Genetics in Practice: Enhancing Outcomes through Nutrigenomics

Coordination of Nutritional Recommendations Utilizing Blood Chemistry and Genetic Testing

Arizona Association of Chiropractic
June 14, 2026

Cindy M. Howard, DC, DABCI, DACBN, FIAMA, FICC

DR. Cindy!

Thank You!

Professional Health Products®

METHYLGENETIC NUTRITION®

DR. Cindy!

Dr. Cindy M. Howard
drcindyhoward@msn.com
708-646-6561
Text DRCINDY to 66866
drcindyspeaks.com

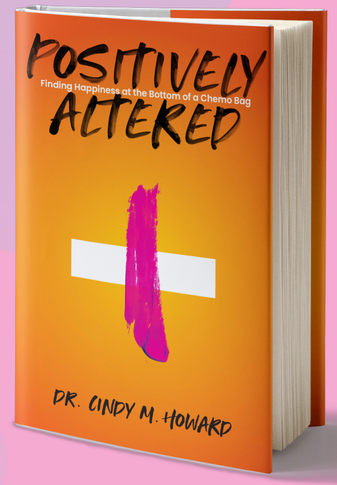
DR. Cindy!

Current:

Board Certified Chiropractic Internist and Nutritionist
Fellowship International Academy of Medical Acupuncture
Fellowship International College of Chiropractors
Owner Innovative Health & Wellness Center
VP of operations, Inguardia Health
Medical Advisory Board, Fullscript
DC Consulting, Owner
Illinois Delegate American Chiropractic Association
ACA Committee member: Nominating , Professional Development, Guidelines and Membership
Past President, College of Pharmacology and Toxicology
Executive Board Member Chiropractic Defense Council
Medical Advisory Board Functional Medicine University
Post graduate instructor for DABCI diplomate
Mom of three amazing kids

Past History:

Original Director of Functional Medicine Aligned Modern Health, Chicago, Illinois
Director of Functional Nutrition for Neurosport Elite, Davie, Florida
Past President of the Council on Diagnosis and Internal Disorders
Past President of the ACA College of Pharmacology and Toxicology
Medical Advisory Board Integrative Therapeutics
Executive Board Member Doc:s
Board member Frankfort Falcons Youth Football Association Team Chiropractic Physician for Dreamz Elite Cheer



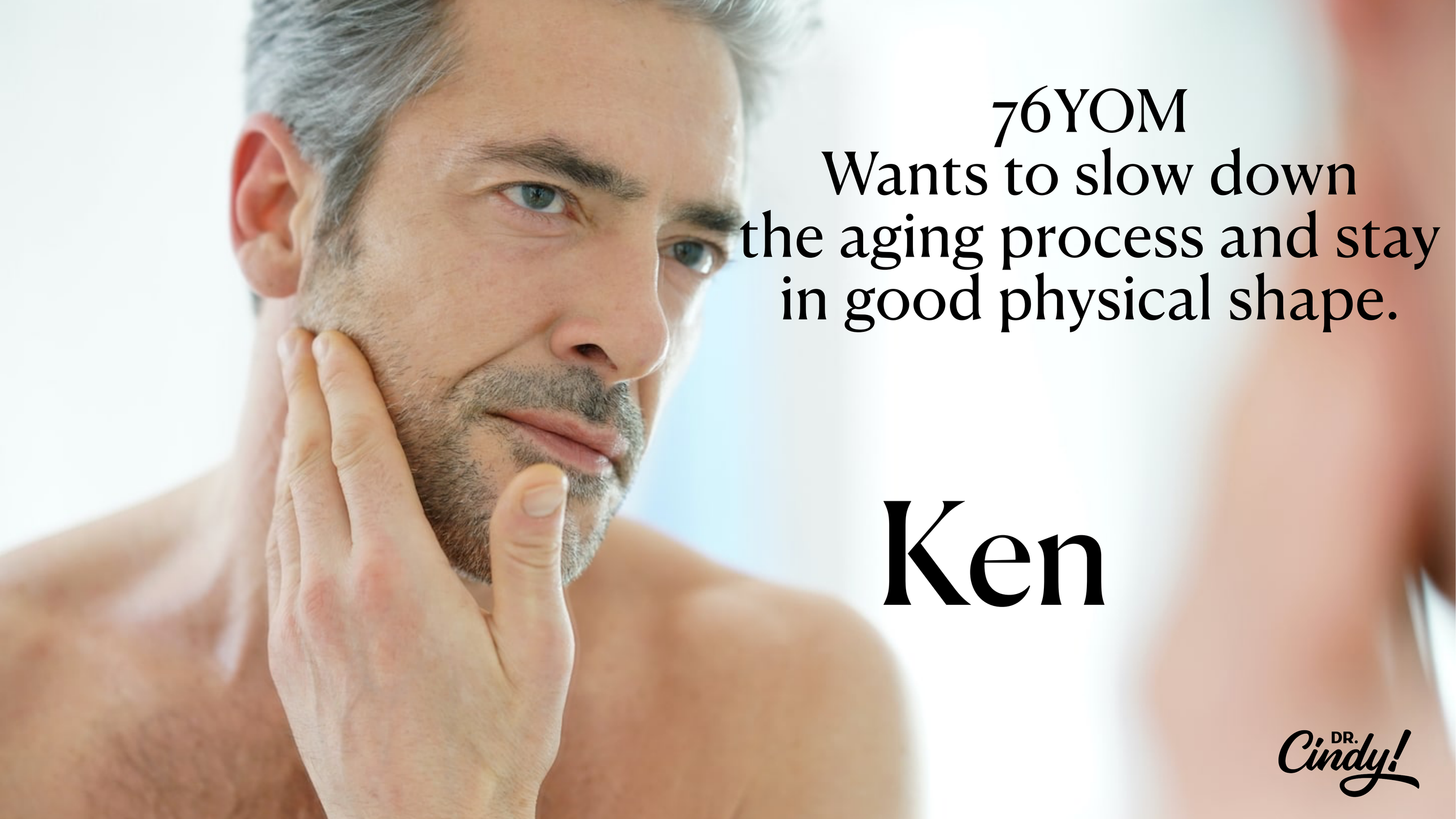
Different types of patients

Patricia & Tom

31YOF and 41YOM

Want to have more kids

2 miscarriages


76YOM
Wants to slow down
the aging process and stay
in good physical shape.
Ken
DR.
Cindy!

Jimmy

25YOM

Fatigue

Body aches

Trouble sleeping

Low weight

Poor appetite

Abby

34YOF
GI issues

DR. Cindy!

Improper/Lack of Testing

Common Cause of Misdiagnosis

DR. Cindy!

BASE LINE TESTING

Comprehensive Blood Work
MicroNutrient Testing
Genetic Testing
Metabolic Performance Testing

DR. Cindy!

Nutrigen**etics** vs Nutrigen**omics**

Nutrigen**etics**: how genes affect your nutritional status.
Absorption, transportation, activation and elimination of vitamins and minerals.

Nutrigen**omics:** how nutrients impact your genes.
Affects disease prevention or creation.

We can have a profound effect when we match genetics to diet, nutrition and lifestyle.

Nutrigenetics can explain why two individuals of similar age, stature, and activity levels will react differently to the same diet.

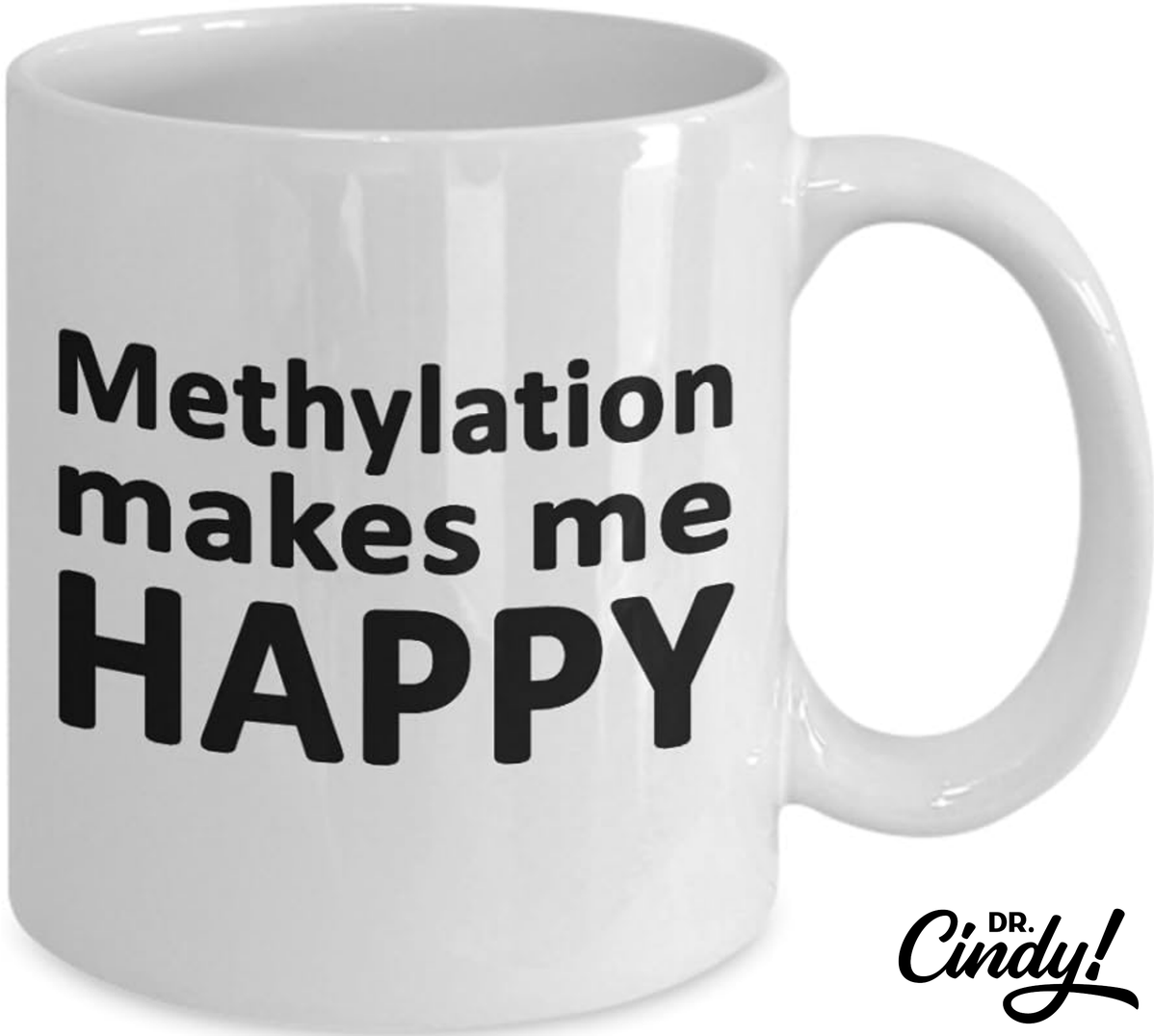
DR. Cindy!

Why bother?

Provide insight as to whether we will develop disease, offer clues for the root cause of disease and symptoms, reduce guessing in helping treat patients.

DR. Cindy!

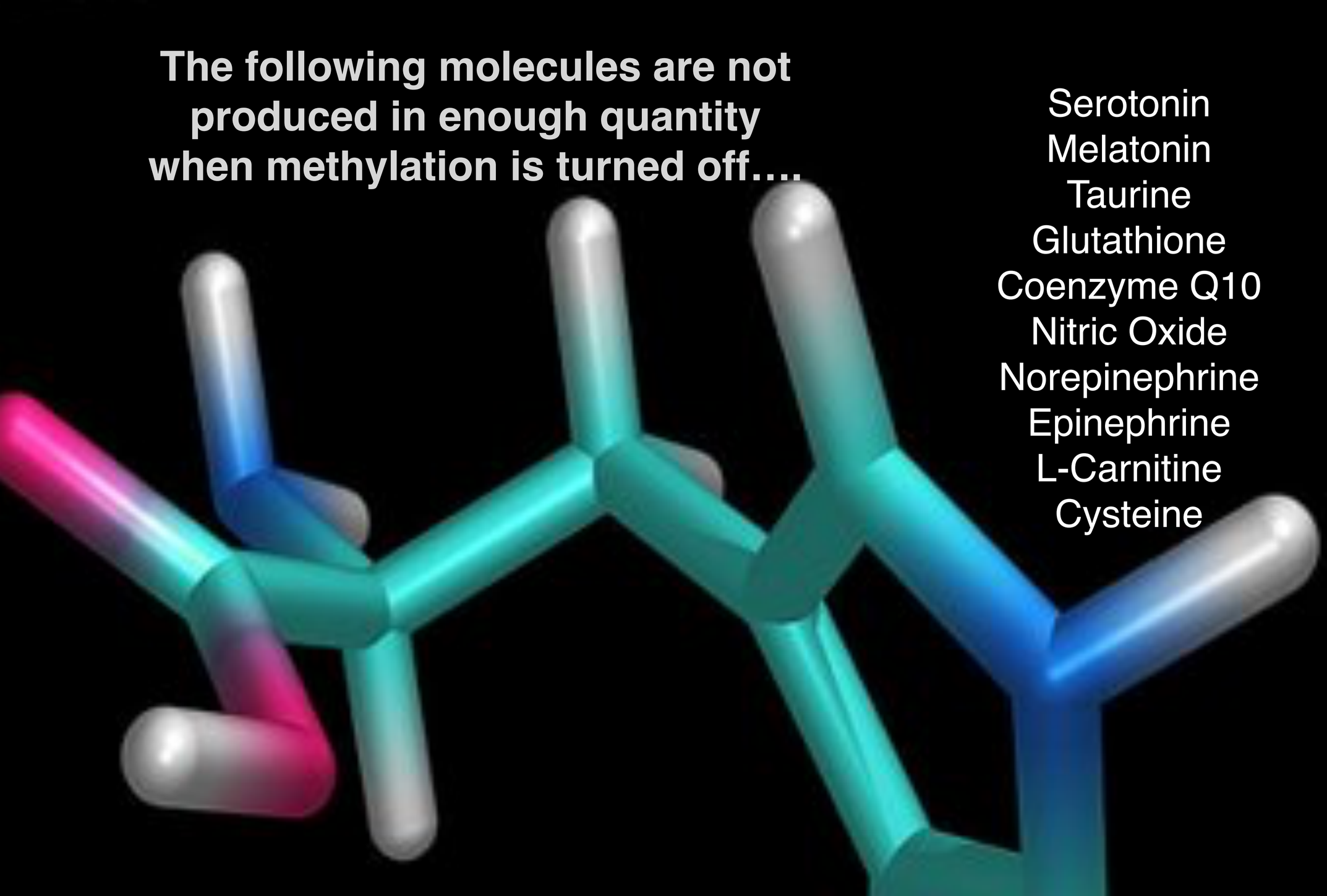
Methylation???



DR. Cindy!


Babies methylate in utero.
Governs development.
Regulates brain chemicals.
Manages inflammation.
Removes environmental toxins.
Methylation
H3C
POMC DNA
PER 2 DNA
DR. Cindy!

The following molecules are not produced in enough quantity when methylation is turned off….



Serotonin
Melatonin
Taurine
Glutathione
Coenzyme Q10
Nitric Oxide
Norepinephrine
Epinephrine
L-Carnitine
Cysteine

DR. Cindy!

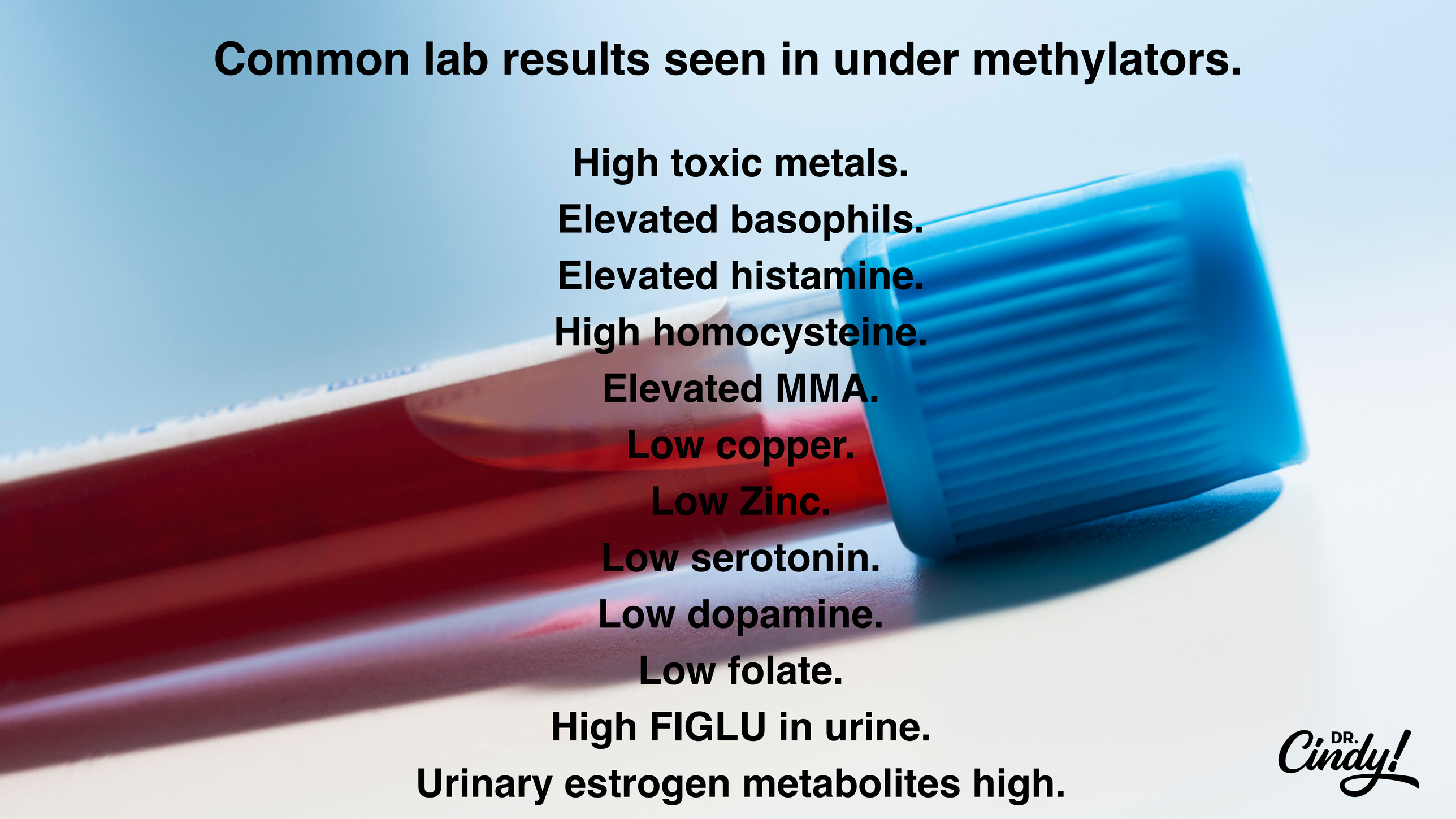
Are you Under methylating?….SAMe too low?

Digestive issues
IBS
Bloating
Constipation
Diarrhea
Stomach pain
Unexplained nausea
Poor absorption of nutrients
Food intolerance
Seasonal allergies
Brain fog
Focus
Disrupted sleep
Anxiety
Sick Often
Cancer
Strong Willed
Good tolerance of cold
Poor tolerance of heat

Thyroid
Weight fluctuations
Fatigue
Joint pain
Inflammation intolerance
Addiction
Competitive
Low pain tolerance
High libido
Inner tension
Phobias
Social Isolation
Headaches
Mood disorders
Autism
Dementia
Neuropathy(peripheral)
Self motivated
Cardiometabolic syndrome

DR. Cindy!

Common lab results seen in under methylators.



High toxic metals.

Elevated basophils.

Elevated histamine.

High homocysteine.

Elevated MMA.

Low copper.

Low Zinc.

Low serotonin.

Low dopamine.

Low folate.

High FIGLU in urine.

Urinary estrogen metabolites high.

DR. Cindy!

Over methylation

Creative
Sensitive
Underachiever
Learning issues
Internal tension
Anxiety
Overactive
Empathetic
Depression
Weight gain
Food/chemical sensitivities
Obsession w/o conclusion
Low libido
Brain fog
Circadian rhythm dysfunction
Dry skin

Fatigue
Trouble sitting still
Hyperactivity
Panic attacks
High tolerance for pain
Pear shaped
Heavy body hair
Eczema
Immune system dysfunction
Poor motivation
Over sleeping
Dry eyes
Dry mouth
Upper body/neck/head pain
Antidepressants don’t work
Relationship to schizophrenia

DR. Cindy!

Lab results for over methylation.

Elevated serotonin.
Elevated dopamine.
Low histamine.
High copper.
High epinephrine.
Low basophils.
Low Zinc.

DR. Cindy!

OR….

Many people with over methylation have zero health problems and don’t need treatment.

Treatment for over methylation doesn’t always fix you but if it does it can take months.

Good for Overmethylation

Choline
DMAE
Vitamin D
Vitamin C
Vitamin B12
Vitamin B6
Zinc
Omega- 3 fatty acids
Magnesium
Methyl-folate

DR. Cindy!

And by the way…

Antacid use
Heavy metals
Viral infections
Bacterial and Yeast overgrowth
-challenge your ability to methylate

DR. Cindy!

Lynch, Ben. Dirty Genes: a Breakthrough Program to Treat the Root Cause of Illness and Optimize Your Health. HarperOne, an Imprint of HarperCollinsPublishers, 2018.


MTRR
Higher toxic burden
Low bilirubin
Low B12
High MMA
High GGT
Low Methionine
Low SAMe
High CRP
DR. Cindy!

EPHX1

Plays a dual role in the biotransformation of xenobiotics.
Gets rid of physiological useless compounds.

Defects in this gene: preeclampsia.
Plays a role in fatigue, obesity and inflammation.

4-OHE1
Bad Estrogen
Minor pathway of estrogen metabolism.
Direct primary estrogen down a different pathway.
Choline, Folate, B12, NAC, Resveratrol, DIM, Calcium D-glucarate, sulforaphanes.

DR. Cindy!

Xenobiotics

Xenobiotics disrupt the microbiome.
Affects testicular function lowering sperm count.
Prevents ovulation.
Early ovarian failure (premature menopause).

Food additives, flavorings, fragrances, pesticides, cosmetics, drugs, plant constituents, environmental and industrial pollutants.

DR. Cindy!

COMT

Alteration in COMT

↓

Build up of hydroxy estrogens

↓

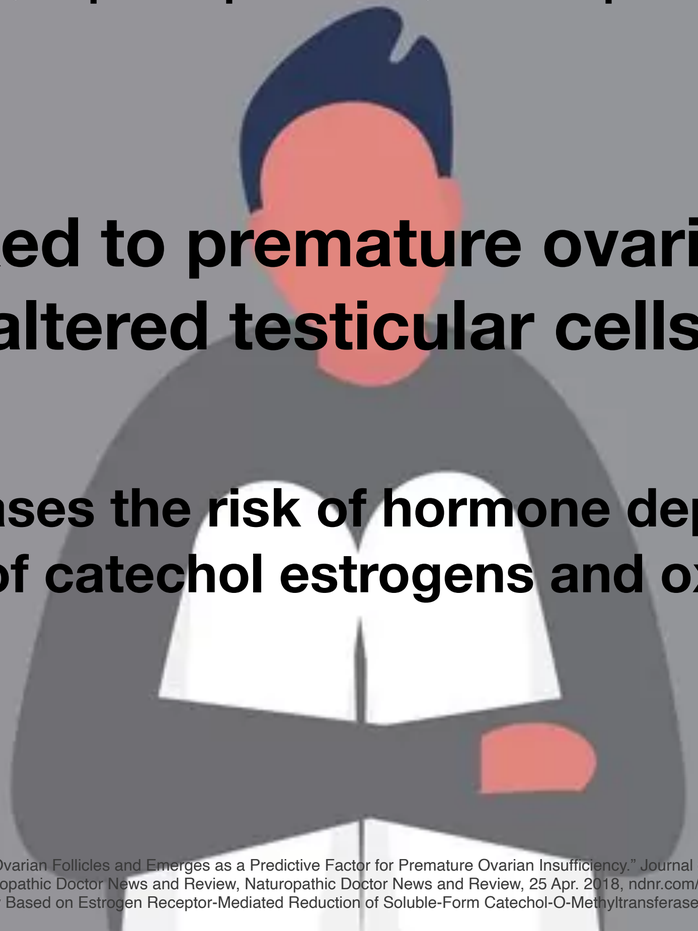
Estrogen Dominance

SAMe is the methyl donor and Magnesium
Needed to break down estrogen

DR. Cindy!

COMT

Processes estrogen and Neurotranmitters.
(Dopamine, epinephrine, norepinephrine)



Mutations are linked to premature ovarian insufficiency and preeclampsia, altered testicular cells and male fertility.

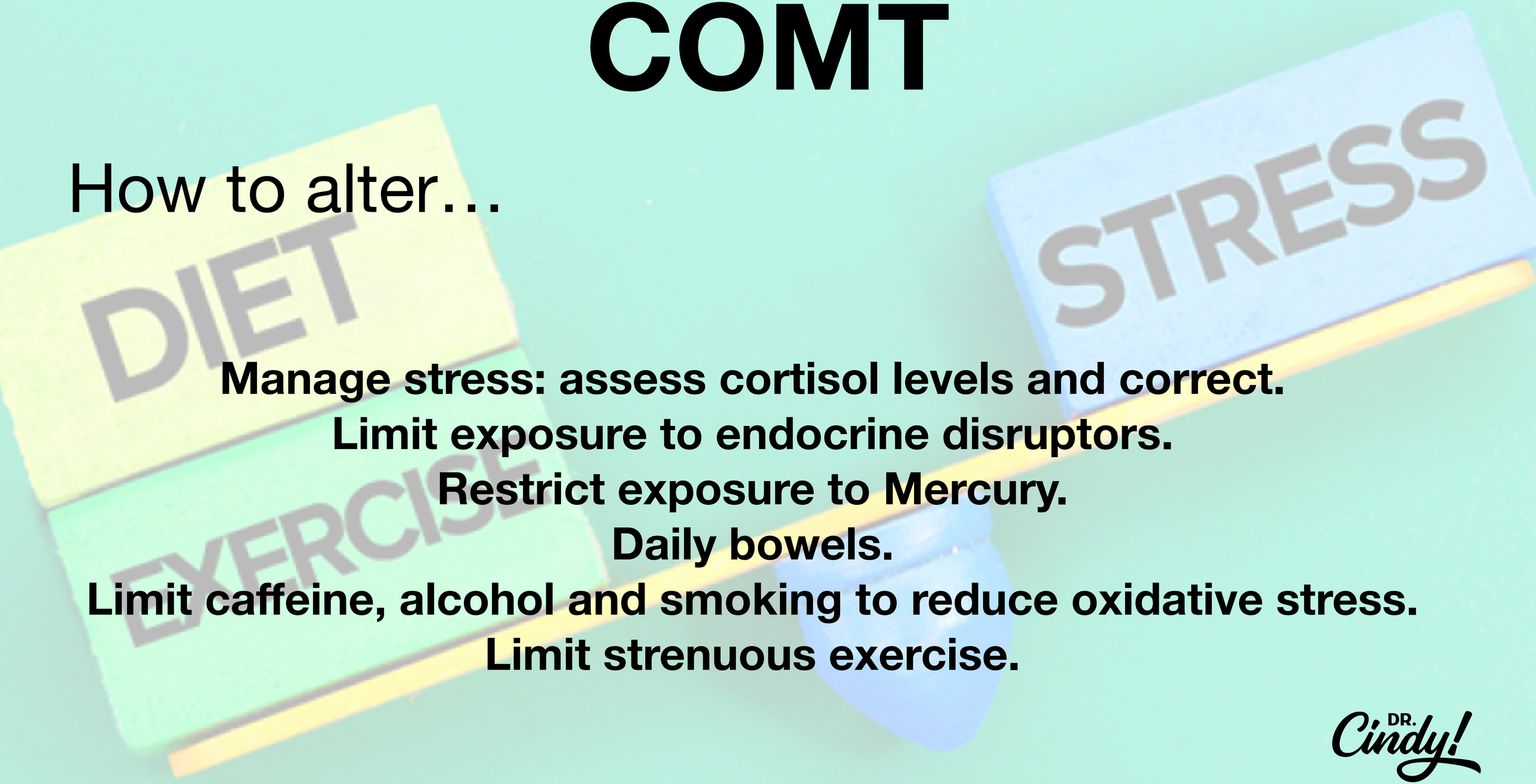
Reduced COMT activity increases the risk of hormone dependent disease: enhances estrogen, accumulation of catechol estrogens and oxidative DNA damage.

DR. Cindy!

Cordts, Emerson, et al. “COMT Polymorphism Influences Decrease of Ovarian Follicles and Emerges as a Predictive Factor for Premature Ovarian Insufficiency.” Journal of Ovarian Research, vol. 7, no. 1, 2014, p. 47., doi:10.1186/1757-2215-7-47.
Skowron, Jared M. “Move Over, MTHFR: Time to Look at COMT.” Naturopathic Doctor News and Review, Naturopathic Doctor News and Review, 25 Apr. 2018, ndnr.com/pediatrics/move-over-mthfr/.
Ho PW, Tse ZH, Liu HF, et al. Assessment of Cellular Estrogenic Activity Based on Estrogen Receptor-Mediated Reduction of Soluble-Form Catechol-O-Methyltransferase (COMT) Expression in an ELISA-Based System. *PLoS One*. 2013;8(9):e74065.

COMT

How to alter…



Manage stress: assess cortisol levels and correct.
Limit exposure to endocrine disruptors.
Restrict exposure to Mercury.
Daily bowels.
Limit caffeine, alcohol and smoking to reduce oxidative stress.
Limit strenuous exercise.

DR. Cindy!

CYP1B1

Regulates endogenous metabolic pathways,
including the metabolism of
steroid hormones, fatty acids, melatonin, and vitamins.

Key enzyme in the hydroxylation of E2 to 4-hydroxyestradiol.

May be a potent carcinogenic agent.

Mainly expressed in mammary, uterus and ovary tissue .

DR. Cindy!

Tsuchiya Y, Nakajima M, Kyo S, Kanaya T, Inoue M, Yokoi T. Human CYP1B1 is regulated by estradiol via estrogen receptor. Cancer Res. 2004 May 1;64(9):3119-25. doi: 10.1158/0008-5472.can-04-0166. PMID: 15126349.

Polymorphisms in CYP1B1 modify the risk of idiopathic male infertility with abnormal semen quality.

Abstract

Background: It is acknowledged that Cytochrome P450 1B1 (CYP1B1) plays a crucial role in metabolism and is involved in lots of diseases. We carried out this study to evaluate the association between CYP1B1 single nucleotide polymorphisms (SNPs) and male infertility in the Han-Chinese population with abnormal semen parameters.

Methods: We genotyped five CYP1B1 polymorphisms by using TaqMan allelic discrimination assay and Genome Lab SNP-stream. A total of 591 idiopathic infertile men and 419 fertile controls were comprised in the research. Semen quality analysis was performed using computer assisted sperm analysis. According to semen parameters, we divided

Results: In our study, we only found genetic variant rs rs1056836 may decrease the risk of abnormal sperm m with male infertility.

Conclusions: Our results suggested that polymorphis risk of abnormal sperm parameters. These findings should be validated by more epidemiological and functional studies.

Genetic variant rs 1056836 correlated with idiopathic male infertility
May decrease the risk of abnormal sperm motility.

Caution as as it may also promote obesity and hypertension.

DR. Cindy!

Hu W, Yang H, Sun J, Zhang Q, Yang J, Lu L, Zhang J, Qin Y, Xia Y, Wang X. Polymorphisms in CYP1B1 modify the risk of idiopathic male infertility with abnormal semen quality. Clin Chim Acta. 2011 Sep 18;412(19-20):1778-82. doi: 10.1016/j.cca.2011.05.037. Epub 2011 Jun 13. PMID: 21683070.

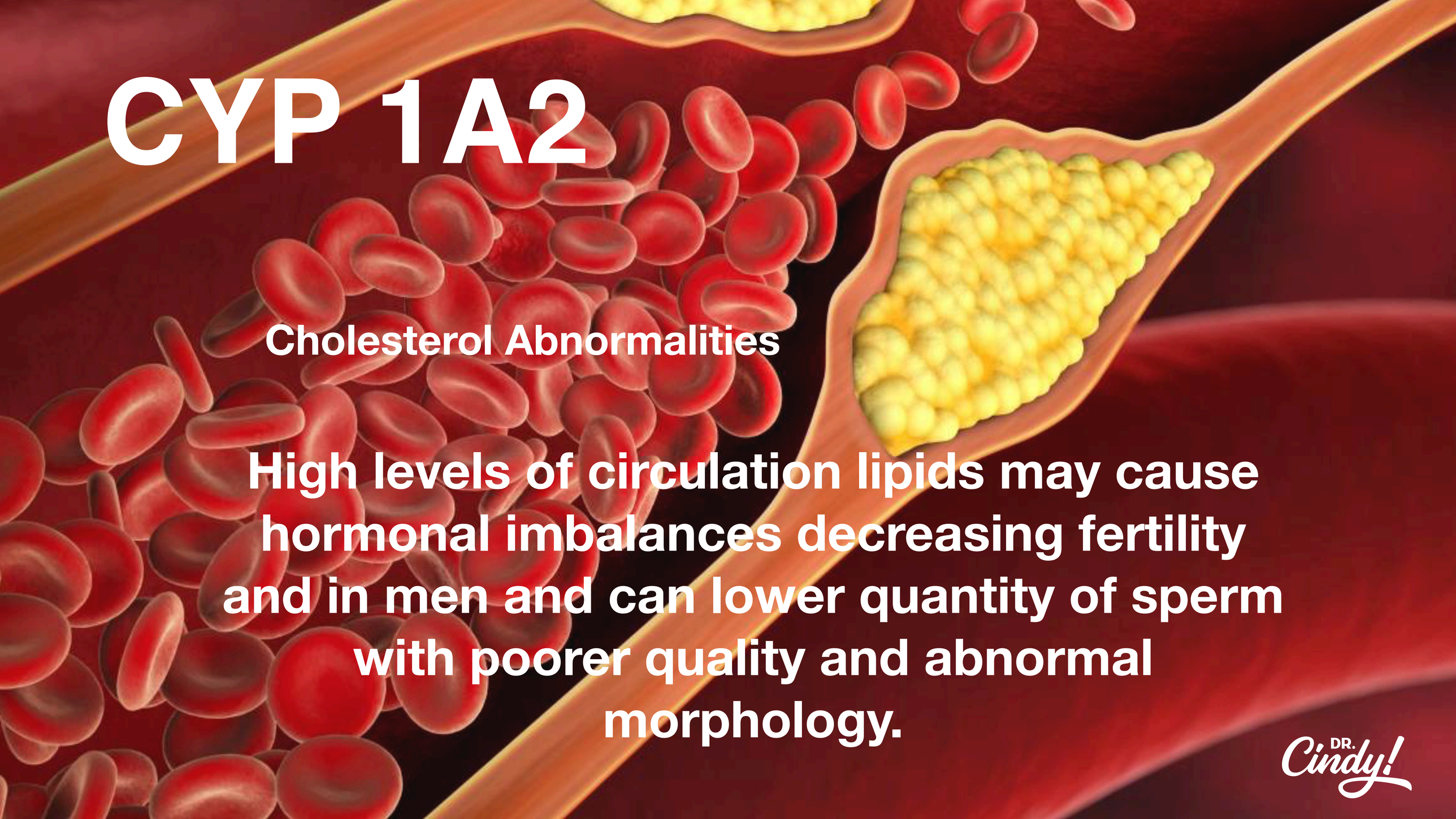
CYP1A2

Can it affect pregnancy?

CYP1A2 is responsible for the metabolism of estrogens and exogenous compounds including caffeine.

Epidemiological Studies: same dosage of caffeine exposure increases risk of pregnancy disorders in women with higher CYP1A2 enzyme activity.

DR. Cindy!


CYP 1A2
Cholesterol Abnormalities
High levels of circulation lipids may cause hormonal imbalances decreasing fertility and in men and can lower quantity of sperm with poorer quality and abnormal morphology.
DR. Cindy!

Oversensitivity to histamine.
Regulates immune response, gut function.
Acts as a neurotransmitter.
Symptoms include abdominal pain, itching or sweating after food consumption.

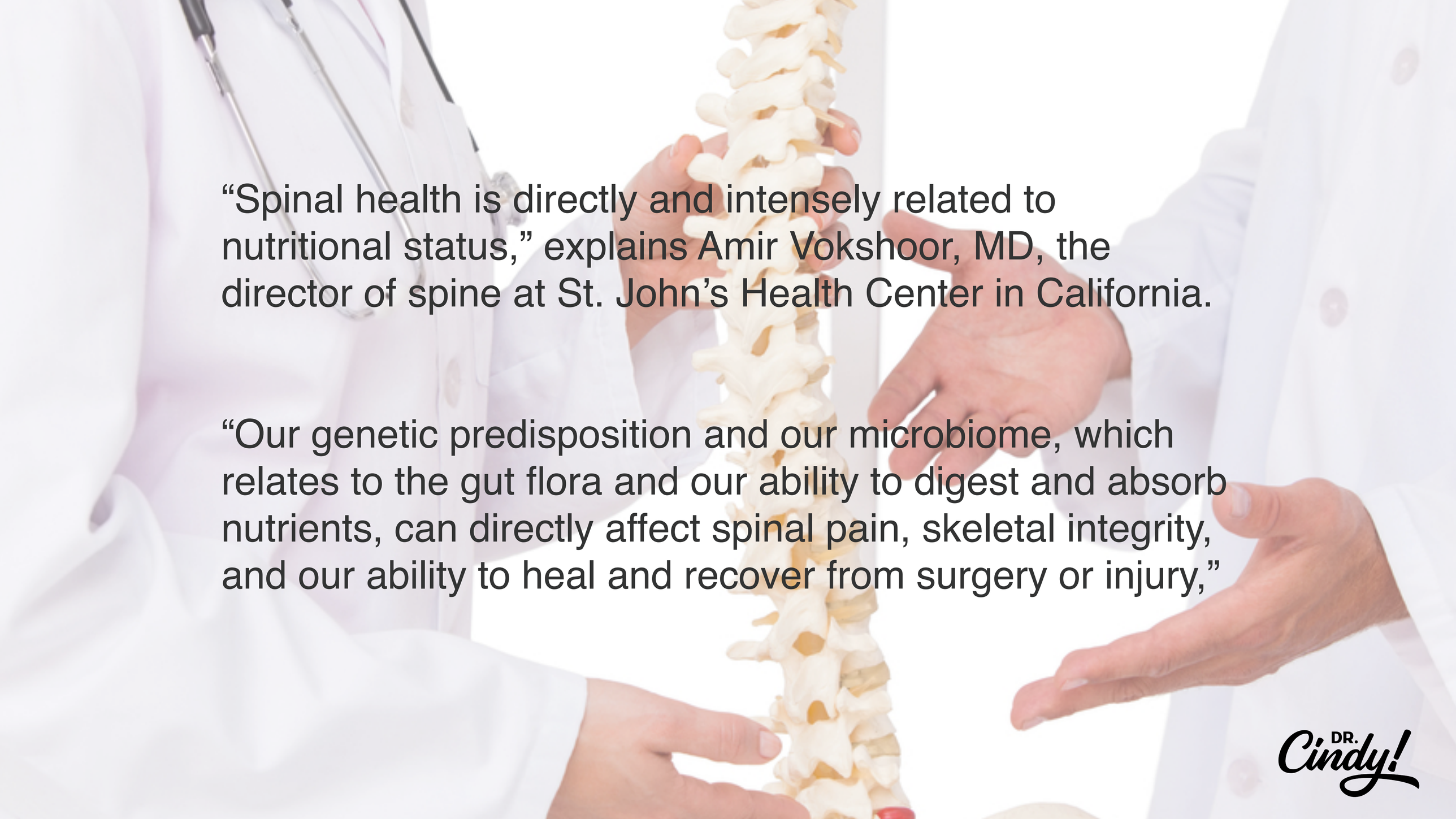
The balance of DAO and histamine plays a role in pregnancy
Reduced DAO activities: complications include diabetes, threatened and missed abortion and trophoblastic disorders
High risk pregnancy .

Assess for leaky gut and food allergies/sensitivities.
DAO is dependent on B6, B12, iron, copper and Vitamin C.

DR. Cindy!

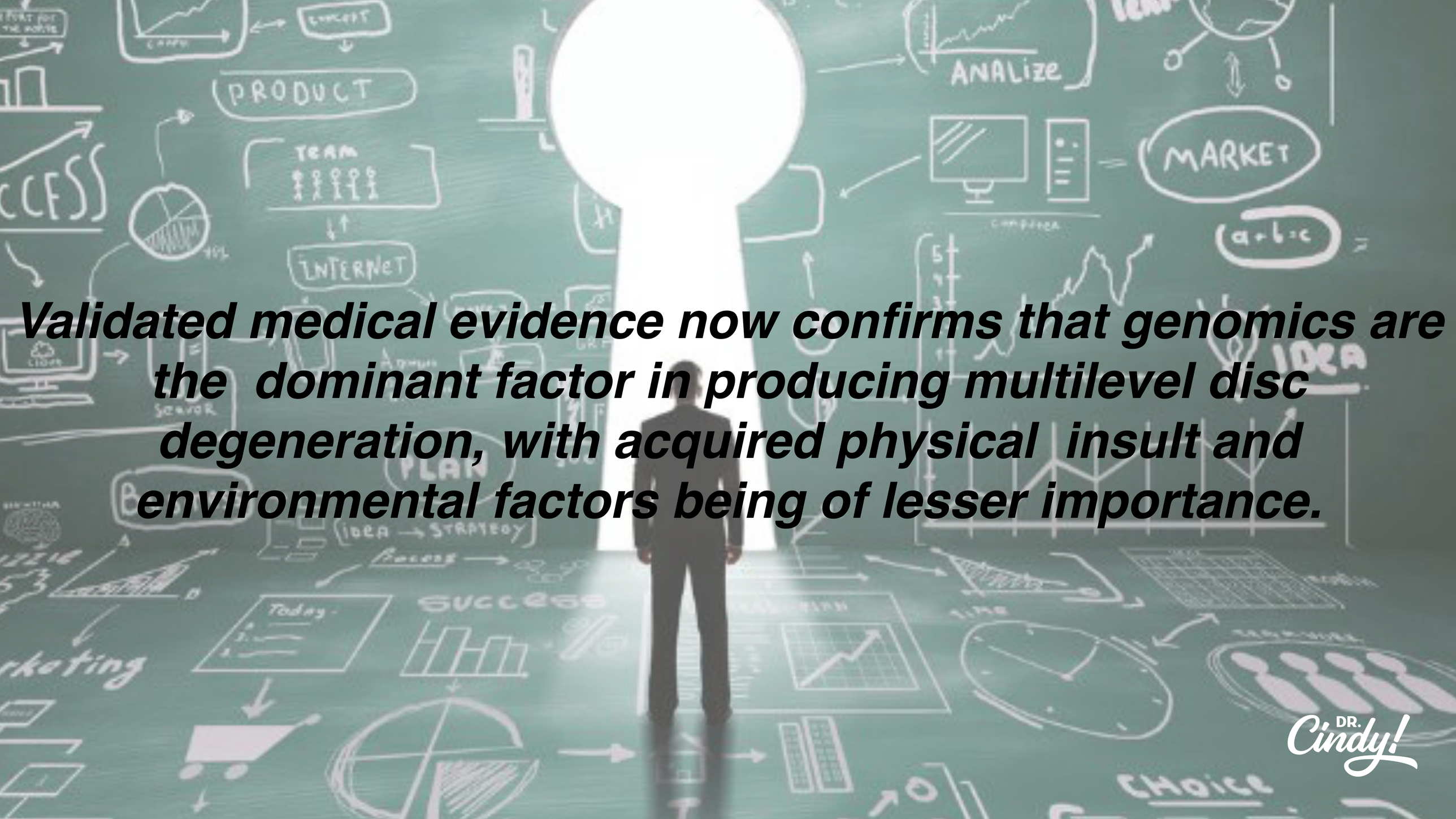
Maintz, L., et al. “Effects of Histamine and Diamine Oxidase Activities on Pregnancy: a Critical Review.” Human Reproduction Update, vol. 14, no. 5, 2008, pp. 485–495., doi:10.1093/humupd/dmn014.
“DAO Deficiency and Histamine: The Unlikely Connection.” MTHFRSupport Australia, 5 Nov. 2019, mthfrsupport.com.au/2016/09/dao-deficiency-and-histamine-the-unlikely-connection/.


Undermethylation
Poor tolerance to pain
DR. Cindy!



“Spinal health is directly and intensely related to nutritional status,” explains Amir Vokshoor, MD, the director of spine at St. John’s Health Center in California.

“Our genetic predisposition and our microbiome, which relates to the gut flora and our ability to digest and absorb nutrients, can directly affect spinal pain, skeletal integrity, and our ability to heal and recover from surgery or injury,”



Validated medical evidence now confirms that genomics are the dominant factor in producing multilevel disc degeneration, with acquired physical insult and environmental factors being of lesser importance.

DR. Cindy!

Int J Biol Sci. **2008**; 4(5): 283–290.
Published online 2008 Sep 2. doi: 10.7150/ijbs.4.283

PMCID: PMC2532796
PMID: 18781226

Advances in Susceptibility Genetics of Intervertebral Degenerative Disc Disease

Yin'gang Zhang,1,✉ Zhengming Sun,1 Jiangtao Liu,1 and Xiong Guo2
Author information Article notes Copyright and License information Disclaimer

Go to:

Abstract

The traditional view that the etiology of lumbar disc herniation is primarily due to age, gender, occupation, smoking and exposure to vehicular vibration dominated much of the last century. Recent research indicates that **heredity may be largely responsible for the degeneration as well as herniation of intervertebral discs. Since 1998, genetic influences have been confirmed by the identification of several genes forms associated with disc degeneration**. These researches are paving the way for a better understanding of the biologic mechanisms. Now, **many researchers unanimously agree that lumbar disc herniation appears to be similar to other complex diseases, whose etiology has both environmental and hereditary influence**, each with a part of contribution and relative risk. Then addressing the etiological of lumbar disc herniation, it is important to integrate heredity with the environment factors. For the purpose of this review, we have limited our discussion to several susceptibility genes associated with disc degeneration.

Keywords: Intervertebral disc Disease, Degeneration, Candidate Genes, Familial Aggregation

Lower back disease may be in your genes: New study indicates predisposition to lumbar disc disease could be inherited

February 2, **2011** American Academy of Orthopaedic Surgeons

Symptomatic lumbar disc disease, a condition caused by degeneration or herniation of the discs of the lower spine, may be inherited, according to a new study published in the *Journal of Bone and Joint Surgery* (JBJS).

"Previous studies, including studies of twin siblings and subsequent genetic marker studies, have suggested a genetic predisposition for the development of symptomatic lumbar disc disease but have been limited by a small number of patients," noted study author Alpesh A. Patel, MD FACS, assistant professor of orthopaedic surgery at the University of Utah School of Medicine. "The results of this study provide evidence based on a population of more than 2 million people, indicating that there likely is a genetic component in the development of this disease. Additionally, **the factors that differentiate a symptomatic disc from a non-painful disc may also be affected by genetics."**

- The researchers used data contained in the Utah Population Database, a public information repository containing health and genealogic data of more than 2 million Utah residents, examining health and family records of 1,264 individuals with lumbar disc disease, defined as either lumbar disc degeneration or lumbar disc herniation.
- To measure how closely patients were related, the researchers used the Genealogical Index of Familiaity, which compares the average relatedness of affected individuals with expected relatedness in the general population. Relatedness is measured by generations or degrees:
  - first-degree relatives (or immediate family) including parents, offspring and siblings;
  - second-degree including grandchildren, grandparents, uncles, aunts, nieces, nephews, and half-siblings; and
  - third-degree comprising great-grandchildren, great-grandparents, great-aunts and great-uncles, grandnieces and grandnephews and first cousins.
  - In this study, only patients with at least three generations of genealogical data in the database were included.
- The researchers also determined and calculated the Relative Risk (RR) for relatives. This measure defines the risk of lumbar disc disease among family members of patients compared to individuals without disease. Important Findings:
- Individuals with lumbar disc disease were more likely to have family members with disc disease.
- Relative risk for lumbar disc disease was significantly elevated in both close and distant relatives.
- The combination of the two findings, given the large patient population, strongly supports a genetic basis to symptomatic lumbar disc disease.

"Although excess risk in the immediate family might indicate evidence of a genetic contribution, it could also simply indicate shared environment risks or household exposure that may be contributing to the disease," Dr. Patel noted. "Conversely, excess risks in second and third-degree relatives strongly support a genetic contribution to disease, given the measurable genetic sharing in these more distant relatives and the relative absence of shared household risks."

"There are limitations to our study. We could not measure disease severity or response to treatment. Furthermore, the population of Utah is genetically representative of a US or North European background. As such, this study does not prove a purely genetic basis for disease but suggests that it may play an important role." Dr. Patel noted. "With additional data, this hypothesis can be tested with larger sample sizes."

According to data from the American Academy of Orthopaedic Surgeons (AAOS), back pain is a common problem, and in 2008, attracted more than 12 million physician visits. Dr. Patel said identifying the factors that contribute to the disease can have far-reaching implications.

"Lumbar disc disease is likely due to a number of factors, including mechanical stresses to the spine, age-dependent disc degeneration, biochemical factors and genetics," he said. **"This study identified an inheritable predisposition to the development of symptomatic lumbar disc disease and also identified high-risk families in the Utah population, which can be studied to identify genes responsible for this predisposition. Identification of these specific genes may help in the future development of drugs or other interventions to prevent and/or treat lumbar disc disease in the public at large."**

1 A. A. Patel, W. R. Spiker, M. Daubs, D. Brodke, L. A. Cannon-Albright. **Evidence for an Inherited Predisposition to Lumbar Disc Disease**. *The Journal of Bone and Joint Surgery*, 2011; 93 (3): 225 DOI: 10.2106/JBJS.J.00276

DR. Cindy!

Science News

Genetic clues to spinal stenosis

Date:
October 13, **2017**
Source:
Wiley

A **new study published in the *Journal of Orthopaedic Research* indicates that certain genetic changes are linked with an increased risk of developing lumbar spinal stenosis,** a narrowing of the open spaces in the lower spine that can lead to pain in the legs when individuals walk.

The results from the study, which included 469 individuals, provide insights into the potential causes of spinal stenosis. "Our study represents a tremendous leap forward in our understanding of the condition," said senior author Dr. Dino Samartzis. "With a better understanding of the condition and the identification of genetic markers, individuals who are at increased risk can be identified early and preventative measures can be initiated. The information may also help investigators develop more novel and precision-based management options for affected patients."

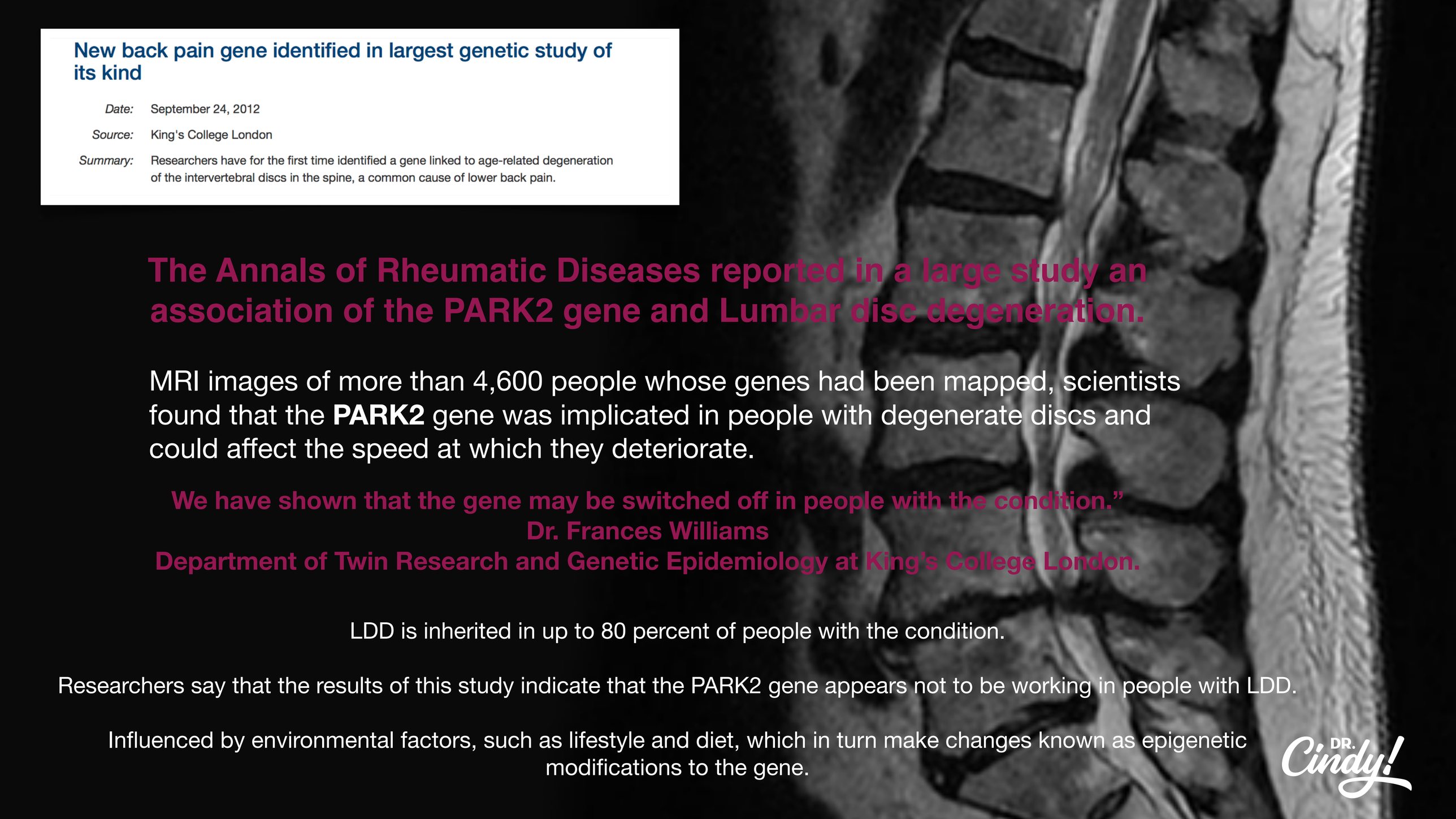
Lead author Dr. Jason Cheung added, "We finally have a clearer understanding regarding the genetic and developmental background of spinal canal narrowing. The bony spinal canal diameter is a unique phenotype that should not be mistaken for a canal measurement at the level of the disc, where it is highly influenced by disc degeneration features."

New back pain gene identified in largest genetic study of its kind

Date: September 24, 2012

Source: King's College London

Summary: Researchers have for the first time identified a gene linked to age-related degeneration of the intervertebral discs in the spine, a common cause of lower back pain.



The Annals of Rheumatic Diseases reported in a large study an association of the PARK2 gene and Lumbar disc degeneration.

MRI images of more than 4,600 people whose genes had been mapped, scientists found that the **PARK2** gene was implicated in people with degenerate discs and could affect the speed at which they deteriorate.

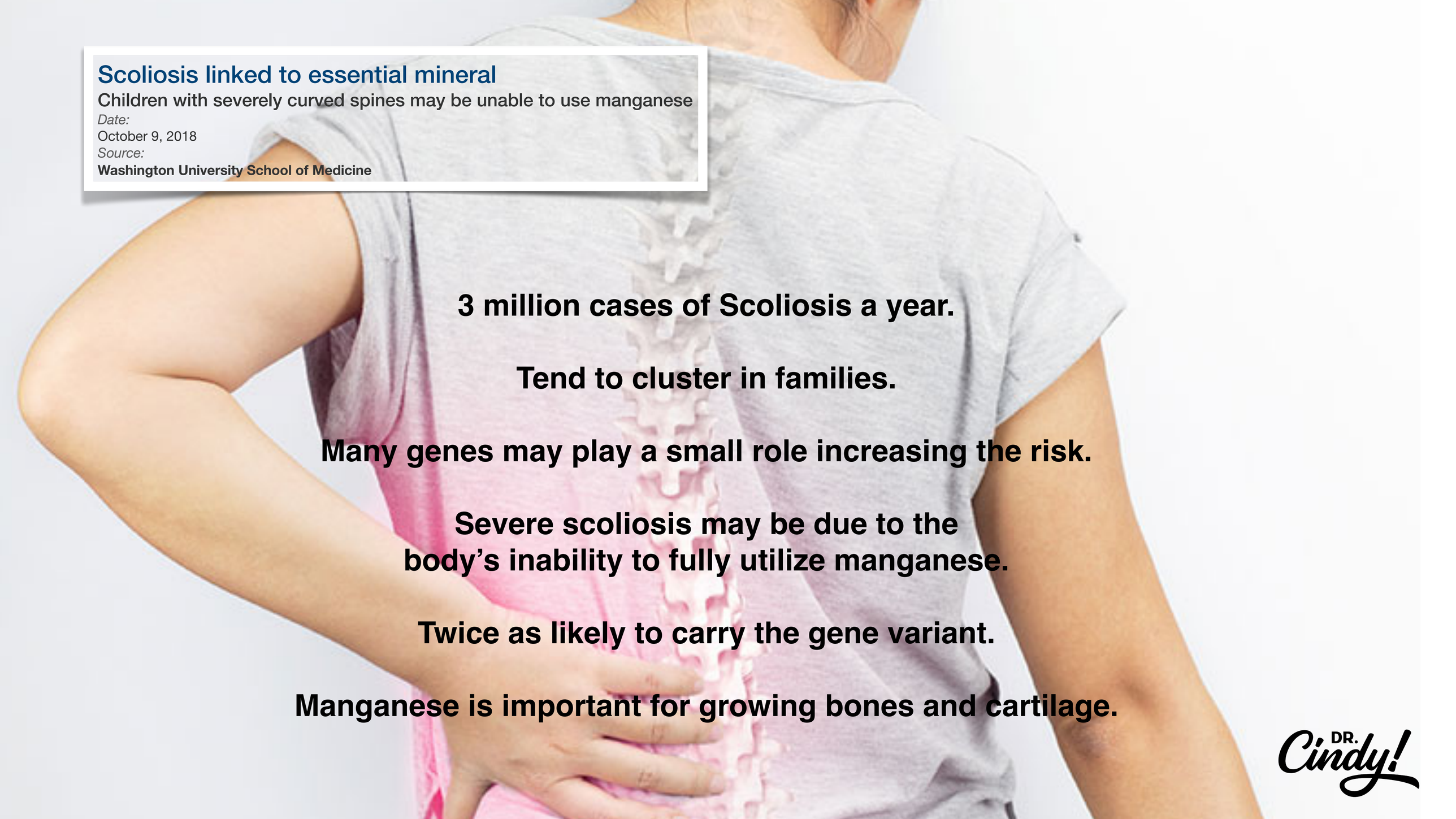
We have shown that the gene may be switched off in people with the condition."
Dr. Frances Williams
Department of Twin Research and Genetic Epidemiology at King's College London.

LDD is inherited in up to 80 percent of people with the condition.

Researchers say that the results of this study indicate that the PARK2 gene appears not to be working in people with LDD.

Influenced by environmental factors, such as lifestyle and diet, which in turn make changes known as epigenetic modifications to the gene.

DR. Cindy!



Scoliosis linked to essential mineral

Children with severely curved spines may be unable to use manganese

Date:
October 9, 2018
Source:
Washington University School of Medicine

3 million cases of Scoliosis a year.

Tend to cluster in families.

Many genes may play a small role increasing the risk.

Severe scoliosis may be due to the body's inability to fully utilize manganese.

Twice as likely to carry the gene variant.

Manganese is important for growing bones and cartilage.

DR. Cindy!

Inflammation

IL6, TNF, IL 16
Look for CRP in the blood.
Vitamin E and C, D

Glycine and Magnesium helps with elevated TNF.

Alpha lipoid acid
Curcumin /Black seed oil
Fish oil
Ginger
Photobiomodulation

DR. Cindy!

Arthritis

Joint damage due to too much iron is most commonly seen in the knees, hands, and wrists.

Hemochromatosis: Abnormal storage of iron.

Body absorbs more iron than it uses.

No way to remove the extra iron.

Stores it in the joints and organs — especially the liver, heart, and pancreas.

More common in male Caucasians of Northern European descent.

30-50 YO.

Women after age 50 or after menopause.
Family HX increases risk.
Most common genetic disorder in the US.

1 of every 8 to 12 Caucasians in America is a carrier, with 1 copy of the gene defect, and about 5 of every 1,000 have 2 copies of the HFE defect, which puts them at risk for developing the disease. It is also estimated that about half of those with two copies of the HFE defect will eventually develop the disease.

DR. Cindy!

Patricia & Tom

Want to have more kids

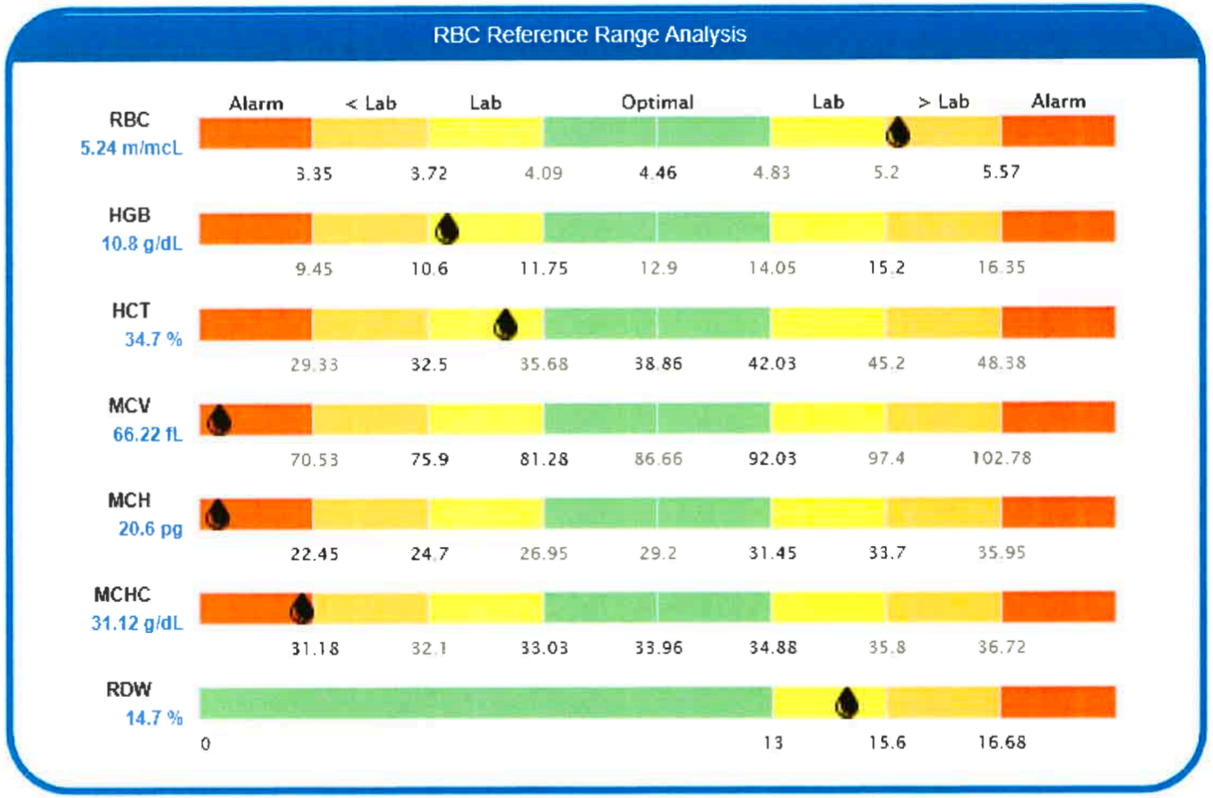
2 miscarriages

DR. Cindy!

Hypochromic Microcytic Anemia

TEST	RESULT	FINAL REPORTED	ABNORMAL	
FERRITIN / IRON / TRANSFERRIN / TIBC		12/28/2022 02:28		
Iron	121			
Transferrin	248			
Ferritin	50.5			
T3 TOTAL		12/28/2022 02:28		
T3, Total	1.0			
THYROGLOBULIN ANTIBODY (Anti-Tg)		12/28/2022 02:37		
Thyroglobulin Antibody	<1.0			
This assay was performed using Beckman Coulter reagents and test kits. Va				
obtained with other assay methods or kits cannot be used interchangeably.				
TPO ANTIBODY		12/28/2022 02:23		
Thyroperoxidase Antibodies	1.0			
TSH		12/28/2022 02:21		
TSH	1.56			
T4 FREE		12/28/2022 02:28		
T4, Free	0.94			
T4 (THYROXINE)		12/28/2022 02:17		
T4, Total	8.18			
FREE T3		12/28/2022 02:21		
T3, Free	3.06			
CBC W/DIFF		12/28/2022 01:23		
WBC	5.8			3.6-10.2 10'3/uL
RBC	5.24			*** 10'6/uL
*** (Based on documented legal sex) 4.10-5.30				
HGB	**10.8**		**L**	***** g/dL**
***** (Based on documented legal sex) 11.9-15.8**				
HCT	**34.7**		**L**	***** %**
***** (Based on documented legal sex) 37.4-48.3**				
MCV	**66.2**		**L**	**82.0-99.0 fL**
MCH	**20.6**		**L**	**27.0-33.0 pg**
MCHC	**31.1**		**L**	**32.0-36.0 g/dL**
RDW	14.7			11.0-15.0 %
PLT	193			150-450 10'3/uL

Red Blood Cell (R C) Analysis



Patricia

DR. Cindy!

12/27/2022 10:02	12/29/2022 10:06	ACCOUNT NUMBER: 75713

TEST	RESULT	FINAL REPORTED	AB

MPV
Not measured
NRBC's 0.0
Absolute NRBCs 0.0
Neutrophils 67.3
Lymphocytes 19.5
Monocytes 11.7
Eosinophils 1.0
Basophils 0.3
Immature Granulocytes 0.2
*** No defined reference range
Absolute Neutrophils 3.9
Absolute Lymphocytes 1.1
Absolute Monocytes 0.7
Absolute Eosinophils 0.1
Absolute Basophils 0.0
Absolute Immature 0.0
Granulocytes
12/28/2022 1:21 AM: P indicates partial results on a panel
Additional results will follow.
12/28/2022 1:21 AM: This result has been final verified. No
changed results are expected.

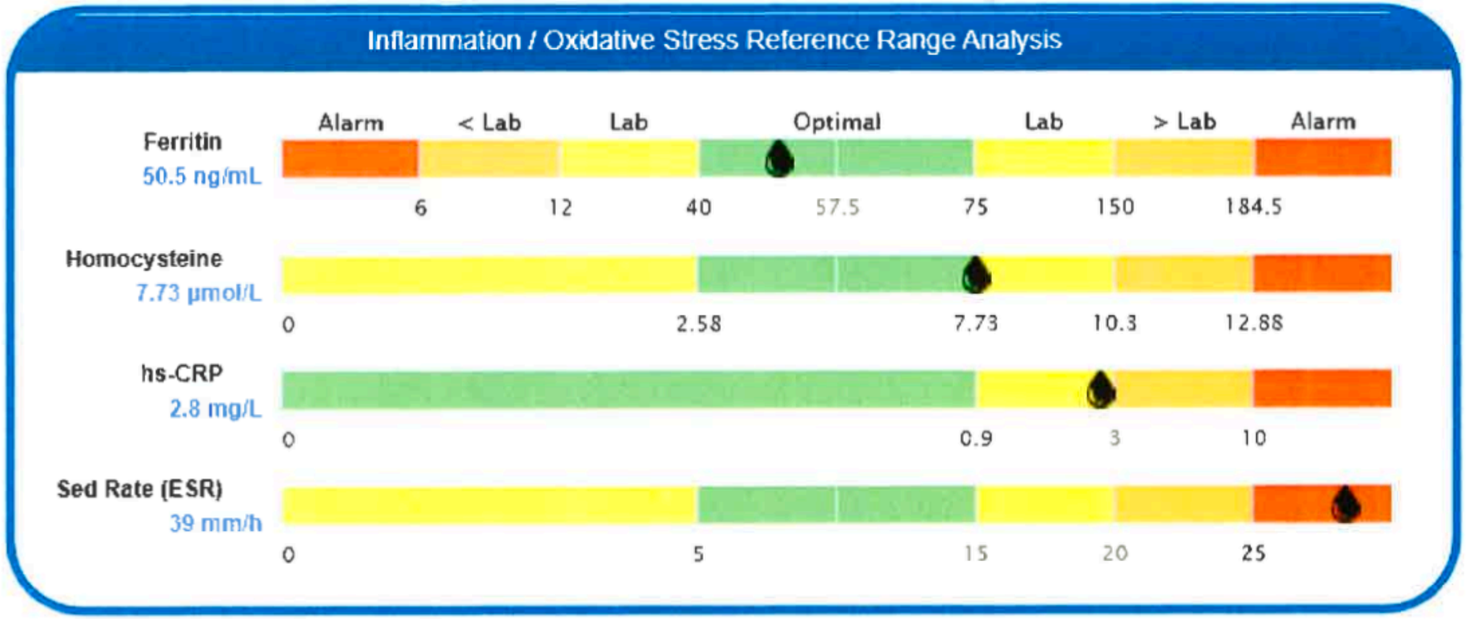
SEDIMENTATION RATE, ESR 12/28/2022 02:08
Sedimentation Rate 39
***** (Based on documented legal sex) 0-20**

HEMOGLOBIN A1C 12/28/2022 03:16
Hemoglobin A1c 5.2 0-5.6 %
The American Diabetes Association recommends that a primary goal of therapy should be a HBA1C of < 7% and that physicians should reevaluate the treatment regimen in patients with HBA1C values consistently > 8%.
<5.7% Normal
5.7 - 6.4% Increased risk for diabetes
>=6.5% Diagnostic of diabetes
<7.0% Goal of therapy
>8.0% Action suggested

LDH, SERUM 12/28/2022 02:16
LDH 143 140-271 units/L

URIC ACID 12/28/2022 02:16
Uric Acid 4.2 2.3-6.6 mg/dL

Inflammation/Oxidative Stress Analysis



Inflammation

Patricia

DR. Cindy!

Patricia

	Serum			WBC			RBC		
Micronutrient	Current	Previous	Ref	Current	Previous	Ref	Current	Previous	Ref
Vitamins									
Vitamin A	48.6		40.8~154.5 (mcg/dL)	5.6		0.9~17.3 (pg/MM WBC)			
Vitamin B1	14.4		1.4~71.3 (nmol/L)	0.20		0.10~7.00 (pg/MM WBC)			
Vitamin B2	16.8		5.6~126.1 (mcg/L)	0.8		0.2~3.6 (pg/MM WBC)			
Vitamin B3	19.3		2.6~36.1 (ng/mL)	60.4		39.6~303.5 (pg/MM WBC)			
Vitamin B6	11.0		2.8~76.2 (ng/mL)	0.8		0.5~9.7 (pg/MM WBC)			
Vitamin B12	656		232~1245 (pg/mL)	6.18		2.00~11.99			
Vitamin B5	47.7		22.7~429.2 (mcg/L)	3.5		2.5~32.8 (pg/MM WBC)			
Vitamin C	1.1		0.2~1.1 (mg/dL)	4.0		3.5~[illegible] (ng/MM WBC)			
Vitamin D3	0.8		0.4~1.8 (ng/mL)	77.0		15.9~246.6 (pg/MM WBC)			
Vitamin D, 25-OH	48.7		30.0~108.0 (ng/mL)						
Vitamin E	1.3		7.4~[illegible] (mg/L)	26.6		18.4~10[illegible].1 (pg/MM WBC)			
Vitamin K1	0.66		0.10~8.10 (ng/mL)	0.23		0.10~0.71 (pg/MM WBC)			
Vitamin K2	0.13		0.10~5.19 (ng/mL)	0.16		0.10~0.89 (pg/MM WBC)			
Folate	3.4 ↓		≥4.6 (ng/mL)				216.7		≥95.5 (ng/mL)

Very Low Folate:

neural tube defect and lowers progesterone

Improvement for all Bs.

DR. Cindy!

Patricia

Inositol for sustained physiological pregnancy.

	Micronutrient	Serum Current	Serum Previous	Serum Ref	WBC Current	WBC Previous	WBC Ref	RBC Current	RBC Previous	RBC Ref
Minerals	Calcium	9.0		8.9~10.6 (mg/dL)	32		15~120 (ng/MM WBC)			
	Manganese	0.6		0.3~2.0 (ng/mL)	27		2~75 (pg/MM WBC)			
	Zinc	0.5		0.5~1.0 (mcg/mL)	7		4~15 (ng/MM WBC)			
	Copper	1.1		0.6~1.8 (mcg/mL)	5		2~15 (ng/MM WBC)			
	Chromium	0.20		0.10~0.70 (ng/mL)						
	Iron	106		37~145 (ug/dL)	9.1		88.9~1170 (mg/dL)			
	Magnesium	2.3		1.6~2.6 (mg/dL)				6.1		3.6~7.7 (mg/dL)
	Copper to Zinc Ratio	2.2		0.9~2.6						
Metabolites	Choline	7.1		6.8~31.0 (nmol/mL)	0.8		0.2~1.5 (ng/MM WBC)			
	Inositol	17.4 ↓		20.5~60.7 (nmol/mL)	0.17		0.10~2.50 (ng/MM WBC)			
	Carnitine	24.9		11.6~43.4 (nmol/mL)	1.0		0.3~1.5 (ng/MM WBC)			
	MMA	0.12		0.10~0.50 (nmol/mL)						
	Sodium	141		136~145 (mmol/L)						
	Potassium	4.3		3.5~5.1 (mmol/L)						

DR. Cindy!

Patricia

	Micronutrient	Serum			WBC			RBC		
		Current	Previous	Ref	Current	Previous	Ref	Current	Previous	Ref
Amino Acids	Asparagine	47.6		39.2~89.8 (nmol/mL)	0.8		0.5~2.8 (ng/MM WBC)			
	Glutamine	409.0		393.5~699.3 (nmol/mL)	5.4		1.4~7.0 (ng/MM WBC)			
	Serine	130.9		94.2~246.8 (nmol/mL)	4.0		1.8~19.8 (ng/MM WBC)			
	Arginine	110.6		81.6~249.0 (nmol/mL)						
	Citrulline	16.7 ↓		18.7~47.5 (nmol/mL)						
	Isoleucine	27.2		25.5~158.9 (nmol/mL)						
	Valine	146.2 ↓		155.9~368.0 (nmol/mL)						
	Leucine	121.0		101.2~249.3 (nmol/mL)						
Antioxidants	Coenzyme Q10	0.86		0.56~2.78 (μg/mL)	88.0		39.6~225.3 (pg/MM WBC)			
	Cysteine	15.9		3.4~37.0 (nmol/mL)	195.3		60.0~565.0 (pg/MM WBC)			
	Glutathione				178.6		98.7~1163.0 (pg/MM WBC)			
	Selenium	131.4		109.8~218.4 (ng/mL)	255		234~1050 (pg/MM WBC)			

Citrulline: maternal vascular health, prevent preeclampsia.

DR. Cindy!

Patricia

Fatty Acids: Omega-3 & 6

Micronutrient	Serum			WBC			RBC		
	Current	Previous	Ref	Current	Previous	Ref	Current	Previous	Ref
EPA							0.17		0.15~2.26 (%)
DPA							0.51		0.45~1.80 (%)
DHA							3.63		2.42~10.52 (%)
Total Omega-3							4.30		3.25~13.99 (%)
LA							4.27		3.22~10.49 (%)
AA							12.61		5.50~19.01 (%)
Total Omega-6							21.05		11.03~34.96 (%)
AA/EPA							74.2 ↑		2.5~10.9
Omega-3 Index							3.80		8.00~12.65 (%)

WBC Count

Test Name	Current	Reference Range	Previous
Lymphocyte Count (x 10^3/µL)	1.10 L	1.18~3.74	
Neutrophil Count (x 10^3/µL)	3.71	1.56~6.13	
WBC (x 10^3/µL)	5.58	3.98~10.04	

DR. Cindy!

Tom

Micronutrient	Serum			WBC			RBC		
	Current	Previous	Ref	Current	Previous	Ref	Current	Previous	Ref
Vitamin A	54.1		40.8~154.5 (mcg/dL)	5.1		0.9~17.3 (pg/MM WBC)			
Vitamin B1	16.7		1.4~71.3 (nmol/L)	0.28		0.10~7.00 (pg/MM WBC)			
Vitamin B2	15.2		5.6~126.1 (mcg/L)	0.1 ↓		0.2~3.6 (pg/MM WBC)			
Vitamin B3	31.5		2.6~36.1 (ng/mL)	119.8		39.6~303.5 (pg/MM WBC)			
Vitamin B6	17.8		2.8~76.2 (ng/mL)	1.4		0.5~9.7 (pg/MM WBC)			
Vitamin B12	535		62~ (pg/mL)			2.00~11.9			
Vitamin B5	55.6		22.7~429.2 (mcg/L)	7.7		2.5~32.8 (pg/MM WBC)			
Vitamin C	0.8		0.2~1.1 (mg/dL)	3.3		0.5~9.7 (ng/MM WBC)			
Vitamin D3	0.7		0.4~1.8 (ng/mL)	170.9		25.9~246.6 (pg/MM WBC)			
Vitamin D, 25-OH	32.9		30.0~108.0 (ng/mL)						
Vitamin E	9.7		7.4~30.6 (mg/L)	408		18.4~1031.1 (pg/MM WBC)			
Vitamin K1	1.41		0.10~8.10 (ng/mL)	0.24		0.10~0.71 (pg/MM WBC)			
Vitamin K2	6		0.10~3.19 (ng/mL)	0.44		0.1~1.8 (pg/MM WBC)			
Folate	6.9		≥4.6 (ng/mL)				253.9		≥95.5 (ng/mL)

Vitamins

Vitamin D for male fertility.

B1 function of the testes.

B2 transmission of nerve impulses for erection.

DR. Cindy!

Tom

	Micronutrient	Serum			WBC			RBC		
		Current	Previous	Ref	Current	Previous	Ref	Current	Previous	Ref
Minerals	Calcium	9.7		8.9~10.6 (mg/dL)	28		15~120 (ng/MM WBC)			
	Manganese	0.7		0.3~2.0 (ng/mL)	16		2~75 (pg/MM WBC)			
	Zinc	0.8		0.5~1.0 (mcg/mL)	3 ↓		4~15 (ng/MM WBC)			
	Copper	0.8		0.6~1.8 (mcg/mL)	8		2~15 (ng/MM WBC)			
	Chromium	0.18		0.10~0.70 (ng/mL)						
	Iron	105		59~158 (ug/dL)				105.8		88.9~117.0 (mg/dL)
	Magnesium	2.2		1.6~2.6 (mg/dL)				5.6		3.6~7.7 (mg/dL)
	Copper/Zinc Ratio	1.0		0.9~2.6						
Metabolites	Choline	18.4		6.8~31.0 (nmol/mL)	1.4		0.2~1.5 (ng/MM WBC)			
	Inositol	25		0.9~2.7 (nmol/mL)	9		0.1~2.5 (ng/MM WBC)			
	Carnitine	36.0		11.6~43.4 (nmol/mL)	1.2		0.3~1.5 (ng/MM WBC)			
	MMA	0.14		0.10~0.50 (nmol/mL)						
	Sodium	141		136~145 (mmol/L)						
	Potassium	4.1		3.5~5.1 (mmol/L)						

Zinc deficiency lowers testosterone and decreases viability of sperm.

DR. Cindy!

Tom

	Micronutrient	Serum			WBC			RBC		
		Current	Previous	Ref	Current	Previous	Ref	Current	Previous	Ref
Amino Acids	Asparagine	49.7		39.2~89.8 (nmol/mL)	0.8		0.5~2.8 (ng/MM WBC)			
	Glutamine	463.7		393.5~699.3 (nmol/mL)	5.2		1.4~7.0 (ng/MM WBC)			
	Serine	162.3		94.2~246.8 (nmol/mL)	4.3		1.8~19.8 (ng/MM WBC)			
	Arginine	158.7		81.6~249.0 (nmol/mL)						
	Citrulline	26.1		18.7~47.5 (nmol/mL)						
	Isoleucine	45.5		25.5~158.9 (nmol/mL)						
	Valine	209.8		155.9~368.0 (nmol/mL)						
	Leucine	152.3		101.2~249.3 (nmol/mL)						
Antioxidants	Coenzyme Q10	1.40		0.56~2.78 (µg/mL)	198.4		39.6~225.3 (pg/MM WBC)			
	Cysteine	13.8		3.4~37.0 (nmol/mL)	172.6		60.0~565.0 (pg/MM WBC)			
	Glutathione				117.5		98.7~1163.0 (pg/MM WBC)			
	Selenium	158.0		109.8~218.4 (ng/mL)	230 ↓		234~1050 (pg/MM WBC)			

Selenium: sperm morphology and mobility.

DR. Cindy!

Tom

Fatty Acids: Omega-3 & 6

Micronutrient	Serum			WBC			RBC		
	Current	Previous	Ref	Current	Previous	Ref	Current	Previous	Ref
EPA							0.15		0.15~2.26 (%)
DPA							0.55		0.45~1.80 (%)
DHA							4.99		2.42~10.52 (%)
Total Omega-3							5.75		3.25~13.99 (%)
LA							5.79		3.22~10.49 (%)
AA							12.64		5.50~19.01 (%)
Total Omega-6							23.10		11.03~34.96 (%)
AA/EPA							84.3 ↑		2.5~10.9
Omega-3 Index							5.14		8.00~12.65 (%)

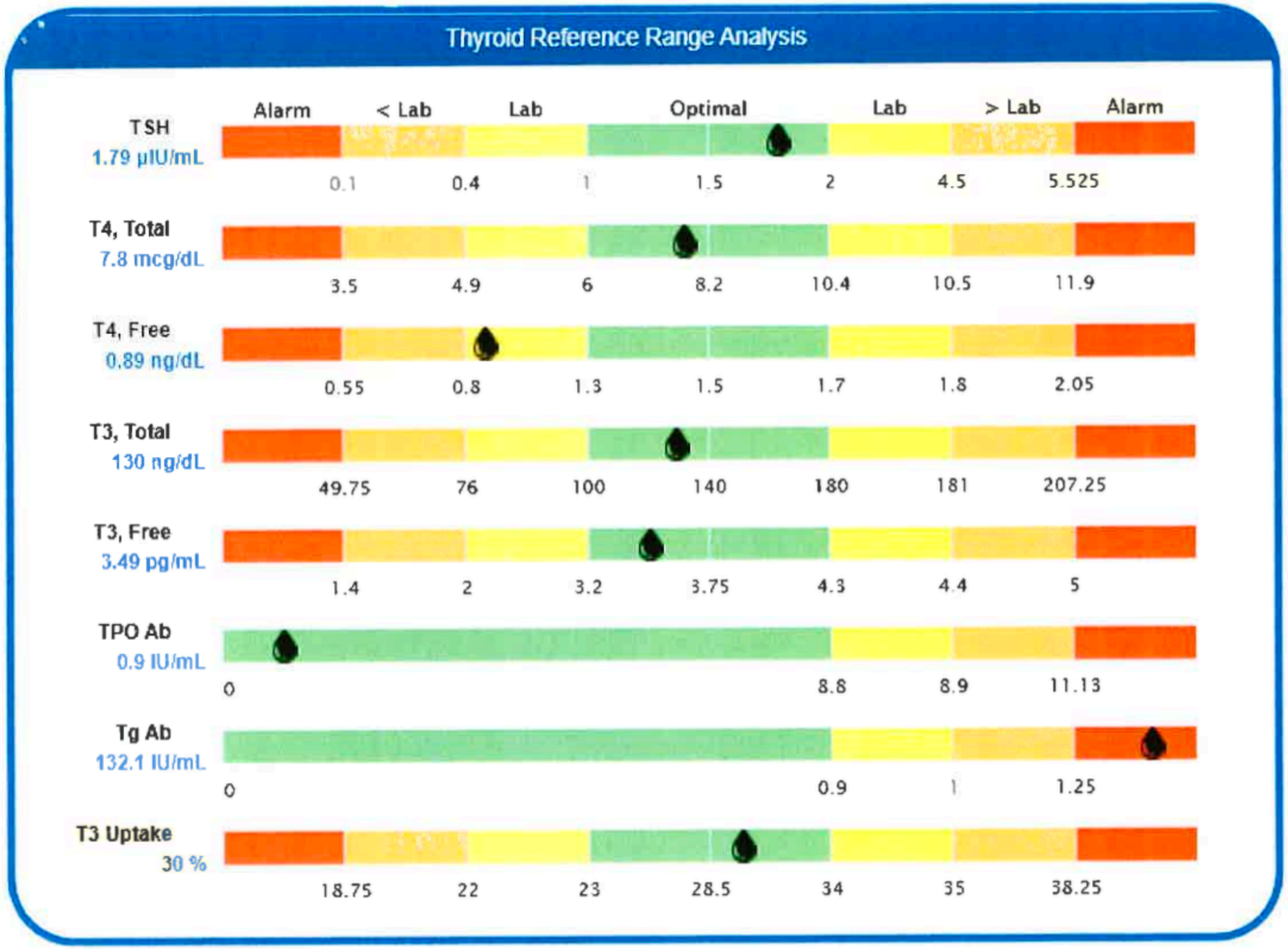
WBC Count

Test Name	Current	Reference Range	Previous
Lymphocyte Count (x 10^3/µL)	1.39	1.32~3.57	
Neutrophil Count (x 10^3/µL)	1.45 L	1.78~5.38	
WBC (x 10^3/µL)	3.31 L	4.23~9.07	

DR. Cindy!

Tom

Thyroid Analysis



DR. Cindy!

Jimmy

Fatigue

Body aches

Trouble sleeping

Low weight

Poor appetite

DR. Cindy!

ALLERGY & SENSITIVITY

Gene	RS#	Result	Signs & Symptoms	Labs	Product/Support
Extracellular Histamine			Migraines, hypotension/hypertension, menstrual cycle irregularities, arrhythmia, urticaria, atopic skin, psoriasis, nasal congestion, asthma, ibs, constipation, satiety issues, vomiting, fibromyalgia, muscle & bone pain.	Low DAO, High Plasma Histamine, Tryptase, Chromograniin-A, LPS- Binding Protein	
DAO (AOC1)	rs1049793	GC - Hetero			
DAO (AOC1)	rs10156191	CC - Wild			
DAO (AOC1)	rs1049742	CC - Wild			
Intracellular Histamine				High Histamine, Tryptase, Chromogranin- A, LPS- Binding Protein	
HNMT	rs11558538	CC - Wild			
Gluten Sensitivity			Diarrhea, fatigue, weight loss, bloating, gas, abdominal pain, nausea and vomiting, constipation	Food Sensitivity Testing, Celiac panel	
HLA-DQ8	rs7454108	CT - Hetero			
HLA-DQ2.5	rs2187668	TC - Hetero			

BLOOD SUGAR & CARDIOVASCULAR

Blood Sugar			Frequent urination, increased thirst, fatigue, slow healing wounds, blurred vision, dizziness	HGB-A1C, Insulin, Glucose
ADRA2A	rs553668	GG - Wild		
TCF7L2	rs7903146	CT - Hetero		
FTO	rs9939609	AT - Hetero		
Cardiovascular			Inflammation, low mood, cardiovascular issues, chronic disease, high toxin-burden	low B12, high MMA(urinary), high homocysteine, low methionine, low SAMe, high CRP
MTHFR A1298C	rs1801131	AA - Wild		
MTHFR C677T	rs1801133	CC - Wild		
Factor 5	rs6025	CC - Wild	Family history of clotting disorders, cold/numbness/pain of extremities, other cardiovascular symptoms.	Prothrombin Time, Fibrinogen, Cardio IQ or Boston Heart.
Prothrombin	rs1799963	GG - Wild		
PAI-1	rs1799889	AG - Hetero		
ACE	rs4343	GG - Homo	Hypertension	Sodium / Metabolic Panel

ELIMINATION

Estrogen			Inflammation, fatigue, brain fog, headaches, weight issues	Dutch testing/ 4-OH-E1
EPHX1	rs2234922	AA - Wild		
CYP1A1	rs1048943	TT - Wild	Increased 2-OHE1	
CYP19A1	rs4646	CA - Hetero	Increased E1 (Aromatase)	
CYP1B1	rs1056836	GG - Homo	Increased 4-OHE1	
COMT	rs4680	GA - Hetero	RESULT: (Normal Activity)	
Glutathione			Inflammation, fatigue, brain fog, kidney pain, headaches, weight issues, cellulite, acne, eczema, yellow sclera, red palms, low back pain, hair loss, indigestion, achy joints, right upper quadrant abdominal pain, loose stools, itchy skin	Low RBC GSH, low bilirubin, elevated LFTs, high GGT, high homocysteine, low methionine, low SAMe, high CRP
CBS	rs4920037	GG - Wild		
CTH	rs1021737	GT - Hetero		
GPX1	rs1050450	GG - Wild		
GSTP1	rs1695	AA - Wild		
GSTP1	rs1138272	CC - Wild		
Other			Inflammation, fatigue, brain fog, kidney pain, headaches, weight issues, cellulite, acne, eczema, yellow sclera, red palms, hair loss, indigestion, achy joints, right upper quadrant	High CRP, elevated LFTs, cholesterol abnormalities
ABCC2	rs3740066	CC - Wild		
ABCC2	rs717620	CC - Wild		
ALDH2	rs671	GG - Wild	Alcohol Flushing	
CYP2E1 *6	rs6413432	TT - Wild	Increased NAPQI from Tylenol use	Avoid Tylenol
SRD5A1	rs1691053	TT - Wild	Family History of Prostate Cancer	Testosterone & DHT
PON1	rs662	CT - Hetero	Pesticide Sensitivity	Environmental Toxins

[redacted]

Jimmy

ELIMINATION CONTINUED

Gene	RS#	Result	Signs & Symptoms	Labs	Product/Support
Methylation			Fat consumption: diarrhea, fatigue, weight issues, keto diet issues	Lipids	
ACAT	rs1044925	AA - Homo			
ACAT	rs3741049	GG - Wild			
BHMT	rs3733890	GA - Hetero	Low mood, anxiety, Inflammation, chronic disease, high toxin-burden	Homocysteine	
BHMT	rs3797546	TT - Wild			
CBS	rs4920037	GG - Wild	(Slows down gene): Hypertension, ulcers, neurological issues.	Elevated Homocysteine & NO	
CBS (699)	rs234706	GG - Wild	(Speeds up gene), halitosis, Sulphur flatulence, hypotension, bowel issues.	High NH4, liver enzymes, Neuro abnormalities, low NO	
GAMT	rs17851582	GG - Wild	Low creatine	Creatine	
MAT1A	rs3851059	GG - Wild	Irritability, depression, anxiety, gut issues, impulsivity, sleep issues	Neurotransmitter/SAMe abnormalities	
MTHFR A1298C	rs1801131	AA - Wild	Low mood, anxiety, Inflammation, chronic disease, high toxin-burden	Low bilirubin, low B12, high (urinary) mma, elevated LFTs, high GGT, high homocysteine, low methionine, low SAMe, high CRP	
MTHFR C677T	rs1801133	CC - Wild			
MTR	rs1805087	AG - Hetero			
MTRR	rs1532268	TT - Homo			
MTRR	rs1801394	AA - Wild			
MTHFD1	rs2236225	GG - Wild			
SHMT1	rs1979277	GG - Wild			
SLC19A1 (RFC)	rs1051266	CT - Hetero			
PEMT	rs7946	CC - Homo	Brain Fog, Fatty Liver Syndrome	ALT, AST, GGT, Ferritin	

ENERGY & METABOLISM

PPARG	rs1801282	CC - Wild	After carbs: bloating, low energy, weight issues, cravings, always hungry.	Low B1, B3, Blood sugar irregularities, high fasting insulin/HgbA1C	
ADIPOQ	rs17366568	GA - Hetero			
FTO	rs1121980	GA - Hetero	Obesity		
FTO	rs9939609	AT - Hetero			
LEPR	rs2025804	AA - Wild	obesity, decreased sense of satiety	Leptin	
MC4R	rs17782313	TC - Hetero			

GI & DIGESTION

DAO (AOC1)	rs1049793	GC - Hetero	Extracellular histamine issues. GI Lining issues	Low DAO, High Histamine, LPS-Binding Protein, Stool Testing	
DAO (AOC1)	rs10156191	CC - Wild			
DAO (AOC1)	rs1049742	CC - Wild			
SPP1	rs2853744	GG - Wild	Oxalate symptoms	Urinary Oxalic Acid (OAT)	
MYO9B	rs2305764	GA - Hetero	Leaky Gut, Autoimmune	Zonulin, Gluten Markers	
FUT2	rs601338	GA - Hetero	Norovirus immunity And Dysbiosis	AA - Non Secreter	

DR. Cindy!

Sample ID: MGP48287
Account: Cindy Howard, DC

METHYLGENETIC NUTRITION®

NEUROLOGICAL & MOOD

Gene	RS#	Result	Signs & Symptoms	Labs	Product/Support
APOE	rs429358	TT - Wild	RESULT: E3/E3 - Normal	Environmental toxins, Lipid panel, heavy metal analysis.	
APOE	rs7412	CC - Wild			
BDNF	rs6265	CT - Hetero	Cognitive Symptoms		
COMT	rs4680	GA - Hetero	RESULT: (Normal Activity)	OAT/NT testing	
DAOA	rs2391191	GA - Hetero	Behavioral issues, anxiety	Low B6, low or normal histamine, normal or over methylation status.	
GAD1	rs2241165	TT - Wild			
GAD1	rs3749034	GG - Wild			
GCH1	rs841	GG - Wild	Decreased BH4	NT Testing	
MAO-A	RS6323	GG - Homo	(RESULT: Increased Activity) Anger, Depression	OAT/NT testing	
TPH2	rs4570625	GG - Wild	Behavioral issues, anxiety	OAT/NT testing	
PEMT	rs7946	CC - Homo	Anxiety, Non-Alcoholic Fatty Liver	Micronutrient testing	

OXIDATIVE STRESS & INFLAMMATION

Oxidative Stress & Inflammation			Fatigue, brain fog, chemical sensitivity, cardiovascular issues.	Oxidative stress markers (8-OH-DG)	
CAT	rs769214	AG - Hetero			
IDH1	rs11554137	GG - Wild	Fatigue, brain fog, early signs of aging, low stamina	Oxidative stress markers (8-OH-DG)	
IDH2	rs11630814	AA - Homo			
TALDO1	rs3901233	AT - Hetero			
NFE2L2	rs10183914	CT - Hetero	Inflammation,neoplasms, chronic disease, estrogen issues, toxin sensitivity	Low GSH, low bilirubin, elevated LFTs, high GGT, high CRP, environmental toxins	
NQO1	rs1800566	GG - Wild			
SOD1	rs2070424	AA - Wild	Inflammation, sleep issues, hypertension, fatigue, brain fog, early signs of aging, high toxic-burden	High CRP, low bilirubin, High 8-0h-DG	
SOD1	rs1041740	TC - Hetero			
SOD2	rs4880	AA - Wild			
SOD3	rs1799895	CC - Wild			
Inflammation			Inflammation, immune dysregulation	CRP, oxidative stress markers	
IL-6	rs1800795	GG - Homo			
TNF-alpha	rs1799724	CC - Wild			
TNF-alpha	rs1800629	AG - Hetero			
G6PD	rs1050829	TT - Wild	G6PD deficiency	G6PD	
Fatty Acids			Inflammation, immune dysregulation, 03/06 ratio issues, decreased O3 in breast milk	Omega 3/6 Panels, Lipid Panel, CRP	
FADS	rs174537	GG - Homo			
FADS	rs174548	CC - Wild			
FADS2	rs1535	AA - Wild			
Autophagy			Age spots/premature aging, chronic disease, history of neoplasms, chronic infections (Lyme), chronic viruses, neurodegenerative diseases, weight issues	Telomere Testing	
ATG13	rs13448	TC - Hetero			
JAK2	rs12340895	CG - Hetero			
Nitric Oxide			Decreased libido, poor concentration and low memory, fatigue, irritability, anxiety, depression, hypertension, poor sleep, symptoms of heart disease, asthma	Low nitric oxide, (test strips)	
NOS3	rs1799983	GT - Hetero			
NOS3	rs2070744	CC - Homo			
NOS3	rs891512	GG - Wild			

[redacted]
Jimmy

Sample ID: MGP48287
Account: Cindy Howard, DC

METHYLGENETIC NUTRITION®

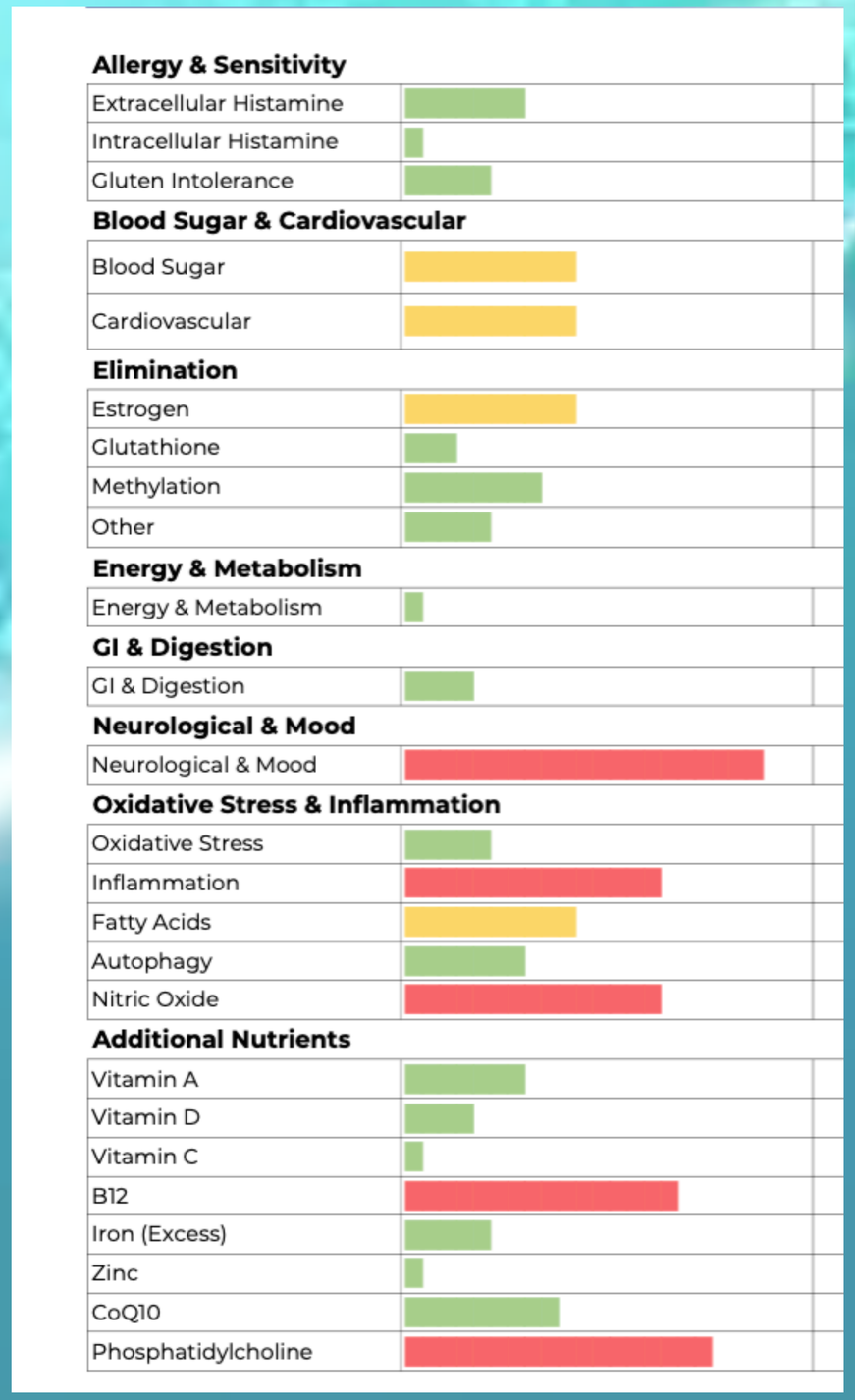
ADDITIONAL NUTRIEINTS

Gene	RS#	Result	Signs & Symptoms	Labs	Product/Support
Vitamin A					
BCMO1	rs12934922	AT - Hetero	Low retinol conversion	Serum Retinol	
BCMO1	rs7501331	TC - Hetero			
B12					
CUBN	rs180122	GG - Wild	Decreased B12 Absorption	Serum B12	
FUT2	rs601338	GA - Hetero	Increases Haptocorin (inert B12)	Potentially false B12 Elevation	
MTRR	rs1532268	TT - Homo	Decreased B12 levels.	B12, MMA (Urinary), B12 sat.	
MTRR	rs1801394	AA - Wild			
TCN2	rs1801198	GC - Hetero	Decreased B12 binding		
Iron (Excess)					
HFE	rs1799945	CC - Wild	Inflammation, early signs of aging (skin), age spots	Abnormalities in iron studies.	
HFE	rs1800562	GG - Wild			
TF	rs1049296	TT - Homo			
Vitamin D					
CYP2R1	rs10741657	GA - Hetero	Decreased Vitamin D levels and receptor activity. Some diabetes associations	Vitamin D 1,25 OH and 25 OH	
GC	rs2282679	TT - Wild			
VDR	rs2228570	GG - Wild			
VDR	rs731236	GA - Hetero			
Vitamin C					
SLC23A1	rs33972313	CC - Wild	(TT) Low Vit C.	Vit. C	
Zinc					
SLC30A8	rs13266634	CC - Protective	Low Zinc	Zinc	
CoQ10					
SLCO1B1	rs4149056	TC - Hetero	Low CoQ10 / caution w/statins	CoQ10 / oxidative stress markers	
Phos-Choline					
PEMT	rs7946	CC - Homo	Anxiety, Non-Alcoholic Fatty Liver	Micronutrient testing	

[redacted]

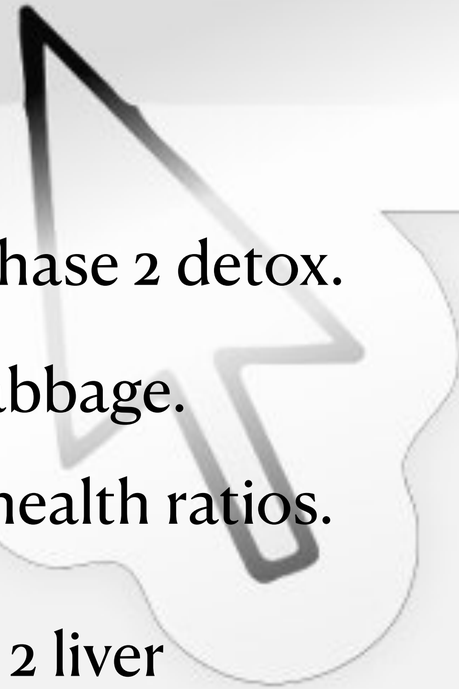
DR. Cindy!

Jimmy



DR. Cindy!

Add to favorites...



Sulpforaphanes: enzyme needed for conversion in the small intestine for phase 2 detox.

DIM: metabolic byproduct of indole-3-carbinol found in broccoli and cabbage.

Supports processing estrogen metabolites and estrogen metabolism to favor health ratios.

Calcium-D-Glucarate: supports healthy estrogen metabolism, phase 2 liver processes and lipid metabolism.

DR. Cindy!

Add to favorites...

B3 Niacinamide: suppports heart, blood lipids and nerves.

Serrapeptidase: systemic enzymatic support.

Quercitin, MSM, Tumeric, Boswellia, Ginger, Rutin, NAC: lowers high levels of oxidative stress.

DR. Cindy!

Add to favorites...

BH4-tetrahydrobiopterin: important for NT and NO production.

SAMe and 5-Methyltetrahydrofolate: support proper methylation and cell production.

Lithium: to increase BH4 levels.

DR. Cindy!

Micronutrients

Blood Cell Count		Current	Previous	Result	Reference
Lymphocyte Count	Cellular	2.32		0 1.31 3.57	1.32-3.57 (x 10^3/µL)
Neutrophil Count	Cellular	2.08		0 1.77 5.38	1.78-5.38 (x 10^3/µL)
WBC	Cellular	5.16		1.01 4.22 9.07	4.23-9.07 (x 10^3/µL)

Vitamins		Current	Previous	Result	Reference
Vitamin A	Serum	54.5		0 40.7 154	40.8-154.5 (mcg/dL)
	Cellular	1.1		0 0.8 17.3	0.9-17.3 (pg/MM WBC)
Vitamin B1	Serum	14.6		0 1.3 71.3	1.4-71.3 (nmol/L)
	Cellular	0.19		0 0.09 7	0.1-7.0 (pg/MM WBC)
Vitamin B2	Serum	6.3		0 5.5 126	5.6-126.1 (mcg/L)
	Cellular	0.6		0 0.1 3.6	0.2-3.6 (pg/MM WBC)
Vitamin B3	Serum	1.7		0 2.5 36.1	2.6-36.1 (ng/mL)
	Cellular	73.7		0 39.5 303	39.6-303.5 (pg/MM WBC)
Vitamin B5	Serum	39.6		0 22.6 429	22.7-429.2 (mcg/L)
	Cellular	4.9		0 2.4 32.8	2.5-32.8 (pg/MM WBC)
Vitamin B6	Serum	6.7		0 2.7 76.2	2.8-76.2 (ng/mL)
	Cellular	2.9		0 0.4 9.7	0.5-9.7 (pg/MM WBC)
Folate (Vitamin B9)	Serum	11.2		0 4.5	≥4.6 (ng/mL)
	Cellular	145.4		0 95.4	≥95.5 (ng/mL)
Vitamin B12	Serum	652		0 231 1245	232.0-1245.0 (pg/mL)
	Cellular	4.58		0 1.99 11.9	2.0-11.99
Vitamin C	Serum	0.7		0 0.1 1.1	0.2-1.1 (mg/dL)
	Cellular	2.0		0 0.4 9.7	0.5-9.7 (ng/MM WBC)
Vitamin D, 25-OH	Serum	60.1		0 29.9 108	30.0-108.0 (ng/mL)

Micronutrients

Vitamins		Current	Previous	Result	Reference
Vitamin D3	Serum	1.0		0 0.3 1.8	0.4-1.8 (ng/mL)
	Cellular	32.3		0 25.8 246	25.9-246.6 (pg/MM WBC)
Vitamin E	Serum	11.3		0 7.3 30.6	7.4-30.6 (mg/L)
	Cellular	21.0		0 18.3 1031	18.4-1031.1 (pg/MM WBC)
Vitamin K1	Serum	0.45		0 0.09 8.1	0.1-8.1 (ng/mL)
	Cellular	0.10		0 0.09 0.71	0.1-0.71 (pg/MM WBC)
Vitamin K2	Serum	0.17		0 0.09 5.19	0.1-5.19 (ng/mL)
	Cellular	0.09		0 0.09 0.89	0.1-0.89 (pg/MM WBC)

Minerals		Current	Previous	Result	Reference
Copper	Serum	0.6		0 0.5 1.8	0.6-1.8 (mcg/mL)
	Cellular	3		0 1 15	2.0-15.0 (ng/MM WBC)
Zinc	Serum	0.5		0 0.4 1	0.5-1.0 (mcg/mL)
	Cellular	5		0 3 15	4.0-15.0 (ng/MM WBC)
Copper to Zinc Ratio	Serum	1.2		0 0.8 2.6	0.9-2.6
Calcium	Serum	9.3		6.5 8.8 10.6	8.9-10.6 (mg/dL)
	Cellular	45		0 14 120	15.0-120.0 (ng/MM WBC)
Chromium	Serum	0.46		0 0.09 0.7	0.1-0.7 (ng/mL)
Iron	Serum	68		0 58 158	59.0-158.0 (ug/dL)
	Cellular	99.3		0 88.8 117	88.9-117.0 (mg/dL)
Magnesium	Serum	2.3		1 1.5 2.6	1.6-2.6 (mg/dL)
	Cellular	5.3		0 3.5 7.7	3.6-7.7 (mg/dL)
Manganese	Serum	0.5		0 0.2 2	0.3-2.0 (ng/mL)
	Cellular	11		0 1 75	(pg/MM WBC)

Date of Birth: 03-06-2001 Accession ID: 2505086105
Service Date: 2025-05-08 02:00 (CDT)

Micronutrients

Micronutrients

Amino Acids		Current	Previous	Result	Reference
Arginine	Serum	132.3		0 81.5 249	81.6-249.0 (nmol/mL)
Citrulline	Serum	26.2		0 18.6 47.5	18.7-47.5 (nmol/mL)
Asparagine	Serum	48.6		0 39.1 89.8	39.2-89.8 (nmol/mL)
	Cellular	0.8		0 0.4 2.8	0.5-2.8 (ng/MM WBC)
Glutamine	Serum	543.3		0 393 699	393.5-699.3 (nmol/mL)
	Cellular	2.4		0 1.3 7	1.4-7.0 (ng/MM WBC)
Isoleucine	Serum	108.0		0 25.4 158	25.5-158.9 (nmol/mL)
Leucine	Serum	186.6		0 101 249	101.2-249.3 (nmol/mL)
Valine	Serum	370.7		0 155 368	155.9-368.0 (nmol/mL)
Serine	Serum	140.0		0 94.1 246	94.2-246.8 (nmol/mL)
	Cellular	2.8		0 1.7 19.8	1.8-19.8 (ng/MM WBC)

Fatty Acids: Omega-3 & 6		Current	Previous	Result	Reference
AA (Arachidonic acid)	Cellular	19.67		0 5.49 19.0	5.5-19.01 (%)
AA/EPA	Cellular	72.9		0 2.4 10.9	2.5-10.9
DHA	Cellular	5.38		0 2.41 10.5	2.42-10.52 (%)
DPA	Cellular	0.95		0 0.44 1.8	0.45-1.8 (%)
EPA	Cellular	0.27		0 0.14 2.26	0.15-2.26 (%)
LA (Linoleic acid)	Cellular	8.94		0 3.21 10.4	3.22-10.49 (%)
Omega-3 Index	Cellular	5.65		0 2.65 7.99 12.6	8.0-12.65 (%)
Total Omega-3	Cellular	7.45		0 3.24 13.9	3.25-13.99 (%)
Total Omega-6	Cellular	34.27		0 11.0 34.9	11.03-34.96 (%)

Date of Birth: 03-06-2001 Accession ID: 2505086105
Service Date: 2025-05-08 02:00 (CDT)

Micronutrients

Micronutrients

Metabolites		Current	Previous	Result	Reference
Carnitine	Serum	34.1		0 11.5 43.4	11.6-43.4 (nmol/mL)
	Cellular	0.5		0 0.2 1.5	0.3-1.5 (ng/MM WBC)
Choline	Serum	17.8		0 6.7 31	6.8-31.0 (nmol/mL)
	Cellular	0.7		0 0.1 1.5	0.2-1.5 (ng/MM WBC)
Inositol	Serum	27.3		0 20.4 60.7	20.5-60.7 (nmol/mL)
	Cellular	0.07		0 0.09 2.5	0.1-2.5 (ng/MM WBC)
MMA (Methylmalonic acid)	Serum	0.11		0 0.09 0.5	0.1-0.5 (nmol/mL)

Antioxidants		Current	Previous	Result	Reference
Coenzyme Q10	Serum	0.85		0 0.55 2.78	0.56-2.78 (µg/mL)
	Cellular	75.7		0 39.5 225	39.6-225.3 (pg/MM WBC)
Cysteine	Serum	20.9		0 3.3 37	3.4-37.0 (nmol/mL)
	Cellular	45.6		0 59.9 565	60.0-565.0 (pg/MM WBC)
Glutathione	Cellular	219.7		0 98.6 1163	98.7-1163.0 (pg/MM WBC)
Selenium	Serum	216.9		0 109 218	109.8-218.4 (ng/mL)
	Cellular	290		0 233 1050	234.0-1050.0 (pg/MM WBC)

Electrolytes		Current	Previous	Result	Reference
Potassium	Serum	4.4		3 3.4 5.1	3.5-5.1 (mmol/L)
Sodium	Serum	138		125 135 145	136.0-145.0 (mmol/L)

Jimmy

Date of Birth: 03-06-2001 Accession ID: 2505086115
Service Date: 2025-05-16 15:32 (CDT)

Total Tox Burden - Summary

High

Mycotoxins | Environmental Toxins

Test Name	Current	Previous	Result (75th / 95th)	Reference
2,2-bis(4-Chlorophenyl) acetic acid (DDA) (ug/g)	66.21		7.9 / 19	≤19
Aflatoxin G2 (ng/g)	11.72		6.08 / 10.8	≤10.8
Citrinin (CTN) (ng/g)	24.24		7.05 / 12.53	≤12.53
Deoxynivalenol(DON) (ng/g)	78.14		37.95 / 67.47	≤67.47
Fumonisins B3 (ng/g)	13.72		6.08 / 10.8	≤10.8
Roridin E (ng/g)	4.17		0.75 / 1.33	≤1.33
Sterigmatocystin (STC) (ng/g)	1.06		0.3 / 0.53	≤0.53

Suboptimal

Mycotoxins | Heavy Metals | Environmental Toxins

Test Name	Current	Previous	Result (75th / 95th)	Reference
Bisphenol A (BPA)^ (ug/g)	2.36		2.12 / 5.09	≤5.09
Diethyl phosphate (DEP)^ (ug/g)	4.93		3.2 / 15.7	≤15.7
Dimethyl phosphate (DMP)^ (ug/g)	20.64		9.1 / 33.6	≤33.6
Barium^ (ug/g)	2.54		2.33 / 5.59	≤5.59
Beryllium^ (ug/g)	0.34		0.2 / 0.76	≤0.76
Lead^ (ug/g)	0.66		0.52 / 1.16	≤1.16
Aflatoxin B1 (AFB1) (ng/g)	6.19		3.9 / 6.93	≤6.93
Aflatoxin M1 (ng/g)	4.86		3.6 / 6.4	≤6.4
Fumonisins B2 (ng/g)	6.40		4.05 / 7.2	≤7.2
Patulin (ng/g)	10.49		6.53 / 11.6	≤11.6
Verrucarin A (ng/g)	0.98		0.75 / 1.33	≤1.33

Creatinine

Test Name	Current	Previous	Result (0 / 0.24 / 2.16)	Reference
Urine Creatinine (mg/mL)	0.52		0 / 0.24 / 2.16	0.25-2.16

DR. Cindy!

Abby

GI issues

Overweight

DR. Cindy!

ALLERGY & SENSITIVITY

Gene	RS#	Result	Signs & Symptoms	Labs	Product/Support
Extracellular Histamine			Migraines, hypotension/hypertension, menstrual cycle irregularities, arrhythmia, urticaria, atopic skin, psoriasis, nasal congestion, asthma, ibs, constipation, satiety issues, vomiting, fibromyalgia, muscle & bone pain.	Low DAO, High Plasma Histamine, Tryptase, Chromogranin-A, LPS- Binding Protein	
DAO (AOC1)	rs1049793	CC - Wild			
DAO (AOC1)	rs10156191	CC - Wild			
DAO (AOC1)	rs1049742	CC - Wild			
Intracellular Histamine				High Histamine, Tryptase, Chromogranin- A, LPS- Binding Protein	
HNMT	rs11558538	TC - Hetero			
Gluten Sensitivity			Diarrhea, fatigue, weight loss, bloating, gas, abdominal pain, nausea and vomiting, constipation	Food Sensitivity Testing, Celiac panel	
HLA-DQ8	rs7454108	TT - Wild			
HLA-DQ2.5	rs2187668	TC - Hetero			

BLOOD SUGAR & CARDIOVASCULAR

Gene	RS#	Result	Signs & Symptoms	Labs	Product/Support
Blood Sugar			Frequent urination, increased thirst, fatigue, slow healing wounds, blurred vision, dizziness	HGB-A1C, Insulin, Glucose	
ADRA2A	rs553668	GG - Wild			
TCF7L2	rs7903146	CT - Hetero			
FTO	rs9939609	AA - Homo			
Cardiovascular			Inflammation, low mood, cardiovascular issues, chronic disease, high toxin-burden	low B12, high MMA(urinary), high homocysteine, low methionine, low SAMe, high CRP	
MTHFR A1298C	rs1801131	CA - Hetero			
MTHFR C677T	rs1801133	CC - Wild			
Factor 5	rs6025	CC - Wild	Family history of clotting disorders, cold/numbness/pain of extremities, other cardiovascular symptoms.	Prothrombin Time, Fibrinogen, Cardio IQ or Boston Heart.	
Prothrombin	rs1799963	GG - Wild			
PAI-1	rs1799889	AG - Hetero			
ACE	rs4343	AG - Hetero	Hypertension	Sodium / Metabolic Panel	

ELIMINATION

Gene	RS#	Result	Signs & Symptoms	Labs	Product/Support
Estrogen			Inflammation, fatigue, brain fog, headaches, weight issues	Dutch testing/ 4-OH-E1	
EPHX1	rs2234922	AG - Hetero			
CYP1A1	rs1048943	TT - Wild	Increased 2-OHE1		
CYP19A1	rs4646	CC - Wild	Increased E1 (Aromatase)		
CYP1B1	rs1056836	CG - Hetero	Increased 4-OHE1		
COMT	rs4680	GA - Hetero	RESULT: (Normal Activity)		
Glutathione			Inflammation, fatigue, brain fog, kidney pain, headaches, weight issues, cellulite, acne, eczema, yellow sclera, red palms, low back pain, hair loss, indigestion, achy joints, right upper quadrant abdominal pain, loose stools, itchy skin	Low RBC GSH, low bilirubin, elevated LFTs, high GGT, high homocysteine, low methionine, low SAMe, high CRP	
CBS	rs4920037	GG - Wild			
CTH	rs1021737	GG - Wild			
GPX1	rs1050450	GG - Wild			
GSTP1	rs1695	GA - Hetero			
GSTP1	rs1138272	CC - Wild			
Other			Inflammation, fatigue, brain fog, kidney pain, headaches, weight issues, cellulite, acne, eczema, yellow sclera, red palms, hair loss, indigestion, achy joints, right upper quadrant	High CRP, elevated LFTs, cholesterol abnormalities	
ABCC2	rs3740066	TC - Hetero			
ABCC2	rs717620	CC - Wild			
ALDH2	rs671	GG - Wild	Alcohol Flushing		
CYP2E1 *6	rs6413432	TT - Wild	Increased NAPQI from Tylenol use	Avoid Tylenol	
SRD5A1	rs1691053	TT - Wild	Family History of Prostate Cancer	Testosterone & DHT	
PON1	rs662	CT - Hetero	Pesticide Sensitivity	Environmental Toxins	

[redacted]

Sample ID: MGP49363
Account: Cindy Howard, DC
METHYLGENETIC NUTRITION®

ELIMINATION CONTINUED

Gene	RS#	Result	Signs & Symptoms	Labs	Product/Support
Methylation			Fat consumption: diarrhea, fatigue, weight issues, keto diet issues	Lipids	
ACAT	rs1044925	AA - Homo			
ACAT	rs3741049	GG - Wild			
BHMT	rs3733890	AA - Homo	Low mood, anxiety, Inflammation, chronic disease, high toxin-burden	Homocysteine	
BHMT	rs3797546	TT - Wild			
CBS	rs4920037	GG - Wild	(Slows down gene): Hypertension, ulcers, neurological issues.	Elevated Homocysteine & NO	
CBS (699)	rs234706	GG - Wild	(Speeds up gene), halitosis, Sulphur flatulence, hypotension, bowel issues.	High NH4, liver enzymes, Neuro abnormalities, low NO	
GAMT	rs17851582	GG - Wild	Low creatine	Creatine	
MAT1A	rs3851059	AA - Homo	Irritability, depression, anxiety, gut issues, impulsivity, sleep issues	Neurotransmitter/SAMe abnormalities	
MTHFR A1298C	rs1801131	CA - Hetero	Low mood, anxiety, Inflammation, chronic disease, high toxin-burden	Low bilirubin, low B12, high (urinary) mma, elevated LFTs, high GGT, high homocysteine, low methionine, low SAMe, high CRP	
MTHFR C677T	rs1801133	CC - Wild			
MTR	rs1805087	AG - Hetero			
MTRR	rs1532268	CC - Wild			
MTRR	rs1801394	AA - Wild			
MTHFD1	rs2236225	AG - Hetero			
SHMT1	rs1979277	GG - Wild			
SLC19A1 (RFC)	rs1051266	CT - Hetero			
PEMT	rs7946	TT - Wild	Brain Fog, Fatty Liver Syndrome	ALT, AST, GGT, Ferritin	

ENERGY & METABOLISM

Gene	RS#	Result	Signs & Symptoms	Labs	Product/Support
PPARG	rs1801282	CC - Wild	After carbs: bloating, low energy, weight issues, cravings, always hungry.	Low B1, B3, Blood sugar irregularities, high fasting insulin/HgbA1C	
ADIPOQ	rs17366568	GG - Wild			
FTO	rs1121980	AA - Homo	Obesity		
FTO	rs9939609	AA - Homo			
LEPR	rs2025804	AA - Wild	obesity, decreased sense of satiety	Leptin	
MC4R	rs17782313	TT - Wild			

GI & DIGESTION

Gene	RS#	Result	Signs & Symptoms	Labs	Product/Support
DAO (AOC1)	rs1049793	CC - Wild	Extracellular histamine issues. GI Lining issues	Low DAO, High Histamine, LPS-Binding Protein, Stool Testing	
DAO (AOC1)	rs10156191	CC - Wild			
DAO (AOC1)	rs1049742	CC - Wild			
SPP1	rs2853744	GG - Wild	Oxalate symptoms	Urinary Oxalic Acid (OAT)	
MYO9B	rs2305764	GA - Hetero	Leaky Gut, Autoimmune	Zonulin, Gluten Markers	
FUT2	rs601338	GA - Hetero	Norovirus immunity And Dysbiosis	AA - Non Secreter	

[redacted]

Client DOB: 8/9/1991
Sample ID: MGP49363
Account: Cindy Howard, DC

METHYLGENETIC NUTRITION

NEUROLOGICAL & MOOD

Gene	RS#	Result	Signs & Symptoms	Labs	Product/Support
APOE	rs429358	TT - Wild	RESULT: E3/E3 - Normal	Environmental toxins, Lipid panel, heavy metal analysis.	
APOE	rs7412	CC - Wild			
BDNF	rs6265	CT - Hetero	Cognitive Symptoms		
COMT	rs4680	GA - Hetero	RESULT: (Normal Activity)	OAT/NT testing	
DAOA	rs2391191	GG - Wild	Behavioral issues, anxiety	Low B6, low or normal histamine, normal or over methylation status.	
GAD1	rs2241165	TT - Wild			
GAD1	rs3749034	GG - Wild			
GCH1	rs841	GG - Wild	Decreased BH4	NT Testing	
MAO-A	RS6323	GT - Hetero	(RESULT: Normal Activity	OAT/NT testing	
TPH2	rs4570625	GT - Hetero	Behavioral issues, anxiety	OAT/NT testing	
PEMT	rs7946	TT - Wild	Anxiety, Non-Alcoholic Fatty Liver	Micronutrient testing	

OXIDATIVE STRESS & INFLAMMATION

Oxidative Stress & Inflammation					
CAT	rs769214	AG - Hetero	Fatigue, brain fog, chemical sensitivity, cardiovascular issues.	Oxidative stress markers (8-OH-DG)	
IDH1	rs11554137	GG - Wild	Fatigue, brain fog, early signs of aging, low stamina	Oxidative stress markers (8-OH-DG)	
IDH2	rs11630814	AG - Hetero			
TALDO1	rs3901233	AT - Hetero			
NFE2L2	rs10183914	CC - Wild	Inflammation,neoplasms, chronic disease, estrogen issues, toxin sensitivity	Low GSH, low bilirubin, elevated LFTs, high GGT, high CRP, environmental toxins	
NQO1	rs1800566	GA - Hetero			
SOD1	rs2070424	AA - Wild	Inflammation, sleep issues, hypertension, fatigue, brain fog, early signs of aging, high toxic-burden	High CRP, low bilirubin, High 8-0h-DG	
SOD1	rs1041740	TC - Hetero			
SOD2	rs4880	AA - Wild			
SOD3	rs1799895	CC - Wild			
Inflammation					
IL-6	rs1800795	CC - Wild	Inflammation, immune dysregulation	CRP, oxidative stress markers	
TNF-alpha	rs1799724	CC - Wild			
TNF-alpha	rs1800629	AG - Hetero			
G6PD	rs1050829	TT - Wild	G6PD deficiency	G6PD	
Fatty Acids					
FADS	rs174537	TT - Wild	Inflammation, immune dysregulation, 03/06 ratio issues, decreased O3 in breast milk	Omega 3/6 Panels, Lipid Panel, CRP	
FADS	rs174548	GG - Homo			
FADS2	rs1535	GG - Homo			
Autophagy			Age spots/premature aging, chronic disease, history of neoplasms, chronic infections (Lyme), chronic viruses, neurodegenerative diseases, weight issues	Telomere Testing	
ATG13	rs13448	TT - Wild			
JAK2	rs12340895	CC - Wild			
Nitric Oxide			Decreased libido, poor concentration and low memory, fatigue, irritability, anxiety, depression, hypertension, poor sleep, symptoms of heart disease, asthma	Low nitric oxide, (test strips)	
NOS3	rs1799983	GT - Hetero			
NOS3	rs2070744	CT - Hetero			
NOS3	rs891512	GA - Hetero			

[redacted]
ABBY

Sample ID: MGP49363
Account: Cindy Howard, DC

METHYLGENETIC NUTRITION

ELIMINATION CONTINUED

Gene	RS#	Result	Signs & Symptoms	Labs	Product/Support
Methylation					
ACAT	rs1044925	AA - Homo	Fat consumption: diarrhea, fatigue, weight issues, keto diet issues	Lipids	
ACAT	rs3741049	GG - Wild			
BHMT	rs3733890	AA - Homo	Low mood, anxiety, Inflammation, chronic disease, high toxin-burden	Homocysteine	
BHMT	rs3797546	TT - Wild			
CBS	rs4920037	GG - Wild	(Slows down gene): Hypertension, ulcers, neurological issues.	Elevated Homocysteine & NO	
CBS (699)	rs234706	GG - Wild	(Speeds up gene), halitosis, Sulphur flatulence, hypotension, bowel issues.	High NH4, liver enzymes, Neuro abnormalities, low NO	
GAMT	rs17851582	GG - Wild	Low creatine	Creatine	
MATIA	rs3851059	AA - Homo	Irritability, depression, anxiety, gut issues, impulsivity, sleep issues	Neurotransmitter/SAMe abnormalities	
MTHFR A1298C	rs1801131	CA - Hetero	Low mood, anxiety, Inflammation, chronic disease, high toxin-burden	Low bilirubin, low B12, high (urinary) mma, elevated LFTs, high GGT, high homocysteine, low methionine, low SAMe, high CRP	
MTHFR C677T	rs1801133	CC - Wild			
MTR	rs1805087	AG - Hetero			
MTRR	rs1532268	CC - Wild			
MTRR	rs1801394	AA - Wild			
MTHFD1	rs2236225	AG - Hetero			
SHMT1	rs1979277	GG - Wild			
SLC19A1 (RFC)	rs1051266	CT - Hetero			
PEMT	rs7946	TT - Wild	Brain Fog, Fatty Liver Syndrome	ALT, AST, GGT, Ferritin	

ENERGY & METABOLISM

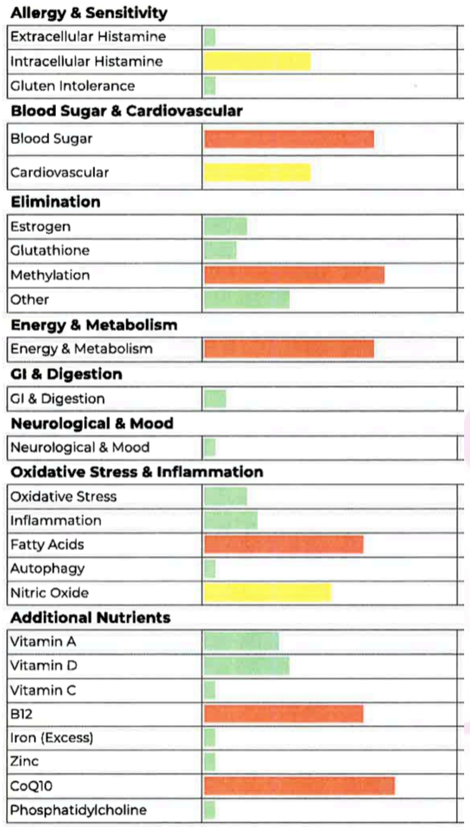
PPARG	rs1801282	CC - Wild	After carbs: bloating, low energy, weight issues, cravings, always hungry.	Low B1, B3, Blood sugar irregularities, high fasting Insulin/HgbA1C	
ADIPOQ	rs17366568	GG - Wild			
FTO	rs1121980	AA - Homo	Obesity		
FTO	rs9939609	AA - Homo			
LEPR	rs2025804	AA - Wild	obesity, decreased sense of satiety	Leptin	
MC4R	rs17782313	TT - Wild			

GI & DIGESTION

DAO (AOC1)	rs1049793	CC - Wild	Extracellular histamine issues. GI Lining issues	Low DAO, High Histamine, LPS-Binding Protein, Stool Testing	
DAO (AOC1)	rs10156191	CC - Wild			
DAO (AOC1)	rs1049742	CC - Wild			
SPP1	rs2853744	GG - Wild	Oxalate symptoms	Urinary Oxalic Acid (OAT)	
MYO9B	rs2305764	GA - Hetero	Leaky Gut, Autoimmune	Zonulin, Gluten Markers	
FUT2	rs601338	GA - Hetero	Norovirus immunity And Dysbiosis	AA - Non Secreter	

[redacted]
DR. Cindy!

ABBY



GUT ISSUES

Gut Commensals

SUGGESTED SUPPLEMENTS INCLUDE:

Omega-3 Fatty Acids, Vitamin D, Isoflavone, Taurine, Chitin-glucan, Protease, Amyloglucosidase, Beta-glucanase, Alpha-galactoidase, Lipase, Amylases, Glycine, Pantothenic Acid, Riboflavin, Vitamin B6, Folate, Vitamin B12, Betaine, Whey Protein Concentrate, Watercress, Green Tea Catechins, Berberine, Origanum Vulgare, Wormwood Oil, Lemon Balm Oil, Barberry Root Extract, Resveratrol, Epigallocatechin, Curcumin, Quercetin, Boswellia, Selenium, Milk Thistle Extract, Alpha-lipoic Acid, N-acetyl-l-cysteine, L-glutamine, Immunoglobulin G, Zinc Carnosine, Licorice Root Extract, Calcium

INFLAMMATION MARKERS

Test Name	Current	Previous	Result	Reference
Beta defensin 2 (ng/mL)	74.8		0 34.9	≤34.9

Beta-defensin 2 is an antibiotic peptide locally regulated by inflammation in humans. It is produced by a number of epithelial cells and exhibits potent antimicrobial activity against Gram-negative bacteria and Candida, but not Gram-positive bacteria. It has been speculated that beta-defensin 2 may contribute to the infrequency of Gram-negative infections on skin and lung tissue.

DIGESTIVE INSUFFICIENCY AND MALABSORPTION MARKERS

ENZYME INSUFFICIENCY	Current	Previous	Result	Reference
Pancreatic elastase 1 (mcg/g)	151.1		0 100 199	≥200.0

Consider digestive support with betaine HCL. Consider pepsin, plant or pancreatic enzyme supplements, digestive herbs, bile salts, and taurine. Micronutrient evaluation recommended, especially for fat soluble vitamins A, D, E, and K.

DIETARY FIBER MARKERS	Current	Previous
Vegetable fiber	DETECTED	

Vegetable fiber: Presence of vegetable fibers is indicative of improper chewing or digestive insufficiency.

FAT MALABSORPTION	Current	Previous	Result	Reference
Total Fecal Fat (mg/g)	55.2		0 2.8 37.5	2.9-37.5

This test measures the amount of fat in a stool sample. Excess fecal fat (termed steatorrhea) in stool is indicative of malabsorption disorder. The absorption of fat can be varied by production of bile in the gallbladder or liver, production of digestive enzymes in the pancreas, and normal functioning of the intestines. Decreased absorption of fat can be a sign of many different illnesses, including celiac disease, crohn's disease, cystic fibrosis, pancreatitis, etc.

DIGESTIVE INSUFFICIENCY AND MALABSORPTION MARKERS

FAT MALABSORPTION	Current	Previous	Result	Reference
Long chain fatty acids (mg/g)	49.9		0 0.8 28.1	0.9-28.1

Total long chain fatty acids

GUT METABOLITES

No markers are outside the normal reference range

OTHER MARKERS

Test Name	Current	Previous	Result	Reference
Fecal Zonulin (ng/mL)	243.8		0 25 160	25.1-160.8

Fecal zonulin measurement may be advantageous, compared to serum zonulin when assessing intestinal permeability, as serum zonulin may constitute secretion not only from intestinal cells, but also from extraintestinal tissues such as the liver, heart and brain. Stool may therefore present a more appropriate specimen for analyzing only intestinal production of zonulin. Elevated fecal levels of zonulin have been associated with metabolic syndrome, obesity, and healthy cigarette smokers. High fecal zonulin levels in smokers irrespective of IBD point to the significant and undesirable up-regulation of gut permeability in cigarette smokers.

GUT PATHOGENS

Bacteria	Current	Previous	Reference
Campylobacter spp	4.6e3		≤1e2

Campylobacter spp: Consider broad-spectrum antimicrobial herbs including berberine, caprylic acid, garlic oil, oil of oregano, uva ursi, olive leaf extract.

DR. Cindy!


Wants to slow down
the aging process and stay
in good physical shape.
Ken
DR.
Cindy!

Vial Number: MGP41558
Client Sex: Male
Report Date: 1/8/2024
MaxGen PTID#: P252

Your Genetic Summary

B12 Levels	• You have a risk for low serum Vitamin B12 levels. Use organic acid or homocysteine testing to verify your need for B12.
Methyl-B12	• You have two heterozygous variations on the MTRR enzyme. This could create a need for B12 supplementation. Use organic acid or homocysteine testing to verify your need for B12.
B12 Sensitivity	• There are no genetic indications for Methylcobalamin sensitivity.
Adeno-B12	• There are no genetic indications that you need Adenosylcobalamin supplementation. Adenosylcobalamin could be used in cases of fatigue.
Vitamin A	• You have multiple heterozygous variants on BCMO1. This alone should not lead to Vitamin A deficiency. Test micronutrients yearly to determine your need for supplementation.
Vitamin D	• There are no indications of genetic Vitamin D metabolism issues.
Folate/MTHFR	• You are negative for the MTHFR enzyme variation. There are no further recommendations based off of your MTHFR status.
Folate Sensitivity	• There are no genetic indications for MethylFolate sensitivity.
Dietary Histamine	• You are not genetically predisposed to reduced DAO enzyme activity.
Cellular Histamine	• No variant detected that increases cellular histamine.
DHA Fish Oil	• You are genetically predisposed to Omega 3 Fatty Acid deficiency, specifically due to an inability to produce DHA. Consider supplementing with high DHA fish oil. Test Omega ratios.
Phos-Choline	• You are not genetically predisposed to Phosphatidylcholine deficiency.
Arachidonic Acid	• You are not genetically prone to high or low levels of the pro-inflammatory fatty acid, Arachidonic Acid.
Inflammation	• You do not have the genetic marker for increased levels of inflammation. There may still be inflammation present.
Estrogen levels	• You have one of the four genetic markers associated with conditions in estrogen metabolism. Monitor hormones with your doctor.
Bad Estrogen	• If you are female, you have a genetic variant associated with increased levels of 4-OH-Estradiol, which can be highly reactive. You should evaluate 4-OH-Estradiol levels yearly and seek appropriate medical intervention if needed.
Pesticides	• You are not genetically sensitive to pesticides. They should still be avoided. Consume organic foods and use a water filter.
Glutathione	• You are genetically predisposed to reduced Glutathione production. Consider organic acid testing.
Probiotic	• There are no probiotic recommendations based on your results. See the box below if there are additional recommendations.
Secretor Status	• FUT2 Secretor. There are no probiotic recommendations associated with this variant.

KEN

DR. Cindy!

KEN

Age	75 Sex M	Received Date/Time	12/14/2023 10:00 PT	Client ID	2770 Innovative Health & Wellness
DOB	7/1/1948	Report Date/Time	12/15/2023 16:35 PT	Address	18309 Distinctive Dr.
Accession ID	197342	Report Status	Final		Orland Park, IL 60467

Patient Acute Coronary Syndrome (ACS) Profile is Elevated

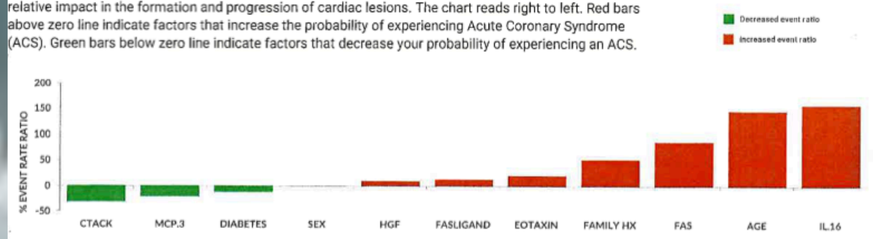
SVDx Score: 39.39%

Normal: < 3.50% | Borderline: 3.50% - 7.49% | Elevated: ≥ 7.50%

Expected Score: 5.49%

Graph

The ratio size and location for each biomarker bar located on the Protein Biomarker Graph indicates the relative impact in the formation and progression of cardiac lesions. The chart reads right to left. Red bars above zero line indicate factors that increase the probability of experiencing Acute Coronary Syndrome (ACS). Green bars below zero line indicate factors that decrease your probability of experiencing an ACS.



Test Interpretation:

1. Your SMART Vascular Dx score indicates that **39.39**% (Absolute Risk) of individuals of your age, sex, and score had a cardiac event within a 5 year time period. Your expected score of **5.49**% is where you should be according to your current age and sex.
2. Your SMART Vascular Dx score indicates that you are **7.17** times (Relative Risk) more likely to experience an ACS (heart attack) than would be expected for your age and sex.
3. This SMART Vascular Dx score classifies you at **High-Risk** by AHA/ACC Cardiovascular Risk Guidelines.

SmartVascular Dx Test				SmartVascular Dx Expected Score Gap				
	< 3.50%	3.50% - 7.49%	≥ 7.50%				< 5 Times	≥ 5 Times
1 SmartVascular Dx Score (Absolute Risk)			39.39	1 Expected Score for Age and Sex	5.49	2 Score Gap (Relative Risk)		7.17
3 AHA/ACC Guidelines Class	High			This patient is at high risk and should be treated as such. A low threshold for additional testing should be applied to this patient to better define the clinical picture and treatment plan. Aggressive lifestyle modification, supplements, and or medication should be considered. If the clinical situation warrants it, and the patient is not currently under the care of a cardiologist, referral to a cardiologist might be warranted.				

The SmartVascular Dx measures protein biomarkers of active Unstable Lesion formation and progression produced by the pathways (thrombosis, apoptosis, cell proliferation, inflammation & angiogenesis). An integrated score calculated with established clinical risk factors demonstrates clinical utility that identifies the vulnerable patient and improves accuracy in cardiovascular risk classification, which could lead to improved preventive care and fewer deaths.

Age	75 Sex M	Received Date/Time	12/14/2023 10:00 PT	Client ID	2770 Innovative Health & Wellness
DOB	7/1/1948	Report Date/Time	12/15/2023 16:35 PT	Address	18309 Distinctive Dr.
Accession ID	197342	Report Status	Final		Orland Park, IL 60467

About this Test

The SmartVascular Dx Score quantifies endothelial damage and predicts the likelihood of Acute Coronary Syndrome (ACS-heart attack, unstable angina and sudden cardiac death) within 5 years. The SmartVascular Dx test measures the body's immune response pathway of coronary endothelial damage causing the formation, progression and likelihood of cardiac lesion rupture that can lead to a heart attack.

Protein Result (Relative % Contribution to the SmartVascular Dx Score)				
SmartVascular Dx Biomarker	**Relation To Endothelial Damage & Unstable Cardiac Lesions**	**Normal**	**Borderline**	**Elevated**
Measures Immune Formation & Free Radical Damage				
IL-16	Signaling molecule that triggers the repair process; often associated with stress, obesity, and sleep apnea			157.8
Measures Immune Response				
MCP-3	Recruits monocyte/macrophages that form foam cells to clean up damaged cells, lipids, and cellular debris	21.89		
Eotaxin	Recruits eosinophils that consume fibrin and facilitates repair			20.13
CTACK	Recruits T-cells that regulate the local inflammatory response at the site of a lesion	32.1		
Measures Disease Progression				
Fas	Soluble form prevents programmed cell death (apoptosis) - usually indicates healing			86.41
Fas Ligand	Initiates programmed cell death and recycling - associated with more acute processes		12.43	
HGF	Governs tissue remodeling & repair		9.23	

Test Comments

DR. Cindy!

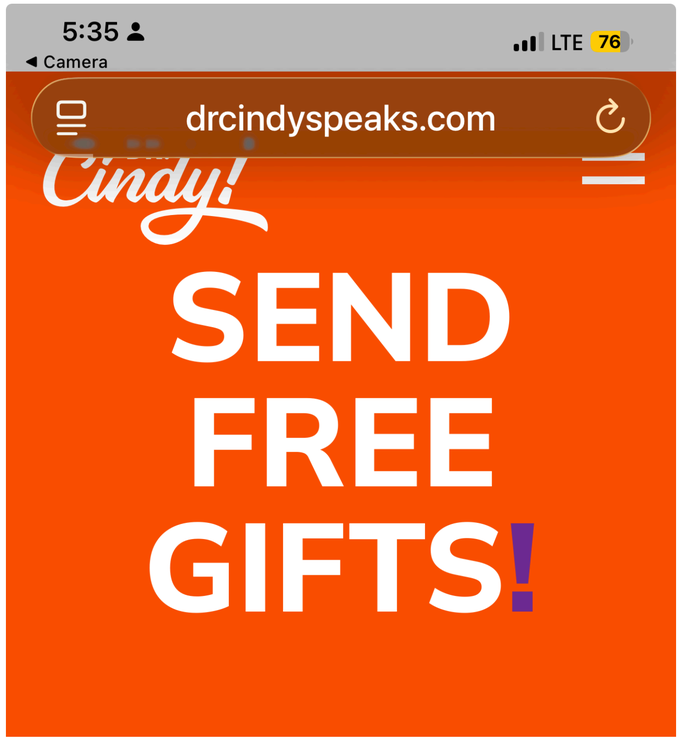

Nutrients,
Genes, &
Conditions
DR. Cindy!

Free Gifts!

- A handy recap of today's topic.
- My latest list of recommended books.
- A warm welcome to my Daily Dose newsletter.

PLUS, enter to win one of my favorite books if you open my brief survey!

DR. Cindy!



Enter your first name and email below for my guide to today's presentation, and to fill out a brief (optional) speaker survey. Thank you!

First Name *

First Name

Email *

Email

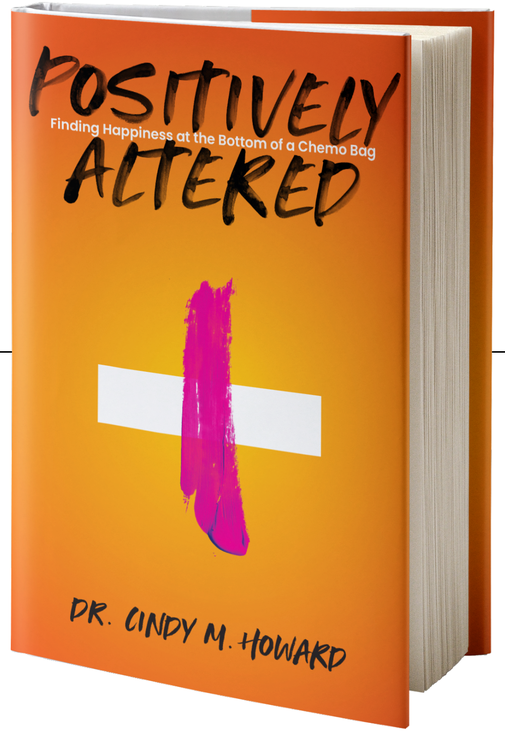
DR. Cindy!

Don’t forget to find me at my Positively Altered Podcast!

thank you

DR. Cindy!

Professional Health Products®



Hello@drcindyspeaks.com
drcindyhoward@msn.com
C:708.646.6561
O:708.479.0020