

## The 21th Century Message is "Health Promotion"

Messaging Ocular Wellness & Nutrition  
COPE 60493- PH



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UMSL 13 April 2019



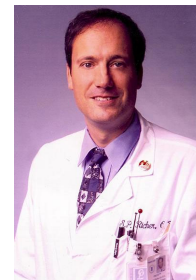
### disclosures

#### Research Grants

Kemin Health – LAST study  
Chrysantis – ZVF study  
IL Society Prevent Blindness  
Longevinex® Associates  
ZeaVision (Night Vision) research

#### Consultant

Bausch + Lomb  
Nestle Purina  
Essilor / Stereo Optical Inc  
Annis Health Systems  
Douglas Labs  
Maculogix®  
EyeCheck  
Global Scientific Director ZTA



## OUTLINE

- Reaching for Health not Disease
  - 4 ways to promote health in your practice
- The essentials for health
  - Intake high quality nutrients
    - Ethnic diets are superior (i.e. Mediterranean Diet, Asian)
  - Care for your **microbiome** and exclude harmful chemicals
  - Focus on decreasing blue light while balancing with red / IR
- Learn the essentials of **supplementation**
  - Prebiotics / probiotics / symbiotics – focus on the **microbiome**
  - 15 Lettered Vitamins and minerals
  - 60 Trace Minerals
  - 3 essential fats
  - 12 essential amino acids
- 8 Predictive Health Biomarkers
- Principles of Fitness (stretching, building muscle, cardiovascular conditioning)
- Environmental Challenges and Opportunities

## Creating an Optometric Wellness Practice

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

1. Monetize your effort by becoming a CNS (Certified Nutrition Specialist) after completing and passing 6 on-line courses, a 4 hour examination, 1000 hours of mentorship, \$7500 in expense in an 18 month on line and clinical training program.
2. Join the Ocular Wellness and Nutrition Society for \$100, attend 2 national meetings each year and consider Fellowship.
3. Join the American Academy Of Optometry (AAO) Nutrition, Disease Prevention & Wellness Special Interest Group (Sig).
4. Contact a Faculty Liaison at your nearest College of Optometry.



## 3. CNS (Certified Nutrition Specialist)

### 3. Become a Certified Nutrition Specialist

Recently, OWNS, in collaboration with the University of Western States, developed an online course suite enabling qualified optometrists to sit for the Certified Nutritionist Specialist (CNS) Examination. The CNS certificate is held by clinical nutritionists, physicians and other health professionals with a specialty in nutrition. It is the only non-dietetics credential and examination widely respected in state nutrition licensure laws. Thus, optometric CNS certification monetizes eye health promotion, for your private pay and some insurance carriers. It is a model for the future of eye care that OWNS hopes will be adopted by the American Optometric Association. Here are the courses:

- MSN 6200 Nutritional Biochemistry (offered Spring and Fall)
- MSN 6101 Evidence-Based Nutrition (offered Summer and Winter)
- MSN 6305 Whole Food Nutrition and Supplementation (offered Summer and Winter)
- MSN 6204 Gastrointestinal Imbalances (offered Spring and Fall)
- MSN 7215 Cardiovascular Disease and Metabolic Imbalances (offered Summer and Winter)
- MSN 6300 Detoxification and Biotransformation Pathways and Imbalances (offered Summer and Winter)

Totals: 18 quarter-credits (4.5 quarter-credits biochemistry, 13.5 quarter-credits nutrition).

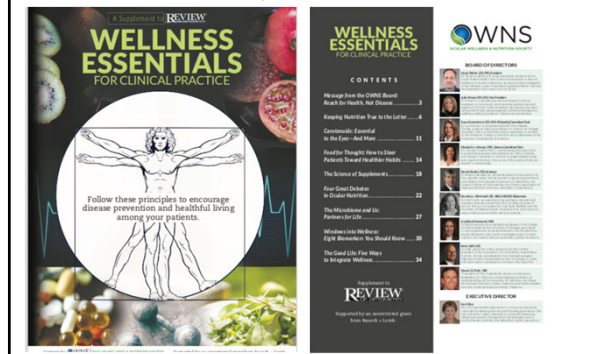
Tuition, determined by the UWS Board of Trustees, is \$473 per credit. OWNS members receive a 15% discount. At current rates, the 18-credit program would cost \$7,236 for members. See [www.ocularnutritionssociety.org/become-a-cns](http://www.ocularnutritionssociety.org/become-a-cns) for more.

### 5. Get connected locally with an OWNS liaison

Optometrists currently in practice and those students now joining the ranks can both reach out to an OWNS representative at their local college of optometry. The society is in the process of appointing an OWNS liaison at each of the colleges to serve as a resource. Below are the individuals currently participating as of press time; check [www.ocularnutritionssociety.org](http://www.ocularnutritionssociety.org) for updates as they become available.

School	Location	Faculty Advisor	Faculty email
Indiana School of Optometry	Bloomington, IN	Julie Torbit, OD	<a href="mailto:jtorbit@indiana.edu">jtorbit@indiana.edu</a>
Nova Southeastern University	Ft. Lauderdale, FL	Lori Vollmer, OD	<a href="mailto:hvollmer@nova.edu">hvollmer@nova.edu</a>
Western University College of Optometry	Pamona, CA	Pinakin G. Davey, OD, PhD	<a href="mailto:pdavey@westernu.edu">pdavey@westernu.edu</a>
University of Houston College of Optometry	Houston, TX	Bruce Onofrey, OD, RPh	<a href="mailto:beonofre@cetral.uh.edu">beonofre@cetral.uh.edu</a>
SUNY College of Optometry	New York, NY	Jerry Rapp, PhD	<a href="mailto:jrap@sunyopt.edu">jrap@sunyopt.edu</a>
Illinois College of Optometry	Chicago, IL	Stuart Richer, OD, PhD	<a href="mailto:stuart.richer1@va.gov">stuart.richer1@va.gov</a>
Midwestern University	Downers Grove, IL	Diya Ivanova, OD	<a href="mailto:divano@midwestern.edu">divano@midwestern.edu</a>
New England College of Optometry	Boston, MA	Diane Russo, OD	<a href="mailto:russod@neco.edu">russod@neco.edu</a>
University of Missouri at St. Louis	St. Louis, MO	Mary Beth Rhomberg, OD	<a href="mailto:rhombergm@msx.umsu.edu">rhombergm@msx.umsu.edu</a>
Pacific University College of Optometry	Forest Grove, OR	James Kundart, OD Dina Erickson, OD	<a href="mailto:kundart@pacificu.edu">kundart@pacificu.edu</a> <a href="mailto:derickson@pacificu.edu">derickson@pacificu.edu</a>
Southern College of Optometry	Memphis, TN	Taylor Kiser, OD	<a href="mailto:tkiser@sco.edu">tkiser@sco.edu</a>

## 36 Page PDF: A RO-OWNS SUPPLEMENT 15 September 2018



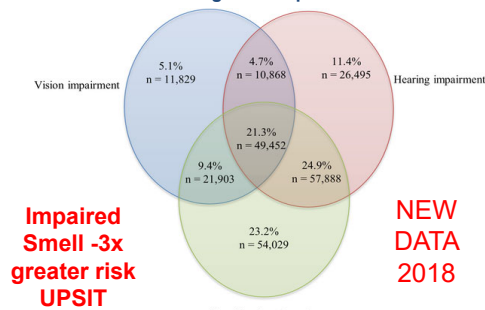
## Reach for Health, Not Disease

Too often, doctors approach 21st century challenges with 19th century thinking.



"You know what's the biggest, 'Oh, wow!' about getting your eyes examined?" asks Kerry Gelb, OD (above left), in a trailer for his documentary *Open Your Eyes*. "People just don't realize that the eye is a biomarker for many diseases—there's over 170 systemic diseases that can manifest in the eye." The documentary is available at [openyoureyes2020.com](http://openyoureyes2020.com).

## Distribution of home care clients with hearing and vision sensory and/or cognitive impairments.



Guthrie DM, Davidson JGS, Williams N, Campos J, Hunter K, et al. (2018) Combined impairments in vision, hearing and cognition are associated with greater levels of functional and communication difficulties than cognitive impairment alone: Analysis of interRAI data for home care and long-term care recipients in Ontario. PLOS ONE 13(2): e0192971. <https://doi.org/10.1371/journal.pone.0192971>



## 5 Key Insights

1. 92% of health is determined from the interaction of the environment with DNA (**The Science of Epigenetics**).
2. Promotion of traditional whole natural plant and farm food and **minimization of industrial chemicals, additives, natural and artificial sweeteners, hormone disruptors and other 21<sup>st</sup> century health challenges** and using natural light are at the heart of preventative medicine strategies.
3. Understanding the 8 predictive biomarkers for health, and how judicious use of supplementation can help our patients achieve better health outcomes is key.
4. Stress reduction has quantifiable biologic effects.
5. Physical Activity, Fitness & Prayer (manifestation) count.

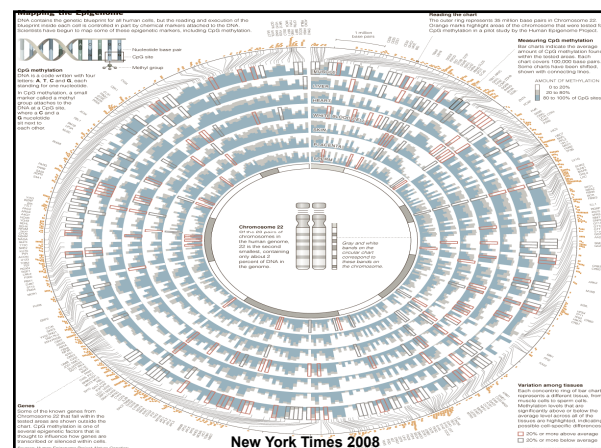
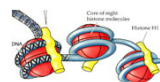
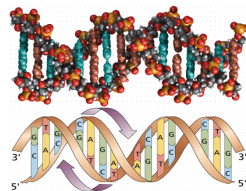
## "Primacy" of DNA now questioned (also 99% of our genes are actually in our microbiome)

Also called "Genetic Determinacy"  
Genes dictate who we are and what diseases we will inherit.

**\* DNA can be altered or changed via epigenetic modification**

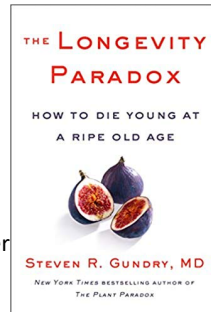
### 3 mechanisms to change DNA

- Histones (within Chromatin)
- DNA methylation
- miRNA



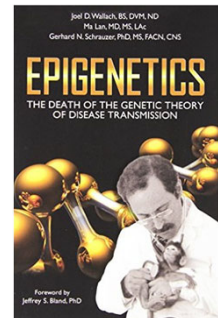
## Counter 21<sup>st</sup> Century Threats to our Microbiome

1. Lectins (Gluten, WGA)
2. Soy products
3. Broad-spectrum antibiotics
4. Chronic NSAIDs
5. Chronic GI acid blocker use
6. Artificial sweeteners, and food additives
7. Environmental Hormone disruptors
8. Herbicides, biocides, fertilizer
9. GMOs
10. Nitrates

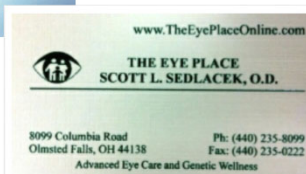


## START WITH QUALITY RAW MATERIALS ( especially before pregnancy )

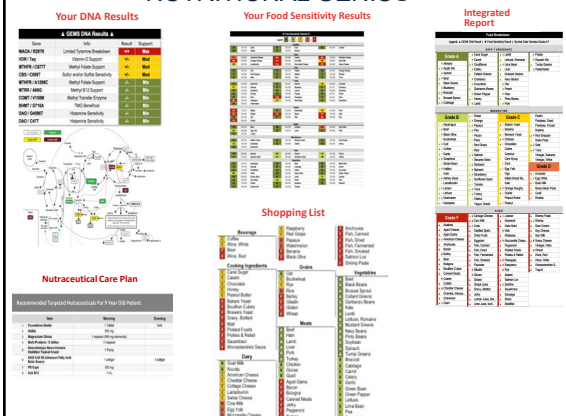
- 15 lettered vitamins
  - 60 trace minerals
  - 12 essential amino acids
  - 3 essential fats
- 90 components**



"The doctor of the future will give no medication, but will interest his patients in the care of the human frame, diet and in the cause and prevention of disease."  
-Thomas Edison



## NUTRITIONAL GENIUS



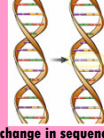
## EPI -GENETICS

▲ GEMS DNA Results ▲			
Gene	Info	Result	Support
MAOA / R297R	Limited Tyramine Breakdown	+/-	Max
VDR / Taq	Vitamin-D Support	+/-	Mod
MTHFR / C677T	Methyl Folate Support	+/-	Mod
CBS / C699T	Sulfur and/or Sulfite Sensitivity	+/-	Mod
MTHFR / A1298C	Methyl Folate Support	-/-	Min
MTRR / A66G	Methyl B12 Support	-/-	Min
COMT / V158M	Methyl Transfer Enzyme	-/-	Min
BHMT / G716A	TMG Beneficial	-/-	Min
DAO / G4586T	Histamine Sensitivity	-/-	Min
DAO / G47T	Histamine Sensitivity	-/-	Min

- The gene variant, short description and test result are included

## GENETICS

### Mutations



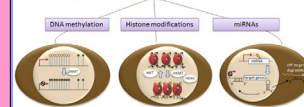
change in sequence

### Inherited

**Polymorphisms**  
Example: blood type

## EPIGENETICS

### Gene protein making



**Methylation Histone modifications microRNA**

### Imprinting

Some chromosomes or some genes are stamped with a 'memory' of the parent from whom it came.

**Variability, adaptability, regeneration**

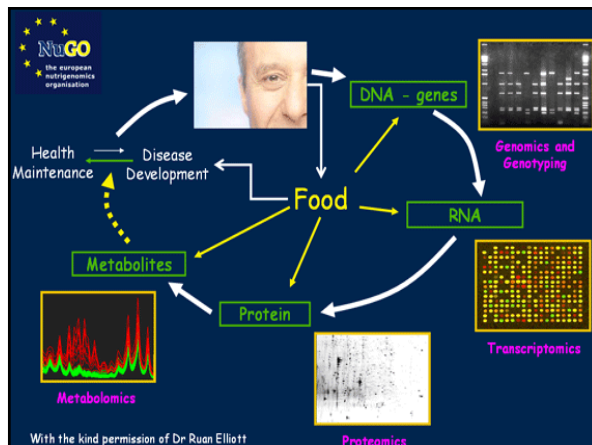
## Why is all of this 23 and Me and You Stuff important ?

- Patient's that are not getting better even though they have balanced their hormones, thyroid, look at their [www.23andme.com](http://www.23andme.com); methylation profile, copper, zinc, pyrroles etc. – **useful information**
- If patient's want to get off antidepressants- **useful information**
- If you are working with a younger person- early 20 or teens that has anxiety, depression, PMS, ADD, ADHD and eye diseases etc – **useful information**
- If your patient has a family history of depression or anxiety and now they want to get pregnant. You want them to know their biochemistry- so they can correct it, so as not to pass that gene expression to their kids – **useful information**
- If your patient is very intense, and concerned about staying on top of their game. Check their brain chemistry. By replacing the nutrients, correcting the deficiencies they can get their brain healthy, prevent aging, and disease- **useful information**

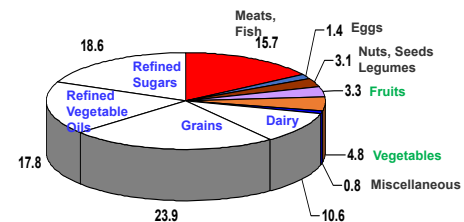
## www.23andMe.com

### (10 new high value tests pending release )

- Hereditary Hemochromatosis
- Celiac Disease
- AMD (Y402H & A69S)
- Late Onset AD
- Parkinson's Disease
- Alpha 1 Antitrypsin Deficiency
- Hereditary Thrombophilia



### Refined sugars, grains, vegetable oils and dairy = 70.9% of energy of the U.S. food supply

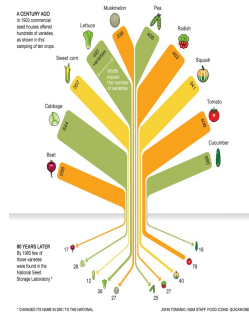


- Refined sugars, grains, vegetable oils and dairy represent Neolithic & Industrial era foods that were not present in traditional ancestral human diets
- By default, their inclusion **displaces** minimally processed, wild plant and animal foods.

Gerrior S, Bente I. 2002. Nutrient Content of the U.S. Food Supply, 1909-99: A Summary Report. U.S.D.A. Center for Nutrition Policy and Promotion. Home Economics Research Report No. 55

## We Used To Have 307 Kinds Of Corn. Guess How Many Are Left?

National Geographic charts our dwindling food variety.

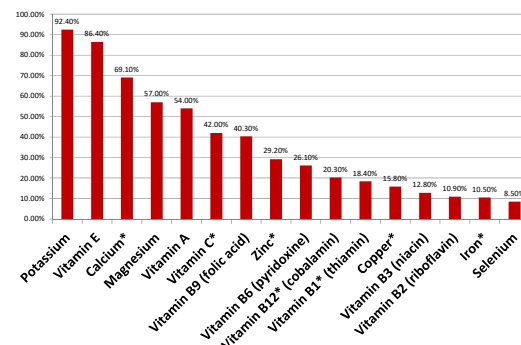


CORN = monoculture  
WHEAT = monoculture

### Undesirable

- Lectins – plant proteins
- Gluten – large molecule
- WGA – Wheat Germ Agglutinin
  - small molecule
  - insulin mimicry
  - increases fat
  - muscle & brain cells starve for energy (sarcopenia & AD)
- LPS (lipopolysaccharides)

## % US population with INADEQUATE intake of the RDA





## Nutrient depleting drugs

**Statins** - CoenzymeQ10, selenium, vitamin D,

**Antacids** - B vitamins, vitamin C, vitamin D, carotenoids, MG++, ZN++

**Diuretics** -B1, B12, magnesium, potassium, Vit. C,

**Aspirin** - folic acid, vitamin C, iron, to name a few

**Alcohol** - B1, zinc, magnesium

## Which Fast Food Chain has taken over your state ?



**Color key:** black is McDonald's, red Burger King, yellow Wendy's, magenta Jack in The Box, periwinkle Sonic, cream Dairy Queen, green Carl's Jr., and cyan Hardee's. Three colors combine per region; so if you see darker colors, it means McDonald's is supreme. Whiter ones

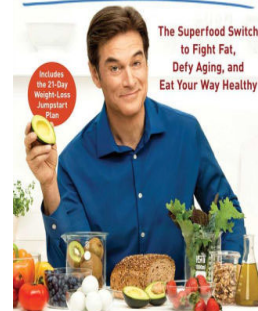
Can the  
"Affordable Care Act"  
or  
"Medicare For All"  
Possibly fix this ?  
**NO**

## Bruce Ames, PhD



- Micronutrient deficiency is indistinguishable from radiation damage when examining cultured cells in a petri dish.
- Vitamin insufficiency is boosting age-related diseases.

## Food Can Fix It



Dr. Mehmet Oz

## Antioxidants



## Natural Sources of Antioxidants

- **Berries:** Blueberries, blackberries, raspberries, strawberries, acai and cranberries
- **Beans:** Small red beans and kidney, pinto and black beans
- **Fruits:** Many apple varieties (with the peel left on), avocados, cherries, green and red pears, fresh or dried plums, pineapple, oranges and kiwi fruits
- **Vegetables:** Artichokes, spinach, red cabbage, red and white potatoes (with peel), sweet potatoes and broccoli
- **Beverages:** Green tea, coffee, red wine and *some* fruit juices
- **Nuts:** Walnuts, pistachios, pecans, hazelnuts and almonds
- **Dessert:** Dark chocolate
- **Grains ?:** Whole grain-based products (Cordain / Gundry) **no**

## Think Eggs



- **% RDA** Vit A 6%; Vit B2 15%; Vit B5 5%; Vit B9 5%; Vit B12 9%, Phosphorous 9%, SE 22% and Vit D, E, K, B6, CA and ZN.
- **LOW CALORIE**
- **HIGH CHOLESTEROL W LECITHIN**
- **RAISES HDL**
- **CONTAINS CHOLINE**
- **TRANSFORMS SMALL DENSE LDL INTO LARGE FLUFFY LDL**
- **LUTEIN & ZEAXANTHIN & VIT A**
- **LOWERS TGs (pastured)**
- **6 g COMPLETE PROTEIN**
- **IN LOW CARB PATIENTS, IMPROVEMENT IN THEIR CARDIAC RISK FACTORS**
- **HIGH SATIETY INDEX**
- **\*Immunoglobulins**

## OWNS BOARD MEMBER



**Steven G. Pratt, MD**

The author of five 'Superfoods' books, including two bestsellers, Dr. Pratt is a clinical assistant professor of ophthalmology at the University of California, San Diego. He has been trained in holistic medicine and holds a degree from the American Board of Holistic Medicine.



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

### A Deeper Dive

The guidelines I've provided in this article merely scratch the surface of proper nutrition habits. These concepts are developed extensively in the five books I've written on the topic:

- **Superfoods Rx: Fourteen Foods That Will Change Your Life**, Pratt S, Matthews K. (2006). New York: William Morrow, an imprint of HarperCollins Publishers.
- **Superfoods HealthStyle: Proven Strategies for Lifelong Health**, Pratt S, Matthews K. (2006). New York: William Morrow, an imprint of HarperCollins Publishers.
- **The Superfoods Rx Diet: Lose Weight with the Power of SuperNutrients**, Butler S, Pratt S, Matthews K. (2008). New York: Rotula Inc.
- **SuperHealth: 4 simple steps, 4 easy weeks, 2 bigger, healthier life**, Pratt S, Kellum S. (2009). New York: Sutton in division of Penguin Group.
- **Superfoods Rx for Pregnancy: The Right Choices For A Healthy, Smart, Super Baby**, Pratt S. (2013). New Jersey: John Wiley & Sons.

## 14 SuperFoods



- |                 |             |
|-----------------|-------------|
| • Spinach       | Blueberries |
| • Sardines      | Citrus      |
| • Turkey Breast | Pumpkin     |
| • Broccoli      | Yogurt      |
| • Walnuts       | Oats        |
| • Tomato        | Legumes     |
| • Soy (organic) | Green Tea   |

Daily sunlight and/or 1000 IU vitamin D3 (Double for people of color) daily also is very important for general health

## Keeping Nutrition True to the Letter

Healthy eyes and bodies need essential vitamins and minerals. Here's your guide, from A to zinc.



**HIGH POTENCY MULTIVITAMIN, MULTIMINERAL SUPPLEMENT**

**3 ESSENTIAL FATTY ACIDS**



**PREBIOTICS, PROBIOTICS, SYMBIOTICS**



**60 + TRACE MINERALS**

**12 essential Amino Acids**



## Geographic Atrophy

dry late stage progression **disappointing**  
AREDS II intervention data

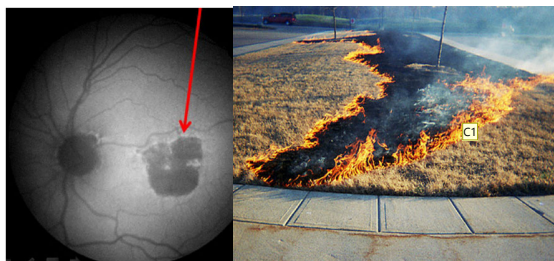


Photo courtesy of Stuart Richer, OD, PhD

## Alzheimer's in America

(3<sup>rd</sup> Leading Cause of US Death / Rare in India)

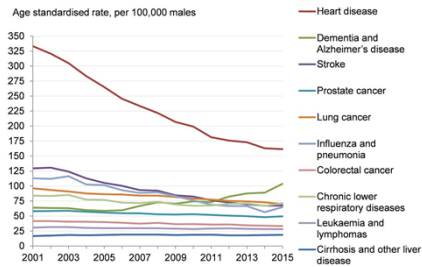
- 72.8 years = average age onset
- 1 in 10 people over age 65.
  - 6-8 % develop symptoms before age 65 (~300,000 people).
  - Few experience symptoms between ages 30 & 40.
- **50 % for Americans over age 85**
  - +Multisensory Impairment (Eyes / Ears / Brain)
  - Few covered by US programs.
  - 5.7 million Americans (47 million worldwide)
  - Projected 14 million Americans by 2050.
  - Move to India ?

## Slide 35

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**C1**      need copyright for burning hill photo  
Cynthia, 2/10/2014

## 2<sup>nd</sup> Leading Cause of death in UK



Similar data for UK females

## ↑ US AD \$ Burden



- 2x ↑ the cost of ambulatory care
- 2.5x ↑ the cost of hospital care
- 7x ↑ nursing home costs
- Billions in Caregiver Services
- **Getting Worse**
  - Costs Double in 20 years
  - Priceless Emotional Cost to Families
    - 40 % of family care givers pre-decease their dependent family member
- Logistically difficult to do AD research

## 2 common optometric AD Issues encountered



1. Learning & Retaining New Information
2. Handling Complex Tasks
3. Ability to Reason - appropriateness
4. **Spatial Ability & Orientation (driving)**
5. **Chronic Reading Fatigue – can't read 2 pages**
6. Language (speaking & comprehension)
7. Behavior (personality changes, mood)

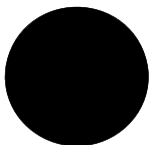
June 2018

- An international team of scientists have just developed a new way to screen for age-related cognitive decline at home using a test which asks people to detect sounds and flashes on their laptop or phone.



PUBLIC DOMAIN

## Basic Stimuli requirement for Cognition Assessment



The **visual stimulus** is a 7.9 degree Black Circle presented centrally against a White background with a stimulus duration of 100 ms with a pseudo-randomized inter-stimulus interval (ISI) of 2500–3500 ms to prevent anticipation.



The **auditory stimulus** is a 1000 Hz sinusoidal pure tone presented via the built-in speakers of a laptop.

## Vitamin A (night vision, hearing, olfactory etc.)

- 3 human dietary forms: preformed vitamin A (retinol & retinyl ester) and pro-vitamin A carotenoids (B carotene).
  - All forms of vitamin A solubilized into micelles in the intestinal lumen and absorbed by duodenal mucosal cells.
  - Most vitamin A stored in the liver as retinyl esters.
- In the retina, vitamin A is converted to retinol, oxidized to retinal and then retinoic acid.
- Included in AREDS/AREDS2 studies





## Beta Carotene

- Beta carotene **is** an effective antioxidant
  - But **Not** an appropriate source of Vitamin A
    - Does **not** as readily convert to pre-formed Vitamin A (retinol) in the older population as it does in younger people
    - Does not convert to vitamin A if there are sufficient stores of Vitamin A in the system.
  - Increased risk of cancer in smokers and SECOND-HAND smokers, when imbalanced with vitamin D3.
  - **Interferes** with the absorption of lutein /Zx
- "Higher beta-carotene intake was associated with an **increased risk** of AMD."- *Dietary Antioxidants and the Long-term Incidence of Age-Related Macular Degeneration (The Blue Mountain Eye Study)* Jennifer, SL Tan, et al. Ophthalmology 2008; 115:334-341

## 8 essential B Vitamins

A synergistic combination best  
i.e. B50 or B100, as reduced by 1) dysbiosis  
2) age and 3) medications i.e. PPIs

- **Vitamin B1** (thiamin): blood test indicates intake only; refined sugars, soda, alcohol, coffee, tea, drugs block absorption. (many many Americans are deficient).
- **Vitamin B2** (riboflavin) cofactor for GSH reductase- the major intracellular antioxidant. A retinal photosensitizer in high doses.
- **Vitamin B3** (niacin) – required by mitochondria
- **Vitamin B5** (pantothenic acid)- to synthesize CoA

## Vitamin B1 (thiamin)

- Severe deficiency = Beri Beri (POWs, Alcoholics)
- **The US diet of refined carbohydrates, sugar, coffee, alcohol, tea and pharmaceuticals depletes our reserves.**
- Thiamin helps produce the neurotransmitter ACH
- Involved in multi-system diseases and AMD
- Thiamin is involved in Alzheimer's' disease so these cognitively challenged patients should avoid drinking abundant sweetened soda and fruit juices.
- Reduces B amyloid protein.
- Fat soluble thiamin (benfo-thiamine) is a valuable supplement for alcoholic or uncontrolled diabetics suffering from diabetic neuropathy and macular edema.



## Vitamin B3 (niacin)

- Comes in multiple forms including "nicotinic acid" that is used clinically to reduce high LDL cholesterol, and niacinamide that supports cellular mitochondria.
- Plays a role in converting proteins, fats and carbs into energy.
- Severe deficiency (pellagra) results in weak muscles, digestive issues and skin irritation.
- Niacinamide and riboside-nicotinamide (along with resveratrol or pterostilbene) support mitochondrial function, and are considered all- star nutrients for reducing neurodegenerative diseases of aging (i.e. typical Alzheimer's and Parkinson's diseases).



## Essential B Vitamins – cont.....

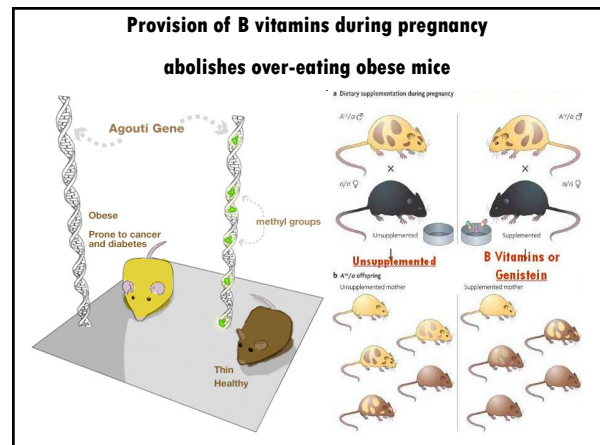
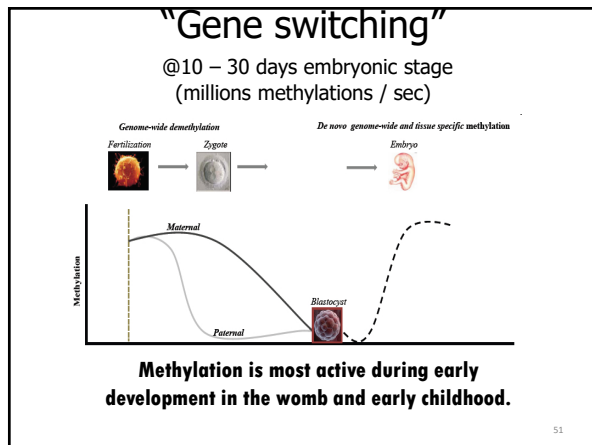
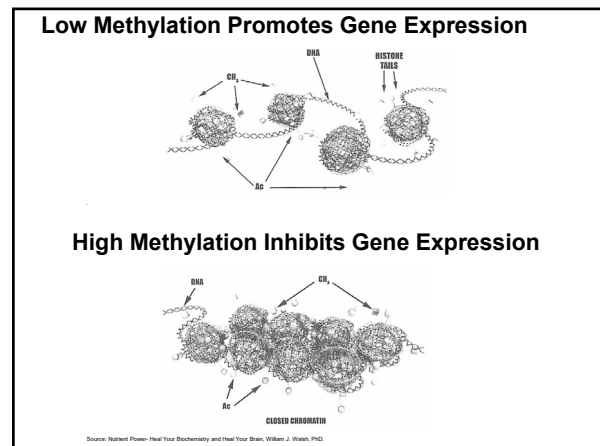
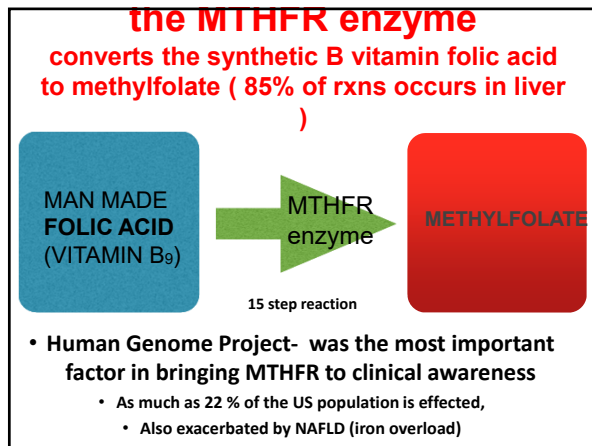
- **Vitamin B6**- three pyridoxal enzymes for protein metabolism.
- **Biotin** – for skin, hair and energy production.
- **Vitamin B9** (food folate)- for methylation, DNA synthesis.
- **Vitamin B12** (i.e methyl cobalamin): supplementation often resolves symptoms of fatigue and neuritis (tingling, numbness) even when blood levels are adequate, indicating commonly-occurring blood concentration (reference range) is not adequate and therapeutic doses (above RDA) are required. Lowers the oxidant homocysteine.

## Vitamin B9 (folate)

Folic acid is the synthetic version of food folate.

- Natural food folate (found for example in dark green leafy vegetables) is the purest least problematic form of vitamin B9.
- **We require this vitamin for methylation reactions** and a significant 22% of the US population are 'under-methylators'. In this case, high dose supplemental folic acid is sometimes problematic or even dangerous.
- Folate plays a role in the production of DNA, encouraging mutations and the elimination of new red blood cells.





**nutrient-based psychiatry and nutritional medicine**  
**International Physician Training Center**

**WALSH RESEARCH INSTITUTE**  
Better Health through Biochemistry

PhD Chemical Engineering, Iowa State University

Author of 200 scientific articles and reports over 35 years.

Studied 30,000 patients w variety of mental illnesses including 15,000 with a behavior disorder (BD)

3 Million blood, urine & tissue chemical assays

Collaborated with Pfeiffer's nonprofit Princeton Brain Bio Center (Dr Walsh founded the satellite center in Illinois w 25,000 patients)

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

**Methylation and Brain Disorders**

- Methylation status has been determined for 30,000 patients over a 30-year period.
- Most persons diagnosed with mental disorders exhibit a serious methylation imbalance.
- Accurate diagnosis of methylation status is essential to effective treatment.

**Mensah Medical**  
Healthcare Reinvented

Albert Mensah, MD  
Judith Bowman, MD  
630.256.8308  
4355 Weaver Parkway, Suite 110  
Warrenville, IL 60555  
[www.mensahmedical.com](http://www.mensahmedical.com)

THE ENERGY BLUEPRINT

**DIRTY GENES,  
OVERCOMING DISEASE  
& THE DANGERS OF  
FOLIC ACID**

WITH **Dr. BEN LYNCH ND**

**DIRTY GENES**  
PRESALE BOOK LAUNCH

**EPIGENETICS**

**“We can Edit and  
Revise our genes  
every moment of  
our lives”**

“Discover how  
to reach  
your genetic  
potential...”

...despite the genes  
you were born with.

- DR. BEN LYNCH, ND

**DR. BEN LYNCH  
DIRTY  
GENES**

Discover how to reach your genetic potential... despite the genes you were born with.

**LEARN MORE TODAY!**

CLICK HERE

# Under-methylation

22% Patients who are **under-methylated** have a tendency towards depression, eating disorders, OCD, perfectionism, and autism.

## Symptoms may include:

- Elevated Histamine Level >70-** measure whole blood histamine level.
- Same/SAH ratio (Doctors Data)-** more accurate but an expensive test

Good Response to SSRI


- Respond positively to Benadryl
- High Libido
- OCD or ODD, anorexia
- protein deficiency, mal-absorption

Cancer and global hypomethylation

[illegible]

## Trans-Generational

**'epigenetic inheritance' (TEI).**




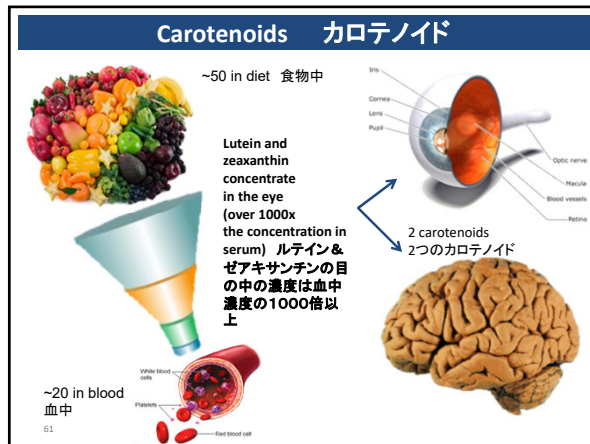
<http://witsmag.com>

- *The harm from environmental poisons or other insults may be inherited by the next 2 to 3 generations.*
- *This may explain why several heritable disorders violate the classical laws of genetics.*

# Cobalamines (vitamin B12)

- Vitamin B12 (along with B6 and folate) are responsible for reducing the oxidant homocysteine, which in turn **increases the risk of AMD by 40 %**.
- Aging and H pylori infection diminish serum B12 status promoting pernicious anemia.
- Intrinsic factor is required for B12 absorption.
- Chronic gastrointestinal acid blockade thru the use of proton pump inhibitors is a major under-appreciated cause of vitamin B12 deficiency.
- Most pabulum multivitamins have an inadequate dose (6 or 25 mcg)
- 2 preferred forms (methylcobalamine and hydroxycobalamine)



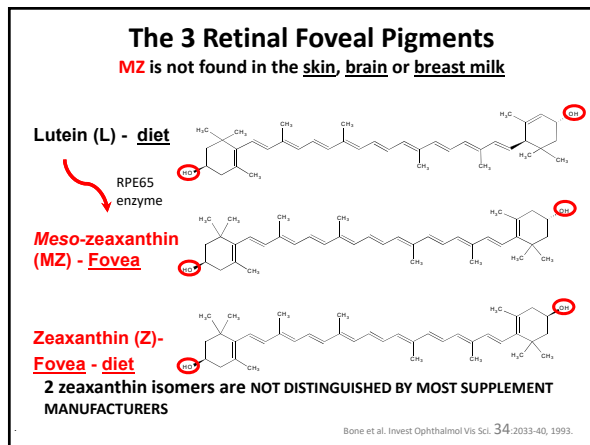
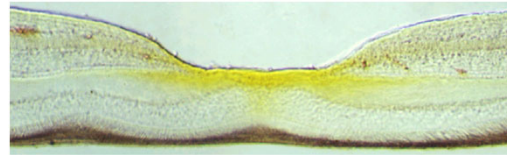


**Lutein and Zeaxanthin influence visual function through optical as well as biological mechanisms**

• Optical mechanisms

– GD, GR, CS, CC, VISUAL RANGE

– \* Biological mechanisms – eyes + brain

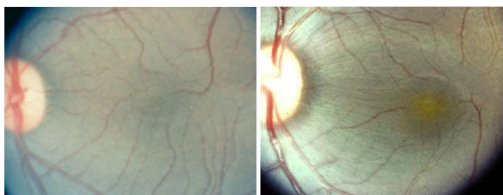


**Dietary Carotenoids ↑ Retina Macula Pigment and deposit in the Brain- at any age.**



**Macular pigment = MP**

Varies by 10X among individuals and genetics involved



monkeys without

with

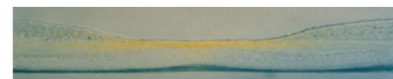
Human Twin Studies suggest that genetic factors may explain 67% of variability in MP (Liew SHM et al, IOVS 2005;46:4430) and 27% of variability in response to 6 months supplementation. (Hammond CJ et al IOVS 2012)

**3 Human Macular Pigments**

**Lutein (meso – zeaxanthin\*) and Zeaxanthin**

Carotenoid ratios	L:Z:M
Diet	5:1:0
Blood:	3:1:0
Whole retina:	2:1:0.5
Fovea:	1:1:1

**meso-zeaxanthin\*** is a non- dietary metabolite of lutein found only in the eye, in the posterior fovea



Photomicrograph courtesy of Dr. Joanne Curran-Celentano.





### The value of MP measurement & carotenoid supplementation

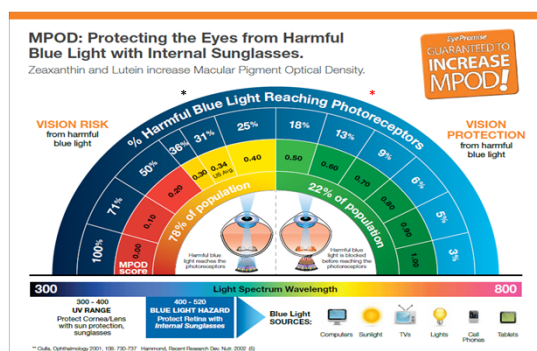
Any patient with high risk AREDs signs  
 Any patient with a strong AMD risk factor  
age (over 50) – smoker – obese – poor diet  
 Any patient with a family history of AMD  
 Any patient with diabetes  
 Any patient with photophobia i.e. smokers  
 Any patient with a non-refractive reading / driving issue  
 Anyone in the transportation industry (3%)  
 Athletes i.e. Skiers (glare); Baseball (fine acuity)

### MPOD Measurement

Heterochromic Flicker Photometry (HFP)  
is the Gold Standard

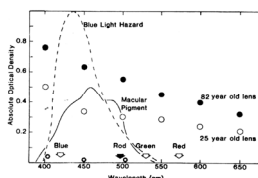


MPOD instrumentation has improved  
significantly !



### Putative role of MP

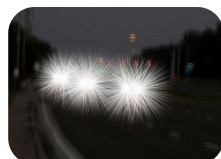
1. ↓ glare by absorbing blue light
2. ↑ VA & CSF
3. ↓ chromatic aberrations
4. ↓ photophobic pain
5. Scavenges free radicals and associated w ↓ AMD



### Night Driving Challenges (worse for 15 % + drivers > 65 years)



GLARE  
Disability  
(GD)

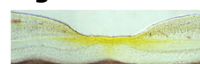


Glare  
Recovery  
(PR)



Contrast  
(CSF)

### SUMMARY: Carotenoids are Superior Internal Sunglasses with Vision & Emerging Cognitive Benefits



- Improvement in responses to dark and light adaptation (i.e. Tunnels)
- Decreased Glare disability (GD) and better Glare recovery (PR)  
– Up to 5 seconds in a 60mph car = 440 ft. faster stopping
- Better Color Contrast (CC) and Mesopic Twilight vision
- Contrast sensitivity (CSF) - improvement up to 75%
- Can see up to 30% more on a hazy day (CC)
- Better Temporal processing speed (CFP)  
– means quicker decisions at intersections
- Expect overall daylight and night driving improvement.



## Clinical Optometric Experience

- Improves ciliary body "endurance" – **mitochondrial benefit**
- Extends pre-presbyopia time period – **mitochondrial benefit**
  - 2 to 3 months @ 6 mg/day to see effect
  - Results may vary
- Accommodative Near Point Stress (computers)
- Traumatic Brain Injury Patients
- Pre-Myopic Children?
- Dry eye – synergistic w n3 fats
- AMD
  - absorb UV and Blue light, potent anti inflammatory, crosses blood retina barrier and some emerging studies show it improves choroidal circulation. (check ARVO & PubMed)

## Vitamin C

- The major extracellular antioxidant, setting the redox potential of all cells.
- 30x the serum concentration of the blood,
- Found in every ocular tissue protecting blood vessels.
- Deficiency results in diminished healing, fewer infections, (lower platelets and thin skin (typical of the elderly), bleeding gums, retinal micro-aneurysms and cataracts.
- Vitamin C decreases skin bruising and thinning skin in the elderly.
- Humans have a genetic defect in their gulano-oxidase gene to make vitamin C

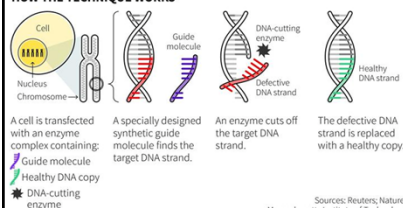


## CRISPR = Clustered Regularly Interspaced Short Palindromic Repeats

### DNA editing

A DNA editing technique, called CRISPR/Cas9, works like a biological version of a word-processing programme's "find and replace" function.

#### HOW THE TECHNIQUE WORKS



The CRISPR/Cas system is a [prokaryotic immune system that confers resistance to foreign genetic elements such as those present within plasmids and phages that provides a form of acquired immunity. RNA harboring the spacer sequence helps Cas \(CRISPR-associated\) proteins recognize and cut exogenous DNA. Other RNA-guided Cas proteins cut foreign RNA.<sup>\[9\]</sup> CRISPRs are found in approximately 50% of sequenced bacterial genomes](#)

## "Advancements" in Gene Editing

- Modified human embryos**
  - China - Prevent B –thalassemia
- Pig organs for transplant**
  - Harvard and eGenesis – virus free organs
- Extra –muscly dogs**
  - MIT removed the myosatin gene = 2X muscle mass
- Malaria free mosquitoes**
  - UC San Diego and London scientists
- Unraveling human genome**
  - Revealing cancer gene sequences
- A treatment for leukemia**
  - TALEN technology
- Customized pet 'micro-pigs'**
  - \$1600 Chinese Pets



Source: MIT Technology Review

### These CRISPR-modified crops don't count as GMOs





## CRISPR ETHICS ?

MEGAN MOLTENI | SCIENCE | 04.02.18 | 09:00 AM

### A FLAWED STUDY SHOWS HOW LITTLE WE UNDERSTAND CRISPR'S EFFECTS



One study that found off-target effects for the Crispr gene editing technique has been retracted. But that's not the whole story.  
SHUTTERSTOCK/GETTY IMAGES

May 2018, [A small case study suggested the much-hyped technology might actually be quite dangerous—and pop went the Crispr bubble, briefly tanking shares of Crispr companies like Editas Medicine, Intellia Therapeutics, and Crispr Therapeutics.](#)

The now-retracted paper claimed that Crispr caused nearly **2,000 unexpected mutations—ten times previously observed off-target rates**—in two mice that it cured of blindness.

<https://www.wired.com/story/a-flawed-study-shows-how-little-we-understand-crispr-effects/>

## Big Picture

### Our Genes are Vast, Dynamic & modulated by nutrition

- 1.2 Million SNPs
- 40,000 SNPs alter genetic function
- **Example: 37 SNPs identified for AMD**
- **2 AMD SNPs describe 80 % of risk**
- SNPs have Positive and Negative attributes
- Homozygous Tendency worse than Heterozygous SNPs
  - 30 -80 % function for Heterozygous SNPs
- **\* There are almost alternative genetic pathways**
  - MTHFR, MS, BHMT, SAHH etc. for methylation
- **\* One Can Edit and Revise Genes with Lifestyle**
  - (w/o CRISPR)

## Incorrect dose & dosing common

- **Vitamin C:** Virtually no one except supplement users maintain adequate vitamin C levels due to rapid excretion of this water soluble vitamin.
- Repeated doses throughout the day for optimal blood concentration (500 mg qid)
- Serial dosing (grazing), liposomal C and now [www.formula216.com](http://www.formula216.com) most effective
  - Ascorbic acid enhances bioavailability
  - Sodium ascorbate- is easier on stomach

## Press Release- Formula 216™ September, 2018 Las Vegas, NV Encode Nutrition



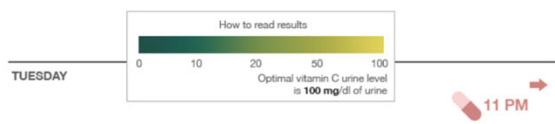
A new patent-pending **nutraceutical blend of olive extract combined with vitamins C, D, zinc and resveratrol**, features a key ingredient that has been shown to elevate and maintain vitamin C blood levels in preliminary human tests without reliance upon consumption of vitamin C-rich foods or dietary supplements. **This revolutionary dietary supplement is said to restore the human body's ability to internally produce vitamin C that was lost due to a gene mutation many generations ago in early human history.**

### How much mg of Vitamin C people need?

Prevent Scurvy	Anti-Oxidant Power (4-6 hr)	Anti-Oxidant Dynamic Flow (4-6 hr)	Pre-oxidant in sick tissues (every 20 min to level toxicosis)
20	500	2000	8000



### Concentration Of Vitamin C as Tested By Home Urine Dip Stick Upon Taken Formula-216



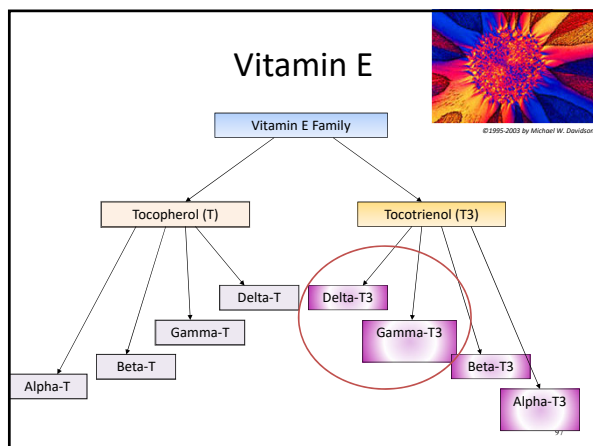
## Vitamin D3 (Sunlight)

*Stimulate innate immune system by a factor of 3 to 5X.*



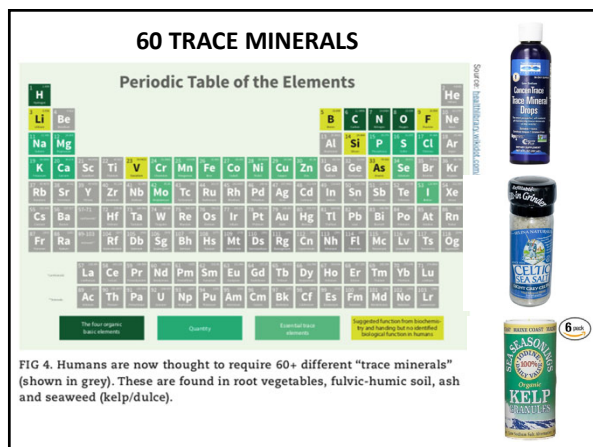
An hour spent in the midday sun, which produces natural vitamin D3, may prolong survival better than any currently available treatment.

"But for you who obey me, my saving power will rise in you like the sun and bring healing like the sun's rays— Book of Malachi 4:2



### Vitamin E (4 tocopherols / 4 tocotrienols)

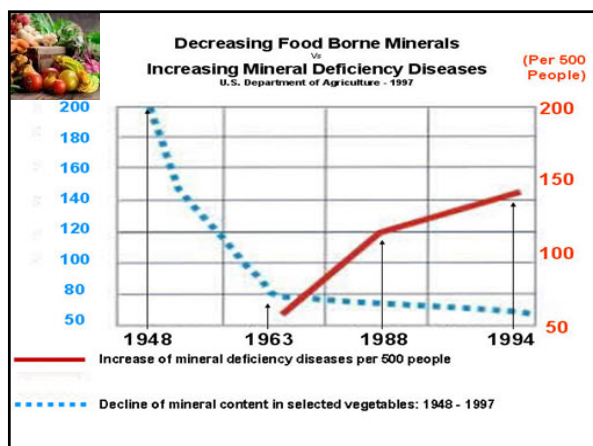
- Alpha Tocopherol employed in both the AREDS I or AREDS II clinical trials
- **But** ..Gamma and Delta tocotrienols increase tear production, retard cataract formation, and decrease the propensity for diabetic retinopathy, angiogenesis and cancer.
- **And...**High dose synthetic tocopherol competes with the tocotrienols.



### Crucial Major Minerals

- ❖ Calcium-400-1000 mg/day
- ❖ Potassium-2000 mg/day
- ❖ Sodium-500-1500 mg/day
- ❖ Magnesium-200-600 mg/day
- ❖ Boron-2 mg/day
- ❖ Zinc 15-40 mg/day
- ❖ Copper-1-2 mg/day
- ❖ Chlorine- 1.7-5 g/day
- ❖ Manganese- 2 mg/day
- ❖ Chromium- 150 mcg/day
- ❖ Molybdenum- 100-200 mcg/day
- ❖ Selenium- 75-200 mcg/day
- ❖ Vanadium- 150-200 mcg/day

**MnSOD (zinc, copper and manganese)**  
is vital for intracellular clean up



### MINERALS AND CVDz / EYE HEALTH

- **OFTEN DEFICIENT**
  - Zinc **ZN** (2 of 7 billion humans)
  - Selenium **SE** (poor soil, toxicity above 1000 mcg)
  - Magnesium **MG** (poor soil, low plant food consumption "the forgotten mineral")
  - Calcium **CA++** (iatrogenic – due to low D3 & plant food)
- **Divalent minerals OFTEN IN EXCESS**
  - Copper **CU++** (copper plumbing, poorly designed mvi s)
  - Iron **FE++** (excess heme iron intake in adult 50+ males and females)
  - Calcium **CA++** (via unbalanced calcium supplementation – not enough magnesium)

## zinc



- Affects **all 5 senses** and plays a significant role in alopecia.
- Transports vitamin A from the liver to the eye
- We need zinc for production of genetic material, proteins, sperm, fetal development and maintaining the **thymus gland (T cell immunity)** past young adulthood.
- Various medications (diuretics, estrogen, beta blockers, ACE inhibitors) deplete zinc.
- This mineral is often poorly absorbed due to lack of stomach acid (52% of Americans have H pylori infection that inhibits secretion of stomach acid)  
– **Zinc Carnosine best**
- Too much zinc can depress immune system and alter the HDL /LDL ratio.



## Percentage of All Individuals (2 yrs & older) Not Meeting 100% of 1989 RDAs in US (1994-96)

### 14 Nutrients Most Lacking in U.S. Diet

- **Zinc** = 73.3 %
- Calcium = 65.1 %
- Magnesium = 61.6 %
- Vitamin A = 56.2 %
- Vitamin B6 = 53.6 %
- Iron = 39.1 %
- Vitamin C = 37.5 %
- Folate = 33.2 %
- Vitamin B1 = 30.2 %
- Vitamin B2 = 30.0 %
- Vitamin B3 = 25.9 %
- Protein = 20.5 %
- Vitamin B12 = 17.2 %

**1) Zinc is rare in US diet**

**2) Supplemental Zinc had the strongest effect in AREDS 1.**

**3) The 80mg dose is high but Zinc Oxide is poorly absorbed.**

## Zinc

### Most abundant trace element in the eye

- **Animal / Fish Sources** - Shellfish, beef, and other red meats are rich sources of zinc with high bioavailability because of absence of inhibitors / presence of sulfur-containing amino acids (cysteine and methionine) that improve zinc absorption.
- **Plant Proteins** – Nuts, legumes & whole grains are relatively good plant sources of zinc, but less bioavailable due to their relatively high content of phytic acid, a compound that inhibits zinc absorption.
- **Supplements** – Zn oxide (worst), Zn glycinate / citrate (better); Zn malate (fibromyalgia); Zn threonate or Zn cystethionine (eyes & brain); Zn carnosine for H Pylori infection

## iodine

- The major mineral of the thyroid, a gland that helps regulate growth, development and metabolic rate.
- Recommendations to minimize iodized salt intake to protect the 15 % of the population that is 'salt sensitive' has a negative effect on the 85 % of the population that need a source of iodine.
- Fluoridated water, found in most US jurisdictions, competes with available dietary iodine supplies.
- Brominated bread (i.e. dough fortified with potassium bromate) and unfiltered chlorinated water exacerbate the iodine deficit.



## selenium

- Is a cofactor of the antioxidant enzyme **GSH peroxidase**, that protects all cellular membranes.
- Works synergistically with vitamin E to protect cells from oxidation.
- Converts T4 to biologically active T3 within the thyroid gland.
- Is crucial in AMD prevention, despite it not being included by the committee of scientists formulating the AREDS I and II formulations.



## SELENIUM: 1 brazil nut / day (protects against cancer and AMD; (helps convert T4 to T3 within thyroid )



But increases  
CANCER and  
Cataracts in Excess

Researchers at Warwick University say they have discovered that high selenium levels are 'associated' with a 10 per cent rise in cholesterol.

The warning emerges from data on 1,042 people aged 19 to 64 who took part in the UK National Diet and Nutrition Survey between 2000 and 2001.

Read more:  
<http://www.dailymail.co.uk/health/article-1227367/Brazil-nuts-raise-risk-heart-disease.html#ixzz2C8D3nBRa>

## Magnesium



- 4<sup>th</sup> most abundant mineral in the body
  - 50 % in bones
  - 49 % in cells / tissues
  - 1 % in blood
- RDA for adult men = 420 mg / day
  - Absorbed in small intestines
  - Excreted by kidneys
- Needed for 300+ chemical reactions
- Normalizes muscle and nerve function and regulates blood sugar and blood pressure
- Enhances Energy metabolism and protein synthesis
- HTN, CVDz and Diabetes ( ↑ HDL, ↓ TGs and better BS control)
- Review of 7 studies shows IV MG++ reduces risk of MI by 50 %.

## Chronic GI Acid Blockade (onset 3 months to 1 year)



DEPARTMENT OF VETERANS AFFAIRS VETERAN HEALTH ADMINISTRATION  
PHARMACY BENEFITS MANAGEMENT SERVICES (PBM) & MEDICAL ADVISORY  
PANEL (MAP)

VA CENTER FOR MEDICATION SAFETY (VAMedSAFE)

NATIONAL PBM COMMUNICATION · March 11, 2011



## **“Long-Term Proton Pump Inhibitor (PPI) Use and Risk of Hypomagnesemia”**

– also Zn; L/Zx, all 8 B Vitamins are diminished

## Common Mild Heartburn ?

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

- Avoid lying down after meals.
- Avoid overeating
- Avoid sleeping within 2 hrs after a meal
- Sleep on left side
- Avoid triggers (alcohol, caffeine, fatty & spicy foods, tomatoes, citrus, chocolate)
- Thayers Slippery Elm Lozenges
- Raise head of bed
- DGL – 2 chewable tablets , 20 minutes before meal
- (deglyrhizinized licorice)



Item #: ENZ 8091010  
SKU #: 763948091010  
90 tabs / \$ 7.19

*Magnesium deficiency has been linked with chronic diabetic complications such as retinopathy (eye disease), nephropathy (kidney disease), neuropathy (nerve disease), and foot ulcerations, migraines, ocular myokymia, and low tension glaucoma. (European Ophthalmologic Literature)*

## Magnesium (anti-spasm mineral)

Dilates blood vessels.

Prevents spasm in the heart muscle and blood vessel walls.

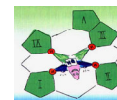
Counteracts the action of calcium, which increases spasm.

Help dissolve blood clots and aids blood thinning.

Dramatically lessens the site of injury and prevents arrhythmia.



## Magnesium Supplements



- 80 % of Americans deficient according to Dr. Dean.
- MG++ Glycinate - **best absorbed**.
- MG++ Oxide (worst absorbed) + citrate for **constipation**
- MG++ Malate for **fibromyalgia**
  - Breaks up lactic acid
- MG++ Ascorbate for **anemia / restless leg syndrome**



## Think Magnesium Deficiency

\* measure **RBC Magnesium**  
or **Top 50% of Serum Spot Check Range**

- Controls Calcium Deposition in Body by 4 physiological mechanisms
- Unresponsive or minimally responsive Vitamin D Repletion.
- Over-calcification states
- **Blepharo-Spasm** or any Spasm in the Body
- **Ocular myokymia**
- **Migraine headaches, classic or acephalgic**
- **Low Tension Glaucoma**

FIG. 1. In recent years, scientists have discovered that the gut microbiome orchestrates human metabolism, immunity and gene expression.

### The Microbiome and Us: Partners for Life

Systemic and ocular microbial populations provide vital services to the body and eyes.

BY JULIE POTEET, CO. CNS, AND DOROTHY HITCHCOCK, CO.

- **Pre-biotics**
- **Probiotics**
- **Symbiotics**

## microbiome

- Contains 10x the number of cells than in the human body
- Collectively contains 4 million genes (as opposed to approximately 25,000 genes in the human genome)
- 95 % of the distinct bacterial microbiome genes are located in the large intestine.
- 95% of serotonin is made in your gut.
- 70% of your immune cells are in your gut.
- Your gut is a factory for making vitamins such as K2.
- Acne rosacea and periorbital skin diseases encountered in practice are modulated by gut bacteria.
- Plays a role in autism



### Viome

#### Essential - Gut Intelligence Test

- In-home Gut Intelligence test kit
- Your personalized nutrition recommendations to follow for 90 days
- Updates to your recommendations as we learn more
- Access to latest features and scores about your gut's health
- Retests at \$199 to track your progress and keep your gut in check

## Microbiome / GI Restoration

improved "gut – brain" immune communication  
against candida / glyphosate / gluten damage



probiotic yogurt + ( Europe )



Paleolithic soil lignite product  
Restores GI tight junctions  
Zack Bush, MD, PhD

## chronic candida infection + sugar craving

(urine organic acids test to diagnose)

restore gut microbiome

against candida / glyphosate / gluten / bacterial overgrowth



Decrease systemic  
candida load

+



Re-establish gut  
bacterial balance

## Garlic. *Allium Sativum* (solution against antibiotic resistance)

**Garlic and war:** Roman soldiers ate garlic before going into battle and avoided illness. It was believed to give courage and ferocity. This is how the use of garlic spread throughout the western world.

**Garlic and sport:** Aristophanes noted that athletes used to eat garlic before the Olympic games.

**Garlic and health**  
anti cholesterol, antibiotic, wound healing, protects against plague, vampires, fleas, ticks, and lowers blood pressure.



bobschwabach.wordpress.com

Allicin is a potent antibiotic against MRSA, listeria monocytogenes & E. coli O157:H7, H. pylori and candida.

## Important Polyphenols

- Resveratrol
- Quercetin
- Fisetin

## Resveratrol

### Multiple Actions Against Disease and Against

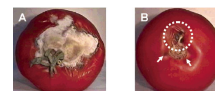
- Bioavailability = half life can be extended to 9 hrs
- Multiple biological actions (selected)
  - GERMICIDAL: Anti-bacterial, fungal, viral
  - INFLAMMATION: Anti-inflammatory ↓ COX-2, C-reactive protein, TNF
  - VASCULAR: Anti-cholesterol, anti-hypertensive, anti-platelet, anti-plaque
  - BRAIN: Antidepressant (MAO inhibitor), anti-brain plaque (↓ beta amyloid)
  - METABOLICS: Rescues pancreatic beta cells; ↓ blood sugar;
  - ANTICARCINOGENIC - against all 3 stages of CA



Apple samples immersed 5 seconds in bi-distilled water after 75 days of storage under room temperature.

Apple samples immersed 5-seconds in bi-distilled water + resveratrol and stored under same conditions

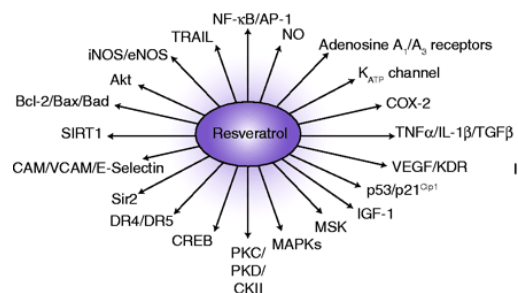
Sources: Improving Post-harvest Resistance in Fruits by External Application of trans-Resveratrol. J. Agric. Food Chem. 2003, 51, 82-89; Resveratrol Treatment Controls Microbial Flora, Prolongs Shelf Life, and Preserves Nutritional Quality of Fruit. J. Agric. Food Chem. 2005, 53, 1326-1330



## Resveratrol For Food Preservation

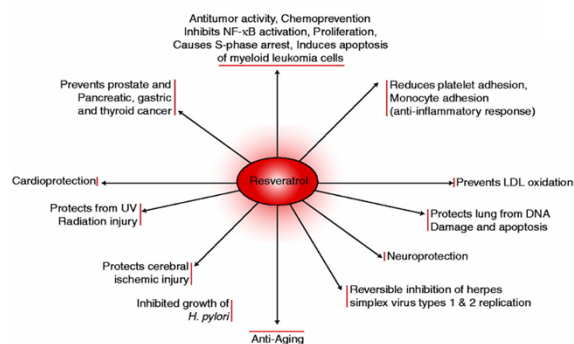
124

## The known gene targets of the “promiscuous” Resveratrol molecule

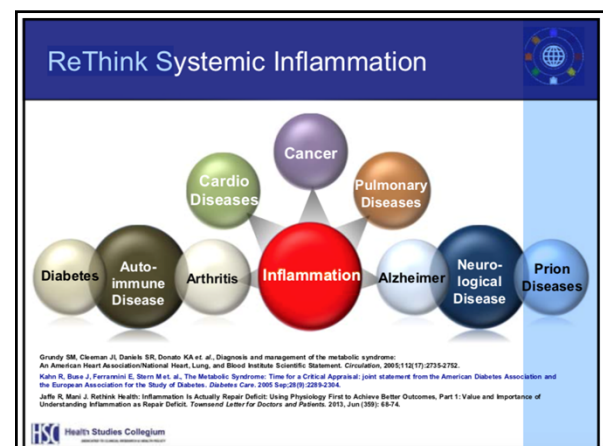
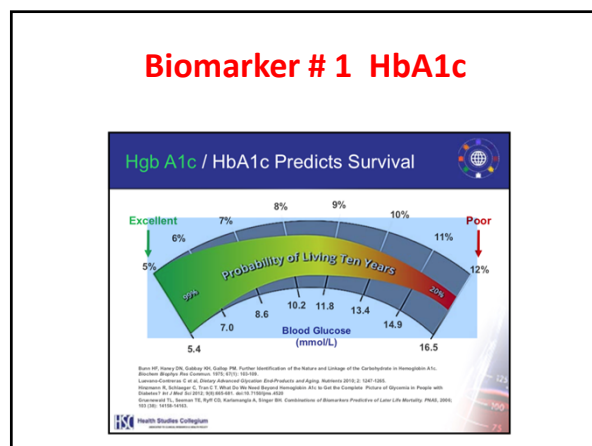
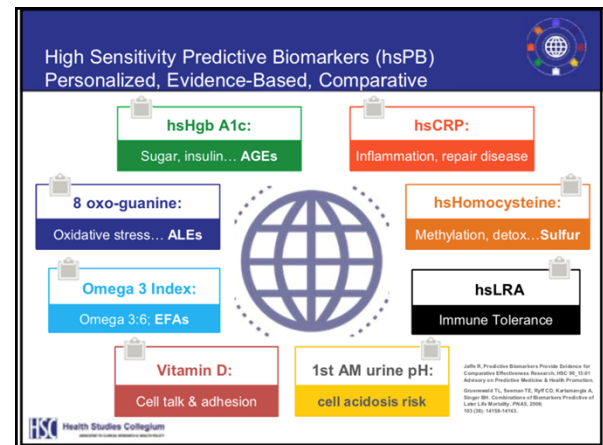
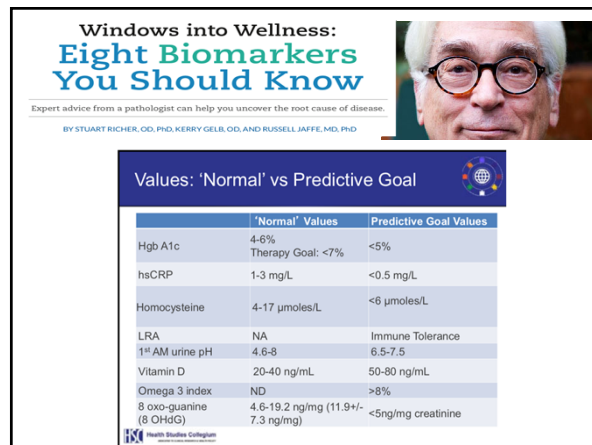
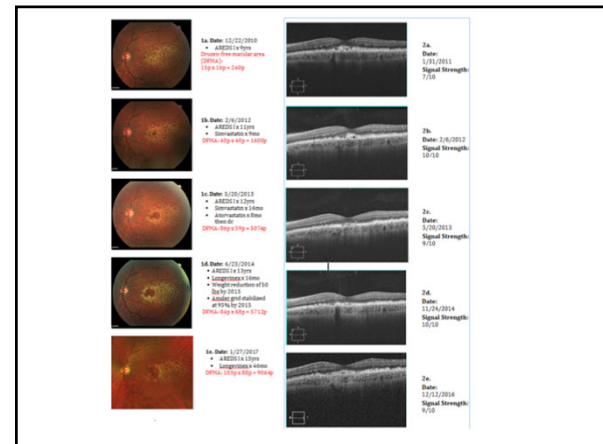
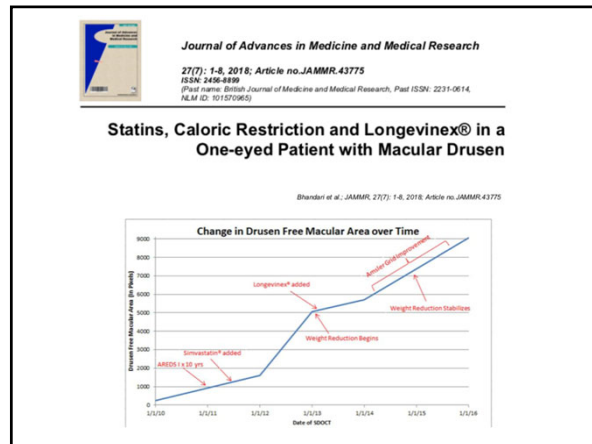


125

## Resveratrol & Better Health



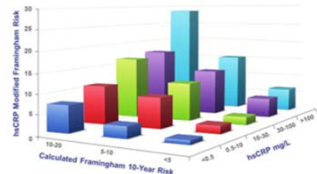
126



## Biomarker # 2 hsCRP (inflammation = Repair Deficit)

hsCRP <0.5 is Predictive Biomarker

Calculated Framingham 10-Year Risk

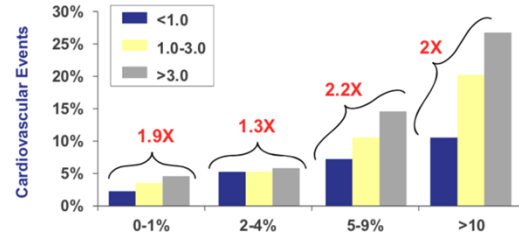


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Ridker PM, Wilson PWF, Glynn RM. Circulation 2004; 109: 2302-2305

## Actual Cardiovascular Events Compared with Framingham Estimate

+ hs-CRP in the WHS

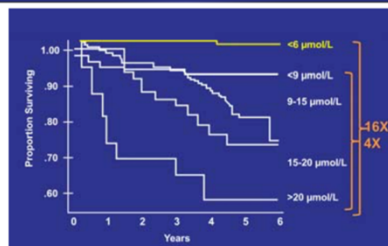


Ridker PM et al. N Engl J Med. 2002;347:1157

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## Biomarker # 3 HCY - an oxidant (methylation deficit)

Homocysteine <6 is Predictive Biomarker

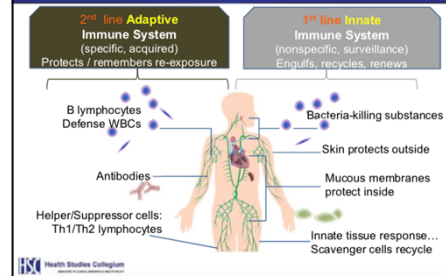


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Hopwood D, Netherland JF, Ridker PM, Liberman MC, Finkelstein SE, Pasterkamp GJ. Plasma Homocysteine Levels and Mortality in Patients with Coronary Artery Disease. JAMA. 1997; 277(12):1502-1506

## Biomarker # 4 LRA

Immune System: Defends & Repairs



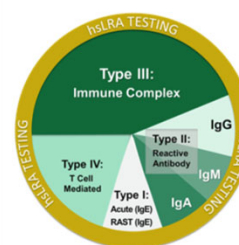
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## Functional Immunology

- Immune system = **amplified response to foreigners**
- Inflammation = **repair deficit**; toxin / immunotoxin load
- Delayed allergies** require cell culture **ex vivo** hsLRA tests to distinguish **helpful** from **harmful** defenses
- Comprehensive detoxification & immune repair:**
  - **Eat, Drink, Think, Do**
  - Personalized lifestyle repair
  - Proactive primary prevention in practice

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## Identify Hidden Immune Burdens



Type II – Reactive Antibody; B-Cell  
Type III – Immune Complex; vasculitis  
Type IV – T-Cell Mediated

**History/Serology  
not helpful**

**Delayed Allergies: Symptoms  
in Hours to Weeks**

**3 Hours to 3 Weeks**

Gell, P.G.H. and Coombs, R.R.A.  
The classification of allergic reactions underlying disease in: R.R.A. Coombs, P.G.H. Gell (Eds.)  
Clinical Aspects of Immunology. Blackwell Science, 1963.

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## Biomarker # 5 – 1<sup>st</sup> Morning Urine pH

### 1st AM Ur pH

After six or more hours rest, the urine fluid equilibrates with the GU tract lining cells.

Clinically useful assessment of metabolic acidosis risk and intracellular mineral (K & Mg)



Julian Seifter

Seifter, R. Integration of acid-base and electrolyte disorders. N Engl J Med 2015; Nov 25:373(22):2015-2. Integration of acid-base and electrolyte disorders.

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## Urine >6° rest

Excess acid wears you out



Too Acidic (<6.5)

Healthy Repair / Restore Zone



Healthy pH (6.5-7.5)

Catabolic illness tears you down



Too Alkaline (>7.5)

Predictive Goal Value = pH 6.5 – 7.5

Julie R. Mann, J. Clinical Evidence in Favor of Specific Polyphenolics. In: Watson RR, Freedy VR & Zisak S, Eds.: Polyphenols in Human Health and Disease, Academic Press, 2013: 685-705

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most Americans are too acidic

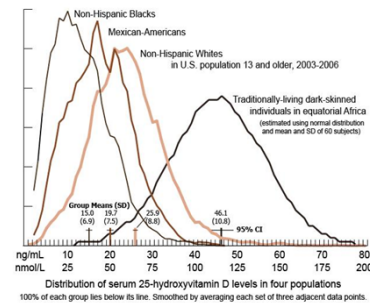
- Higher risk of HTN and DM.
- In a metabolic anabolic biosynthetic constructive metabolic state there is synthesis of complex biomolecules such as proteins and nucleic acids, but...
- You have a dearth of magnesium and potassium available for health.



## Biomarker #6: 25 OH vitamin D status

### Vitamin D vs. Ethnicity

(why serum testing important)

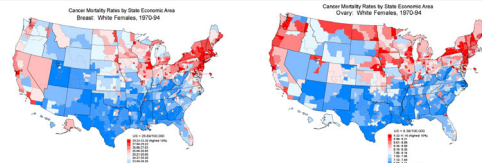


73 % of US insufficient/deficient

Correlates with morbidity & mortality

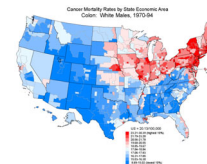
## Vitamin D3 ( a hormone)

- African Americans and Hispanic Americans require more sunlight (or daily dosed vitamin D3) than Caucasians to maintain optimal health and wellness.
- The seasonal value 25 OH vitamin D blood test, is the most reliable method to determine the exact dose of vitamin D3 to prescribe.
- Vitamin D3 sufficiency cannot be achieved in African Americans with milk alone who have little cold-water fish in their diet. The “milk mustache” is not the correct approach.
- Vitamin D3 plays a significant role in patients with the following: arcus-senilis, diabetes, macular degeneration, cancer, Alzheimer’s dz, autoimmune dz and recurrent herpetic infections of the eyes.

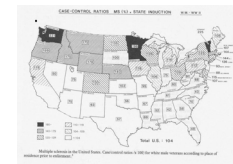


Breast CA

Ovarian CA



Colon CA

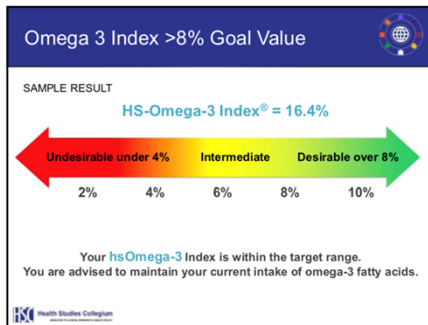


MS





## Biomarker # 7 Omega 3 Index



## Omega -3 Index



William Harris, Ph.D.,  
1985 to today

### High Omega 6/3 ratio

- Increased inflammation
- Immune imbalance
- Th1 Th2 diseases

Sinopoulos AP. The importance of the ratio of omega-6/omega-3 essential fatty acids. *Biomol Pharmacother*. 2002 Oct;56(8):345-79.  
Harris WS and von Schacky C. The Omega-3 Index: A New Risk Factor for Death from CHD? *Preventive Medicine* 2004;39:212-220.

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## Omega-3 Fatty Acids

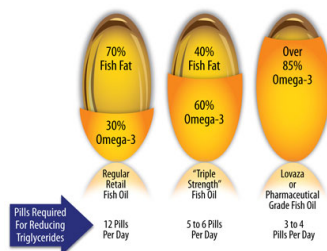
- More than 20,000 scientific papers published
- 2,400 randomized controlled trials in humans
- Affects every system in the body
- Global consumer spending on omega-3 food and beverages was **\$13 billion** in 2013.

## Omega 3

- **Low**ers triglycerides and **increases** desirable HDL. **Both are involved with denser MPOD & decreased photosensitivity**
- The DHA fraction enhances cognition and diminishes retinal neovascularization, according to French studies.
- Omega 3 is typically prescribed at too low a dose to be effective.



## Fish Oil Pills

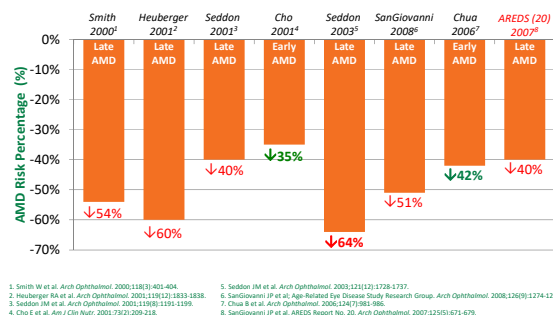


## Eicosapentaenoic Acid (EPA)

- A polyunsaturated fatty acid (PUFA) that acts as a precursor for anti-inflammatory prostaglandin-E3
- A precursor for DHA (structural retina / brain fat)
- Obtained in the human diet by eating oily fish or fish oil supplements.
- Found in human breast milk.



## Omega-3 Is Associated With Reduced Risk of Late AMD



## Docosahexaenoic Acid (DHA)

- The most abundant omega-3 fatty acid in the brain and retina
  - Comprises 40% of the PUFAs in the brain and 60% of the PUFAs in the retina.
  - 50 % of the weight of a neuron's membrane is composed of DHA, for permeability.
  - Present in the diet or derived from EPA
  - Commercially manufactured from fish oils or from microalgae-a vegetarian source.
- Increasingly important in AMD.**



## EBAMD Conclusions

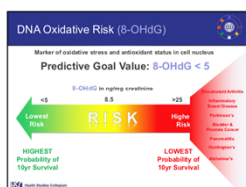


- Macular Pigment Topography** in high risk children of AMD parents is important (beyond macular SDOCT thinning) in identifying "MP dippers". This subset of AMD patients are likely not consuming ample synergistic DHA omega 3 fatty acids.
- The Holman n3 RBC Index was significantly decreased in the central dip group (P=0.03) and associated with MPOD.** DHA was significantly increased in those with measurable serum lutein/Z (P<0.0005) as was the RBC omega 3 index (P=0.001) with a trend for EPA (P= 0.65).
- CLINICAL IMPLICATION: DHA enhanced diets** are valuable to children of AMD patients in normalizing their vulnerable central macular pigment topography, and preserving central foveal retinal thickness, a result that also agrees with the "DHA – AMD -anti-VEGF effects" clinical literature, emanating from France.

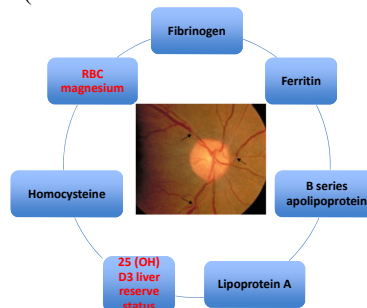
## Look Beyond AREDS II for clinical supplementation recommendations

- AREDS I data +
- Prevention Data **primarily +**
- AMD Genetic Susceptibility can be modulated by omega-3 (*Rotterdam Study 2011*)
- DHA dominant omega 3 supplements appear prudent as DHA has proven anti-inflammatory, anti-apoptotic and anti-angiogenic properties (*NAT2 Study 2013*)
- Omega -3 benefits GA genetic susceptibility (Reynolds et al 2013)
- ALIENOR Study – olive oil helpful against late AMD
- SCRIPPS EBAMD cross –sectional and **topographic macular pigment data** supports higher omega 3 index, higher DHA intake
- **Do your patients eat more turf than surf ?**

## Biomarker # 8 (Oxidative Stress) 8 oxoguanine urine test or a Pharmanex Biophotonic Skin Scan



## Cardiovascular Biomarkers Scheie 3 Retinopathy (i.e. silver wires / heme / exudate)



Retinal Image: westsideoptometrynow.com

## Summary - Excess Divalent Metals (environment)



Copper Plumbing And Supplements



Excessive or Unnecessary iron fortification after age 50+



Un-opposed CA++ supplementation (In absence of magnesium/ vitamin D)

Aging eyes  
(AMD eyes) are over - mineralized with environmental divalent metals

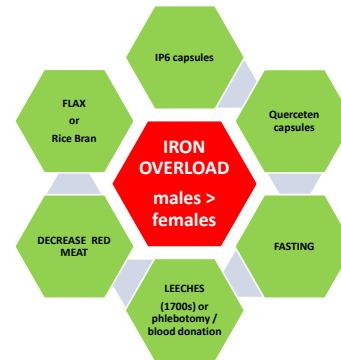
Fe++  
Cu++  
CA++

## Iron (ferritin & GGT tests)

- Iron is typically included in children's and pre-menopausal female multivitamins for growth and development, and replacement.
- However - **Excess accumulation of iron (as determined by a ferritin test)** plays an under-appreciated major role in cardiovascular disease, cancer and AMD.
- Iron is typically not included in adult multivitamins.
- Nearly 35 % of the US population has non-alcoholic fatty liver disease (NAFLD) with excess stored iron.
- Many patients have anemia of chronic inflammation, infection and malignancy where the body releases free (labile) iron, rather than envelop it within cellular ferritin storage protein molecules. GGT test.



## Cancer & Degenerative Eye Disease 6 Ways to Reduce Iron Overload



## The Good Life: Five Ways to Integrate Wellness

Exercise, health consciousness and a positive mental attitude complement diet and supplementation.

BY STUART RICHER, OD, PhD

**P**hysical activity is fundamental for health and wellness now more than ever, given our sedentary and screen-dominated society. We should all be cognizant of our body's need for movement. This is a critical aspect of the "wellness" component of ORN's combining physical activity with a well-balanced nutrition plan. Both are fundamental. One cannot simply exercise oneself out of a bad diet or, conversely, be scrupulous about a good diet while never engaging in physical activity.

To round out the education provided in this supplement, here are five simple principles to encourage your patients—and yourselves.

### 1 FIND SMALL DAILY VICTORIES

Look for little ways to increase the number of calories you burn every day: use the stairs instead of the elevator, walk to and from your car instead of using the valet, go for a walk with your significant other, especially after a full meal. Sunlight exposure during a walk also improves mood and increases vitamin D production. Remember to bring along water with minerals. Good hydration throughout the day supports countless bodily functions.

### 2 FOCUS ON FITNESS

Body composition, and not necessarily body mass index (which relies on height and weight), has a direct

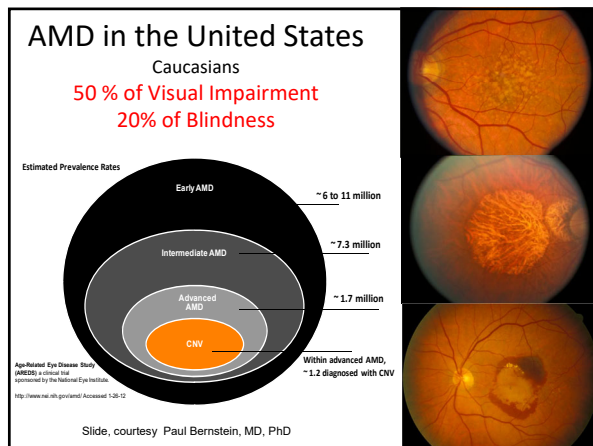


The author, granting what he prescribes, shows off good form on a Dynastar machine.

## sleep and stress reduction

- Too much sleep is worse than too little sleep, because over - sleeping more cannot be compensated thru strategic naps.
- Too much sleep dramatically increases the risk of AMD
- Undiagnosed sleep apnea is associated with ophthalmic vision threatening diseases, such as non-arteritic NAION and AMD. ODs should address these issues with the primary care team.
- Patients should refrain from caffeine, blue light and anxiety provoking situations at least 4 hours before sleep.





## Problems & Opportunities

Genetic Testing of High Risk Relatives is over-emphasized while Epigenetics -- Environment interacting with genes is under utilized

Modern Nutrition is bankrupt

Educate, Educate and Educate ALL patients with / without retinal disease

We Use 1862 Reading Charts on 50+ year olds

**We Don't Assess The Visual System for Safe Driving, especially 65+**

We fail to evaluate contrast, glare disability & recovery

**We Ignore Early Disease & Focus on Rescuing "End-Stage Disease"**

Apply more sensitive vision and macular pigment and melanin imaging

**There is 10X the risk of AMD disease once a patient reaches ages 85+.**

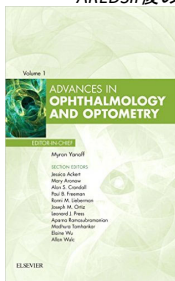
Use Regenerative Medicine along side Conventional Ophthalmology to achieve better functioning retinal tissue.

### Advances in Ophthalmology and Optometry 1 (2016) 335–369

#### ADVANCES IN OPHTHALMOLOGY AND OPTOMETRY

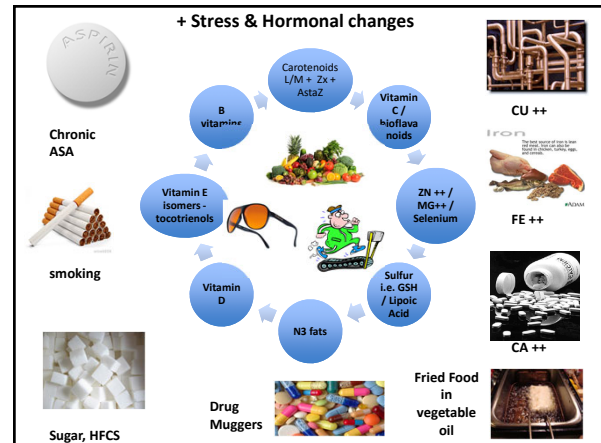
#### 眼科学と検眼の進歩

Age-related Macular Degeneration Beyond  
the Age-related Eye Disease Study II  
AREDSII後の加齢黄斑変性への対応



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Journal of Advances in Medicine and Medical Research

27(9): 1-12, 2018; Article no.JAMMR.43776

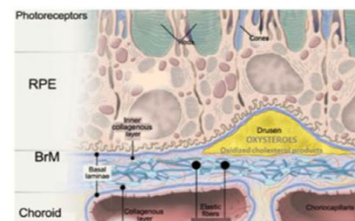
ISSN: 2456-8899

(Past name: British Journal of Medicine and Medical Research, Past ISSN: 2231-0614, NLM ID: 101570965)

### Of Vanishing Retinal Drusen and Oxysterols

Stuart Richer<sup>1,2\*</sup>, Sherwin Nassiri<sup>2</sup>, Avni Dervishi<sup>2</sup>, Harsh Patel<sup>2</sup>,  
Anish Bhandari<sup>2</sup> and William Stiles<sup>1</sup>

<sup>1</sup>Captain James A Lovell Federal Health Care Center, North Chicago, IL 60064, USA,  
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North Chicago, IL 60064, USA.



### ERACATION OF SUB-RETINAL DRUSEN THE BATTLE OF THE ENZYMES

STATIN DRUGS	NUTRACEUTICAL (Longevinex®)
HMG Acetyl CoA reductase inhibitors Inhibit cholesterol synthesis from the liver	Cytochrome p450 27-hydroxylase activator Facilitates cholesterol efflux (disposal) via bile flow

Fig. 2. Drusen / Oxysterol Clearing: A comparison between statin drugs and nutraceuticals (i.e., Longevinex®) by mechanism [11]. Statin pharmaceuticals inhibit the synthesis and influx of cholesterol, while RV facilitates its efflux via bile flow.

Image copyright granted Bill Sardi, [www.KnowledgeofHealth.com](http://www.KnowledgeofHealth.com), La Verne, CA



## Xanthophyll carotenoids

- Lutein and Zeaxanthin are the 2 major dietary carotenoids
- Meso-zeaxanthin is derived from lutein via an enzymatic reaction.
- Lutein, meso-zeaxanthin and zeaxanthin are the major foveal carotenoids.
- The zeaxanthin isomers (zeaxanthin and meso-zeaxanthin) likely play a role in reducing foveal drusen and diminishing the number of anti-VEGF injections required to save an eye with advanced occult foveal neovascular AMD



A Society Focused on  
Ocular Wellness & Nutrition Education  
[www.ocularnutritionssociety.org](http://www.ocularnutritionssociety.org)