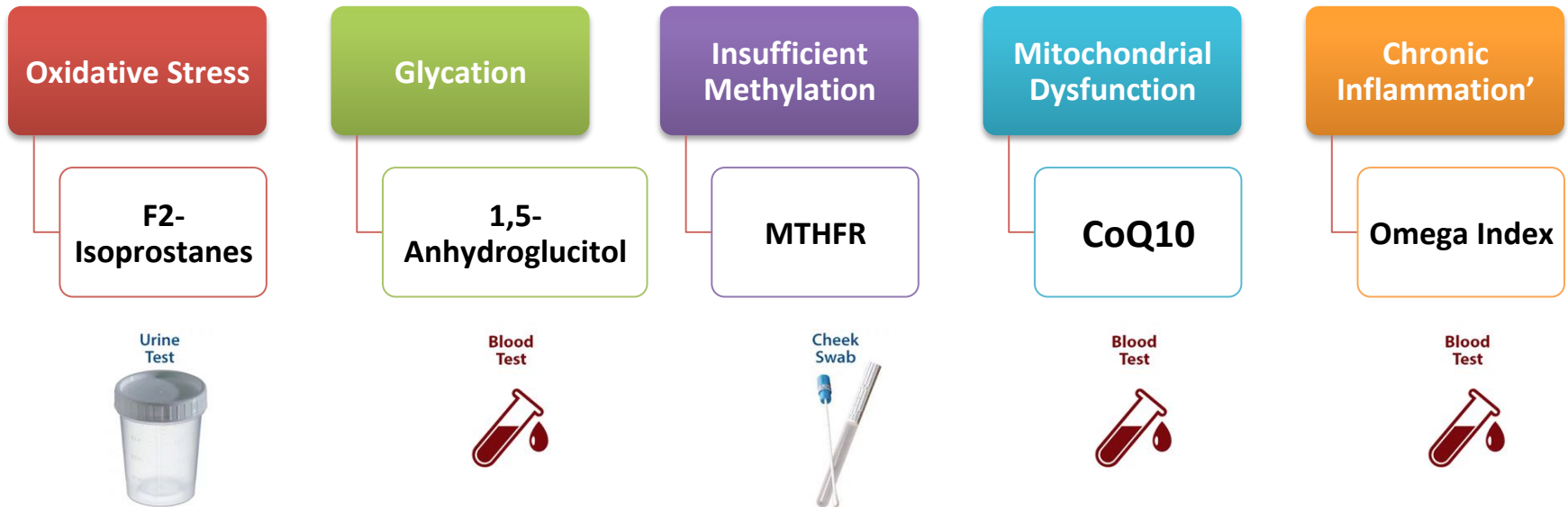


# 5 Lab Tests to Maximize Your Longevity

Dr. Crystal M. Gossard, DCN, CNS®,  
LDN

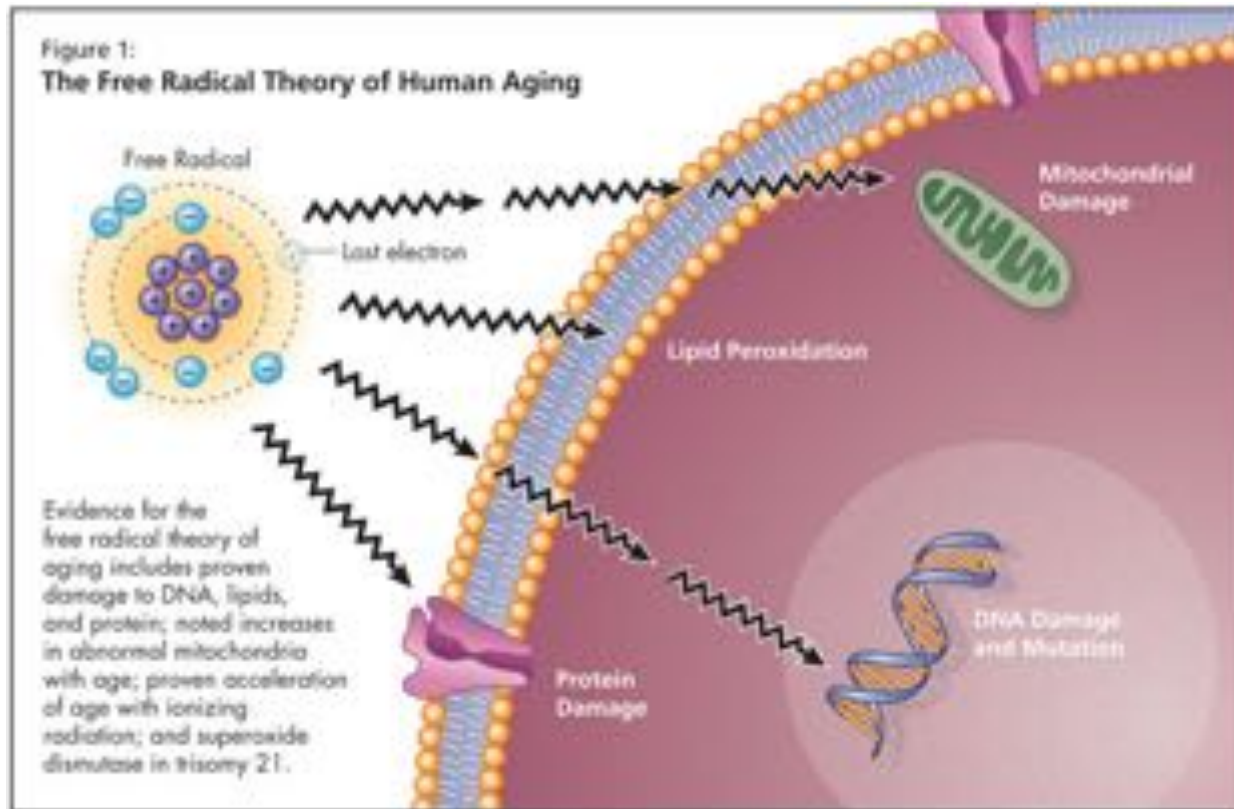
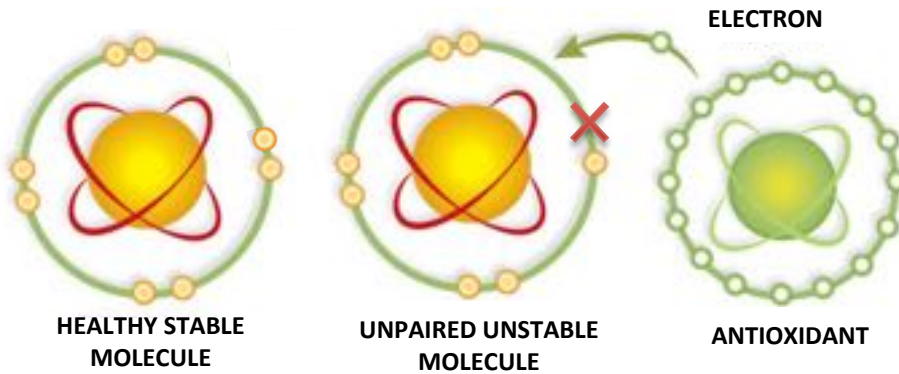
# Mechanisms of Aging



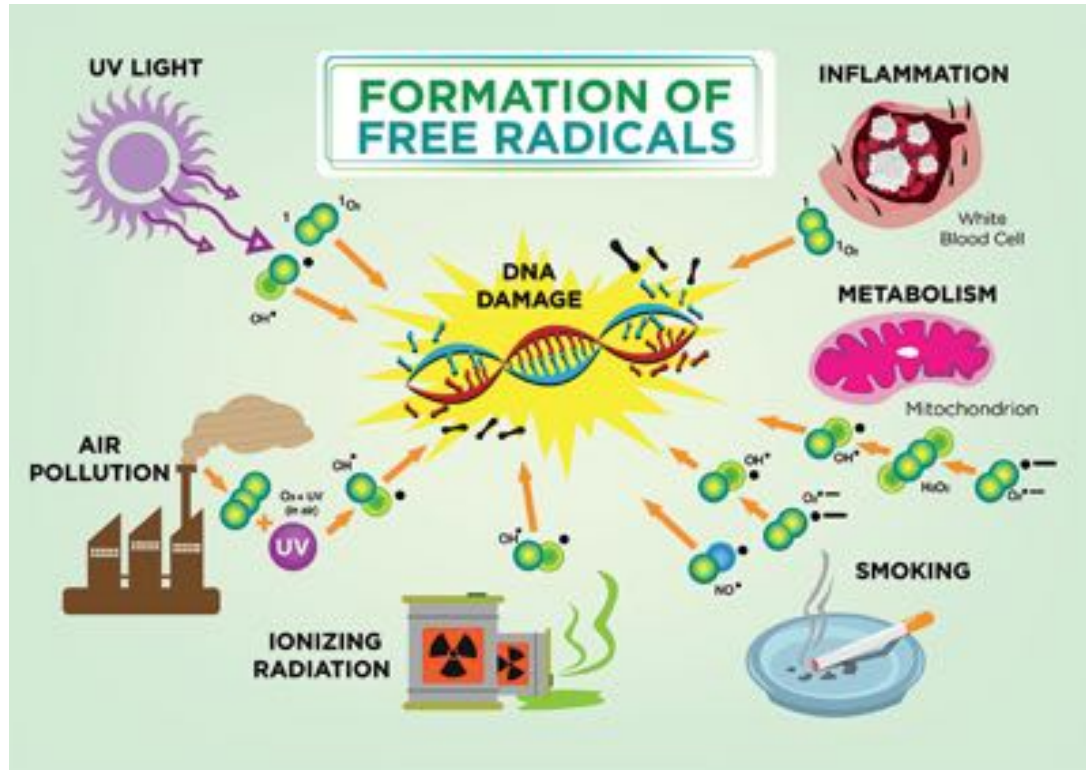
# Oxidative Stress

THE BUILD-UP OF  
FREE RADICAL  
DAMAGE OVER  
TIME!

# Free Radicals

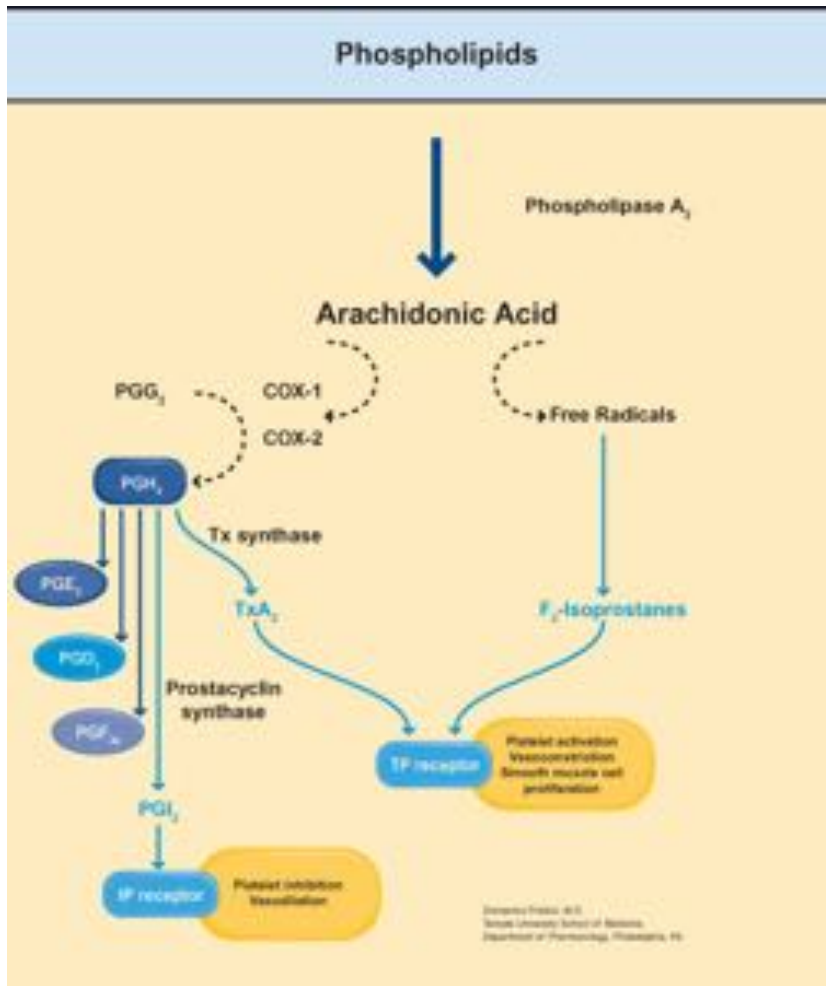


# Free Radicals and Aging



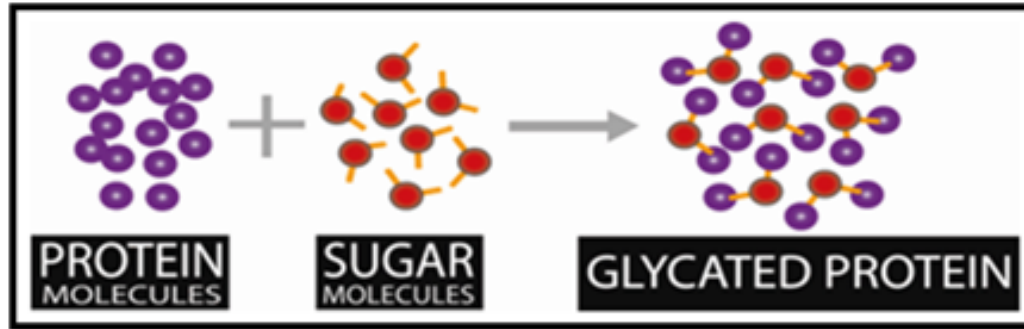
- Diabetes
- Neurodegenerative disorders
- Cardiovascular diseases
- Respiratory diseases
- Cataract development
- Rheumatoid arthritis
- Cancers

# Urinary F2-Isoprostanes



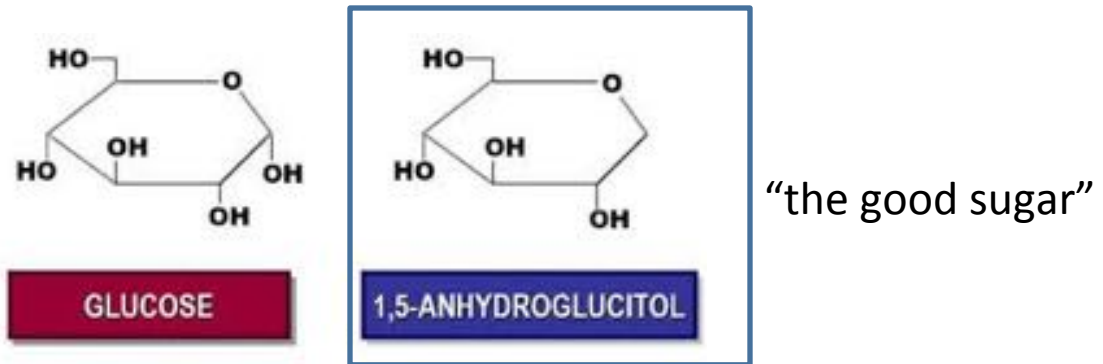
- Measures oxidative stress in vivo
- Free radicals are so reactive and short-lived that direct measurement is usually not possible.
- Produced by the reaction of free radicals with arachidonic acid.

# Glycation



- Glycation is the non-enzymatic bonding of a protein or lipid molecule with a sugar molecule.
- Glycation disrupts structure which disrupts function.

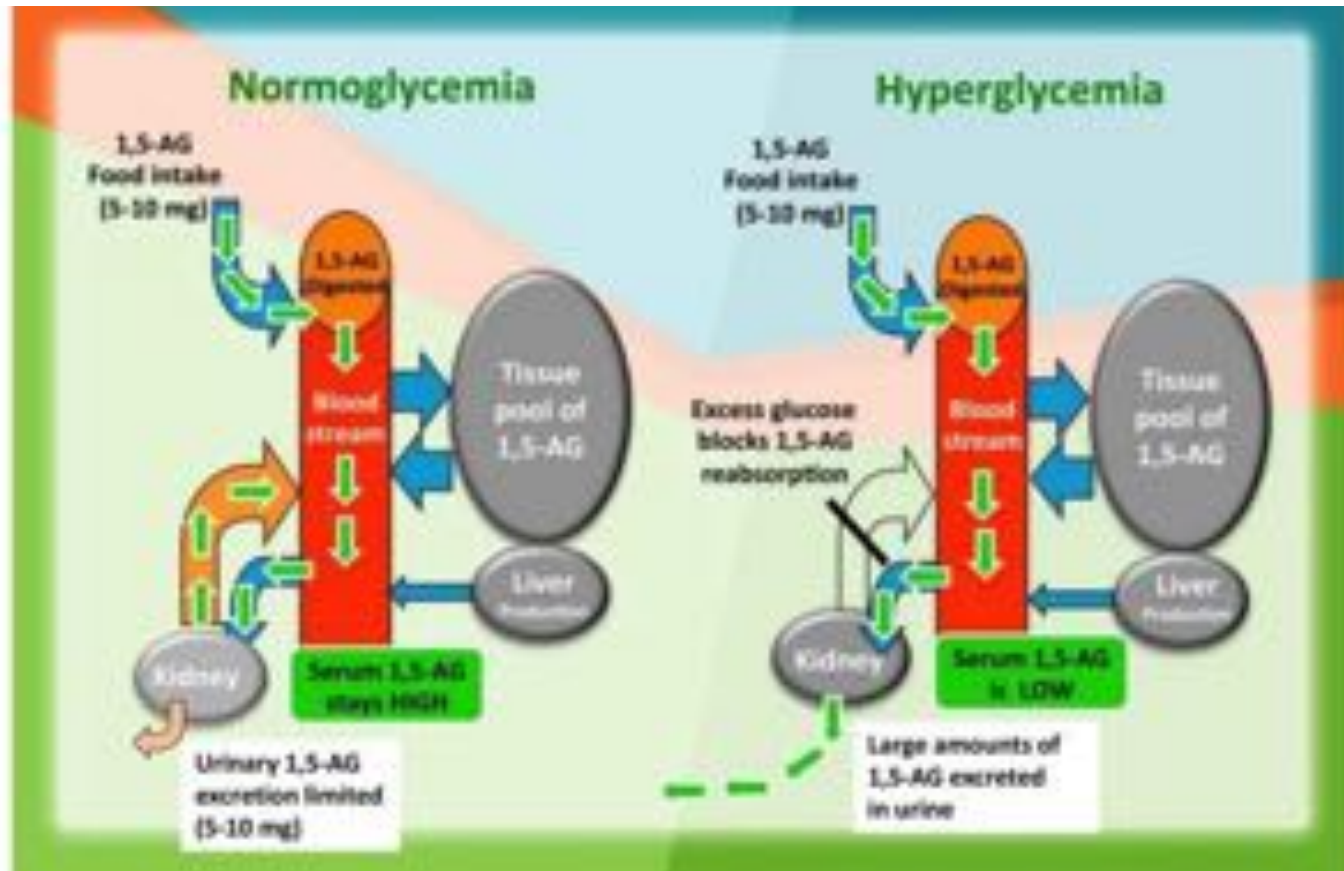
# 1,5-Anhydroglucitol (Glycomark®)



- Found in a constant amount in the bloodstream. Also found in food (soy most abundant source).
- Food sources excreted in the urine to maintain steady plasma levels— **except in the presence of glucose >180 mg/dl**
- Identifies changes in glycemic status over a few days to two weeks



# Why 1,5- AG decreases with hyperglycemia



# Glycomark®

## Patient Case #1

52 year old female

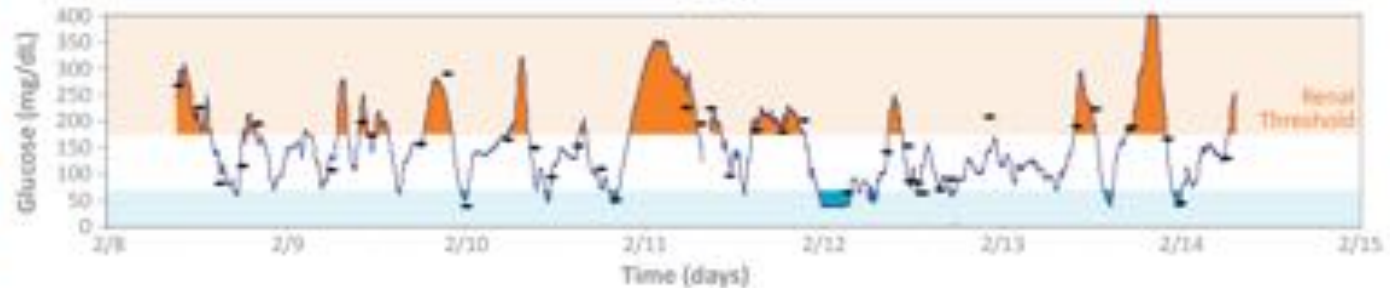
A1C 7.4%  
GLYCOMARK 12.4 µg/mL



## Patient Case #2

49 year old male

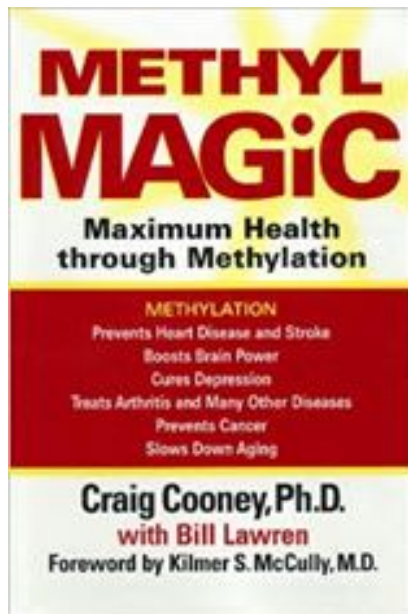
A1C 7.4%  
GLYCOMARK 4.5 µg/mL



### GlycoMark Reference Range:<sup>1</sup>

Result	Interpretation
10 - 31 µg/mL*	GlycoMark Normal
< 10 µg/mL*	GlycoMark Abnormal

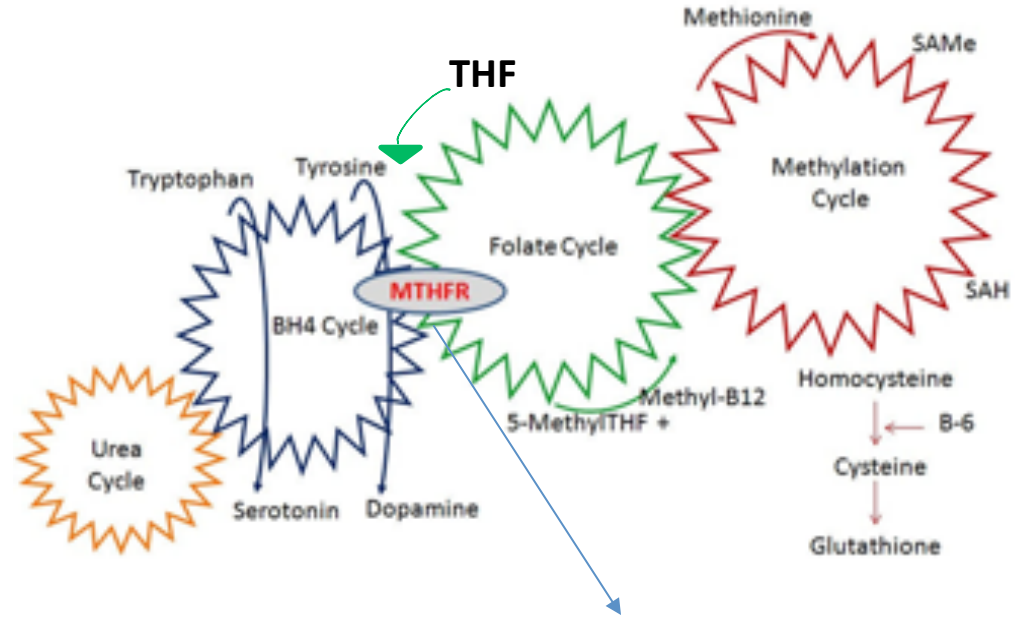
# Insufficient Methylation



“Methylation is a major and fundamental determinant of health and sickness, or life and death. Like a car out of gas, life without methyl power comes to a screeching halt,”  
Craig Cooney, 1999

# Methylation Reactions

- DNA repair
- Detoxification
- Nerve Myelination
- Immune Function
- Recycling homocysteine
- Turning genes on and off
- Production of neurotransmitters
- Energy Production (CoQ10, carnitine, ATP)



5,10-methylenetetrahydrofolate reductase

# MTHFR SNPS

- Two common mutations in the MTHFR gene (C677T and A1298C)
- Reduced MTHFR enzyme function

FREQUENCY OF OCCURRENCE		
	C677T	A1298C
WHITE	25-45%	8-18%
HISPANIC	42%	21%
BLACK	14%	1%
JAPANESE	35%	35%

## Genetic variants that cause your MTHFR enzyme to function less efficiently

Genotype	677CC 2 normal 677s	6T7CT heterozygous one 677 variant	677TT homozygous two 677 variants
1298AA two normal 1298s	100% enzyme activity	66% enzyme activity	25% enzyme activity
1298AC heterozygous one 1298 variant	83% enzyme activity	48% enzyme activity	not analyzed
1298CC homozygous two 1298 variants	61% enzyme activity	not analyzed	not analyzed

Adapted from data presented by van der Put et al.<sup>3</sup>

# MTHFR GENOTYPING REPORT

Patient Name:	Johnny Health	Date Sample Collected:	00/00/14
DOB:	00/00/14	Date Sample Received/Tested:	00/00/14
Lab ID Number:	000000000	Date Reported:	00/00/14
Ordering Physician:	Dr. KCL	Ordering Facility:	Acme Center

## PATIENT'S TEST RESULTS AND INDICATIONS

<u>TEST</u>	<u>GENOTYPE</u>	<u>RESULT</u>
C677T Mutation	C/T	Positive
A1298C Mutation	A/A	Negative

This patient carries **ONE C677T** gene mutation and **ZERO A1298C** gene mutations.

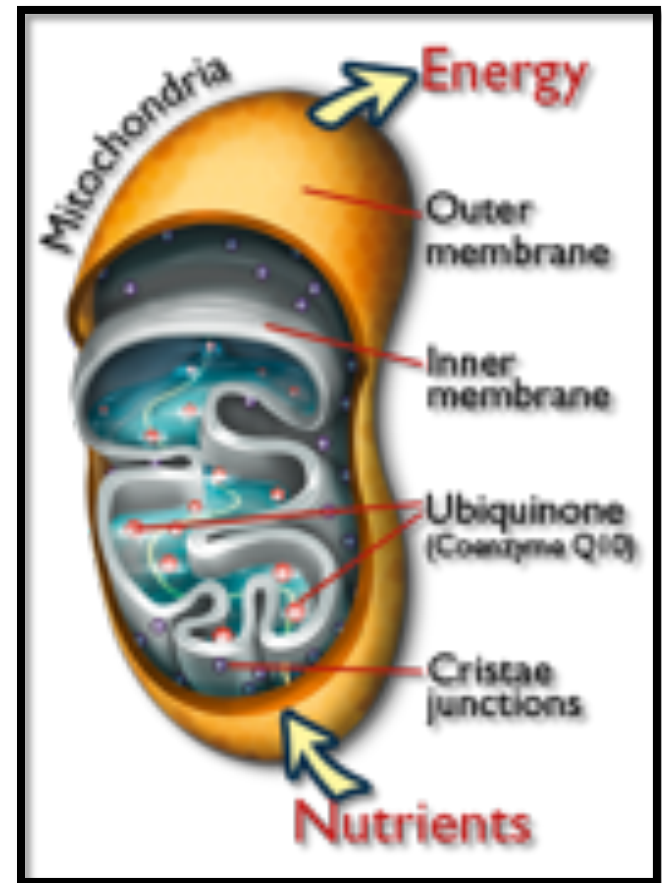
- Heterozygosity for C677T is associated with intermediate levels of enzyme activity.
- Not at risk for increased homocysteine levels.
- Shows an intermediate risk level for depression.
- Increased sensitivity to Methotrexate leading to lower dosage requirements, increased side effects or intolerance of the drug.
- The patient's genotypes should be interpreted in light of clinical information.

## PATIENT'S APPROXIMATE MTHFR ENZYME ACTIVITY<sup>1</sup>



# Mitochondria

- Powerhouse of cell
- Controls apoptosis
- Stores calcium
- Generates heat (brown fat)
- Has own DNA



# Mitochondrial Free Radical Theory of Aging

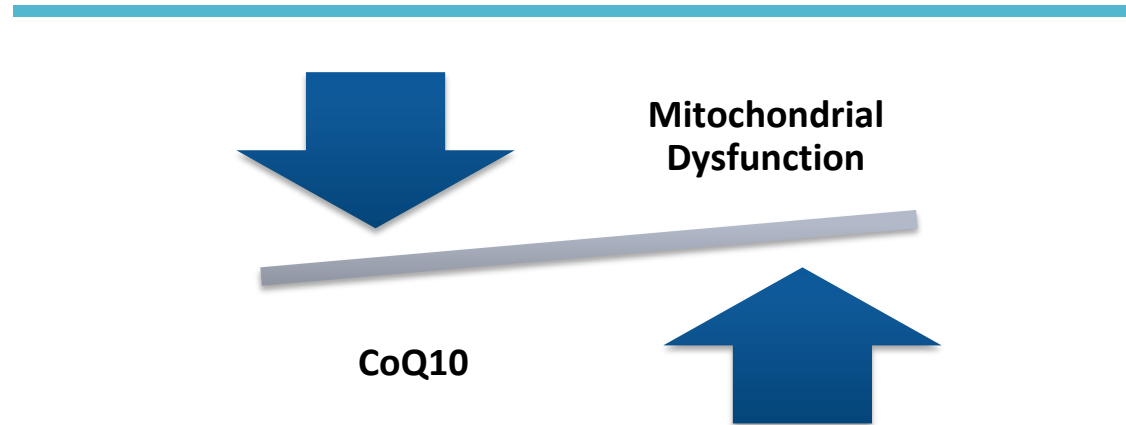
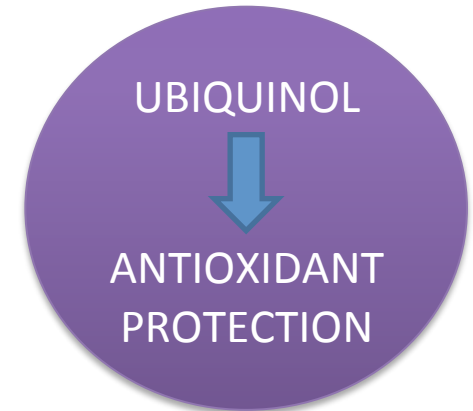
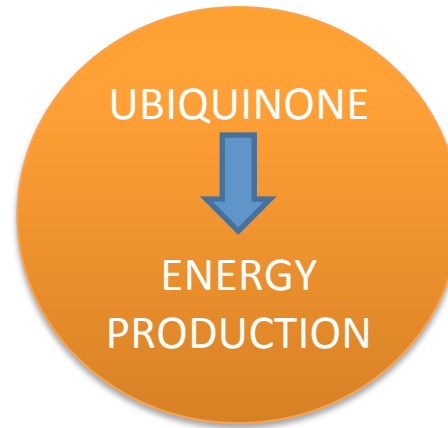
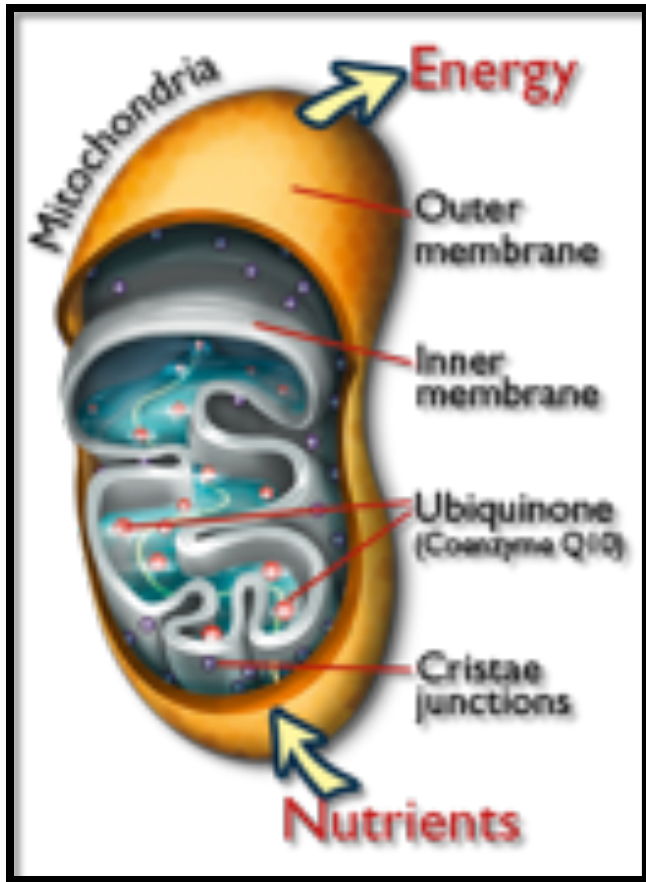
## Mitochondrial DNA

- Susceptible to damage
- Exposed to free radicals
- No protective histones
- Insufficient repair mechanisms
- Decline of CoQ10
- 10-17 fold increased rate compared to nuclear DNA mutation rate





# CoQ10 Protection



# CoQ10 Testing Details

1

Get a baseline value then repeat after 4 weeks.

or

2

Take Coq10 for 4 weeks or more then test and assess level.

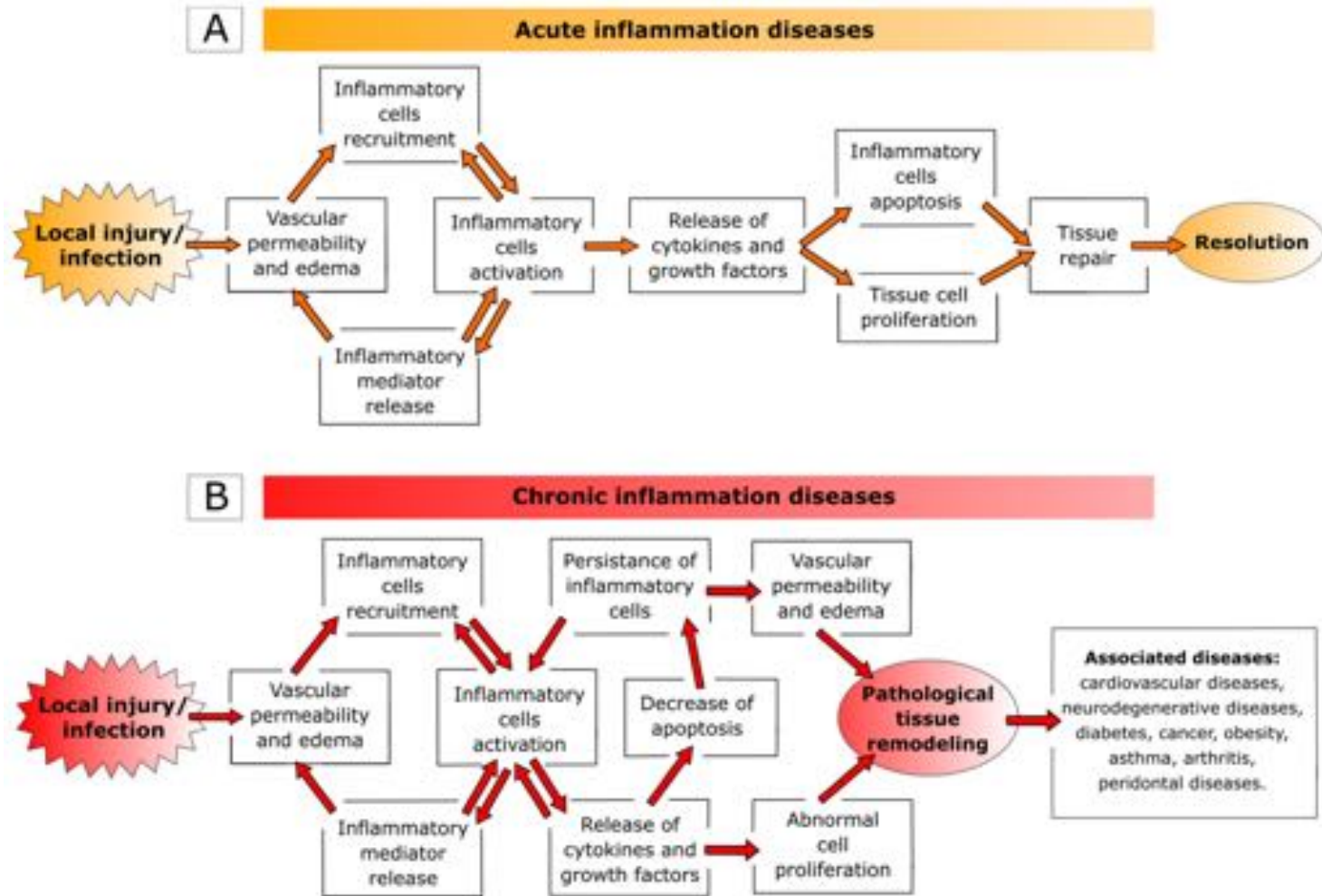
## Optimal Anti-aging

- Plasma 7mcg/ml
- Ubiquinol: 100-300 mg/day
- Those with multiple health concerns will likely need more

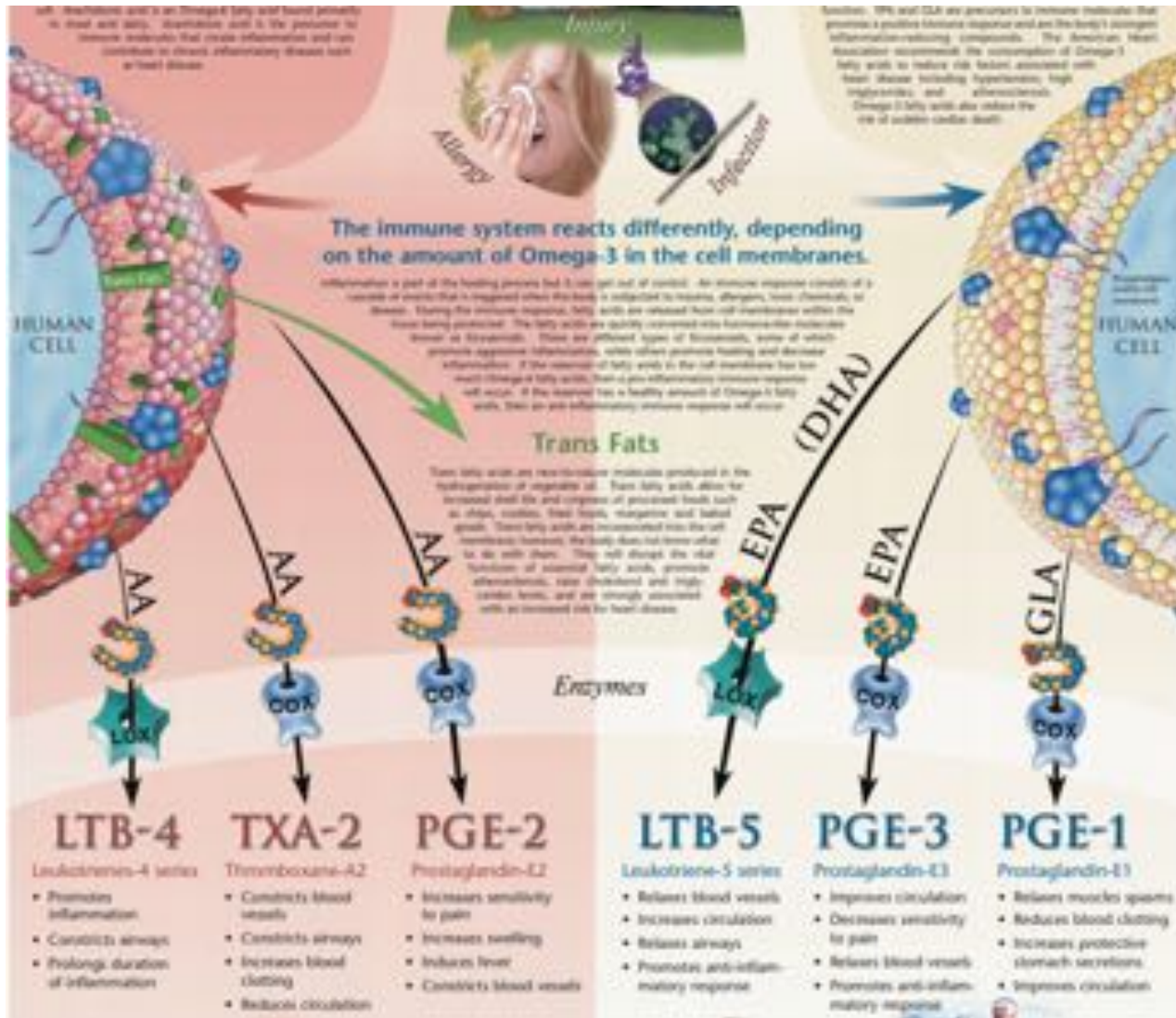
Blood Test



# Chronic Inflammation



# Omega 3 and Inflammation



## OMEGA-3 INDEX REPORT

NAME: John Doe  
DOB: 06/19/1975  
ID: JDoe

COLLECTION DATE: 11/13/2017  
RESULT DATE: 11/18/2017

Your Index  
Reference Range\*: 2.90% - 12.90%

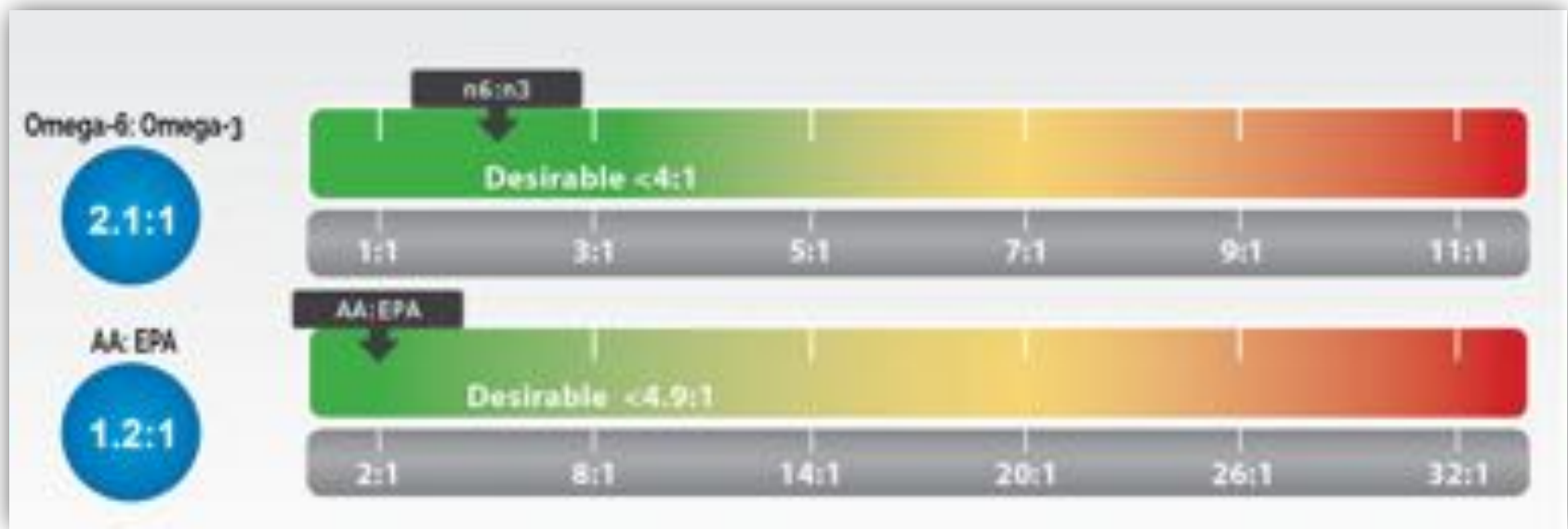
13.01%

Your Index



\* Reference Ranges encompass about 99% of US adults. Visit our FAQ section for more information.

# Omega 3 Optimal Levels



Omega 6:3  
<4:1

AA: EPA  
≤ 4.9:1 Good  
≤ 1.7:1 Ideal

**THANKS FOR YOUR ATTENTION!**

