Lovegrove ^{1,*}

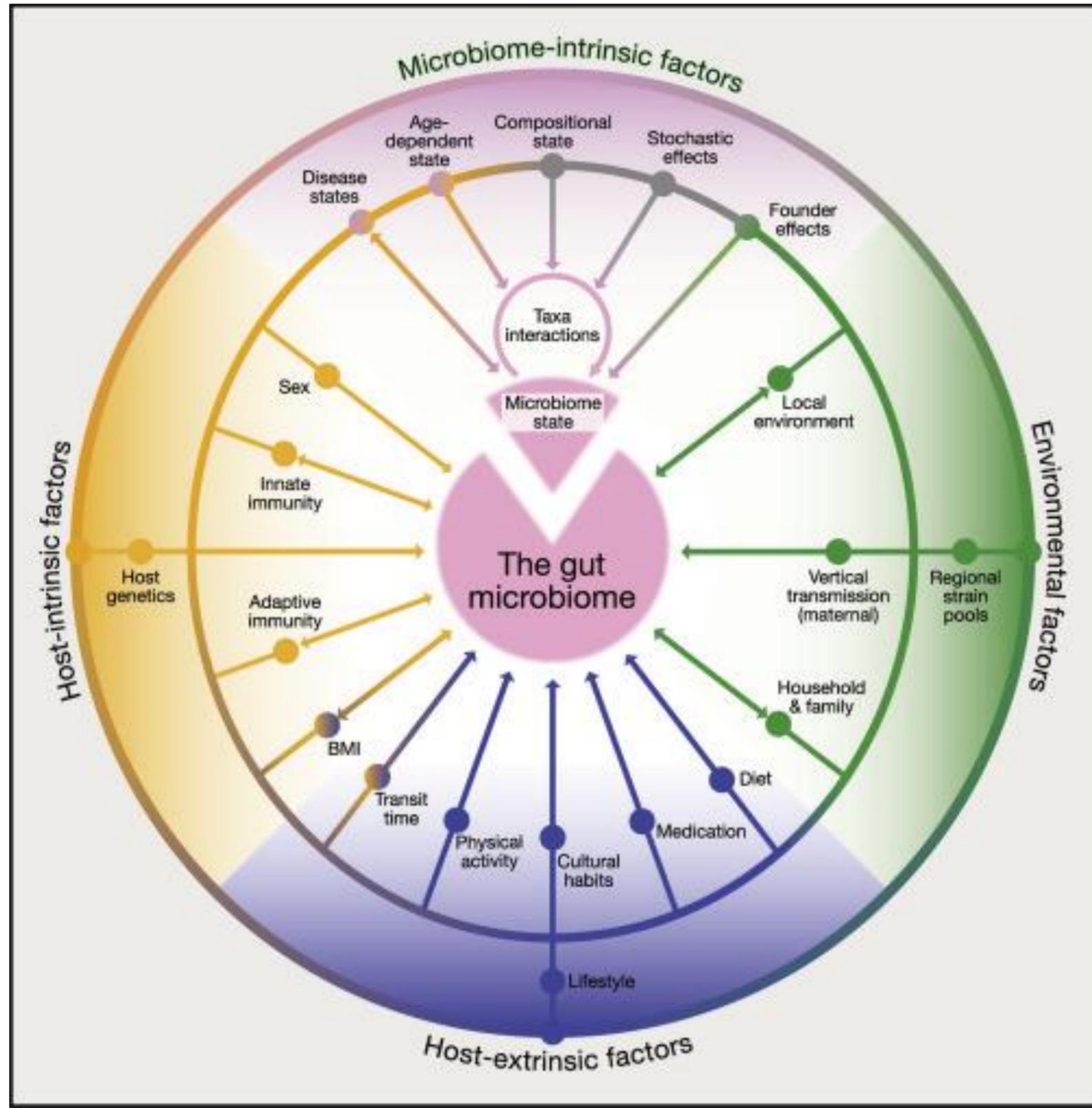
Modern Medicine Discovers "THE HUMAN MICROBIOME"



Intestinal Microbiome

- Microbiome=the collective gene content of those microorganisms
- Microbiota=the collective microorganisms
- >100,000,000,000,000 microorganisms in GIT making us 90% bugs and 10% “us”!
- “Dysbiosis”= dysregulated (abnormal) microbiota.

What Influences the Microbiome?



A Quick Summary of Microbiome Research

- Advanced gene sequencing techniques have fueled an explosion of research
- Many key microbiota are not able to be cultured
- Microbial diversity is an important factor in health
- Dietary fiber, polyphenols, and other phytochemicals are critical
- The microbiome is influenced by **MANY** factors

Alterations in the Microbiome

Links:

- Functional BD
- IBD
- GI infections
- Celiac disease
- Allergies
- Autism
- Metabolic diseases
- Obesity
- Malignancy
- Type 1 and 2 Diabetes
- NASH
- Depression

Obesity, Diabetes, and Gut Microbiota

The hygiene hypothesis expanded?

GIOVANNI MUSSO, MD¹
ROBERTO GAMBINO, PHD²
MAURIZIO CASSADER, PHD²

The connection between gut microbiota and energy homeostasis and inflammation and its role in the pathogenesis of obesity-related disorders are increasingly recognized. Animals models of obesity connect an altered microbiota composition to the development of obesity, insulin resistance, and diabetes in the host through several mechanisms: increased energy harvest from the diet, altered fatty acid metabolism and composition in adipose tissue and liver, modulation of gut peptide YY and glucagon-like peptide (GLP)-1 secretion, activation of the lipopolysaccharide toll-like receptor-4 axis, and modulation of intestinal barrier integrity by GLP-2. Instrumental for gut microbiota manipulation is the understanding of mechanisms regulating gut microbiota composition. Several factors shape the gut microflora during infancy: mode of delivery, type of infant feeding, hospitalization, and prematurity. Furthermore, the key importance of antibiotic

group experiments: they noticed that germ-free mice (i.e., raised in the absence of microorganisms) had 40% less total body fat than conventionally raised mice, even if their caloric intake was 29% higher than that of conventionally raised animals (supplementary Table 1, available in the online appendix at <http://care.diabetesjournals.org/cgi/content/full/dc10-0556/DC1>). In 2 weeks, conventionalization (i.e., colonization of their gut with a cecum-derived, distal microbial community) of germ-free mice produced a 57% increase in total body fat, a 2.3-fold increase in hepatic

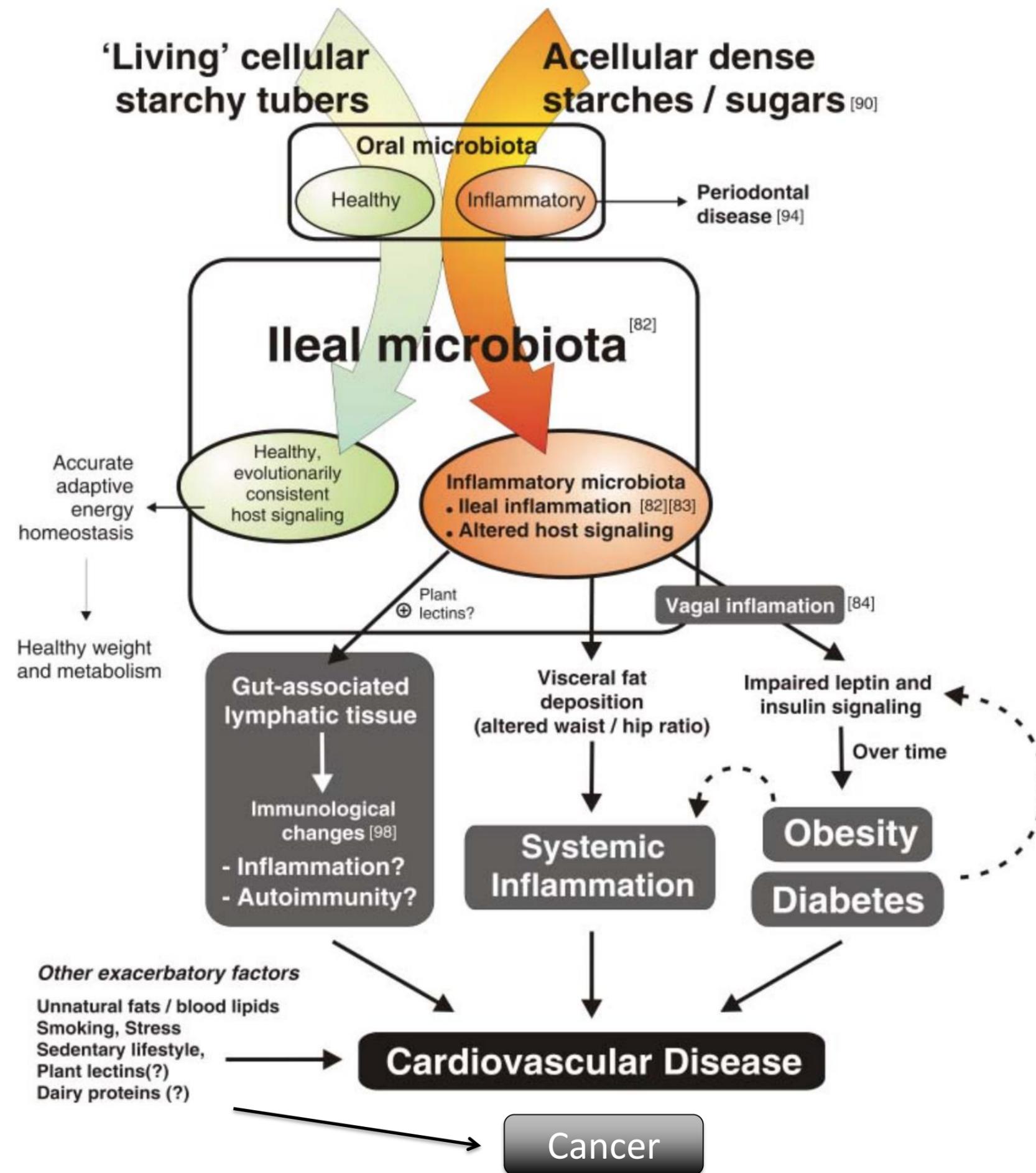
“The connection between the gut microbiota and energy homeostasis and inflammation and its role in the pathogenesis of obesity-related disorders are increasingly recognized. The role of the Western diet, antibiotics and lifestyle in promoting an obesogenic microbiota is increasingly clear.”

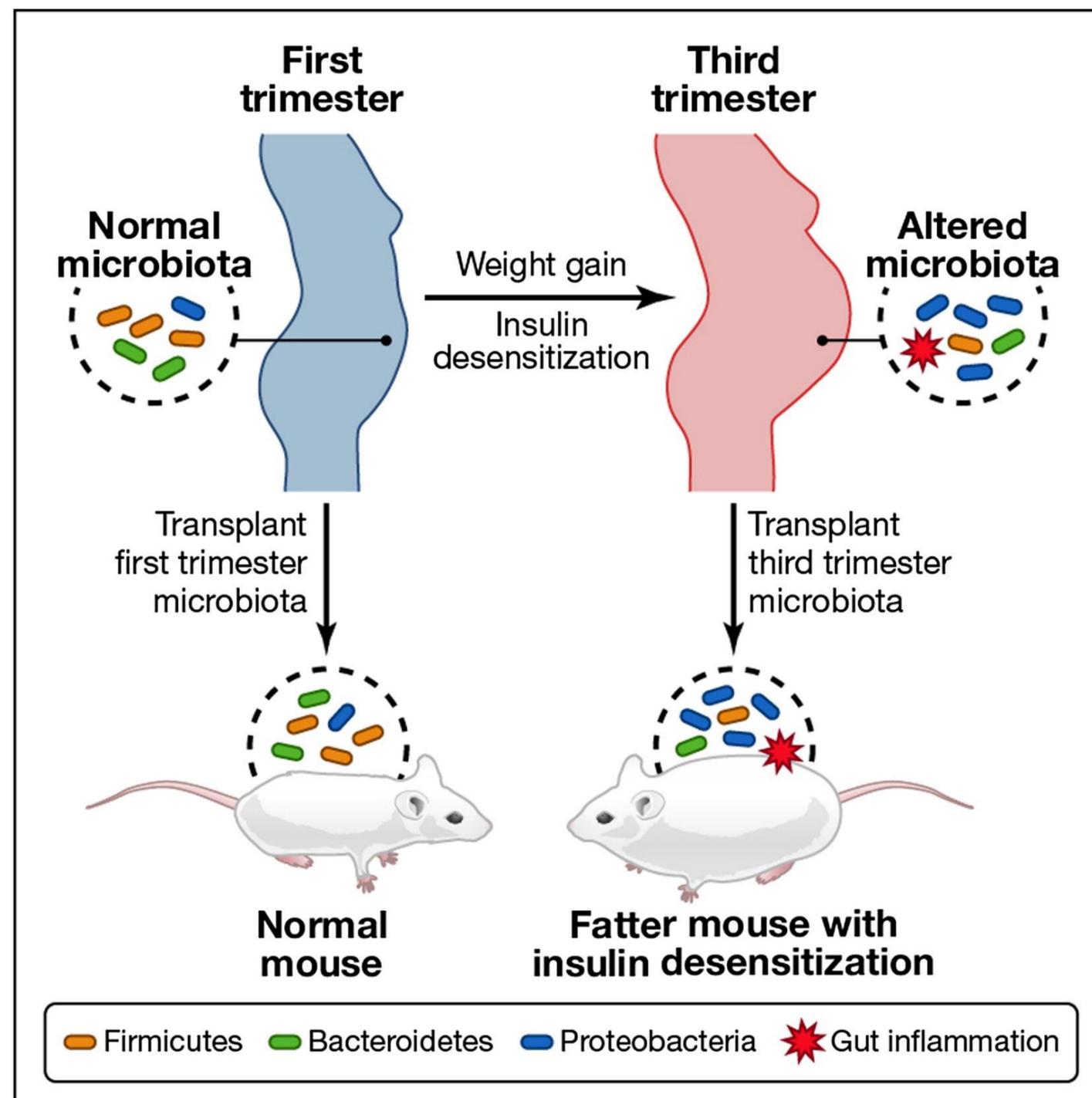
complex process involving genetic susceptibility and environmental factors, which both remain only partially understood. In such instances, gut microbiota is being increasingly recognized as an important factor connecting genes, environment and immune system. The human

and metabolomic approaches in the last 5 years. This article will discuss recent advances in understanding the role of gut microbiota in the pathogenesis of obesity, insulin resistance (IR), and diabetes and their potential therapeutic applications.

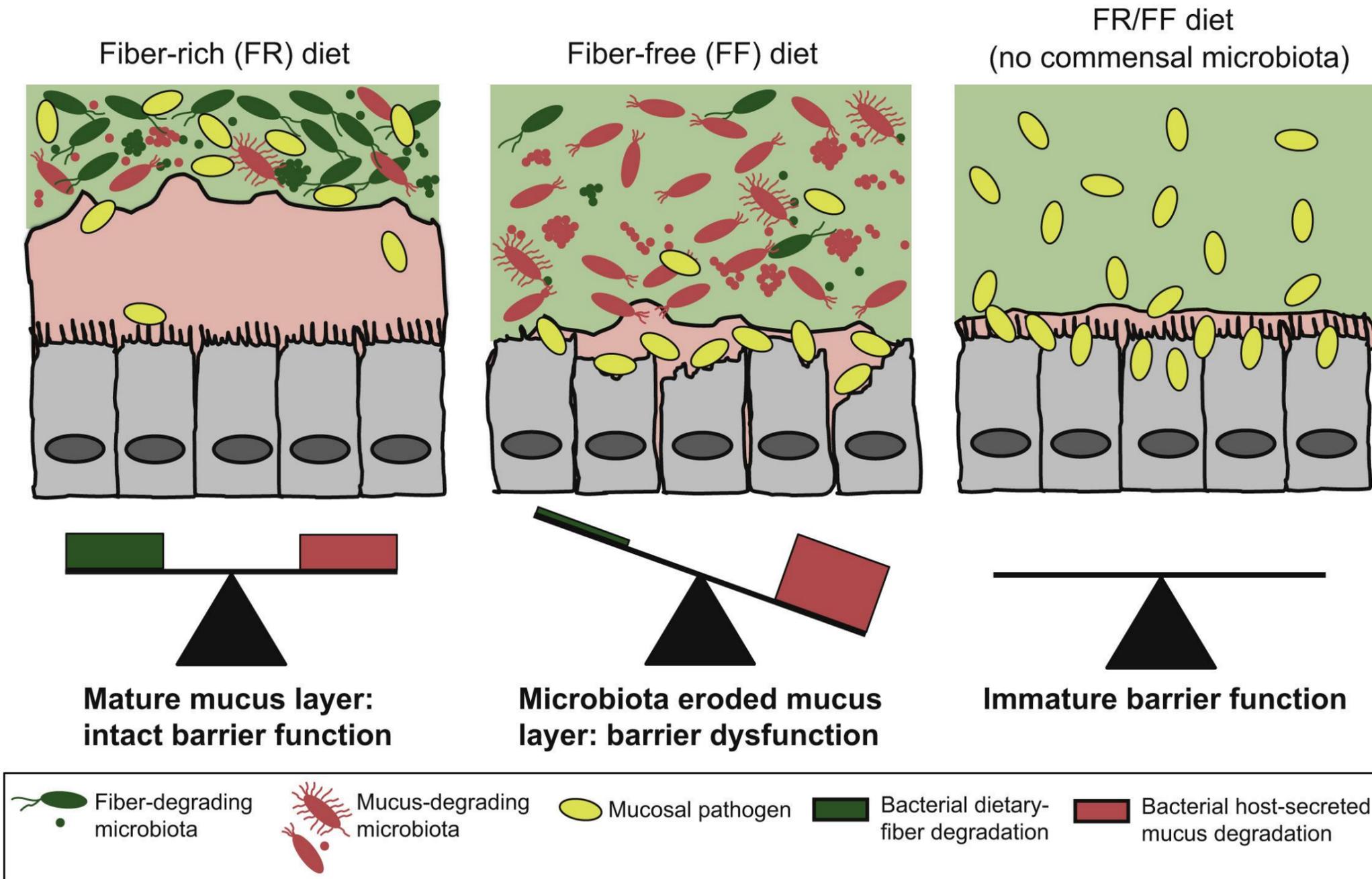
observed resistance of germ-free mice to diet-induced obesity (3):

1) conventionalization doubled the density of small intestinal villi capillaries and enhanced monosaccharide uptake from the gut into the portal blood, stim-





A Dietary Fiber-Deprived Gut Microbiota Degrades the Colonic Mucus Barrier and Enhances Pathogen Susceptibility



Some Key Studies with Probiotics

Promotes weight loss: Review article of 14 double-blind studies found consistent benefits for Lactobacillus supplementation as a weight loss aid. *Int J Obes (Lond)*. 2017 Nov;41(11):1607-1614. In a double-blind study women who took 2 capsules daily providing 3.2 billion colony-forming units of Lactobacillus rhamnosus lost twice as much weight (5.2 vs. 2.6 kg) over the 24-week period of the study. *Br J Nutr*. 2014 Apr 28;111(8):1507-19.

Review article finds benefits in anxiety and depression: “The majority of the studies found positive results on all measures of depressive symptoms; however, the strain of probiotic, the dosing, and duration of treatment varied widely...” *Ann Gen Psychiatry*. 2017 Feb 20;16:14.

Prevent ADHD and Asperger’s Syndrome (AS): When 75 of children from a DBS were evaluated at age 13 years, results showed that ADHD or AS was diagnosed in 6/35 (17.1%) children in the placebo and none in the probiotic group (0/40; $p < 0.008$). *Pediatr Res*. 2015 Mar 11. doi: 10.1038/pr.2015.51.

What Causes the Dysbiosis in IBS?

Complex interactions that include:

- History of antibiotics
- Xenobiotic exposure
- Numerous dietary factors
- Lack of digestive secretions
- Immune dysregulation
- Infection and/or inflammation

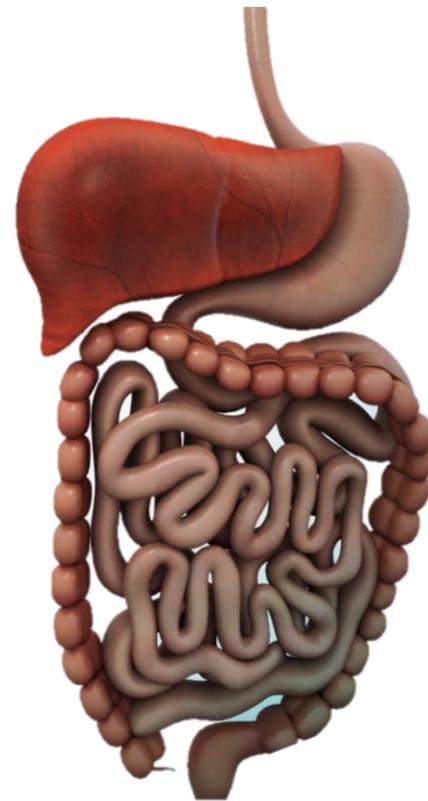
Questions Related to Digestive Enzyme Insufficiency

- Is it more prevalent than reported?
- Does fecal pancreatic elastase reflect enzyme activity?
- What are some factors that can lead to inactivation of digestive enzymes?
 - Xenobiotic exposure
 - Genetic variations
 - Dietary factors
 - Microbial interactions

Digestive Enzymes vs. Probiotics?

DIGESTIVE ENZYMES

- ✓ Work across the entire GI system: stomach, small and large intestine
- ✓ Initiate digestive process by breaking-down food into smaller particles
- ✓ Digest multiple food groups based on selection of particular variants
- ✓ Provide significant support for food intolerance



PROBIOTICS

- ✓ Live, friendly micro-organisms that confer a health benefit
- ✓ Work in the small (immune health) & large intestine (digestive health)
- ✓ Influence health and growth of beneficial bacteria in the GI system
- ✓ Don't actually digest food, but help resident microflora improve nutrient utilization

Both are indispensable to digestive health!

The Low FODMAP Diet

FODMAP is an acronym for:

- **Fermentable** – fermentable foods (e.g., prebiotics)
- **Oligosaccharides** – Beans and various vegetables.
- **Disaccharides** – e.g., sucrose, lactose, etc.
- **Monosaccharides** – primarily fructose
- **And Polyols** – these are sugar alcohols often used as sweeteners. Some examples are xylitol, maltitol, and erythritol

The Low FODMAP Diet

Excludes the following foods:

- **Vegetables:** Artichokes, asparagus, broccoli, beetroot, Brussels sprouts, cabbage, cauliflower, garlic, fennel, leaks, mushrooms, okra, onions, peas, shallots.
- **Fruit:** Apples, applesauce, apricots, blackberries, boysenberries, cherries, canned fruit, dates, figs, pears, peaches, watermelon.
- **Dairy products:** Milk (from cows, goats and sheep), ice cream, most yogurts, sour cream, soft and fresh cheeses (cottage, ricotta, etc).
- **Legumes:** Beans, chickpeas, lentils, red kidney beans, baked beans, soybeans.
- **Wheat, barley and rye:** bread, pasta, most breakfast cereals, tortillas, waffles, pancakes, crackers, biscuits.
- **Beverages:** Beer, fortified wines, soft drinks with high fructose corn syrup, milk, soy milk, fruit juices.
- **Sweeteners:** Fructose, honey, high fructose corn syrup, **xylitol**, mannitol, maltitol, sorbitol.

The Low FODMAP Diet

A low FODMAP diet as a 7 to 10 day treatment is often effective in:

- IBS, SIBO and other Functional Gastrointestinal Disorder (FGID)
- Certain auto-immune conditions/diseases like (potentially) rheumatoid arthritis, multiple sclerosis or eczema
- Fibromyalgia or other health issues you've noticed are triggered by certain foods
- Frequent migraines that appear to be triggered after certain meals

Is the FODMAP Diet Necessary?

Am J Gastroenterol. 2017 Aug 15. doi: 10.1038/ajg.2017.245. [Epub ahead of print]

Increasing Symptoms in Irritable Bowel Symptoms With Ingestion of Galacto-Oligosaccharides Are Mitigated by α -Galactosidase Treatment.

Tuck CJ¹, Taylor KM¹, Gibson PR¹, Barrett JS¹, Muir JG¹.

+ Author information

Abstract

OBJECTIVES: Galacto-oligosaccharides (GOS) are dietary FODMAPs (fermentable carbohydrates) associated with triggering gastrointestinal symptoms in patients with irritable bowel syndrome (IBS). This randomized, double-blind, placebo-controlled, cross-over trial aimed to assess whether oral α -galactosidase co-ingestion with foods high in GOS and low in other FODMAPs would reduce symptoms.

METHODS: Patients meeting the Rome III criteria for IBS who were hydrogen-producers on breath testing were recruited. Participants were treated with full-dose (300 GALU (galactosidic units) α -galactosidase) and half-dose enzyme (150 GALU α -galactosidase), and placebo (glucose) in a random order with ≤ 14 days washout between arms. Following a 3-day low FODMAP run-in period, participants consumed provided diets high in GOS for a further 3-days. Gastrointestinal symptoms were measured daily using a 100 mm visual-analogue-scale, and breath samples taken hourly on the second last day with hydrogen content analysed as area-under-the-curve.

RESULTS: Thirty-one patients with IBS (20 IBS-D, 4 IBS-C, 7 IBS-M) completed the study. The addition of high GOS foods resulted in a significant increase in overall symptoms with 21 patients exhibiting GOS-sensitivity (>10 mm increase for overall symptoms). Of those, full-dose enzyme reduced overall symptoms (median 24.5 (IQR 17.5-35.8) vs. 5.5 (1.5-15.0) mm; $P=0.006$) and bloating (20.5 (9.5-42.0) vs. 6.5 (2.0-15.8); $P=0.017$). Breath hydrogen production was minimal with no differences seen between placebo and full-dose ($P=0.597$).

CONCLUSIONS: Oral α -galactosidase taken with high GOS foods provides a clinically significant reduction in symptoms in GOS-sensitive individuals with IBS. This strategy can be translated into practice to improve tolerance to high GOS foods as an adjunct therapy to the low FODMAP diet. Am J Gastroenterol advance online publication, 15 August 2017; doi:10.1038/ajg.2017.245.

Dr. Murray's Personal Superfoods

- Berries
- Raw cacao and dark chocolate
- Green tea
- Bee pollen
- Ground flaxseeds
- Whey protein
- Soluble dietary fiber

Superfruits?

Familiar:

- Blueberry
- Grape
- Strawberry
- Black currant
- Apples
- Acerola
- Cranberry
- Pomegranate

Exotic:

- Noni
- Acai
- Goji
- Mangosteen
- Sea buckthorn
- Jujube
- Camu Camu
- Maqui

Berries are Superfruits



Health Benefits Noted:

- Rich source of flavonoids and other polyphenols
- Intake of >3 servings a week decreases CVD risk by 34%
- Reduces inflammation and strengthen collagen
- Protects and enhances brain function
- Low glycemic fruit

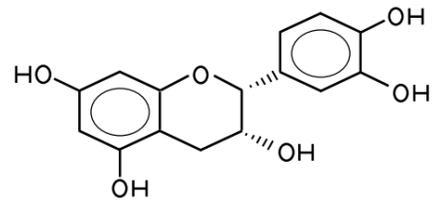
Reasons to Love Chocolate



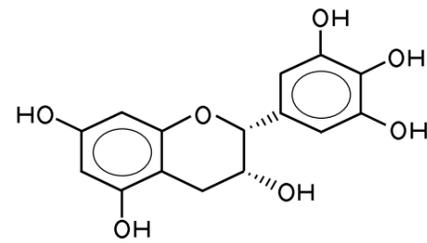
Health Benefits Noted:

- Chocolate polyphenols can:
 - Protect the lining of blood vessels
 - Reduce the risk of a heart attack or stroke
 - Promote metabolism
 - Protect and enhance brain function
- The darker the better, 1 ounce daily

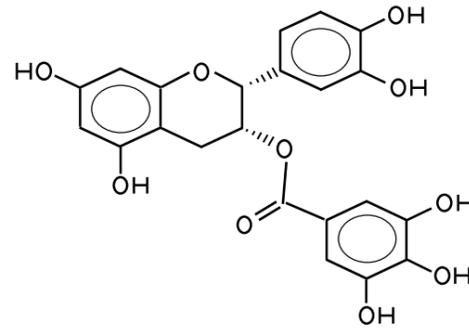
Examples of flavonoids and polyphenols



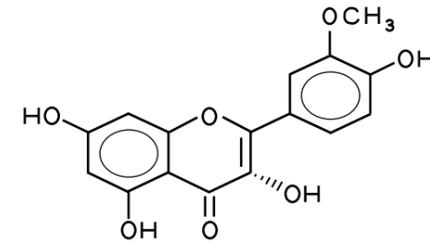
**(-)-Epicatechin
EC**



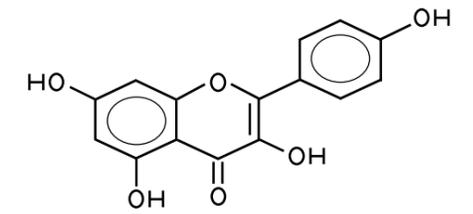
**(-)-Epigallocatechin
EGC**



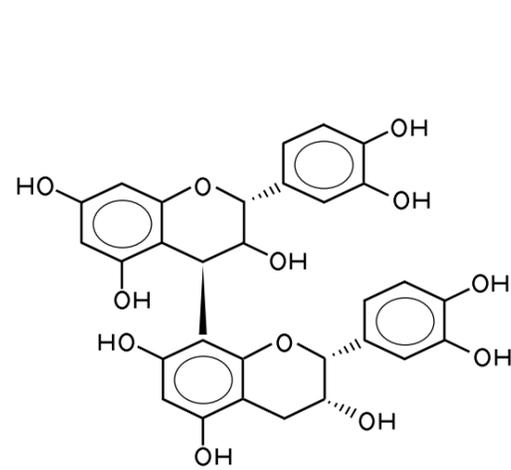
**(-)-Epicatechin-3-O-gallate
ECG**



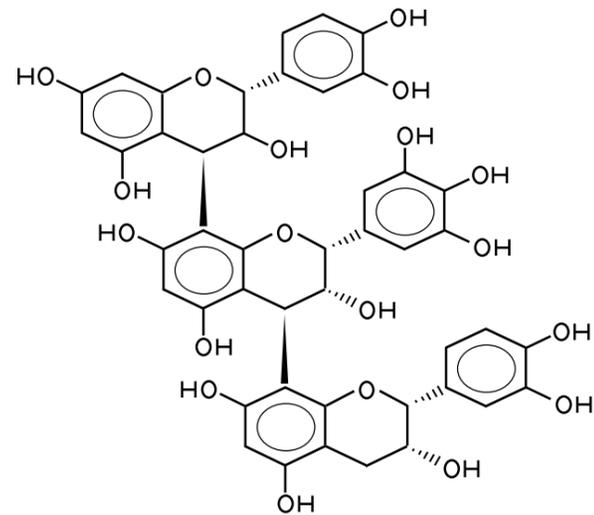
Isorhamnetin



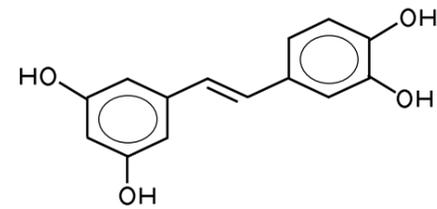
Kaempferol



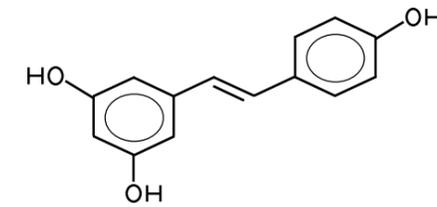
Procyanidin B1



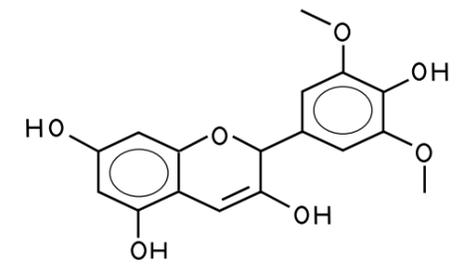
Proanthocyanidin



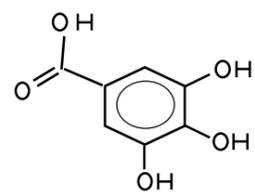
Piceatannol



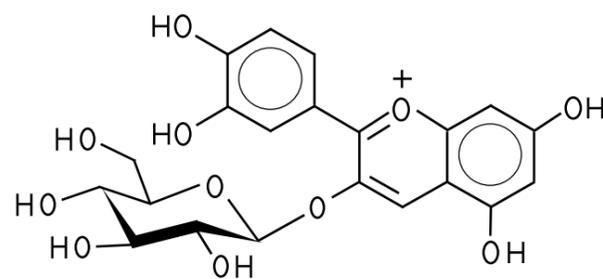
Resveratrol



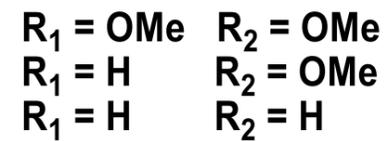
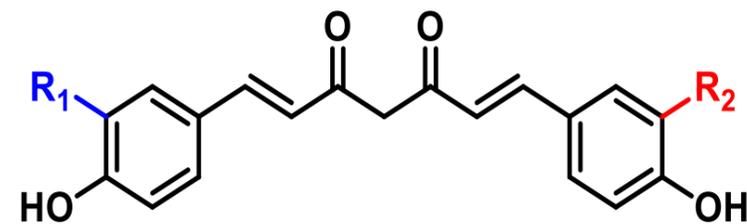
Malvidin



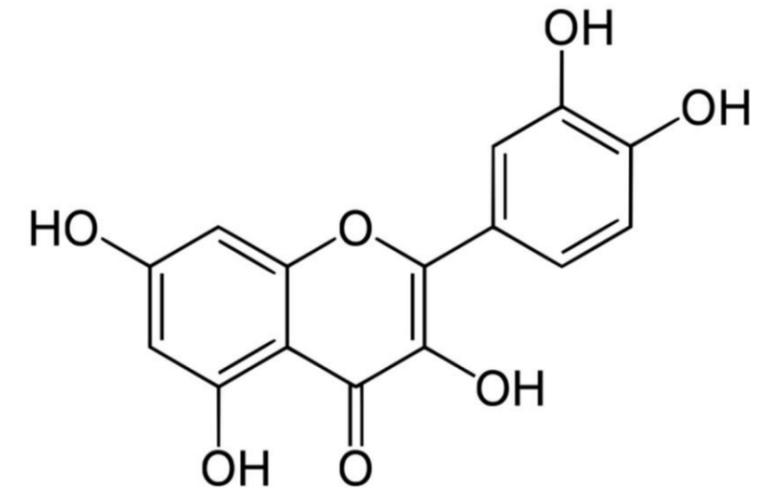
Gallic acid



Cyanidin 3-glucoside

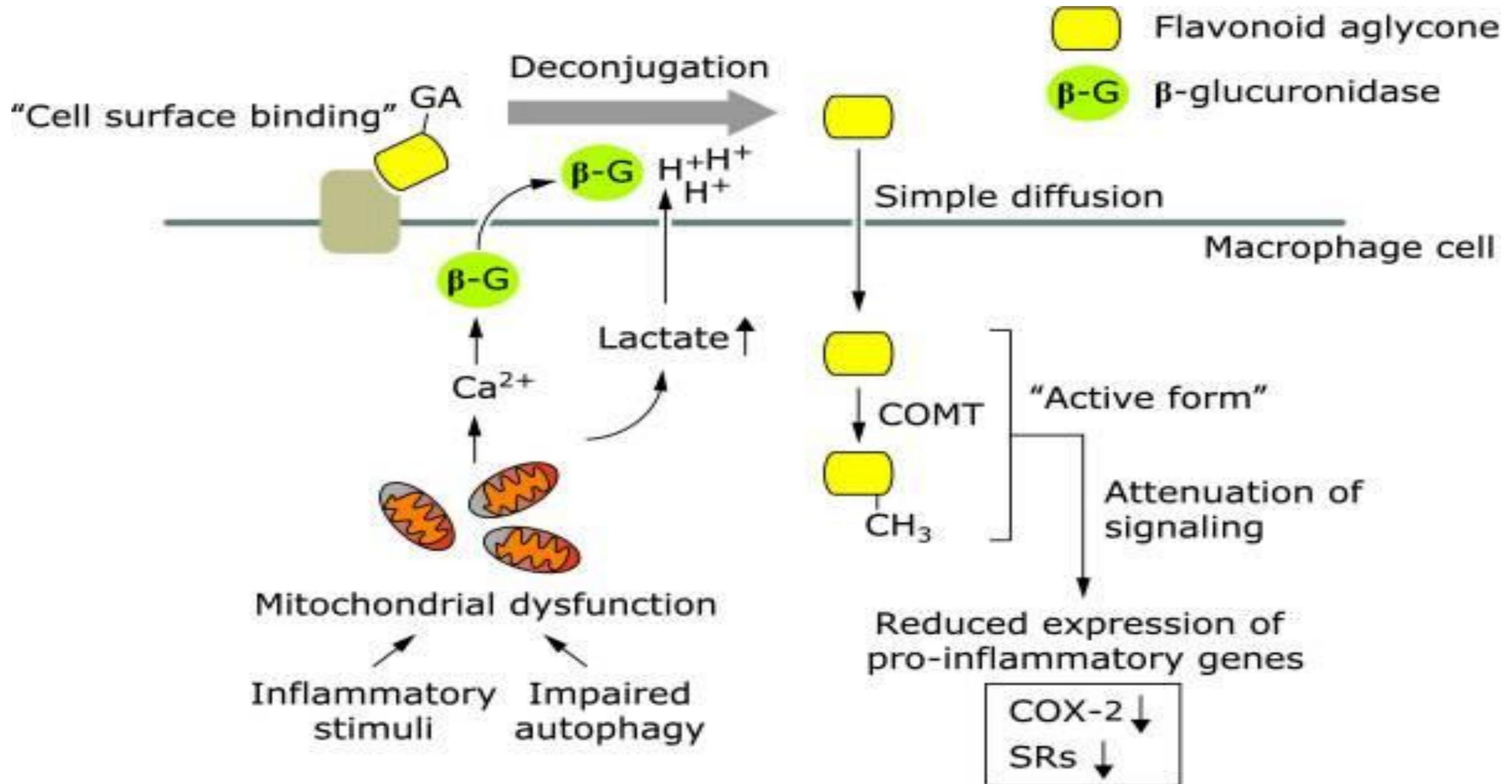


Curcuminoids



Quercetin

Deglucuronidation at Sites of Need



Flavonoid-Rich Extracts:

Tissue Specific Antioxidants

Examples:

- **Quercetin/EMIQ** – Mast cells; best for allergies and eczema?
- **Bilberry/Blueberry** (anthocyanosides) – Retina; best for eyes?
- **Grapeseed/Pine Bark** (procyanidolic oligomers) – LDL cholesterol, retina, vascular lining, lungs; best overall antioxidant?
- **Milk thistle** (silymarin) – Liver and breast. Best as detoxification aid?
- **Hawthorn** (procyanidins) or **Hibiscus** (anthocyanins) – Heart, aorta, arteries; best for heart disease?
- **Green tea** (polyphenols) – Weight loss promotion, LDL cholesterol, gastrointestinal tract; best for cancer prevention?
- **Ginkgo biloba** (ginkgo flavonglycosides) – Brain, vascular lining; best choice for people over 50 years of age?

Which is Higher in Antioxidant Capacity?





Summary of Key Points

- The future of medicine is FOOD!
- Diet affects genetic expression, the microbiome, and exerts many health benefits.
- Ingestion of a diversity of healthy foods is critical.
- Be even more inspired to learn how foods affect health.
- Get my book “The Magic of Food”



Thank You

Gratitude is not only the greatest of virtues, but the parent of all others.

Cicero, 54 B.C.