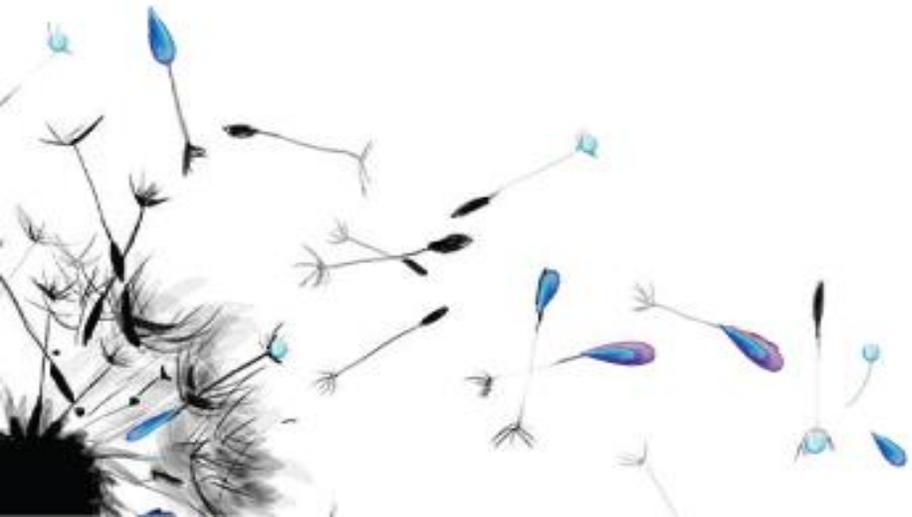


# Nourishing the brain for wisdom and wellness

Dr. Erica Ober, ND MPH

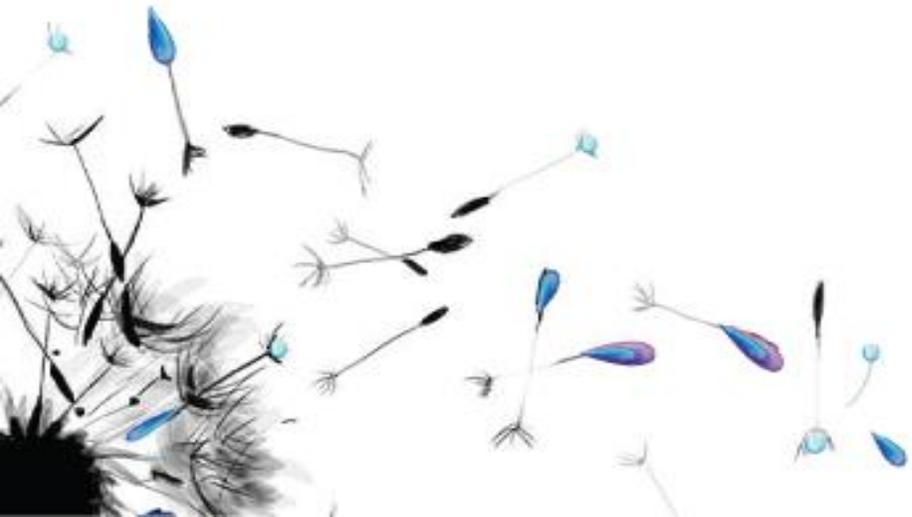
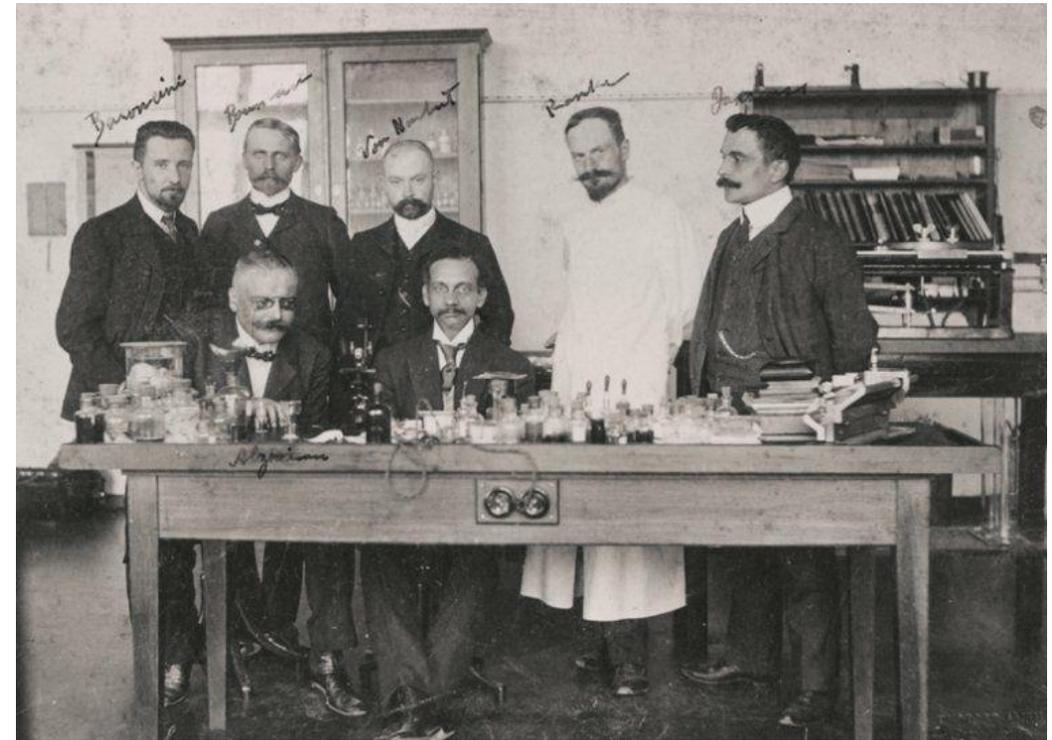
Integrative & Naturopathic Medicine

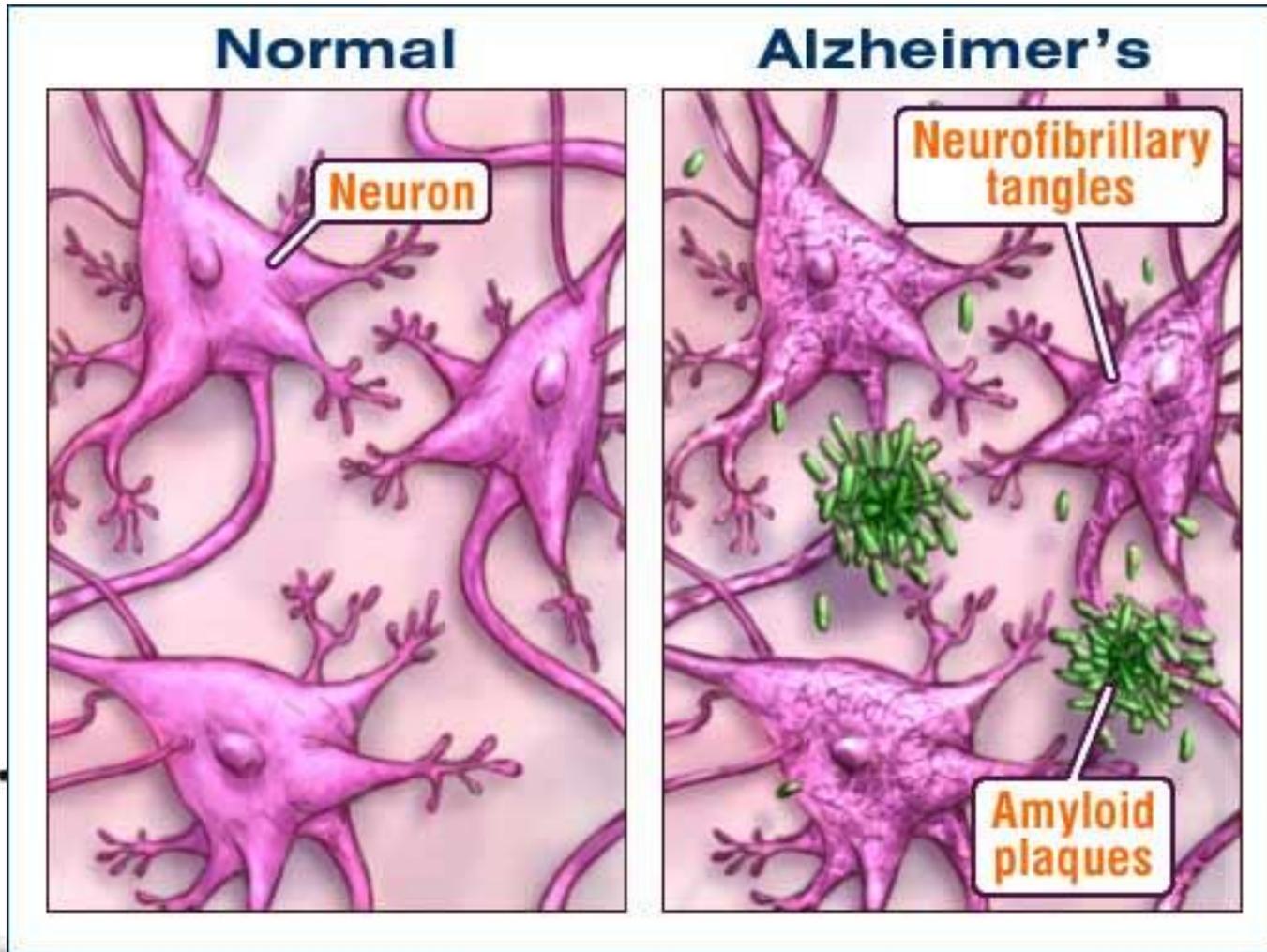
[www.drericaoberg.com](http://www.drericaoberg.com)



# 1907 – autopsy findings

In 1907, Alois Alzheimer was the first to report a case of intellectual deterioration with the histological findings of senile plaques and neurofibrillary tangles

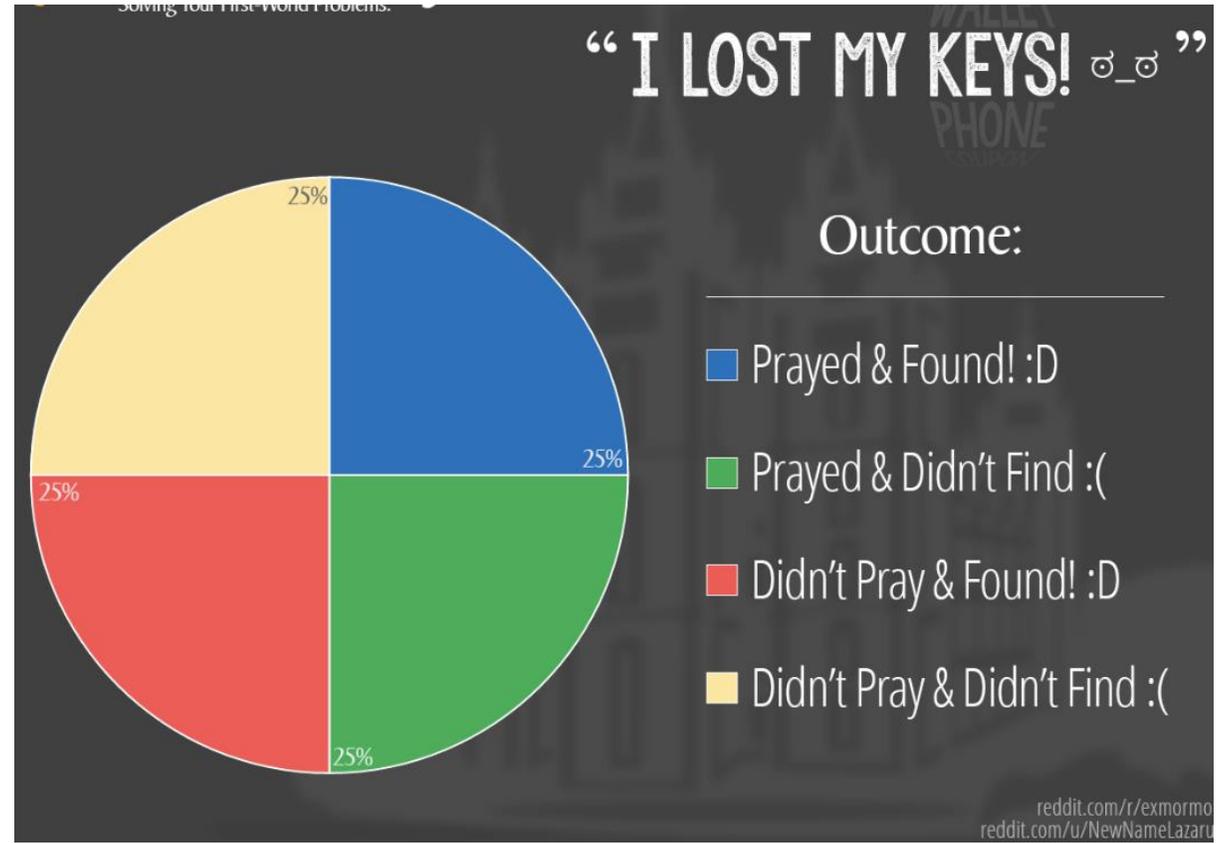




- Tau tangles
- Amyloid plaques
- ApoE aggregation
- Transient ischemic attacks
- Cerebrovascular disease

# Normal cognitive function

- Forgetting someone's name an event
- Misplacing your keys
- Daydreaming past an errand location
- Not following every detail your CPA or Advisor says
- Feeling unfocused and overwhelmed sometimes



# Possible signs of declining function

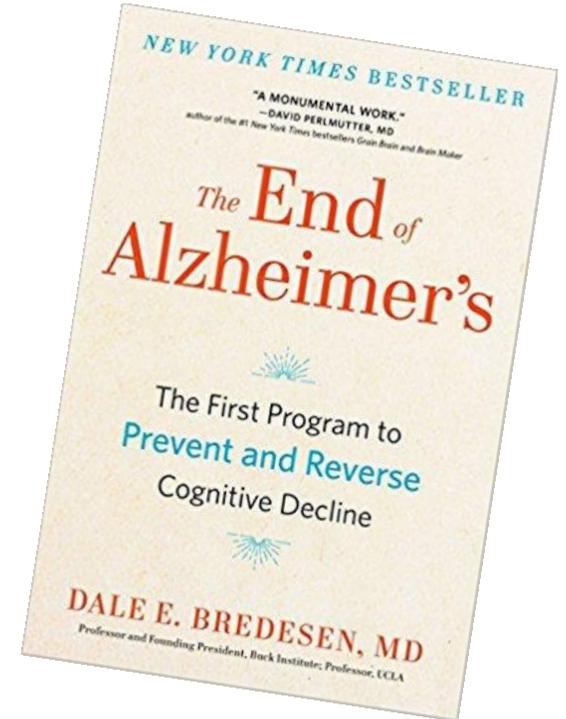
1. Memory loss that disrupts daily life
2. Challenges in planning or problem solving
3. Difficulty completing familiar tasks (work or hobbies)
4. Confusion with time or place
5. Trouble understanding visual images or spatial relationships\*
6. Difficulty following or joining a conversation
7. Misplacing things and losing the ability to retrace your steps
8. Decreased or poor judgement
9. Withdrawal from work or social activities
10. Changes in mood or personality



# Underlying causes

- Inflammation
- Toxic
- Metabolic
- Atrophic

Common pathway:  
mitochondrial dysfunction



# Toxic exposures



**Ordered Items**

Heavy Metals Profile II, Blood; Hered.Hemochromatosis, DNA

TESTS	RESULT	FLAG	UNITS	REFERENCE INTERVAL
<b>Heavy Metals Profile II, Blood</b>				
Lead, Blood	None Detected		ug/dL	0 - 4
Blood Lead Collection Method: Venous				
Testing performed by Inductively coupled plasma/Mass Spectrometry.				
Environmental Exposure:				
WHO Recommendation <20				
Occupational Exposure:				
OSHA Lead Std 40				
BEI 30				
Detection Limit = 1				
**Please note reference interval change**				
Arsenic, Blood	6		ug/L	2 - 23
Detection Limit = 1				
Mercury, Blood	15.5	High	ug/L	0.0 - 14.9
**Verified by repeat analysis**				
Environmental Exposure: <15.0				
Occupational Exposure:				
BEI - Inorganic Mercury: 15.0				
Detection Limit = 1.0				

Comment :

**Toxic Metals; Urine**

*ONE SILVER KING // TWO PPG CROWNS // U.S. VALLEY NO. HG*

TOXIC METALS				
	RESULT	REFERENCE INTERVAL	WITHIN REFERENCE	OUTSIDE REFERENCE
	µg/g creat			
Aluminum (Al)	14	< 25	█	
Antimony (Sb)	< dl	< 0.2		
Arsenic (As)	9.5	< 75	█	
Barium (Ba)	1	< 7	█	
Beryllium (Be)	< dl	< 1		
Bismuth (Bi)	0.5	< 2	█	
Cadmium (Cd)	0.2	< 0.8	█	
Cesium (Cs)	11	< 9	█	
Gadolinium (Gd)	< dl	< 0.5		
Lead (Pb)	4.7	< 2	█	
Mercury (Hg)	51	< 3	█	
Nickel (Ni)	1.4	< 8	█	

# De-Toxing

- Reduce exposures
  - Amalgam fillings
  - Avoid high mercury fish
- Improve detox pathways
  - Onions, garlic, allium family
  - Beets, artichokes,
  - Cilantro, chlorella, parsley
  - Sweating
- Chelation, under supervision
- Supplements

Visit [www.NRDC.org/mercury](http://www.NRDC.org/mercury)

for more information about mercury and fish.

- Learn about mercury and its effects
- Know how mercury gets into your home and food
- Sign up to take action to protect yourself and your family

Test your  
mercury levels  
on our online  
calculator

## LEAST MERCURY

Anchovies	Herring	Sardine
Butterfish	Mackerel (N. Atlantic, Chub)	Scallop*
Catfish	Mullet	Shad (American)
Clam	Oyster	Shrimp*
Crab (Domestic)	Perch (Ocean)	Sole (Pacific)
Crawfish/Crayfish	Plaice	Squid (Calamari)
Croaker (Atlantic)	Pollock	Tilapia
Flounder*	Salmon (Canned)**	Trout (Freshwater)
Haddock (Atlantic)*	Salmon (Fresh)**	Whitefish
Hake		Whiting

## MODERATE MERCURY

### EAT SIX SERVINGS OR LESS PER MONTH:

Bass (Striped, Black)	Jacksmelt (Siverside)	Skate*
Carp	Lobster	Snapper*
Cod (Alaskan)	Mahi Mahi	Tuna (Canned chunk light)
Croaker	Monkfish*	Tuna (Skipjack)*
(White Pacific)	Perch (Freshwater)	Weakfish (Sea Trout)
Halibut (Atlantic)*	Sablefish	
Halibut (Pacific)		

## HIGH MERCURY

### EAT THREE SERVINGS OR LESS PER MONTH:

Bluefish	Mackerel	Tuna
Grouper*	(Spanish, Gulf)	(Canned Albacore)
	Sea Bass (Chilean)*	Tuna (Yellowfin)*

## HIGHEST MERCURY

### AVOID EATING:

Mackerel (King)	Shark*	Tuna (Bigeye, Ahi)*
Marlin*	Swordfish*	
Orange Roughy*	Tilefish*	

**\*Fish in Trouble!** These fish are perilously low in numbers or are caught using environmentally destructive methods.

# Atrophy



Normal

Mild Alzheimer's

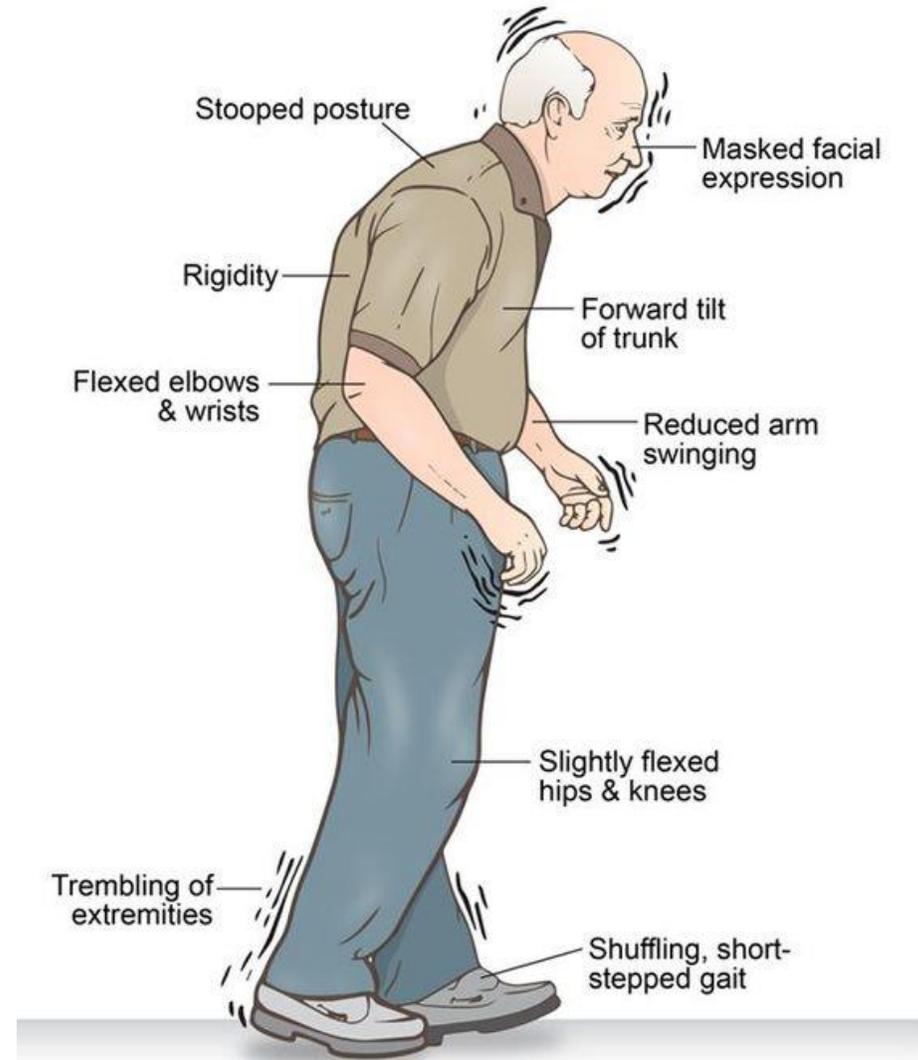


Moderate Alzheimer's

Severe Alzheimer's

© Mayo Foundation for Medical Education and Research. All rights reserved.

## Typical appearance of Parkinson's disease



©UWorld

# Nourishment for Neurodegeneration

- Nutrient dense
- Colorful
- Plant-based & fish fats
- Vitamins B, C, D, E



Bowman G. *Neurology* 2012;78:241-249

[www.drericaoberg.com](http://www.drericaoberg.com)

# Pomegranate



Anti-inflammatory

Antioxidant

Lowers blood pressure

Helps heal mouth ulcers

Liver support

Reduce risk of heart disease

- 90% ↓ in oxLDL
- 21% ↓ in systolic blood pressure
- 141% ↑ in the antioxidant glutathione
- 56% ↓ free radicals
- ↓ oxLDL uptake by macrophages by 39%



# What do You See?



# What I See

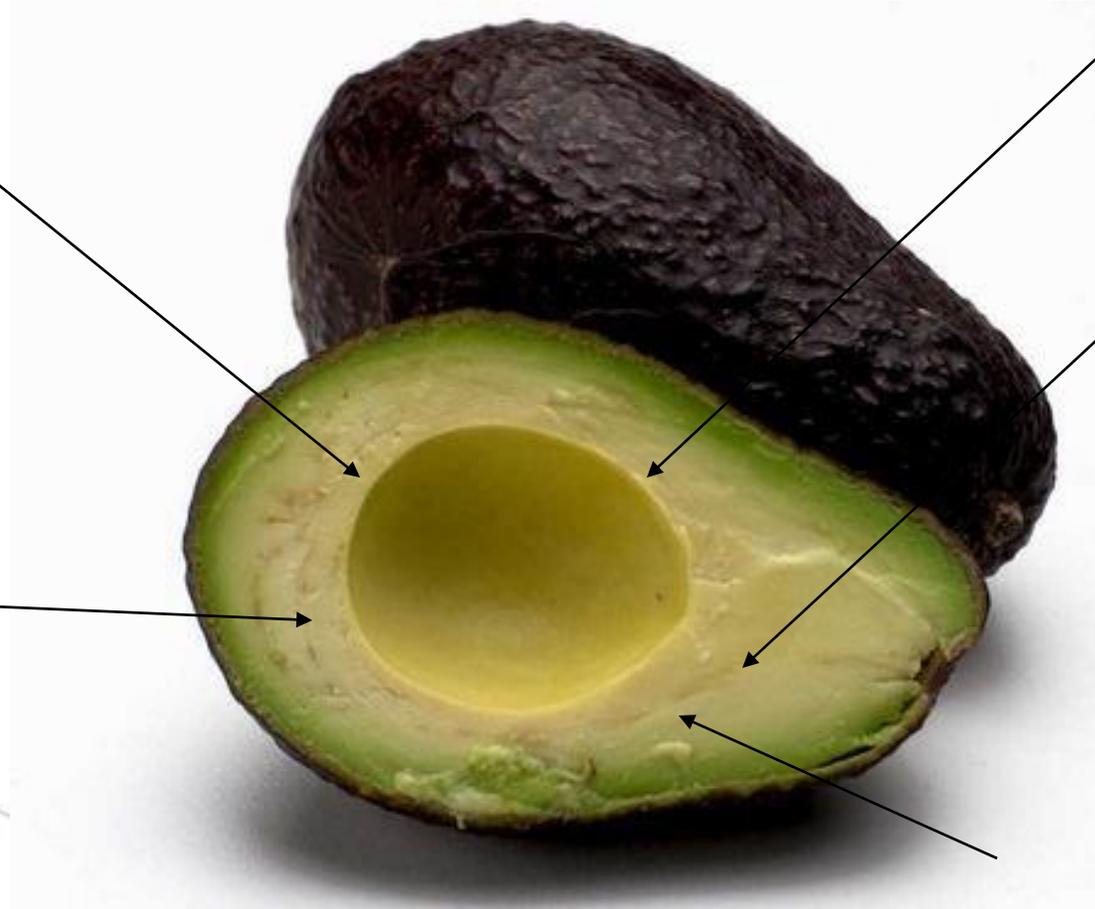
**L-carnitine**

**Lutein/zeaxanthin**

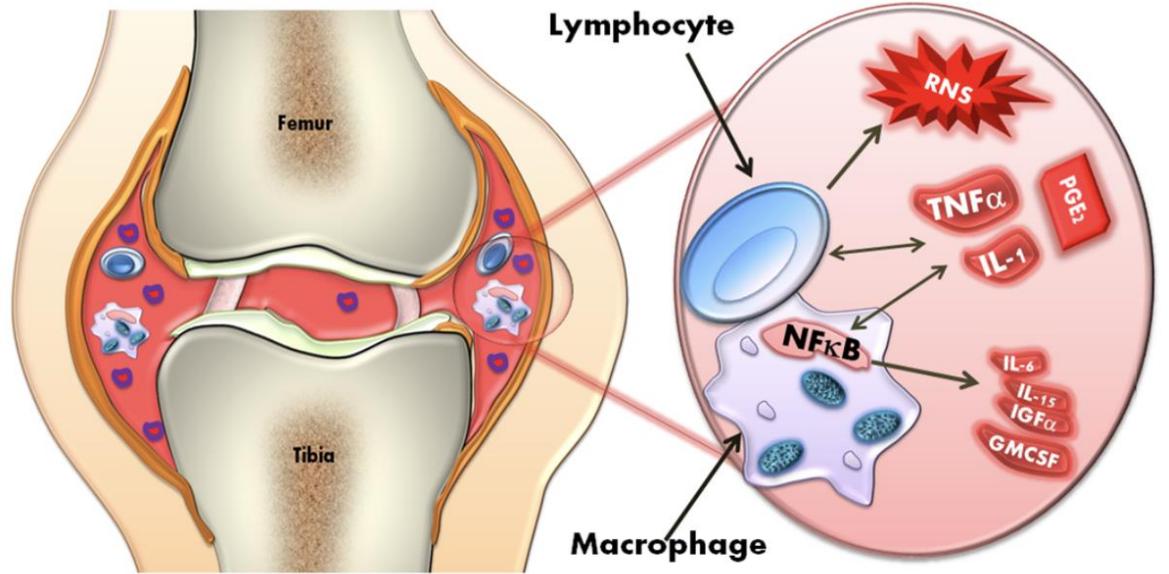
**Potassium**

**Beta-sitosterol**

**Reduced  
Glutathione**



# Inflammation



# Okinawa Japan – a blue zone



# “hara hachi bu”

- Okinawan BMI: 18-22
- Low levels of lipid peroxides
- Low metabolic rate
- Low inflammation
- Caloric restriction



Sohal RS, et al. Science 1996;273:59-63;

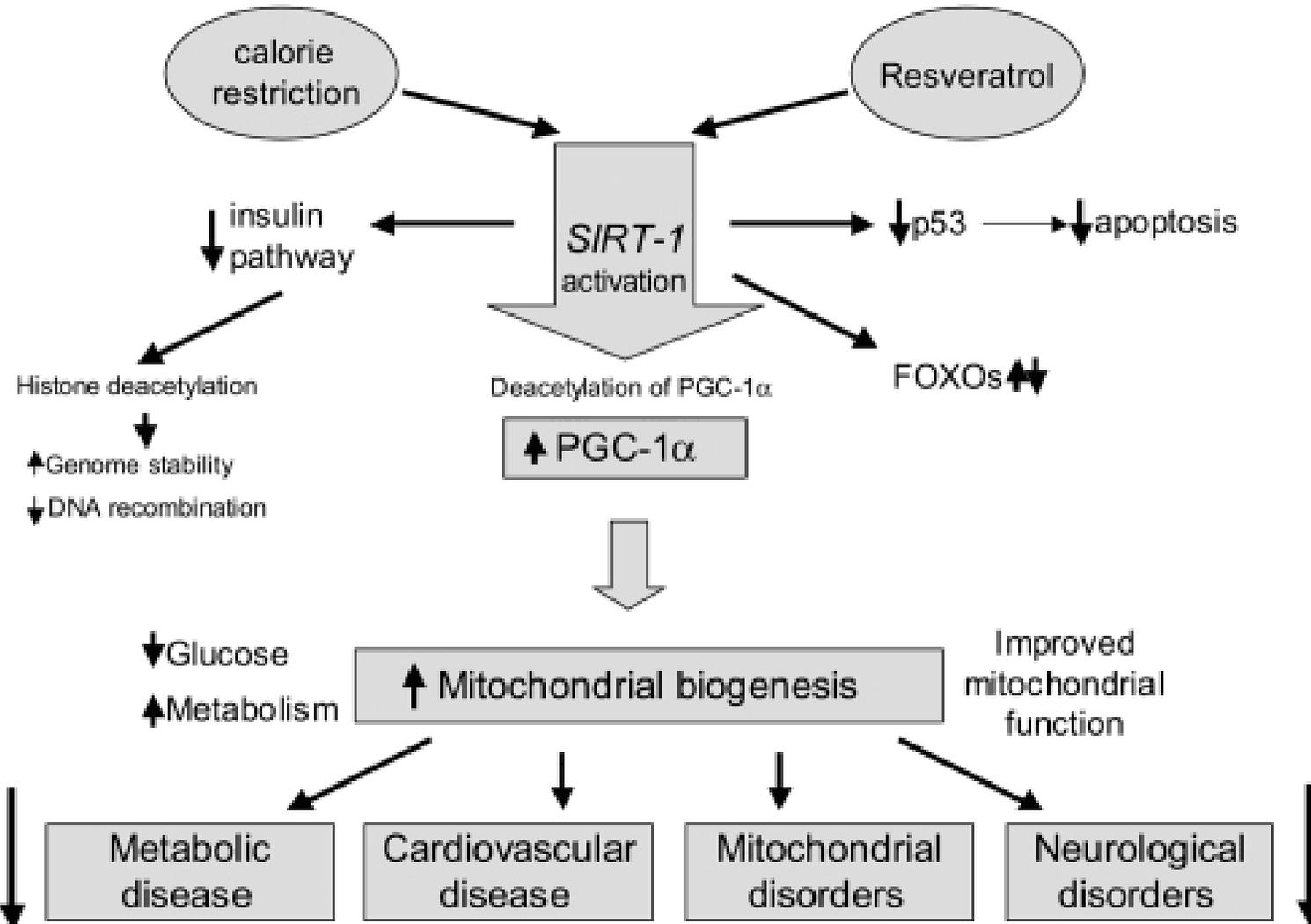
Heilbronn LK, et al. Am J Clin Nutr 2003;78:361-9

Fries JF. New England Journal of Medicine 1980;303:131-5

# Can diet return us to our ancestral physiology?



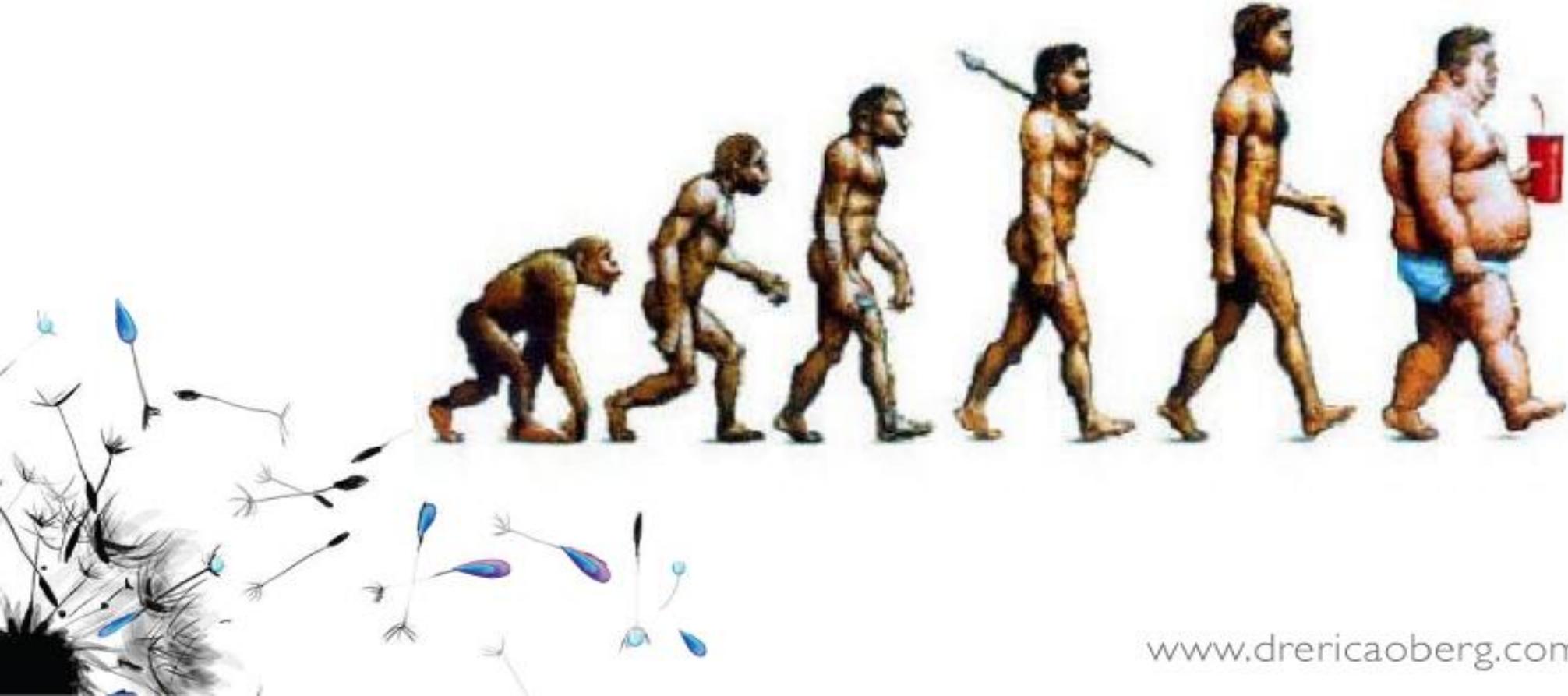
# Physiology of caloric restriction



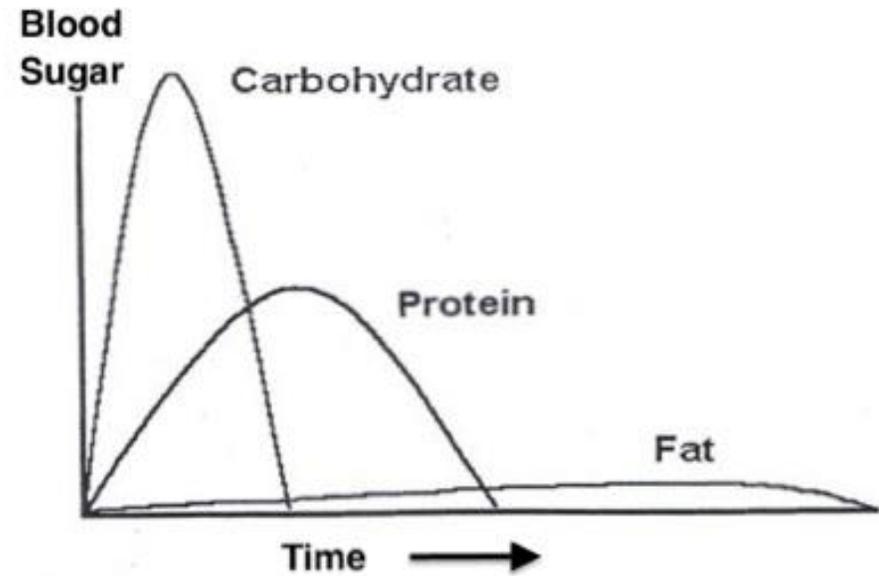
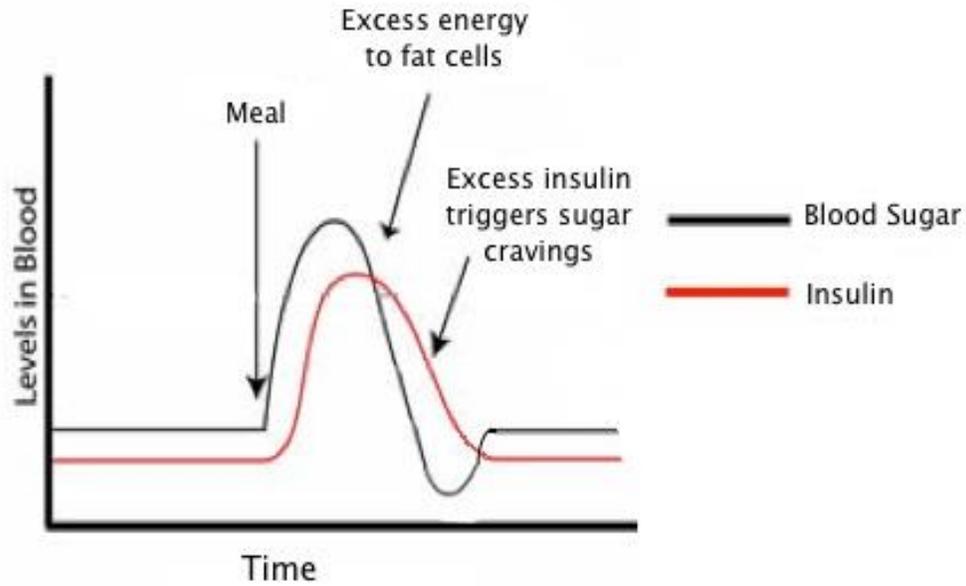
# Do calories count? Fasting

- 24 hours every other day or twice weekly (5:2) extends lifespan by 30%, decreased weight, fat mass, lipids, inflammation, oxidative stress, HTN, diabetes, markers of neurodegeneration and cancer (Harvie 2011)
- Calories stacked early in the day reverses PCOS biomarkers (Jakubowicz 2013)
- 13 hour overnight fast improves chemotherapy response in cancer (Simon 2018)
- 75% reduction (humans, 12 weeks) decreased weight, fat mass, CV risk factors (Kroeger 2014)
- 20% caloric restriction improved verbal memory and markers of age-related dementia in overweight people (Witte 2009)
- Ketogenic diet – similar benefits (Kawisaya 2013)

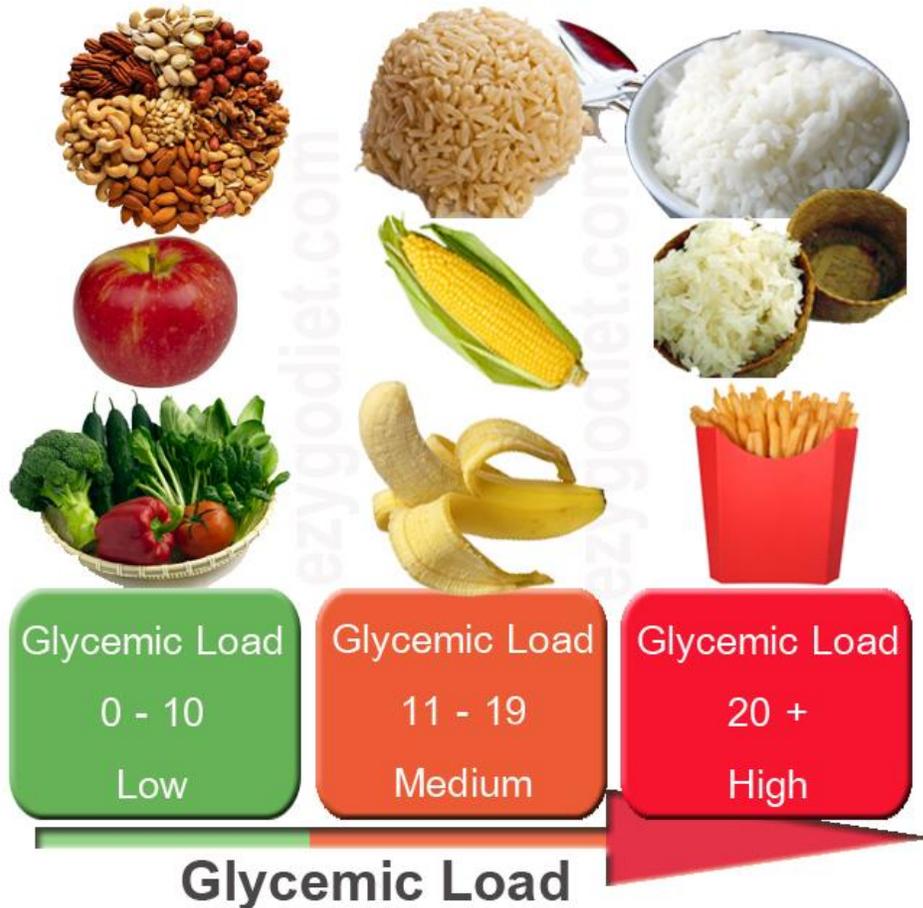
# Metabolic Toxicity



# Blood sugar & Insulin



# How to decrease your Glycemic Load



- Slow digestion
- Add fat
- Add fiber

\*ดูค่า GL เทียบปริมาณน้ำหนักรายอาหาร จำนวน 1 เสิร์ฟ จาก [glycemicindex.com](http://glycemicindex.com)

## Cannabidiol (noun)

can·na·bi·di·ol



Abbreviated CBD. A non-psychoactive constituent of the hemp plant. Not the same as THC.

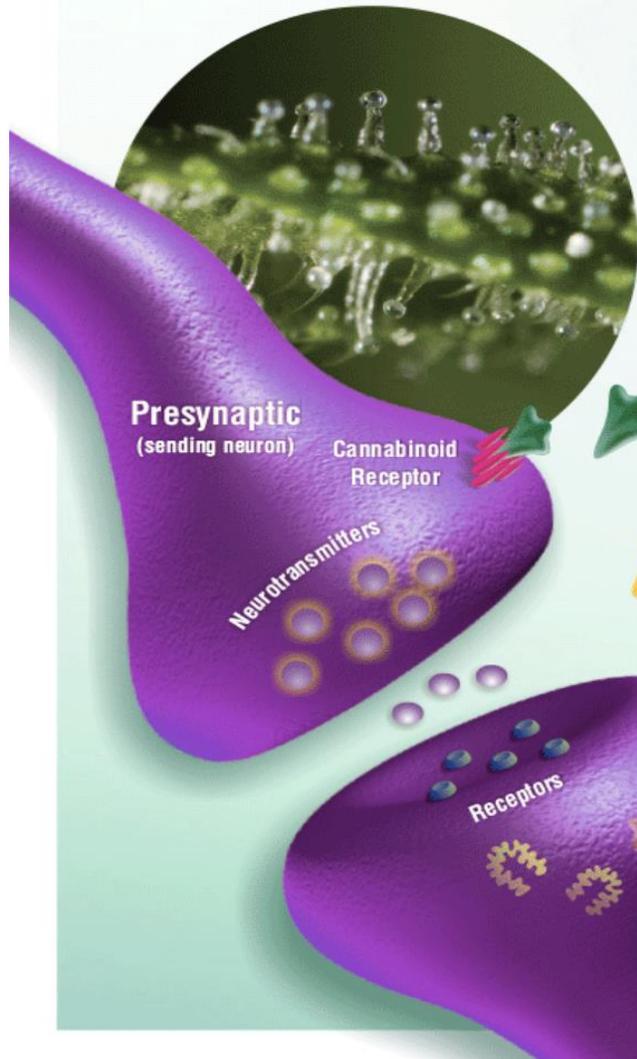
“relax, eat, sleep, forget, and protect”

# The Human Endocannabinoid System

CBD, CBN and THC fit like a lock and key into existing human receptors. These receptors are part of the endocannabinoid system which impact physiological processes affecting pain modulation, memory, and appetite plus anti-inflammatory effects and other immune system responses. The endocannabinoid system comprises two types of receptors, CB1 and CB2, which serve distinct functions in human health and well-being.

CB1 receptors are primarily found in the brain and central nervous system, and to a lesser extent in other tissues.

Receptors are found on cell surfaces



Tetrahydrocannabinol



Cannabidiol



Cannabinol



CBD does not directly "fit" CB1 or CB2 receptors but has powerful indirect effects still being studied.



CB2 receptors are mostly in the peripheral organs especially cells associated with the immune system.



# Self-assess:

## How is your endocannabinoid tone?

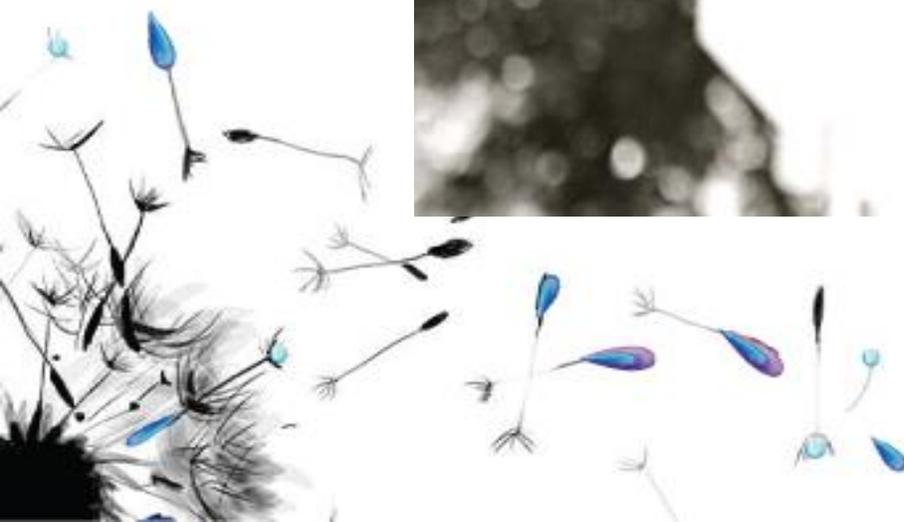


- Reliant on drugs to mask pain & inflammation?
- Dreamless sleep? Low REM? Difficulty falling or staying asleep?
- Prone to anxiety, rumination? “In your head”?
- Motor/balance/neurologic issues?
- Difficulty accessing your creativity, imagination?
- History of concussion, head trauma, brain injury, stroke?

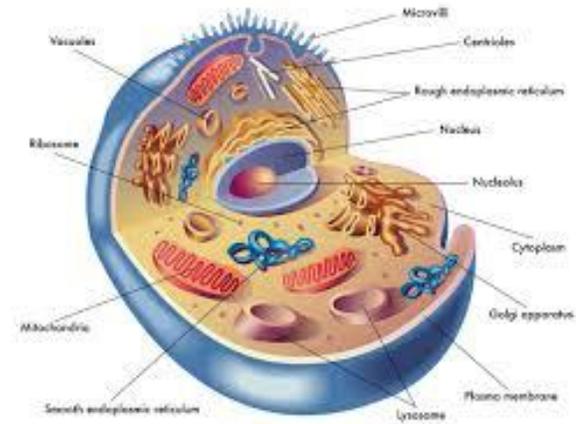
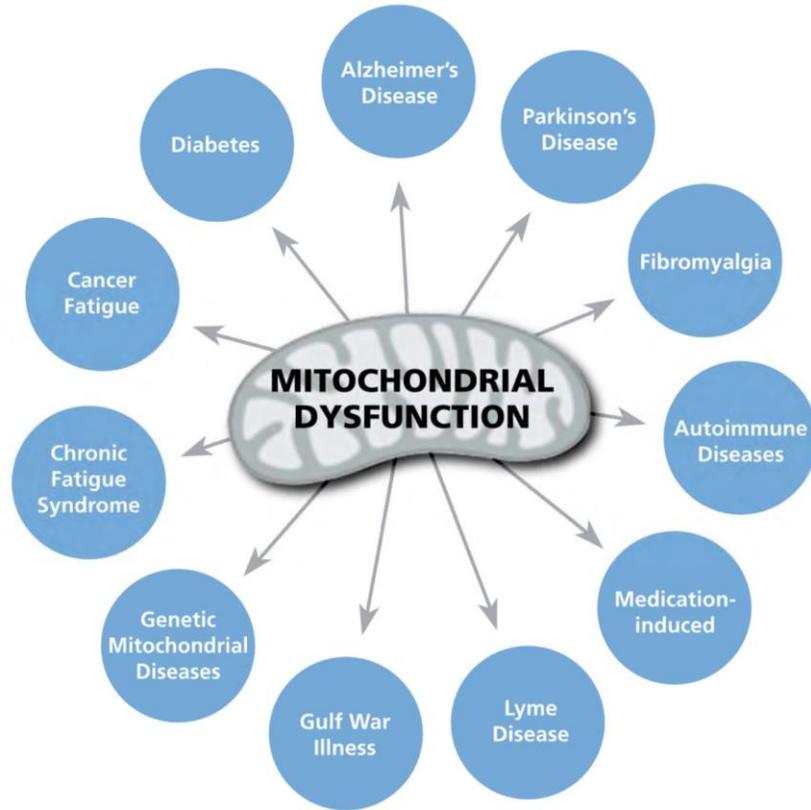
# Other brain balancers

- Rhodiola rosea –increases dopamine
- Phosphatidyl serine – essential for neuroplasticity
- L-phenylalanine, l-tyrosine – dopamine precursors
- Avena sativa (oats/oat straw) – calms the nervous system
- Mucuna puriens – “natural l-dopa”
- B6, B12, folate, betaine, SAM-E – dopamine methylation co-factors



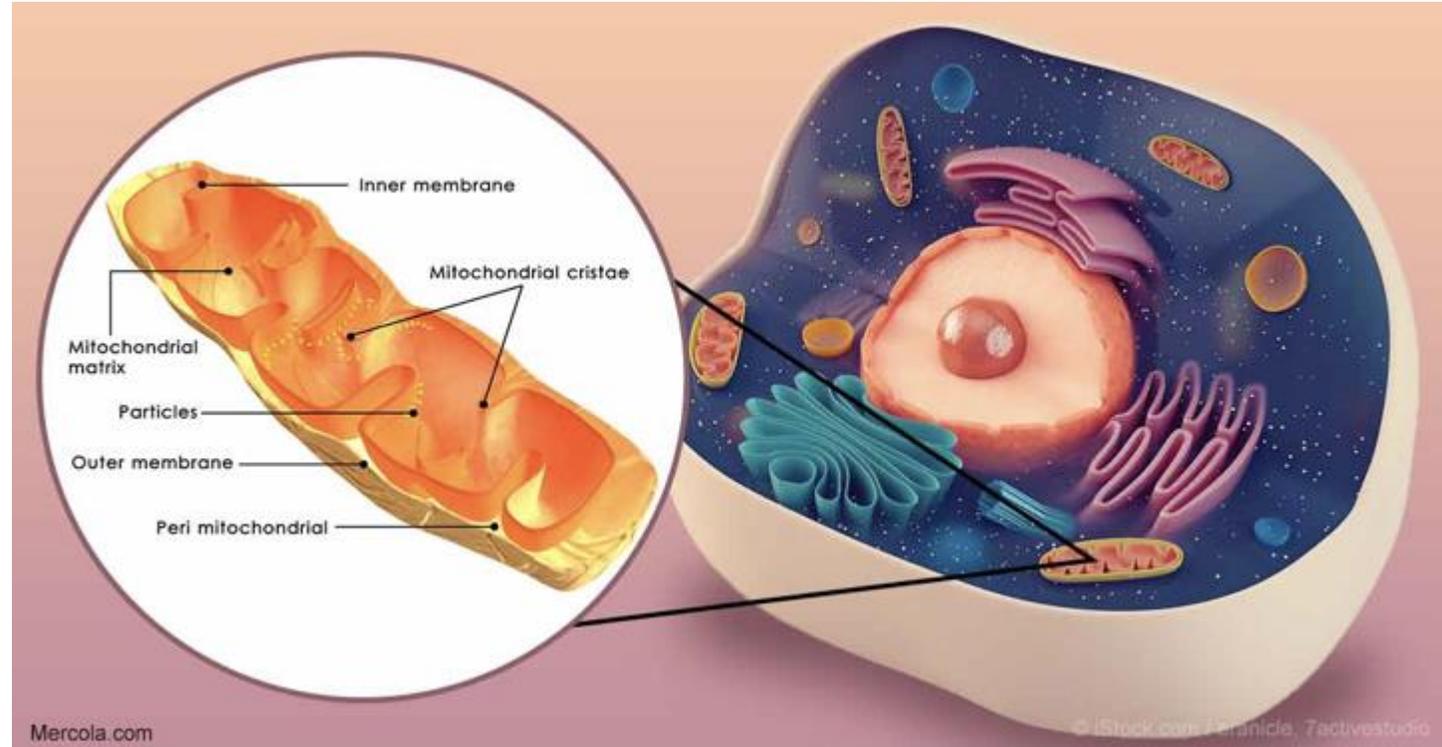


# Mitochondria – cellular power station

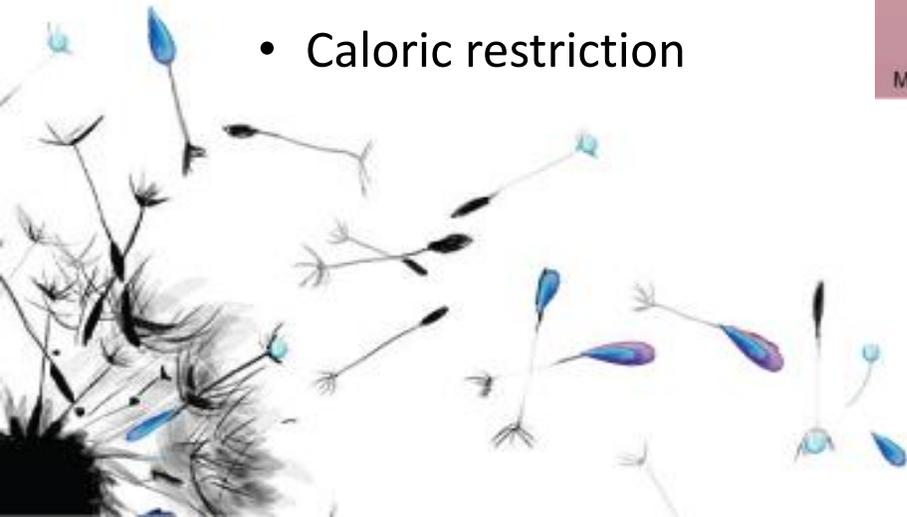


# NAD<sup>+</sup>

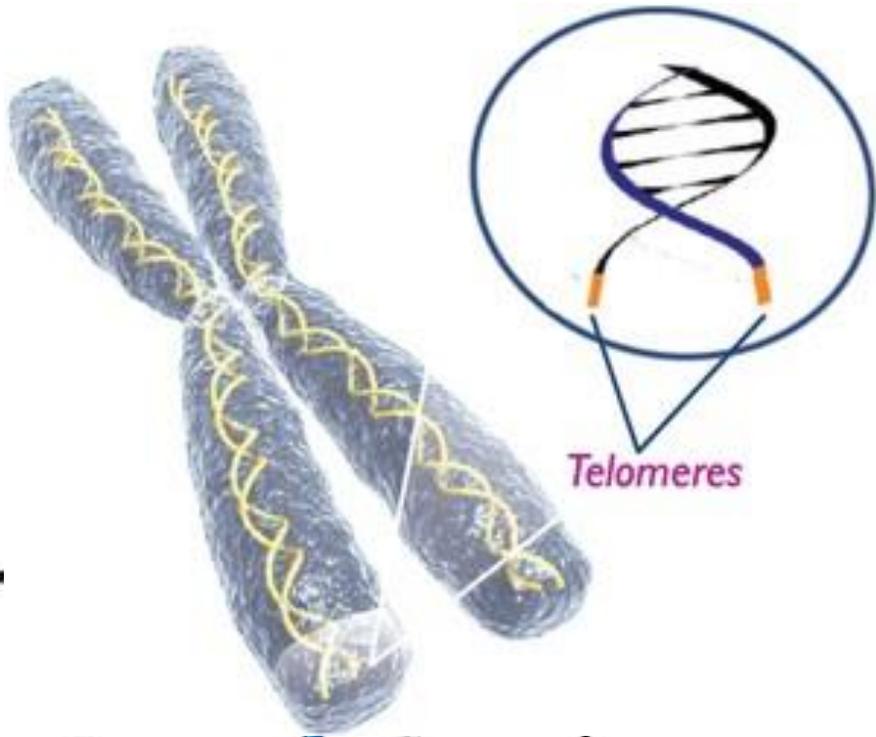
- Nicotinamide adenine di-riboside
- Precursors
  - Tryptophan
  - Niacin & niacinamide
- Caloric restriction



- Nicotinamide adenine dinucleotide and its related precursors for the treatment of Alzheimer's disease. *Curr Opin Psychiatry*. 2018 Mar;31(2):160-166
- NAD(+) in Aging: Molecular Mechanisms and Translational Implications. *Trends Mol Med*. 2017 Oct;23(10):899-916.
- NAD(+) Deficits in Age-Related Diseases and Cancer. *Trends Cancer*. 2017 Aug;3(8):593-610



# Extending time?



# Lengthening telomeres

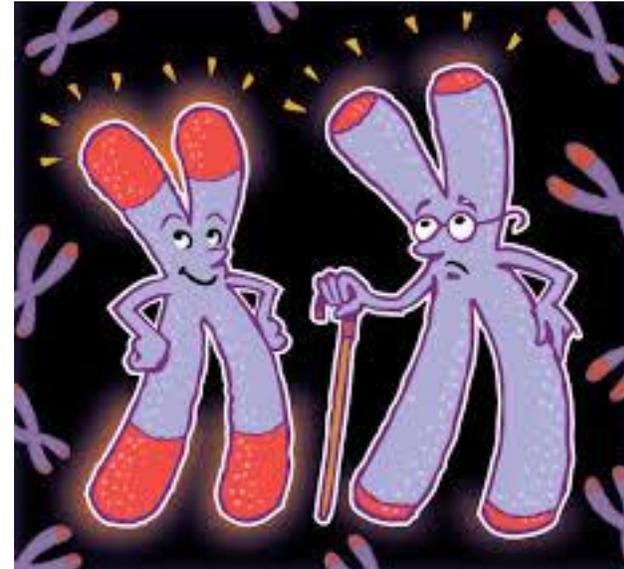
- Walking 3 hours per week for 3 months causes so many new neurons to grow that it actually increased the size of people's brain!
- Drinking green tea inhibits telomere destruction
- After only 3 weeks at a meditation retreat, telomeres lengthened

[Free Radic Biol Med.](#) 2012 Jun 1-15;52(11-12):

[Psychoneuroendocrinology.](#) 2015 Nov;61:26-7.

[Br J Sports Med.](#) 2014 Oct;48(19):1407-9

[Eur J Pharmacol.](#) 2010 Sep 1;641(2-3):199-206

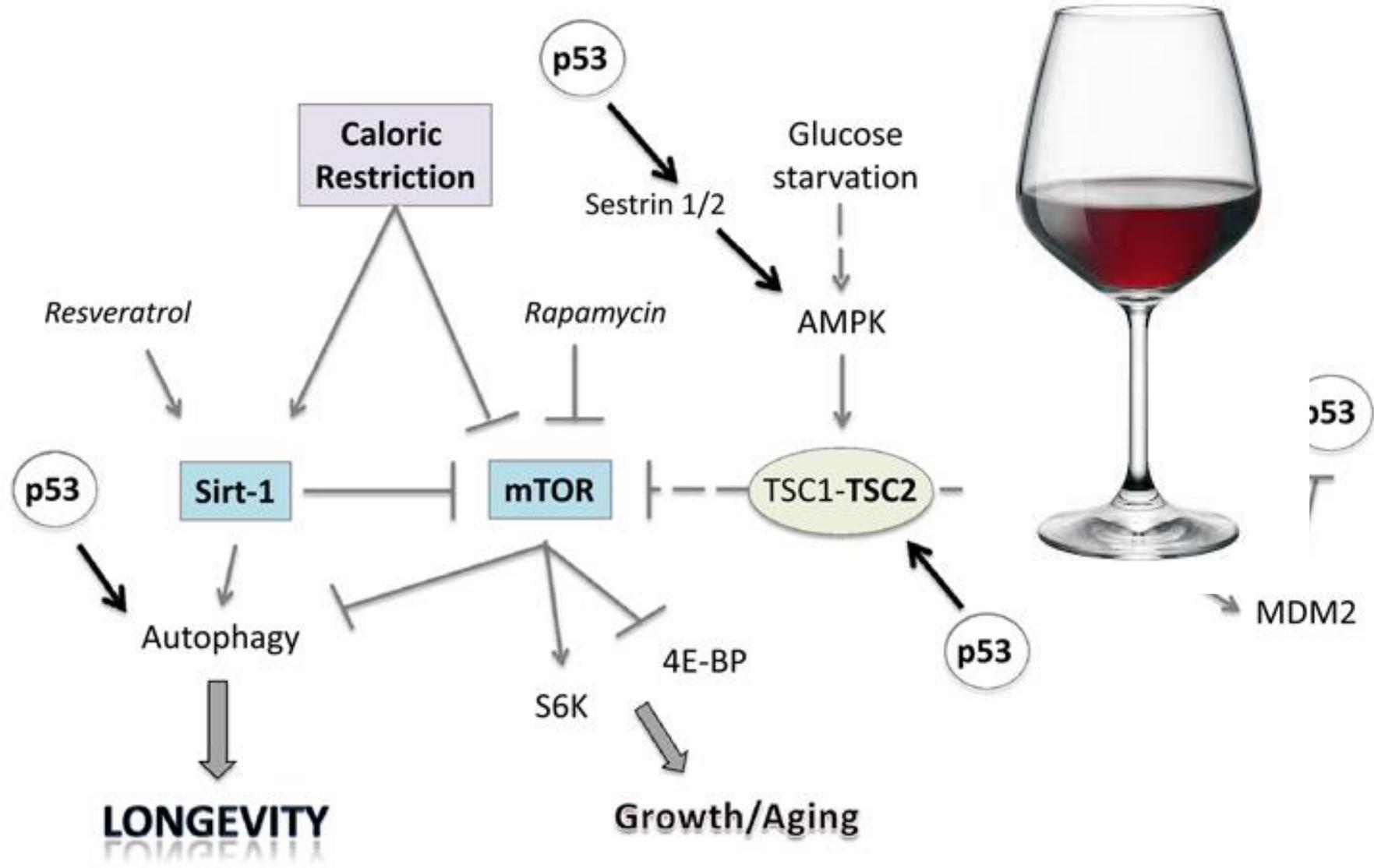


# Grapes & Wine

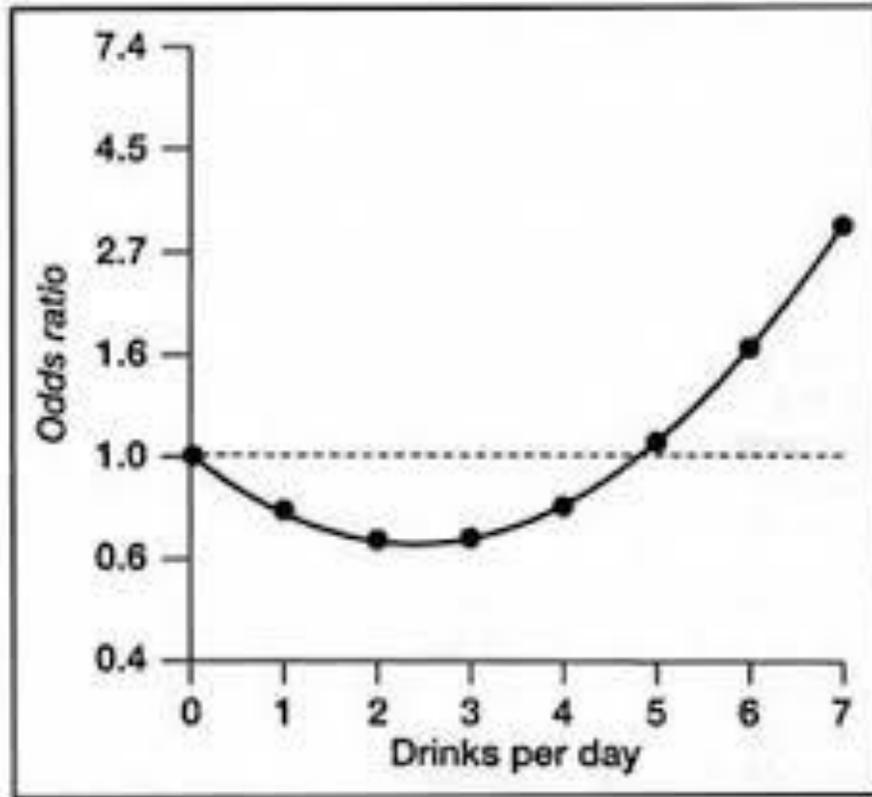


- Polyphenols
- Resveratrol
- Anthocyanidins

Bioactive polyphenols regulate signaling pathways to exert metabolic effects. Several of these effects result from liver and gut microbiota metabolism.



# Moderate alcohol



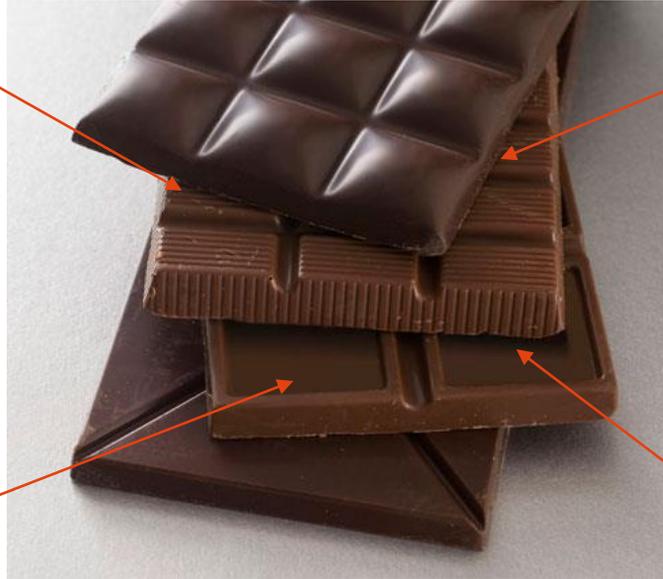
# What do You See?



# What I See

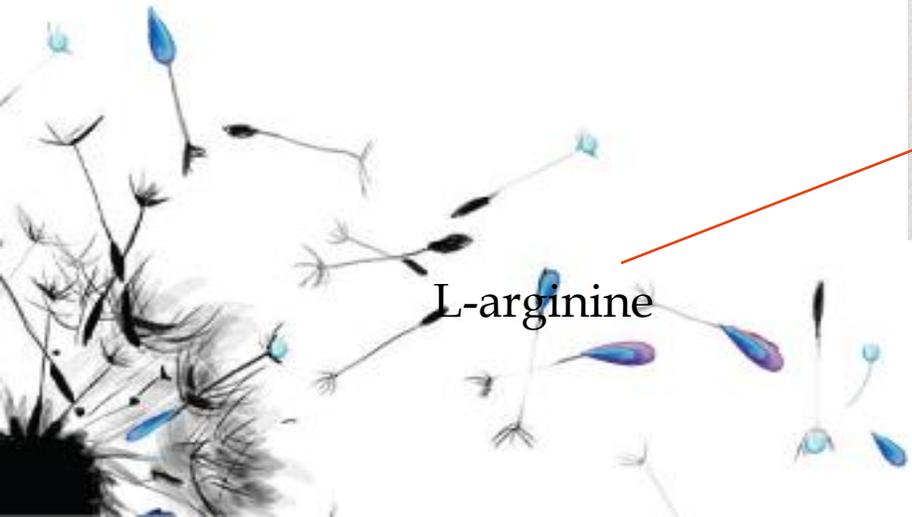
Mono-unsaturated oleic acid &  
stearic acid

Magnesium



L-arginine

Flavonoids/flavanols

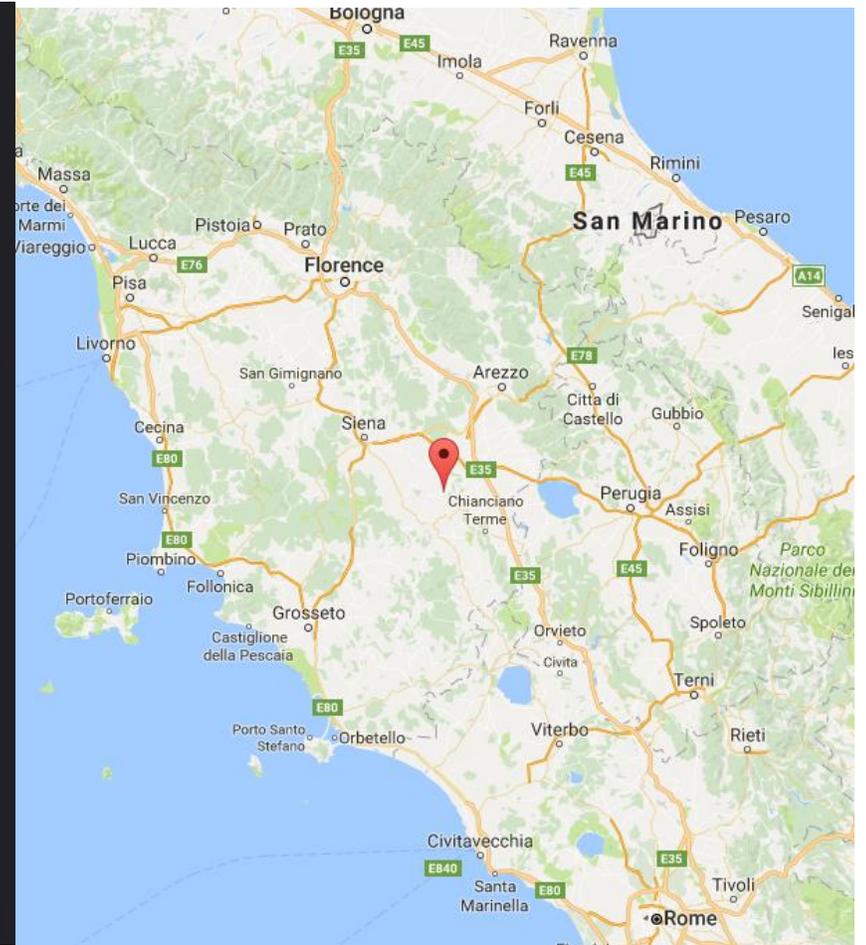


# Many benefits of cocoa

- Coronary vasodilation, improved coronary vascular function, and decreased platelet adhesion
- Antihypertensive
- Reduction in serum oxidative stress
- Cerebral blood flow and overall increased blood flow to gray matter for up to 3 hr
- Improves flow-mediated vasodilation and improves plasma antioxidant status
- Decrease insulin resistance by ameliorating NO bioavailability



# Mediterranean Lifestyle = Longevity



# Mediterranean Diet Pyramid

*A contemporary approach to delicious, healthy eating*

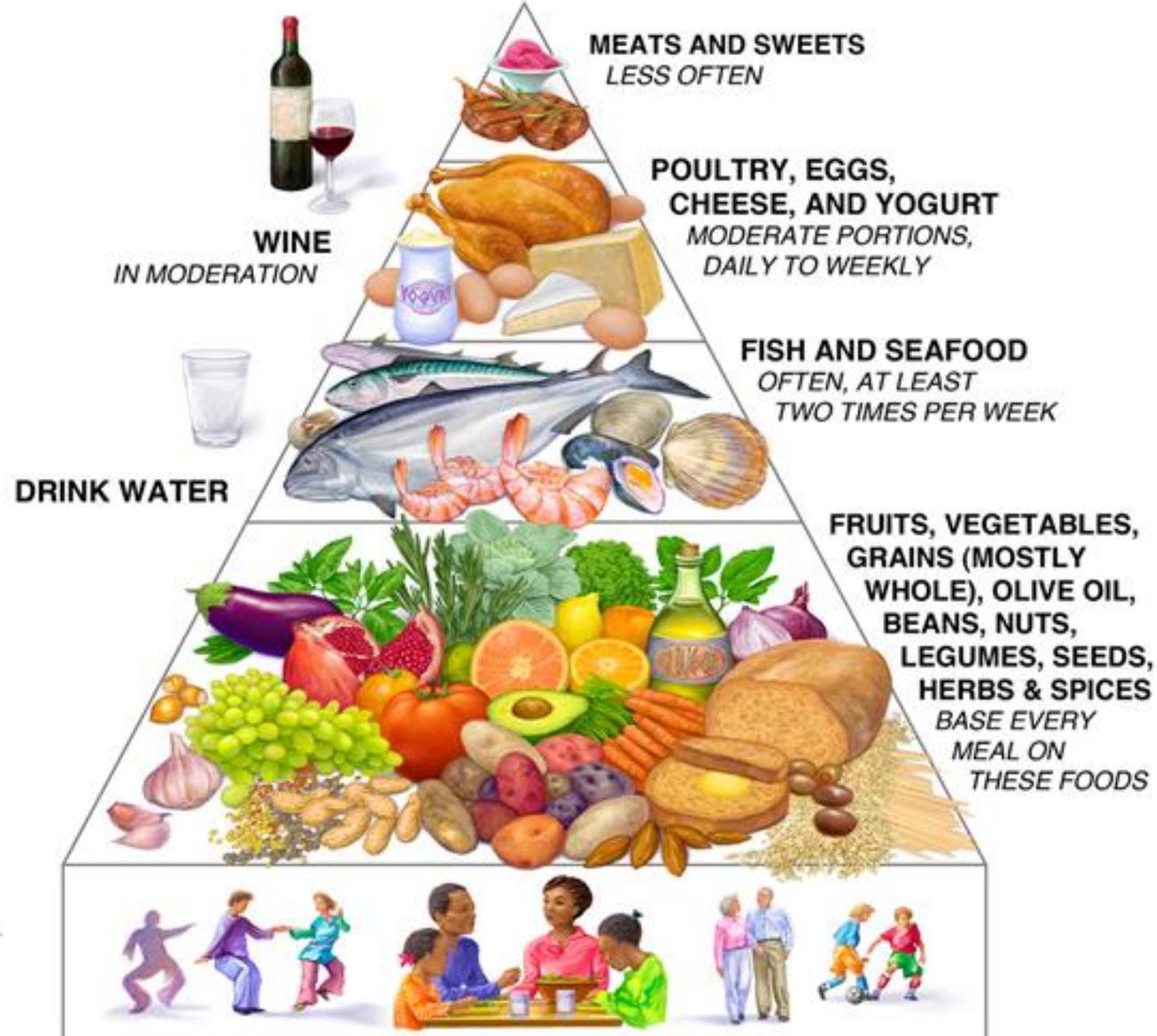


Illustration by George Middleton

© 2009 Oldways Preservation and Exchange Trust [www.oldwayspt.org](http://www.oldwayspt.org)

# Mediterranean Diet, Lifestyle Factors, and 10-Year Mortality in Elderly European Men and Women

## The HALE Project

Kim T. B. Knoops, MSc

Lisette C. P. G. M. de Groot, PhD

Daan Kromhout, PhD

Anne-Elisabeth Perrin, MD, MSc

Olga Moreiras-Varela, PhD

Alessandro Menotti, MD, PhD

Wija A. van Staveren, PhD

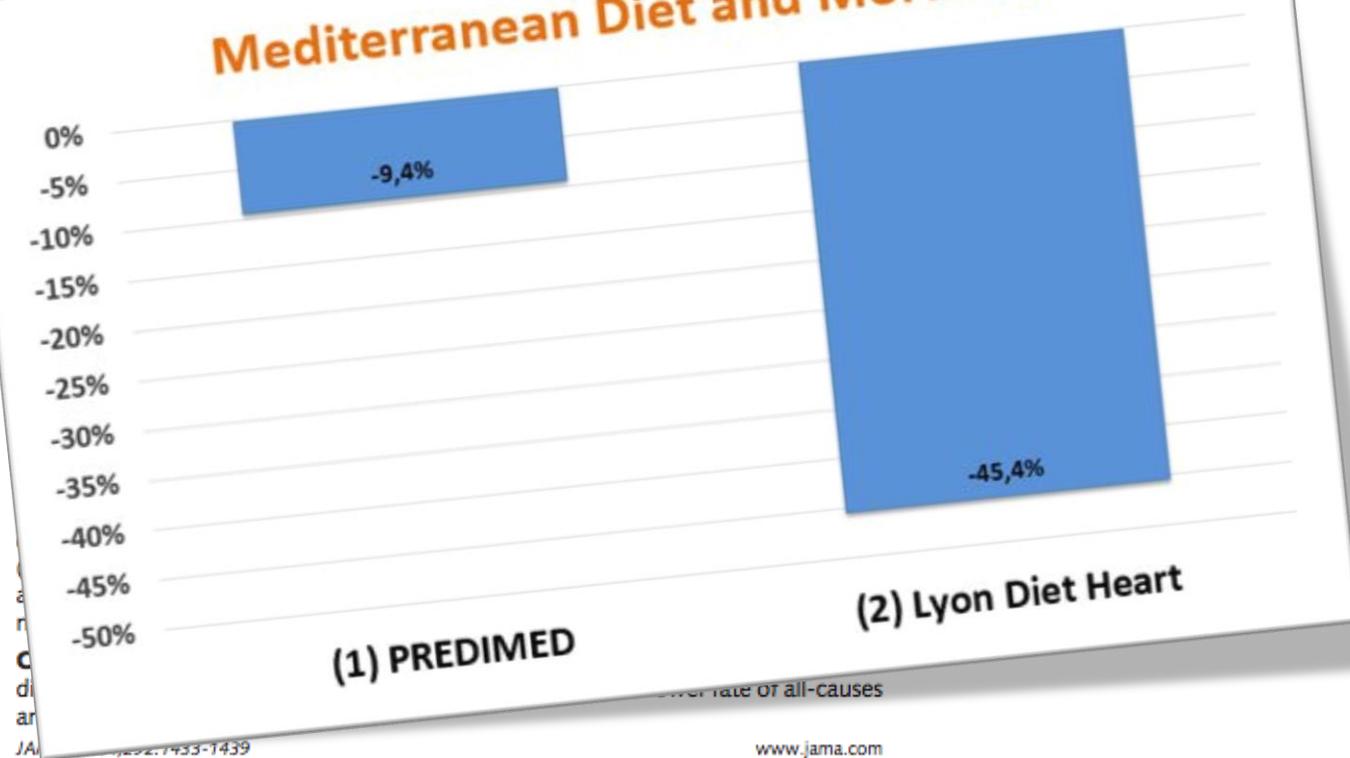
**T**HE NUMBER OF OLDER PEOPLE IS growing rapidly worldwide. More than 580 million people are older than 60 years, and the number is projected to rise to 1000 million by 2020.<sup>1</sup> With the increase in life expectancy, the leading causes of death have shifted dramatically from infectious diseases to noncommunicable diseases and from younger to older individuals. In industrialized countries, about 75% of deaths in persons older than the age of 65 are now from cardiovascular diseases and cancer.<sup>2</sup>

Regardless of predisposing factors, diet and lifestyle influence morbidity and mortality during the course of life.<sup>2</sup> Because of the cumulative effect of adverse factors throughout life, it is particularly important for older persons to adopt diet and lifestyle practices that minimize their risk of death from morbidity and maximize their prospects for healthful aging.<sup>2</sup>

Dietary patterns and other modifiable lifestyle factors are associated with mortality from all causes, coronary

**Context** Dietary patterns and lifestyle factors are associated with mortality from all causes, coronary heart disease, cardiovascular diseases, and cancer, but few studies have investigated these factors in combination.

**Objective**



heart disease (CHD), cardiovascular diseases (CVD), and cancer.<sup>3-8</sup> As yet, few studies have investigated the combined effect of diet and other lifestyle factors.<sup>7,9</sup>

In the current study, we investi-

**Author Affiliations:** Division of Human Nutrition, Wageningen University, the Netherlands (Drs de Groot, Kromhout, and van Staveren, and Ms Knoops); National Institute for Public Health and the Environment, Bilthoven, the Netherlands (Dr Kromhout); Université Louis Pasteur, France (Dr Perrin); Universidad Complutense de Madrid, Spain (Dr Moreiras-Varela); Associazione per la Ricerca Cardiologica, Roma, Italy (Dr Menotti).

www.jama.com

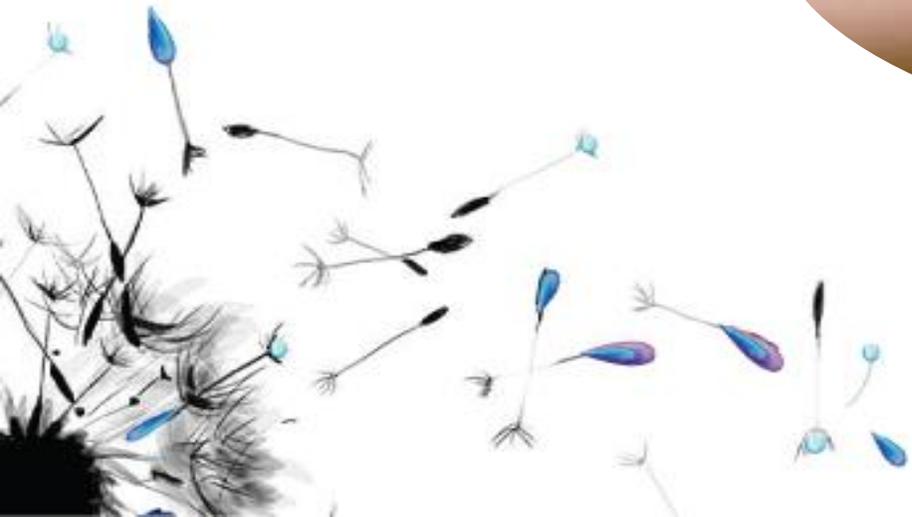
# Common Characteristics



- High fruit, veg, grain intake (higher carb)
- Generous olive oil intake (higher fat)
- Limited dairy, fish, and poultry, very limited meat (mostly vegetarian)
- Moderate intake of wine
- Rare sweets

Join me again...

Hidden causes of slow metabolism – Tuesday 1pm



# Find a naturopathic or integrative doctor like me

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[www.functionalmedicine.org](http://www.functionalmedicine.org)

[www.aihm.org](http://www.aihm.org)

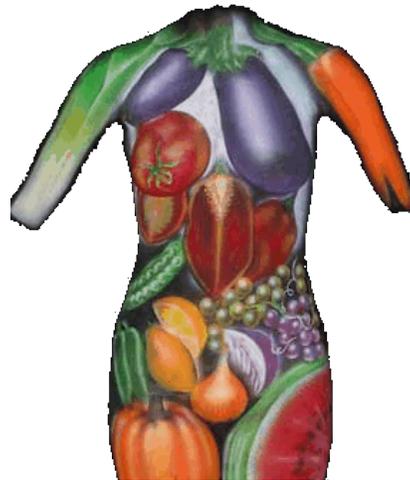
[www.cnda.org](http://www.cnda.org) (California)

Dr Erica Oberg, ND MPH

[www.drericaoberg.com](http://www.drericaoberg.com)

858-215-4935

Telemedicine & in-person  
consultations beginning at \$350



# Parkinson's

See video at: <https://www.youtube.com/watch?v=seJVDDRNpuA>

