Day 3: Incorporate

SHINE CONFERENCE

with Dr. Ritamarie Loscalzo (MS, DC, CCN, DACBN)

SCIENTIFIC AND HOLISTIC INVESTIGATION OF NUTRITIONAL ENDOCRINOLOGY

Mission Possible

A New Paradigm of Health Care

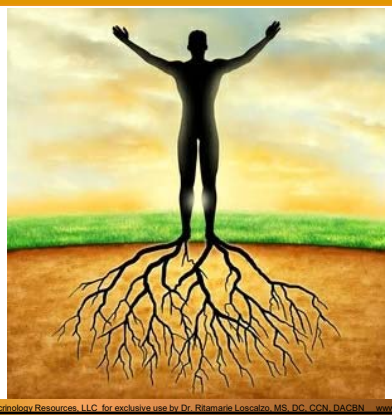
My Mission

Your Mission

Our Mission

Disease Management

True Health Care



The Power of WHY?

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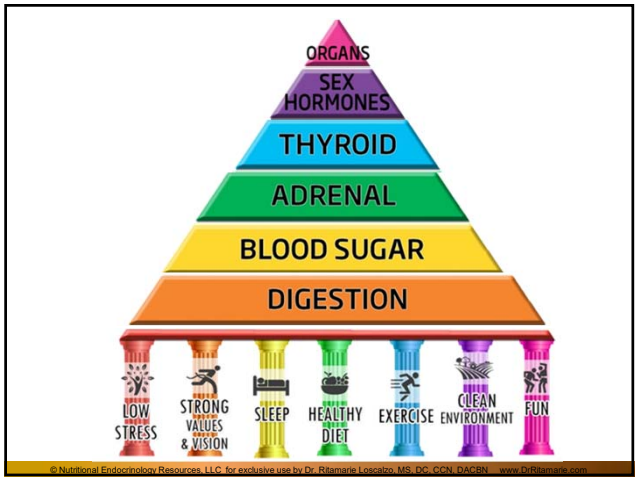

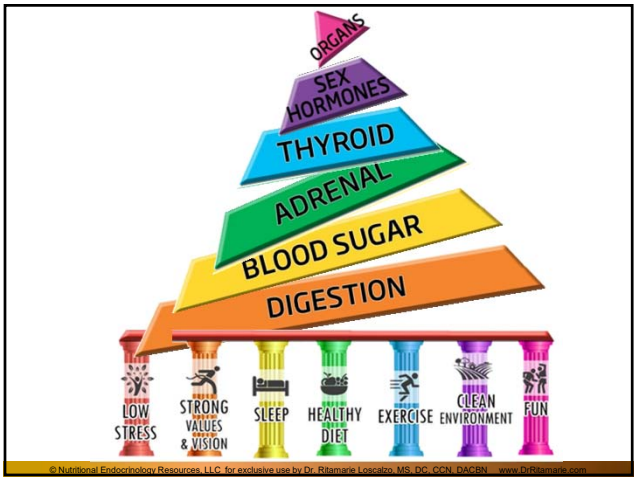

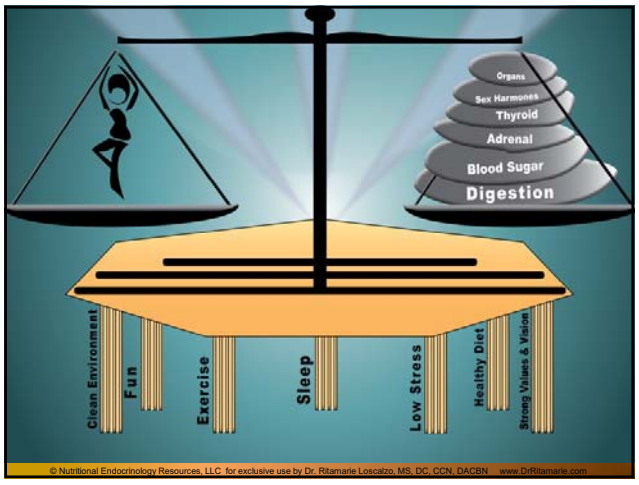
Organs
Sex Harmones
Thyroid
Adrenal
Blood Sugar
Digestion
Clean Environment
Fun
Exercise
Sleep
Low Stress
Healthy Diet
Strong Values & Vision
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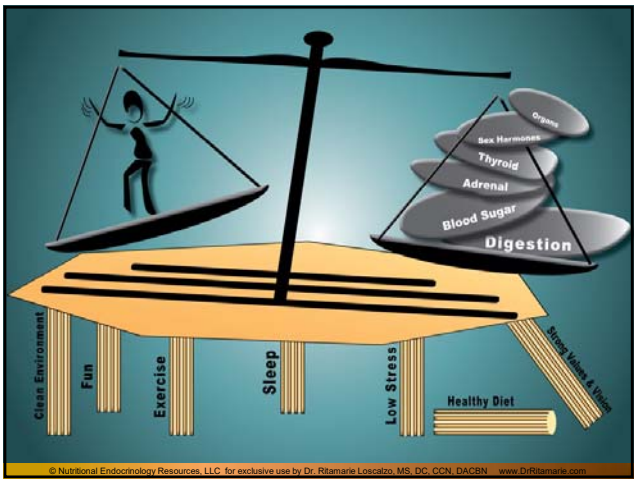
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Home and
Office Testing
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Home and Office Assessments
✓ Symptoms and Signs
✓ Nutrient Assessments
➢Minerals
➢Vitamin C
✓ pH Balance
✓ Nitric Oxide
✓ Blood Sugar
✓ Ketones
✓ Oxidata
✓ Urinalysis
pHydrion
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Mineral Test Kit

The test kits allow you to test for the following minerals:

1. Potassium
2. Zinc
3. Magnesium
4. Copper
5. Chromium
6. Manganese
7. Molybdenum
8. Selenium

http://www.drritamarie.com/go/EmersonEcologics
Use code **fresh1** to access

Interpretation of Mineral Tests

	Taste Test Score	Clinical implication
1	Sweet	Definitely need the mineral
2	Pleasant	Need the mineral
3	No Taste	Need the mineral
4	Hmmmm…taste something	Sufficient
5	So-So, there is some taste	Do not need mineral
6	Don't like	Do not need mineral
7	Gross taste	Do not need mineral

- Write down the appropriate response on the score card
- Repeat this process for each of the remaining minerals

Vitamin C Testing

✓ **Vitamin C Urine Test Strips**

- Normal is greater than 20 mg/dL
- Ideal is greater than 40 mg/dL
- "A consistent urine vitamin C of 20 mg/dL or lower may be trying to tell you something."

James A. Jackson, MT, Ph.D., Journal of Orthomolecular Medicine, Vol. 20,No. 4, 2005

✓ **Vitamin C Calibration**

- Determine bowel tolerance dose
- Take 75% of dose that results in loose stools

Measuring pH

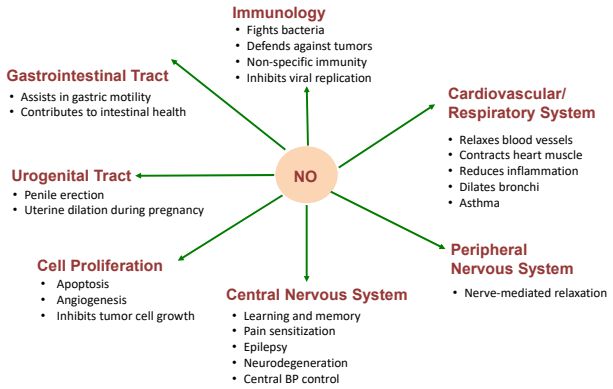
pHydrion paper – range 5.5 to 8

- ✓ **Saliva: 6.8 – 7.2**
  - ➢ First morning
  - ➢ During day
  - ➢ Acid challenge
- ✓ **Urine: 6.5 – 6.8**
  - ➢ First morning
  - ➢ Second morning
  - ➢ Later in day

http://www.drritamarie.com/go/pHpaper

Nitric Oxide Testing

Nitric Oxide: Biological Functions

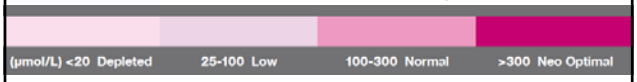


Nitric Oxide Testing

Step 1: Wash hands

Step 2: Place saliva on test strip

Step 3: Compare test strip to color indicator



The deeper the red on the test strip, the higher the Nitric Oxide concentration

http://www.neogenis.com

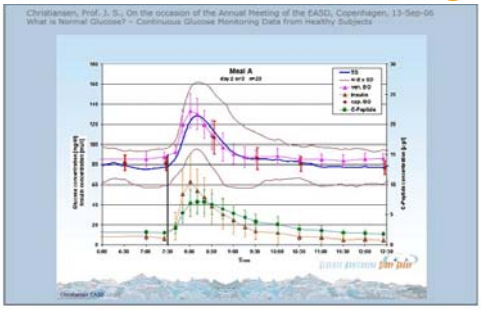
Nitric Oxide in Vegetables

Kale	6825
Swiss chard	2055
Arugula	1452
Spinach	1123
Chicory	938
Wild radish	814
Bok choy	775
Collard greens	697
Beets	632
Chinese cabbage	499
Lettuce	388
Cabbage	312
Mustard greens	226
Cauliflower, raw	167
Parsley	150
Kohlrabi	136
Carrot	127
Broccoli	122

Blood Sugar Measurement

- ✓ **TrueResults:** desktop model
  http://www.drritamarie.com/go/TrueResultStarterKit
- ✓ **True2Go:** portable
  http://www.drritamarie.com/go/True2GoPortableKit
- ✓ **TrueTest Test Strips:**
  use for both glucose meters
  http://www.drritamarie.com/go/TRUEtestTestStrips100
- ✓ **Hemoglobin A1c:**
  http://www.drritamarie.com/go/HemoglobinA1C

What is Normal Blood Sugar?

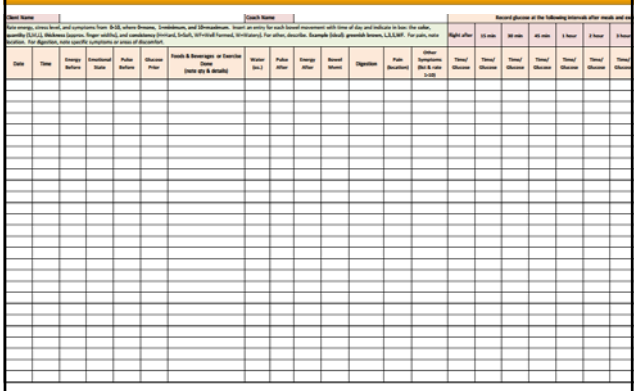


What is a Normal Blood Sugar?

Normal blood sugars after a high carbohydrate breakfast eaten at 7:30 AM. The blue line is the average for the group. The brown lines show the range within which most readings fell (2 standard deviations). Bottom lines show Insulin and C-peptide levels at the same time. Graph is a screen shot from Dr. Christiansen's presentation cited below.

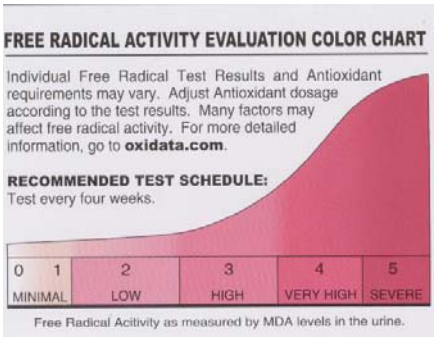
What is Normal Glucose? Continuous Glucose Monitoring Data from Healthy Subjects.
Professor J.S. Christiansen, presented at the Annual Meeting of the EASD.

Glucose Tracking



Ketone Urine Test

Free Radical Testing at Home



http://www.drritamarie.com/go/OxidataTest

Urinalysis at Home

- ✓Glucose
- ✓Ketones
- ✓Bilirubin
- ✓Protein
- ✓Nitrite
- ✓pH
- ✓Blood
- ✓Specific gravity
- ✓Leukocytes
- ✓Urobilinogen

http://www.drritamarie.com/go/Urinalysis10

HCl Challenge

- ✓ Home test – assess need for stomach acid
- ✓ **Start with ONE** 500-650 mg capsule (not tablet) containing both hydrochloric acid (HCl) and 150 mg of pepsin
- ✓ Take HCl after a few bites of food; ***do not take on an empty stomach or after meals***
- ✓ If no discomfort (burning or warm sensation), add one capsule per meal.
- ✓ If pain, burning, or a warm sensation, take one of the following:
  - 1 teaspoon slippery elm in 8 ounces warm water
  - ¼ cup aloe vera juice
  - ¼ teaspoon baking soda in water or…
- ✓ Next meal, go back to the dose that caused no pain

***DO NOT* go above the maximal dose of 4 capsules per meal unless supervised.**

Transit Time

Time from mouth to anus should be 18 – 24 hours

- ✓Swallow 4 charcoal capsules at evening meal
- ✓Calculate time from taking charcoal to when black or gray stool observed
- ✓Wait 5 days before trying again

Date and Time									
Nutrients									
Potassium									
Zinc									
Magnesium									
Copper									
Chromium									
Manganese									
Molybdenum									
Selenium									
Vitamin C									
Chemistry									
pH - Saliva									
pH - Urine									
Nitric Oxide									
Blood Sugar									
Ketones									
Oxidata									
Urinalysis									
Glucose									
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pH									
Blood									
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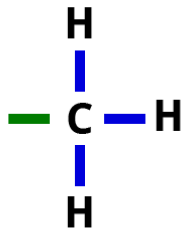
Urobilinogen									

Creating Action Plans Based On Test Results

Genetic Testing and Nutrigenomics

Methylation



Methyl group

Methyl Donors

- SAMe
- Folate
- Vitamin B12
- TMG (Betaine)
- DMG
- DMAE

Methylation Functions

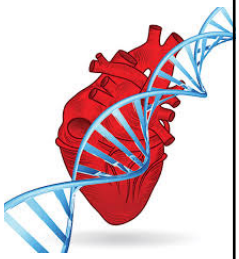
- ✓Turn genes on and off and synthesize DNA
- ✓Process toxins
- ✓Build and metabolize neurotransmitters (epinephrine, NE, serotonin, dopamine, melatonin)
- ✓Process hormones (estrogen)
- ✓Build immune cells (T cells, NK cells)
- ✓Produce energy (CoQ10, carnitine, creatine, ATP)
- ✓Produce myelin sheaths
- ✓Build and maintain cell membranes (phosphatidylcholine)

Main Methylation SNPs

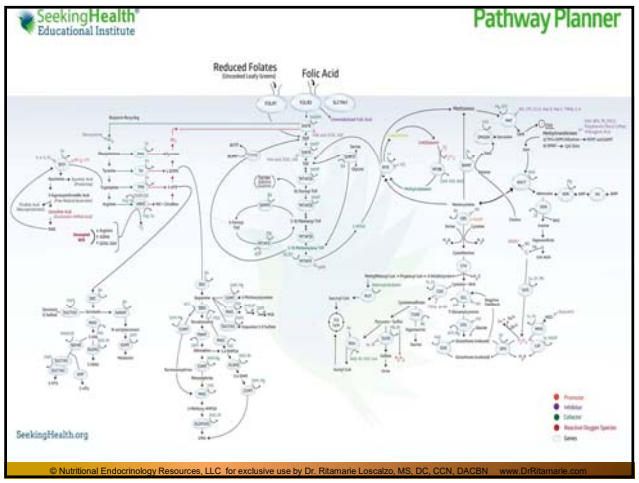
- ✓MTHFR C677T
- ✓MTHFR 1298C
- ✓MTRR, MTR
- ✓BHMT
- ✓CBS
- ✓COMT

Approximately 45% of the population has 1 copy of the MTHFR C677T SNP
Approximately 90% of those with chronic disease have 1 copy of the MTHFR C677T

Potential MTHFR Problems

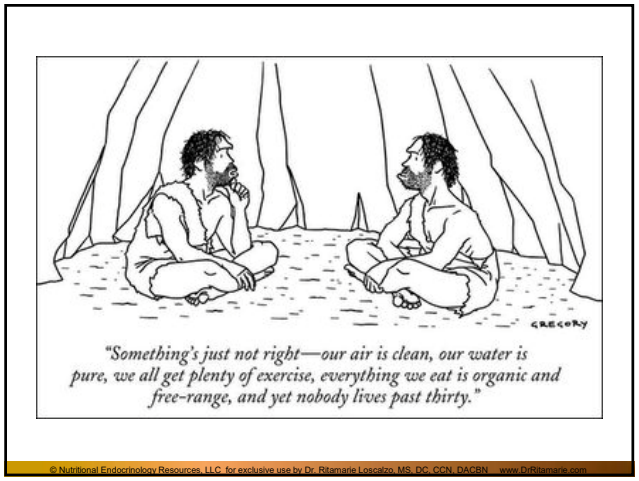


- ✓Increased homocysteine
- ✓Increased risk of cardiovascular disease or thrombosis
- ✓Insufficient substrate for DNA repair, synthesis, or methylation
- ✓Increased risk of miscarriage
- ✓Neurotransmitter problems
- ✓***Folic acid*** blocks methylfolate at BBB
- ✓Excess ***folic acid*** may lead to problems such as cancer
- ✓Dairy can block folate receptors, especially in brain (**FOLR1, FOLR2, FOLR3**)



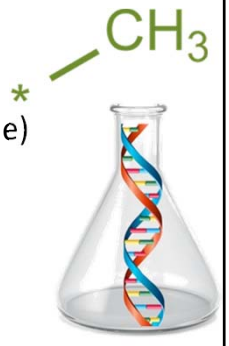
Before Addressing Individual SNPs

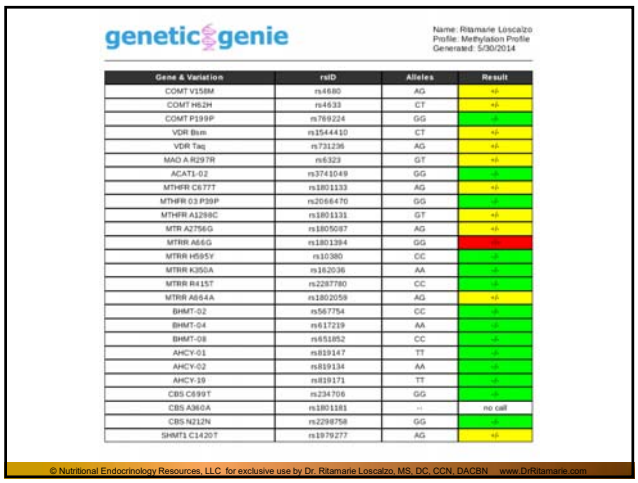
- ✓ **Foundational lifestyle/diet**
  - ➢ Address the 7 Pillars – clean, whole foods, antioxidant- rich diet
- ✓ **Remove all folic acid**
- ✓ Gut healing and pathogen removal
- ✓ Balance blood sugar
- ✓ Address mitochondrial dysfunction
- ✓ Test homocysteine levels
- ✓ B vitamin support
- ✓ Adrenal support and adaptogens
- ✓ Thyroid support



Methylation Blood Markers

1. Homocysteine
2. MCV
3. Methylmalonic acid (urine)
4. Folate and metabolites
5. Serum vitamin B12 (not the best)

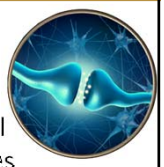




Methylation SNPs on Genetic Genie

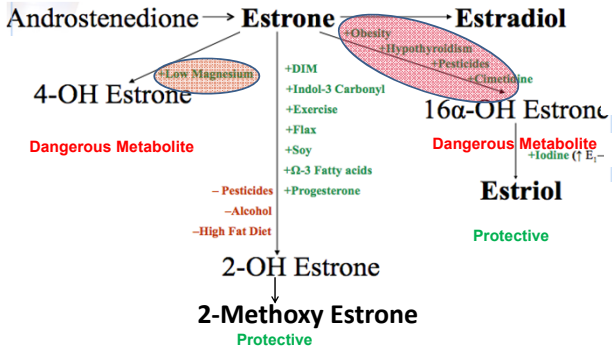
- ✓ COMT (Catechol-O-methyltransferase)
- ✓ VDR (Vitamin D Receptor)
- ✓ MAO-A (Monoamine oxidase A)
- ✓ ACAT1-02 (Acetyl coenzyme A acetyltransferase)
- ✓ MTHFR C677T (Methylenetetrahydrofolate reductase)
- ✓ MTHFR A1298C
- ✓ MTR (5-methyltetrahydrofolate-homocysteine methyltransferase)
- ✓ MTRR (Methionine synthase reductase)
- ✓ BHMT (Betaine--Homocysteine S-Methyltransferase)
- ✓ AHCY (S-adenosylhomocysteine hydrolase)
- ✓ CBS (cystathionine beta synthase)
- ✓ SHMT (Serine hydroxymethyltransferase)

COMT (catechol-O-methyltransferase)



- ✓ **Neurotransmitters:** Transfers methyl group from SAMe to dopamine, epinephrine, and norepinephrine
- ✓ **Estrogen metabolism:** Transfers methyl group from SAMe to catechol hormones
- ✓ **Brain function:** Involved with personality, inhibition of behaviors, short-term memory, planning, abstract thinking, and emotion
- ✓ **CAUTION:** Homozygous SNPs problematic with methyl donors - irritability, hyperactivity, sensitivity to pain, or abnormal behavior

Estrogen Metabolism



VDR (Vitamin D Receptor)

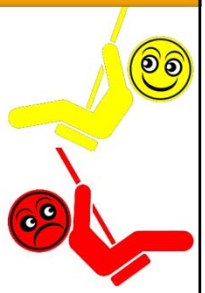
- ✓SNPs lead to low or low-normal vitamin D
- ✓ VDR Fok associated with blood sugar issues and poor pancreatic activity
- ✓VDR Taq SNPs combined with COMT V158M can lead to difficulty with methyl donors

MAO and ACAT

- ✓**MAO-A (Monoamine oxidase A):**
  - ➢Metabolism of serotonin, norepinephrine, and dopamine
  - ➢With COMT V158M increases the likelihood of OCD, mood swings, aggressive and/or violent behavior, and personality disorders
- ✓**ACAT1-02 (Acetyl Co-Enzyme A Acetyltransferase):**
  - ➢Lipid metabolism and energy generation
  - ➢Can deplete B12
  - ➢Increases the likelihood of gut dysbiosis

MTHFR (Methylenetetrahydrofolate reductase)

- ✓**C677T:**
  - ➢Helps convert homocysteine to methionine, which is then converted to SAMe
  - ➢SNP can lead to high homocysteine
  - ➢With COMT V158M SNP, can lead to mood swings
- ✓**A1298C:**
  - ➢Does not lead to elevated homocysteine
  - ➢Can lead to elevated ammonia and decreased neurotransmitters



Genes Associated with Folate Metabolism

Gene	Support	Function
FOLR 1,2,3	Lipids, phospholipids	Bind 5-MTHF and transport into cell
SLC19A1	Lipids, phospholipids	Membrane Protein which Regulates IC [folate]
ALDH1L1	THF	10-Formyl-THF + NADP(+) + H2O → THF + NADPH + CO2
DHFR	NAD (B3)	5, 6, 7, 8 THF + NADP+ → 7,8 DHF + NADPH
MTHFS	Mg	ATP + 5-Formyl THF → ADP + Phos + 5,10-methenyl THF
MTHFD1	THF	a) 5,10-methylene THF + NADP + = 5,10-methenyl THF + NADPH b) 5,10-methenyl THF + H2O = 10-formyl THF c) ATP + formate + THF = ADP + Phos + 10-formyl THF
SHMT 1,2	P-5-P (B6)	5,10-methylene THF + glycine + H2O = THF + L-serine SHMT2: Primary source of IC Glycine
MTHFR	FAD (B2)	5,10-methylene THF + NADPH → 5-MTHF + NADP+

MTR and MTRR

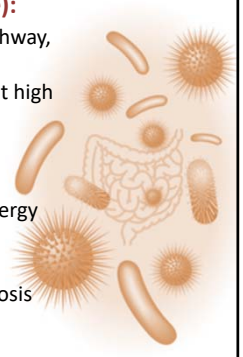
- ✓ **MTR (5-methyltetrahydrofolate-homocysteine methyltransferase):**
  - ➢ Increases need for vitamin B12
  - ➢ With MTHFR C677T leads to persistently high homocysteine levels
- ✓ **MTRR (5-Methyltetrahydrofolate-Homocysteine Methyltransferase Reductase):**
  - ➢ Helps recycle B12
  - ➢ Converts homocysteine to methionine

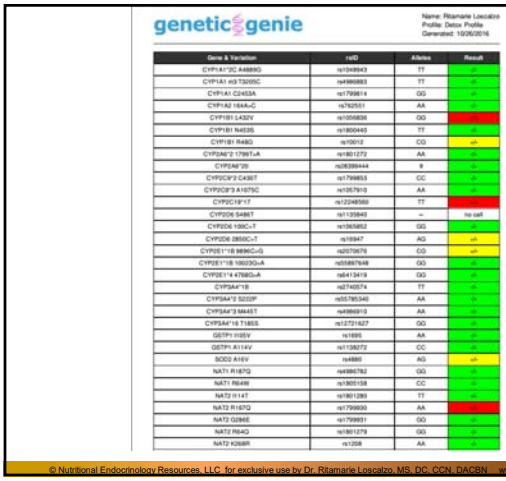
BHMT and AHCY

- ✓ **BHMT (betaine-homocysteine methyltransferase):**
  - ➢ Shortcut through the methylation cycle
  - ➢ Helps convert betaine and homocysteine to methionine
- ✓ **AHCY (S-adenosylhomocysteine hydrolase):**
  - ➢ Breaks down methionine
  - ➢ Transfers energy as ATP and ADP
  - ➢ Helps promote sleep and suppress arousal

CBS and SHMT

- ✓ **CBS (Cystathionine beta synthase):**
  - ➢ First step of the transsulfuration pathway, from homocysteine to cystathionine
  - ➢ If SNP is activated, it's possible to get high levels of taurine and ammonia
- ✓ **SHMT (Serine hydroxymethyltransferase):**
  - ➢ Plays a role lipid metabolism and energy generation
  - ➢ Depletes vitamin B12
  - ➢ Increases the likelihood of gut dysbiosis and gut flora imbalance
  - ➢ Can retain metals like aluminum





Major Detox SNPs: 1

- ✓ **CYP1A1:** Polycyclic aromatic hydrocarbons - exhaust fumes, charbroiled meats, etc.
- ✓ **CYP1A2:** Caffeine and estrogen metabolism upregulation of 4-hydroxylation estrogen
- ✓ **CYP2A6:** Detoxifies nitrosamines and nicotine
- ✓ **CYP2C9:** Drug metabolism: phenytoin, tamoxifen, Coumadin (warfarin), fluvastatin, aspirin, ibuprofen, and naproxen
- ✓ **CYP2C19:** Detoxifies Coumadin (warfarin) and sulfonylureas
- ✓ **CYP2D6:** Metabolism of almost 25% of all prescription drugs including tricyclics, MAOIs, SSRIs, opiates, antiarrhythmics, beta-blockers, and cimetidine

Full list: http://www.drritamarie.com/go/WikiCYP2D6

Major Detox SNPs: 2

- ✓ **CYP2E1:** Metabolizes ethanol, acetone, anesthetics, paracetamol, benzene, carbon tetrachloride, ethylene glycol, and nitrosamines
- ✓ **CYP3A4:** Metabolism of 60% of all known drugs – the most abundant detoxifying enzyme in the liver; metabolizes testosterone, cortisol, estrogen, and other steroids, plus organophosphates
  Grapefruit juice inhibits; milk thistle inhibits in-vitro
- ✓ **GSTP1:** One of the glutathione S-transferase enzymes; detoxifies water-soluble environmental toxins, including many solvents, herbicides, fungicides, lipid peroxides, and heavy metals (e.g., mercury, cadmium, and lead.

Major Detox SNPs: 3

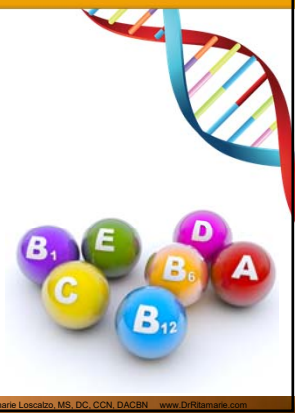
- ✓ **SOD2:** Superoxide Dismutase - protects cells from increased oxidative stress and free radical damage to membranes, mitochondria, DNA, and proteins; drug metabolism
- ✓ **NAT1:** N-acetyltransferase - metabolism of a number of drugs, and it detoxifies many environmental toxins, including tobacco smoke and exhaust fumes
- ✓ **NAT2:** N-acetyltransferase - detoxifies many environmental toxins including tobacco smoke, exhaust fumes, and heterocyclic aromatic amines; protection provided by cruciferous vegetables, garlic, onions, soy, grapes, and berries

MTHFR Support Report

Liver Detox - Phase I (Figure 1)			
SNP Name	Risk Allele	Your Alleles	Your Results
BMP2 C282Y	G	AA	-/-
CYP1A1*2C A4889G	C	TT	-/-
CYP1A1*4 C2453A	T	GG	-/-
CYP1A2 C164A	C	AA	-/-
CYP1B1 L432V	C	GG	-/-
CYP1B1 N453S	C	TT	-/-
CYP1B1 R48G	C	CG	+/-
CYP2A6*2 A1799T	T	AA	-/-
CYP2C19*17 806C>T	T	TT	+/+
CYP2C9*2 C430T	T	CC	-/-
CYP2C9*3 A1075C	C	AA	-/-
CYP2D6 T100C	A	GG	-/-
CYP2D6 T2850C	A	AG	+/-
CYP2E1*1B G9896C	G	CG	+/-
CYP2E1*4 A4768G	A	GG	-/-
CYP3A4*1B 392G>A	C	TT	-/-
CYP3A4*3 M445T	G	AA	-/-
GPX3 129T>C	C	TT	-/-
GSTM1 5419C>T	T	CC	-/-
GSTM1 6360G>A	A	GG	-/-
GSTM1 7107A>G	G	AA	-/-
GSTM1 7175T>A	A	TT	-/-
GSTM1 7730C>T	T	CC	-/-
GSTM1 8048T>A	A	TT	-/-
GSTM1 8869A>G	G	AA	-/-
GSTM3 V224I	T	TT	+/+

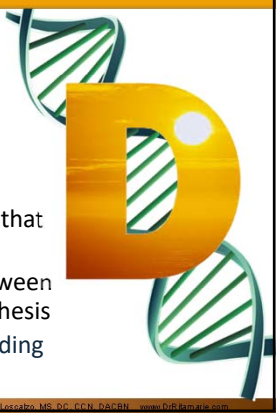
Nutrient Related Genes

- ✓**Vitamin A:** BCMO1
- ✓**Vitamin B6:** NBPF3
- ✓**Vitamin B12:** FUT2
- ✓**Folate and Vitamin B2** (riboflavin)**:** MTHFR
- ✓**Vitamin C:** SLC23A1
- ✓**Vitamin E:** Intergenic (increases vitamin E)



Vitamin D Related SNPs

- ✓**VDR:** Vitamin D receptor
- ✓**GC rs2282679:** Encodes an enzyme that transports vitamin D in blood to cells
- ✓**CYP24A1:** Role in maintaining calcium homeostasis
- ✓**CYP27B1:** Encodes an enzyme that activates Vitamin D
- ✓**DHCR7:** Regulatory switch between cholesterol and vitamin D synthesis
- ✓**GRCh38 rs4588:** Vitamin D binding protein



Eating Related Genes

- ✓**Bitter Taster:** TAS2R38 rs713598, rs1726866
- ✓**Sweet Taster:** TAS1R3 rs35744813
- ✓**Salt Sensitive:** GNB3, NOS3, ACE, AGT
- ✓**Gluten Intolerance:** HLA DQ2.5, HLA DQ8
- ✓**Lactose Intolerance:** MCM6
- ✓**Alcohol Intolerance:** ALDH2
- ✓**Alcohol Metabolism:** CYPE21

Fat Metabolism Related Genes

- ✓**APOE – 3/4 or 4/4:** Sensitive to saturated fats, especially animal fats
- ✓**APOA2:** C or T SNP - regulates after meal response to saturated fat
- ✓**PPARG:** Also related to diabetes
- ✓**ADIPOQ:** Adipose-specific gene

SNPs Related to Blood Sugar

SNP	Possible impairments
MC4R	Significantly higher blood sugars associated with obesity
IGF1R	Substantial increases in GH, which stimulates the liver to increase IGFI production and also causes insulin resistance in insulin-target tissues
IRS1	Related to tyrosine kinase and increased risk of insulin resistance and type 2 diabetes
MTRR A66G	Associated with metabolic syndrome and insulin resistance
FTO	Effect on not feeling satisfied after eating
LEPR	Leptin receptor gene – associated with snacking behavior
SLC2A2	Sweet tooth
MTHFR C677T	Associated with metabolic syndrome and insulin resistance
ABCC8	The sulfonylurea urea receptor, which helps regulate insulin
GLUT2	Glucose transporter 2, which helps move glucose into the pancreas
GCGR	The glucagon receptor
PPARG	Weight gain with diabetes
TCF7L2	Affects insulin secretion and glucose production
ADIPOQ	Adiponectin – higher risk for obesity and type 2 diabetes
AKT2 R208K R467W	Serine/threonine-protein kinase, related to severe insulin resistance and diabetes
Calpain 10	Associated with type 2 diabetes risk in Mexican Americans
LIPC	Insulin sensitivity response to exercise

Additional Blood Sugar Related SNPs

✓ **Risk for elevated blood sugar:**

- ADCY5
- ADRA2A
- CRY2
- FADS1
- G6PC2
- GCK
- GCKR
- GLIS3
- MADD
- MTNR1B
- PROX1
- SLC2A2
- TCF7L2

✓ **Genes associated with type 1 diabetes:**
http://www.drritamarie.com/go/SNPediaType1Diabetes

Going Deeper: http://www.drritamarie.com/go/SNPCarDiab

SNPs Related to Gut and Brain: 1

SNP	Possible impairments
TAS2R38	Eating disinhibition
ANKK1/DRD2	Effects on amount of effort put out to obtain food
TAS2R38	Bitter taster gene
TAS1R3	Sweet tooth gene
FTO	Effect on not feeling satisfied after eating
LEPR	Leptin receptor gene – associated with snacking behavior
SLC2A2	Sweet tooth
NBPF3	Risk of vitamin B6 deficiency – cofactor for neurotransmitter synthesis
SLC23A1	Risk of decreased vitamin C and increased risk of gastric cancer and IBD
MAO-A	Catalyzes deamination of dopamine, norepinephrine, and serotonin; associated with a variety of psychiatric disorders, including antisocial behavior, obsessive compulsive disorders and anxiety
GAD	Involved in the conversion of glutamate to GABA
LRRK2	Linked to increased risk of Parkinson's
IgA	Immune protection for GI and other mucous membranes

SNPs Related to Gut and Brain: 2

SNP	Description
MC4R	Regulates energy balance
COMT	Can cause IBS due to too much dopamine
CYP27B1	Encodes an enzyme that activates vitamin D
DHCR7	Related to cholesterol and vitamin D synthesis
MTHFR	Affects folate metabolism, which is important for gut repair and methylation
HLA DQ2	Celiac disease and gluten sensitivity risk – most common gene as 90% of all celiac patients have it
HLA DQ8	Celiac disease risk – less prevalent than DQ2
ATG16L1	Increased risk of Crohn's disease
ApoA4	Role in lipid absorption in the intestines.
FUT2	Impact on the ability to secrete ABO antigens in body fluids, i.e., saliva, sweat, tears, gut. "Non-secretors" need more bifidobacteria as they can't make the oligosaccharide that feeds them. On the positive side, non-secretors are more resistant to H. pylori and rotovirus and have a higher risk for Crohn's.
DAO	Histamine breakdown
ACE	Regulates fluid balance and blood pressure

SNPs Related to Gut and Brain: 3

SNP	Description
CYPE21	Related to alcohol metabolism and effects on liver and pancreas
APOA2	Regulates after meal response to saturated fat. C variant - saturated fats WILL make you fat, T variant + saturated fat - WILL NOT make you fat
GSTM3 V224I	Association with late-onset Alzheimer's disease
APOE	Association with Alzheimer's disease and ability to process saturated fat
CYP2C19	Increased risk of GERD
CCL26	Reflux; eosinophilic esophagitis
ADRB3	Possible link to increased risk of gallstones and gallbladder cancer
PPARGC1A	Associated with non-alcoholic fatty liver disease
MCM6	Associated with lactose intolerance
GC	Encodes an enzyme that transports vitamin D in blood to cells. Risk of decreased vitamin D, which affects composition of the bacterial flora in the gut microbiome
VDR	Vitamin D receptor gene
FADS1	Risk of decreased omega-3 and omega-6 fatty acids

FUT2 - rs601338

- ✓ "Non-secretors": ABO blood type not expressed on surface of cell and in body fluids – saliva, sweat, tears, gut
- ✓ 20% of Europeans and Africans are homozygous
- ✓ Lower concentration of Bifido bacteria
- ✓ Risk for Crohn's Disease and inflammation in the gut
- ✓ Elevated B12 in blood
- ✓ Greater resistance to H. pylori and certain viruses
- ✓ Vitamin B12 levels are about 16% lower than in non-carriers
- ✓ Non-secretors are extremely resistant to most strains of norovirus

Reprogramming of gut microbiome energy metabolism by the FUT2 Crohn's disease risk polymorphism. *Tong M, et al*

MetabolicHealing
EMPOWERING YOUR HEALTH

GI Health Genetics

GI Health Genetics analyzes various genes that have been studied to influence the health of the GI tract. Some of these processes include: gut flora activity, vitamin B-12 utilization, phospholipid activity, and various GI-related immune responses.

RS#	Call	Risk Allele	Gene	Variation	Result
rs492602	GG	G	FUT2		
rs601338	AA	A	FUT2		
rs602662	AA	A	FUT2		
rs558660	GG	A	GIF (TCN3)		
rs4244593	GT	T	PEMT		
rs4646406	AT	A	PEMT		
rs7946	TT	C	PEMT		
rs1979277	AG	A	SHMT1	C1420T	
rs9909104	TT	C	SHMT1		
rs12319666	GG	T	SHMT2		
rs34095989	GG	A	SHMT2		
rs10210002	CT	C	ATG16L1		
rs4729142	AG	A	IRF5		

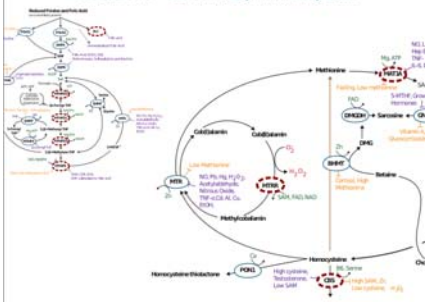
-/- = not present; +/- = one mutation; +/+ = double mutation; +/+* = mutation on the X chromosome in a male

FUT2 rs492602 (+/+) , FUT2 rs601338 (+/+) , FUT2 rs602662 (+/+)
FUT2 (Fucosyltransferase 2) — Involved in H antigen formation through oligosaccharide FuC alpha. Associated with intestinal flora imbalance & Crohn's disease . Mutations in FUT2 may predispose towards low concentrations of bifidobacterium. FUT2 may also be involved in Vitamin B-12 levels.

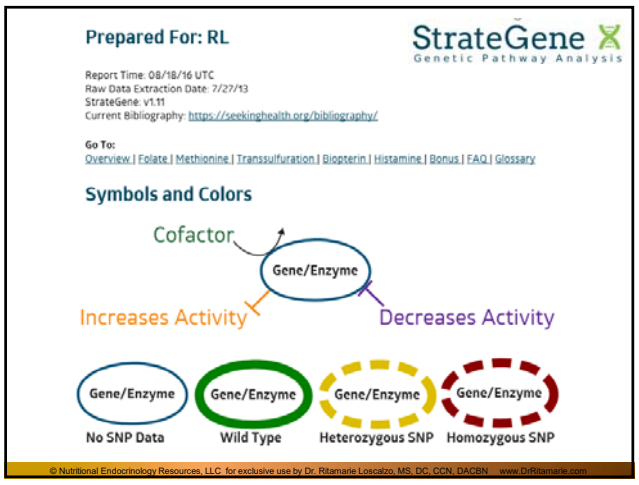
GIF (TCN3) rs558660 (-/-)
GIF (Gastric Intrinsic factor) — Involved in the formation of intrinsic factor for B-12 utilization. Intrinsic factor is produced by the parietal cells of the stomach.

PEMT rs4244593 (+/-) , PEMT rs4646406 (+/-) , PEMT rs7946 (-/-)
PEMT (phosphatidylethanolamine methyltransferase) — Involved in the conversion of the phospholipid ethanolamine into phosphatidylcholine. Phospholipids are components of cellular membranes, and facilitate vital functions in the brain, liver, intestines and nervous system.

StrateGene
Genetic Pathway Analysis



Prepared For: RL
Report Date: 08/18/16


Prepared For: RL
StrateGene
Genetic Pathway Analysis
Report Time: 08/18/16 UTC
Raw Data Extraction Date: 7/27/13
StrateGene: v1.11
Current Bibliography: https://seekinghealth.org/bibliography/
Go To:
Overview | Folate | Methionine | Transsulfuration | Biopterin | Histamine | Bonus | FAQ | Glossary
Symbols and Colors
Cofactor
Gene/Enzyme
Increases Activity
Decreases Activity
Gene/Enzyme
Gene/Enzyme
Gene/Enzyme
Gene/Enzyme
No SNP Data
Wild Type
Heterozygous SNP
Homozygous SNP
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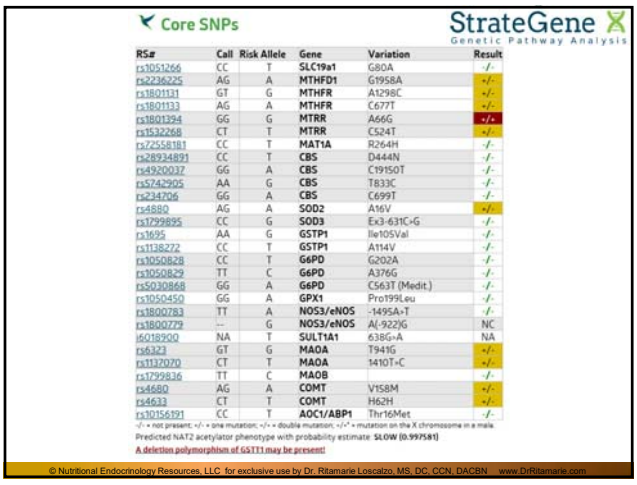
Core SNPs
StrateGene
Genetic Pathway Analysis
RS# Call Risk Allele Gene Variation Result
rs1051266 CC T SLC19a1 G80A -/-
rs2236225 AG A MTHFD1 G1958A +/-
rs1801131 GT G MTHFR A1298C +/-
rs1801133 AG A MTHFR C677T +/-
rs1801394 GG G MTRR A66G +/+
rs1532268 CT T MTRR C524T +/-
rs72558181 CC T MAT1A R264H -/-
rs28934891 CC T CBS D444N -/-
rs4920037 GG A CBS C19150T -/-
rs5742905 AA G CBS T833C -/-
rs234706 GG A CBS C699T -/-
rs4880 AG A SOD2 A16V +/-
rs1799895 CC G SOD3 Ex3-631C>G -/-
rs1695 AA G GSTP1 Ile105Val -/-
rs1138272 CC T GSTP1 A114V -/-
rs1050828 CC T G6PD G202A -/-
rs1050829 TT C G6PD A376G -/-
rs5030868 GG A G6PD C563T (Medit.) -/-
rs1050450 GG A GPX1 Pro199Leu -/-
rs1800783 TT A NOS3/eNOS -1495A>T -/-
rs1800779 -- G NOS3/eNOS Al-922/G NC
i6018900 NA T SULT1A1 638G>A NA
rs6323 GT G MAOA T941G +/-
rs1137070 CT T MAOA 1410T>C +/-
rs1799836 TT C MAOB -/-
rs4680 AG A COMT V158M +/-
rs4633 CT T COMT H62H +/-
rs10156191 CC T AOC1/ABP1 Thr16Met -/-
-/- = not present; +/- = one mutation; +/+ = double mutation; +/* = mutation on the X chromosome in a male.
Predicted NAT2 acetylator phenotype with probability estimate: SLOW (0.997581)
A deletion polymorphism of GSTT1 may be present!
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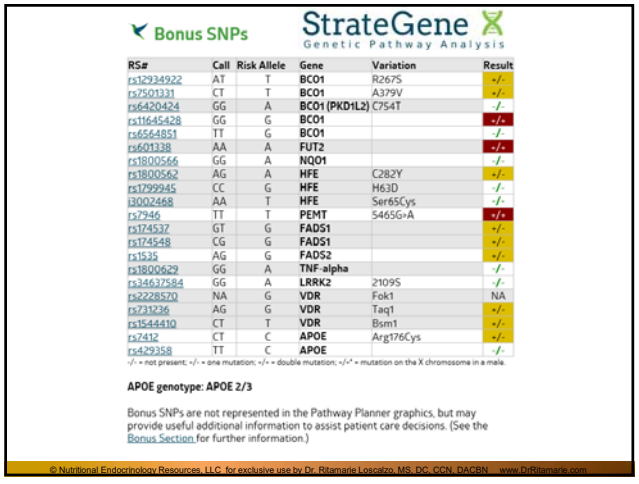
Bonus SNPs
StrateGene
Genetic Pathway Analysis
RS# Call Risk Allele Gene Variation Result
rs12934922 AT T BCO1 R267S -/-
rs7501331 CT T BCO1 A379V +/-
rs6420424 GG A BCO1 (PKD1L2) C754T -/-
rs11645428 GG G BCO1 -/+
rs6564851 TT G BCO1 -/-
rs601338 AA A FUT2 -/+
rs1800566 GG A NQO1 -/-
rs1800562 AG A HFE C282Y +/-
rs1799945 CC G HFE H63D -/-
i3002468 AA T HFE Ser65Cys -/-
rs7946 TT T PEMT S465G>A +/+
rs174537 GT G FADS1 +/-
rs174548 CG G FADS1 +/-
rs1535 AG G FADS2 +/-
rs1800629 GG A TNF-alpha -/-
rs34637584 GG A LRRK2 2109S -/-
rs2228570 NA G VDR Fok1 NA
rs731236 AG G VDR Taq1 +/-
rs1544410 CT T VDR Bsm1 +/-
rs7412 CT C APOE Arg176Cys +/-
rs429358 TT C APOE -/-
-/- = not present; +/- = one mutation; +/+ = double mutation; -/+* = mutation on the X chromosome in a male.
APOE genotype: APOE 2/3
Bonus SNPs are not represented in the Pathway Planner graphics, but may provide useful additional information to assist patient care decisions. (See the Bonus Section for further information.)
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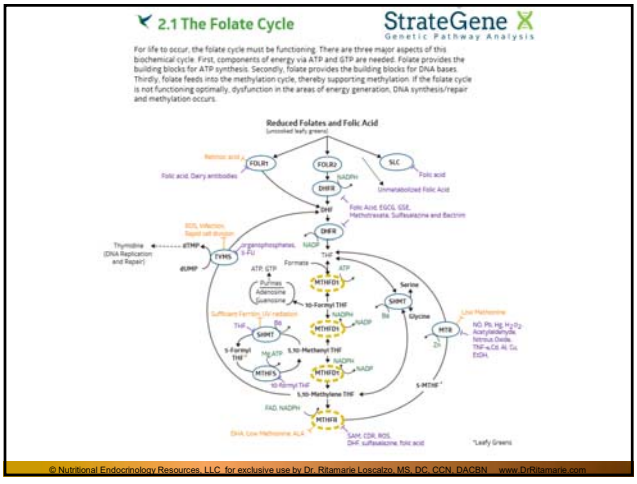
2.1 The Folate Cycle
StrateGene
Genetic Pathway Analysis
For life to occur, the folate cycle must be functioning. There are three major aspects of this biochemical cycle. First, components of energy via ATP and GTP are needed. Folate provides the building blocks for ATP synthesis. Secondly, folate provides the building blocks for DNA bases. Thirdly, folate feeds into the methylation cycle, thereby supporting methylation. If the folate cycle is not functioning optimally, dysfunction in the areas of energy generation, DNA synthesis/repair and methylation occurs.
Reduced Folates and Folic Acid
(uncooked leafy greens)
FOLR1
FOLR2
SLC
DHFR
DHF
DHFR
THF
MTHFD1
SHMT
MTR
MTHFR
MTHFS
MTHFD1
MTHFR
*Leafy Greens
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2.1.1 FOLATE CYCLE SNPS

StrateGene Genetic Pathway Analysis

MTHFR

The MTHFR (Methylenetetrahydrofolate reductase) gene expresses an enzyme that catalyzes the reduction of inactive 5,10-methylenetetrahydrofolate to active 5-methyltetrahydrofolate (5-MTHF). 5-MTHF is critical for the remethylation of homocysteine to methionine, which supports DNA methylation and S-adenosylmethionine (SAMe), neurotransmitter, and phospholipid production.

Factors influencing MTHFR:

Cofactor: FAD

↓ SAM, CDR (cell danger response), ROS, DHF (dihydrofolate), sulfasalzine, folic acid, cocoa (a tbsp or more per day), phenytoin (Dilantin)

↑ DHA and ALA (PUFAs), low methionine

SNP(s) Found:

MTHFR A1298C (+/-, GT) ~20% ↓

- This variant reduces the activity of the MTHFR enzyme by ~20%.
- Associated symptoms and conditions may be neural tube defects (MTHFR 677CT plus MTFHR 1298AC has equal risk for NTD as MTHFR 677TT alone), Alzheimer's disease, schizophrenia.

MTHFR C677T (+/-, AG) ~30% ↓

- This variant reduces the activity of MTHFR by ~30%.
- Associated symptoms and conditions may be premature coronary artery disease, male infertility (especially in Asians), hypertension, congenital heart disease (in Asians/ Caucasians where both mother and child have at least one T allele), and possibly oral clefts, Down syndrome, and fetal anticonvulsant syndrome.

Haplotype Related to MTHFR:

MTHFR A1298C (+/-, GT) **, MTHFR C677T** (+/-, AG) ~50% ↓

This combination implies about 50% reduction in MTHFR activity.

Action Plan for Using Genetic Testing

- ✓Get *23andMe* testing
- ✓Download raw data
- ✓Generate reports and review
  - ➢Genetic Genie Methylation and Detox
  - ➢MTHFR Support
  - ➢Metabolic Healing
  - ➢StrateGene
  - ➢Optional: LiveWello, Promethease
- ✓Join StrateGene Facebook group
- ✓Study with someone who is a few steps ahead

Genomic Testing Services

- ✓ **23andMe**
  - ➢ http://www.23andMe.com
- ✓ **Pathway FIT**
  - ➢ http://www.PathwayFit.com
- ✓ **Holistic Health International**
  - ➢ (Dr. Amy Yasko)
  - ➢ http://www.HolisticHealth.com
- ✓ **Genova Diagnostics**
  - ➢ http://www.GenovaDiagnostics.com
- ✓ **SpectraCell (MTHFR Only)**
  - ➢ https://www.SpectraCell.com/MTHFR-Genotyping

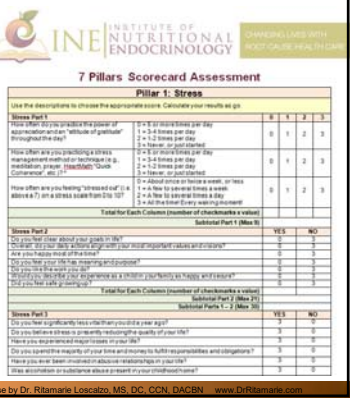
Genomics Interpretation

- ✓www.Geneticgenie.org
- ✓www.MTHFRsupport.com
- ✓Promethease: www.Promethease.com
- ✓LiveWello: www.Livewello.com
- ✓www.MetabolicHealing.com
- ✓StrateGene: www.SeekingHealth.org

Practice Success Guidelines Using Functional Assessments

Identifying Obstacles

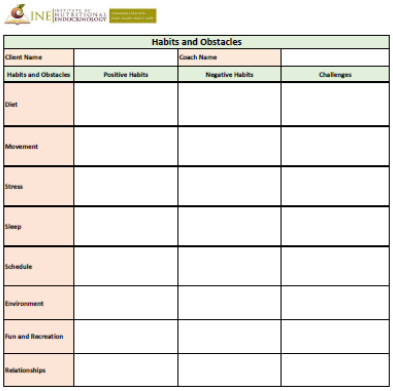
- Stress
- Attitude
- Sleep
- Nutrition
- Exercise
- Environment
- Fun & Relationships



7 Pillars Scorecard

Pillar	Max Score	Your Score	Priority: 1 = low (green) 2 = medium (blue) 3 = high (yellow) 4 = very high (red)
Pillar 1: Stress	1556		
Pillar 2: Attitude and Beliefs	66		
Pillar 3: Sleep	51		
Pillar 4: Nutrition Part 1 - Negative Habits	126		
Pillar 4: Nutrition Part 2 - Positive Habits	66		
Pillar 5: Fitness	21		
Pillar 6: Environment	249		
Pillar 7: Fun	48		

Health Tracker



Nutrient Scorecards

Nutrient Status

Nutrient Balance Assessment Scorecard

Name:

Point Scale:
0 = No, Never/Rarely or almost never
1 = Mild/Sometimes experiences/effects
2 = Moderate/Frequent experiences/effects
3 = Yes, Severe/Daily experiences/effects

Section 1: Essential Fatty Acids	0	1	2	3
Do you experience pain relief with aspirin?	0	1	2	3
Do you crave fatty or greasy foods?	0	1	2	3
Do you have a history of following a low or reduced-fat diet? 0 = never, 1 = years ago, 2 = within last year, 3 = within past 3 months	0	1	2	3
Do you experience tension headaches at the base of your skull?	0	1	2	3
Do you get headaches when out in the hot sun?	0	1	2	3
Do you sunburn easily or suffer sun poisoning?	0	1	2	3
Do your muscles easily fatigue?	0	1	2	3
Do you have dry, flaky skin?	0	1	2	3
Do you ever experience "goose flesh/goose bumps"?	0	1	2	3
Do you have ridged, cracked, and/or peeling nails?	0	1	2	3
Do you have magnesium or vitamin B6 deficiencies that don't respond to supplements?	0			3
Do you have dandruff?	0	1	2	3
Do you have areas of inflamed soft tissue?	0	1	2	3
Do you have inflamed joints?	0	1	2	3
Do you have cracks in your heels?	0	1	2	3
Do you have red cuticles?	0	1	2	3
Do you have acne?	0	1	2	3
Do you have breast cysts?	0	1	2	3
Do you suffer from diarrhea?	0	1	2	3
Do you have dry hair?	0	1	2	3
Do you have Eczema?	0	1	2	3
Do you have excess ear wax?	0	1	2	3
Do you have gall stones?	0	1	2	3
Have you experienced hair loss?	0	1	2	3
Do you suffer from any immune impairment?	0	1	2	3

Nutrient Scorecard

Percent score is calculated by dividing your score by the max score and multiplying by 100. Look up the % score in the chart below to determine priority.

Nutrient	Max Score	Your Score	Your % Score	Priority: 1=low (green) 2=medium (blue) 3=high (yellow) 4=very high (red)
Essential Fatty Acids	99			
Amino Acids	24			
Vitamin A	30			
B Vitamins	45			

Score Interpretation:

- **0-10%:** Overall good balance. Sound nutrition and healthy habits will maintain good balance.
- **11-25%:** In need of a tune up to restore balance before serious illness sets in. Diet and lifestyle improvements should shift to normal.
- **26-50%:** Your nutrient balance is compromised and likely to significantly affect your state of health, well-being, and energy level.
- **51-100%:** Your nutrient balance is severely compromised and requires immediate attention. Take steps now to restore balance to your health, well-being, and energy level.

Nutrient Balance: General Assessment

Date of Assessment						
Essential Fatty Acid Needs						
Amino Acid Needs						

Nutrient Balance: Vitamin Assessment

Date of Assessment						
Vitamin A						
B Vitamins						
Vitamin B1 - Thiamin						
Vitamin B2 - Riboflavin						
Vitamin B3 - Niacin						
Vitamin B5 - Pantothenic acid						
Vitamin B6 - Pyridoxine						
Vitamin B7 - Biotin						
Vitamin B9 - Folic Acid						
Vitamin B12 - Cobalamin						
Vitamin C						
Vitamin D						
Vitamin E						
Vitamin K						

Nutrient Balance: Mineral Assessment

Date of Assessment						
Calcium						
Chromium						
Copper						
Iodine						
Iron						
Magnesium						
Manganese						
Phosphorus						
Potassium						

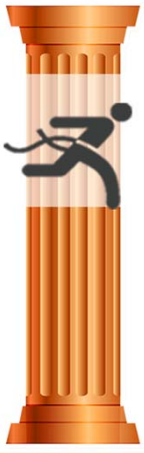
Body System and Organ Assessment						
Date of Assessment: mm/dd/yy						
Digestion - Low Stomach Acid						
Digestion - Excess Stomach Acid						
Digestion - Liver and Gallbladder						
Digestion - Small Intestine and Pancreas						
Digestion - Large Intestine						
Cardiovascular System						
Kidney and Bladder						
Immune System						
Hormone and Gland Assessment						
Date of Assessment						
Adrenal – General						
Adrenal Hypofunction						
Adrenal Hyperfunction (Cortisol high)						
Blood Sugar Dysregulation						
Blood Sugar Handling - Insulin Resistance						
Blood Sugar Handling - Glucose Fluctuation						
Thyroid Low (Hypo)						
Thyroid Excess (Hyper)						
Pituitary						
Male - Prostate						
Male - Hormones						
Female - Hormones						
Female - Menopausal						
Brain and Neurotransmitter Assessment						
Date of Assessment						
General Brain Function						
Serotonin						
Dopamine						
GABA						

Pillar 1: Low Stress

- ✓ Cortisol impacts high level thinking
- ✓ Cortisol depletes neurotransmitter precursors
- ✓ Stress depletes B vitamins
- ✓ Stress impacts motivation, mood, sexual energy, and libido

Solutions:

- ❑ Mini-vacations
- ❑ Qi gong
- ❑ Tapping
- ❑ Meditation
- ❑ Yoga
- ❑ Freeze-Frame
- ❑ Heart Lock-In

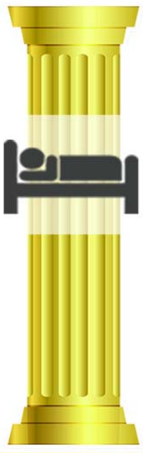


Pillar 2: Strong Values and Vision

- ✓ Connection to values, visions, and goals facilitates healthy choices

Tools:

- ❑ Positive aspects journal
- ❑ Let go of limiting beliefs
- ❑ Portable anchors

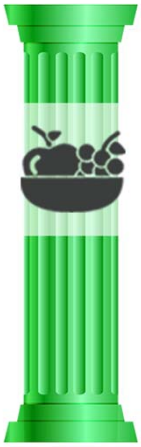


Pillar 3: Sleep

- ✓ Creates more melatonin
- ✓ Aids in repair and detox
- ✓ Helps gut to repair
- ✓ Cleanses neurotoxins
- ✓ Reduces inflammation
- ✓ Improves mental clarity

Actions for Better Sleep:

- ❑ Mini-vacation before bed
- ❑ Sleep "hygiene"
  - ❑ Stop eating before bed
  - ❑ Dim the lights
  - ❑ Turn off electronics
- ❑ Relaxing herbs
- ❑ Supplements can help with sleep



Pillar 4: Nutrition

- ✓ Gut healing foods and herbs
- ✓ Brain healing foods and herbs
- ✓ Nutrients
- ✓ Fun recipes
- ✓ Kitchen setup for success

Tools:

- ❑ Recipes
- ❑ Kitchen setup education
- ❑ Elimination diet

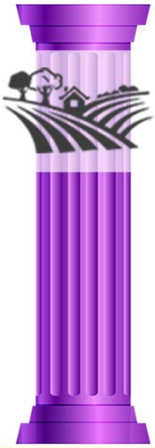
Pillar 5: Fitness

- ✓ Oxygenates and nourishes the brain and gut
- ✓ Reduces stress and balances blood sugar
- ✓ More effective than antidepressants in many people
- ✓ Athletes have a higher diversity of gut microorganisms
- ✓ Beneficial impact of exercise on gut microbiota diversity

Solutions:

- ❑ Daily low intensity aerobic exercise
- ❑ Brain exercises

Gut, Exercise and associated dietary extremes impact on gut microbial diversity; Siobhan F Clarke, et al.



Pillar 6: Environment

- ✓ Hormone disruptors impact gut flora
- ✓ Toxins irritate the brain
- ✓ Liver stress impacts neurotransmitters and digestion

Solutions:

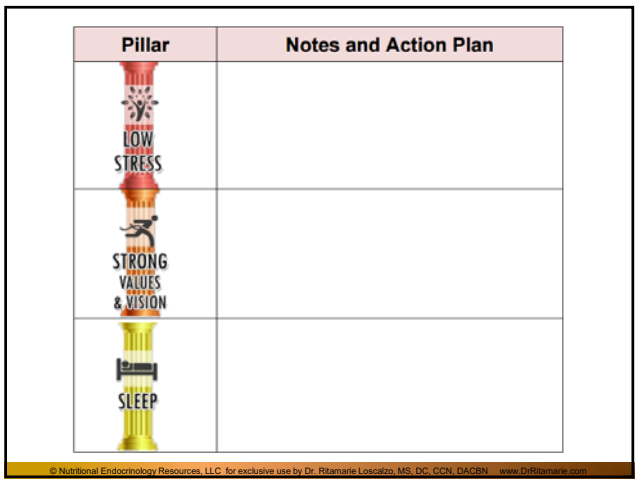
- ❑ Upgrade cosmetics and personal care products
- ❑ Clean up home environment
- ❑ Clean air – filters, windows open
- ❑ Clean water
- ❑ Avoid food allergens, additives, preservatives, and pesticides

Pillar 7: Fun

- ✓ Creates a relaxed and receptive state
- ✓ Activates calming neurotransmitters
- ✓ Activates immune system
- ✓ Feeds the beneficial gut flora
- ✓ Reduces cortisol damage

Solutions

- ❑ Make a list of fun activities
- ❑ Schedule fun on calendar, even if only 5 minutes a day
- ❑ Take regular fun breaks and vacations


Pillar
Notes and Action Plan
LOW STRESS
STRONG VALUES & VISION
SLEEP
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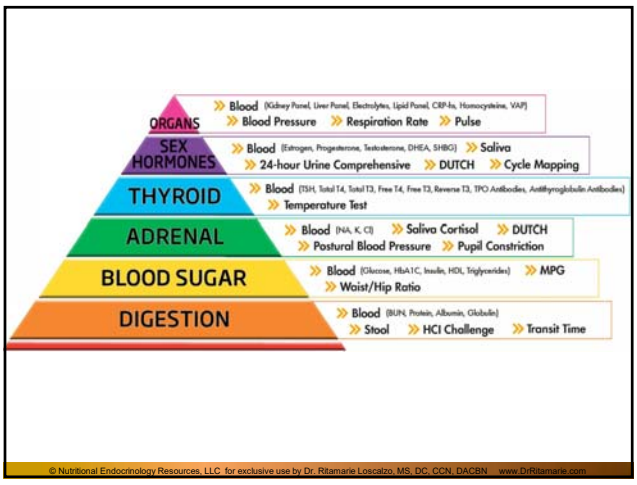
ORGANS
Blood (Kidney Panel, Liver Panel, Electrolytes, Lipid Panel, CRP-hs, Homocysteine, VAP)
Blood Pressure
Respiration Rate
Pulse
SEX HORMONES
Blood (Estrogen, Progesterone, Testosterone, DHEA, SHBG)
Saliva
24-hour Urine Comprehensive
DUTCH
Cycle Mapping
THYROID
Blood (TSH, Total T4, Total T3, Free T4, Free T3, Reverse T3, TPO Antibodies, Antithyroglobulin Antibodies)
Temperature Test
ADRENAL
Blood (NA, K, Cl)
Saliva Cortisol
DUTCH
Postural Blood Pressure
Pupil Constriction
BLOOD SUGAR
Blood (Glucose, HbA1C, Insulin, HDL, Triglycerides)
MPG
Waist/Hip Ratio
DIGESTION
Blood (BUN, Protein, Albumin, Globulin)
Stool
HCl Challenge
Transit Time
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My UNSTOPPABLE HEALTH Roadmap
Name:
Date:
My Current Health Concerns
Top Stressed Body Systems
Top Nutrient Deficiencies
Present/Past Health (Surgery, Trauma, etc.)
My Positive Habits
Obstacles: Keeping Me From My Goals
Stress, Schedule, Limiting Beliefs
Sleep
Diet
Movement/ Physical Limitations
Environment
Fun/ Relationships
Lab Findings
Physical Exam Findings
My Plan to Take Me to My Goals
Week 1
Month 1
90 Days
1 Year
My Core Values
My Goals
My BIG Vision
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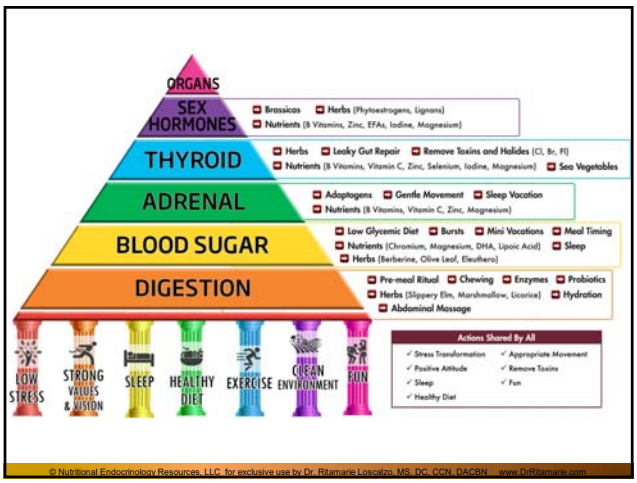
ORGANS
SEX HORMONES
Brassicas
Herbs (Phytoestrogens, Lignans)
Nutrients (B Vitamins, Zinc, EFAs, Iodine, Magnesium)
THYROID
Herbs
Leaky Gut Repair
Remove Toxins and Halides (Cl, Br, Fl)
Nutrients (B Vitamins, Vitamin C, Zinc, Selenium, Iodine, Magnesium)
Sea Vegetables
ADRENAL
Adaptogens
Gentle Movement
Sleep Vacation
Nutrients (B Vitamins, Vitamin C, Zinc, Magnesium)
BLOOD SUGAR
Low Glycemic Diet
Bursts
Mini Vacations
Meal Timing
Nutrients (Chromium, Magnesium, DHA, Lipoic Acid)
Sleep
Herbs (Berberine, Olive Leaf, Eleuthero)
DIGESTION
Pre-meal Ritual
Chewing
Enzymes
Probiotics
Herbs (Slippery Elm, Marshmallow, Licorice)
Hydration
Abdominal Massage
LOW STRESS
STRONG VALUES & VISION
SLEEP
HEALTHY DIET
EXERCISE
CLEAN ENVIRONMENT
FUN
Actions Shared By All
Stress Transformation
Appropriate Movement
Positive Attitude
Remove Toxins
Sleep
Fun
Healthy Diet
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Digestion

- ✓HCl Challenge
- ✓Transit Time
- ✓Stool Testing
- ✓Blood Tests
  - ➢BUN
  - ➢Protein
  - ➢Albumin
  - ➢Globulin

Digestive Assessment Score and Protocol Tracker Chart

Name

Assessment	Ideal Score	First Assessment Date YYYY-MM-DD	Score of First Assessment	Priority: Very High High Med Low	Protocols Started Date YYYY-MM-DD	Protocols Completed Date YYYY-MM-DD	Score After Protocols
Low stomach acid	<10%						
Excess stomach acid	<10%						
Pancreas/small intestine	<10%						
Large intestine	<10%						
Liver/gallbladder	<10%						
Candida/dysbiosis	<20						
Leaky gut	0						
SIBO	<20						

Ideal Score: Congratulations! Follow the "General Healthy Gut Guidelines" to maintain a healthy digestive tract.

Low Score: It could be helpful to follow the protocols from the "Gut Healing Protocols Table".

Medium, High, or Very High Score: You should follow the protocols indicated in the "Gut Healing Protocols Table".

Gut Healing Protocols Table

FOCUS/ CONDITION / PROTOCOLS	Low Stomach Acid	Excess Stomach Acid	Small Intestine and Pancreas	Large Intestine	Liver / Gallbladder	Candida / Dysbiosis	Leaky Gut and Inflammatory Bowel Disease	FODMAP / Specific Carbohydrate Sensitivity (SCD)	SIBO
Gut Rejuvenator drink		Monitor – remove citrus or apple cider vinegar if it aggravates							
Green drinks							May need to restrict to juices or cooked and blended greens if severe	Replace restricted greens with allowed	Replace restricted greens with allowed
Pre-meal ritual, chewing, calm meals									
Remove gut hurting foods									
Elimination diet – food sensitivities									
Add gut healing foods							May need to restrict to cooked and pureed	Modify to only include the allowed foods	Restrict to FODMAP and SCD allowed foods and consider elemental diet
HCL challenge		NO					Caution		
Bitters plus zinc		Caution						Limit to allowed	Limit to allowed
Enzymes		Caution							
Gut soothing Herbs - mucilaginous								Some may not be tolerated – Modified SCD chart	Some may not be tolerated – Modified SCD chart
Antispasmodic herbs								Limit to allowed	Limit to allowed
Carminative herbs								Limit to allowed	Limit to allowed
Candida parasite cleanse									
Leaky gut repair protocol									
Liver / gallbladder cleanse									
Probiotics									Not in early stages
Prebiotics								Caution	Caution
Cholagogues (some also stimulate HCl)		Caution- some stimulate HCl						Limit to allowed	Limit to allowed

Stool Testing: 1

BACTERIOLOGY CULTURE

Expected/Beneficial flora	Commensal (Imbalanced) flora	Dysbiotic flora
3+ Bacteroides fragilis group	1+ Beta strep, not group A or B	
4+ Bifidobacterium spp.	2+ Citrobacter freundii complex	
NG Escherichia coli	1+ Citrobacter freundii complex,isolate 2	
NG Lactobacillus spp.	2+ Enterobacter cloacae complex	
NG Enterococcus spp.	3+ Gamma hemolytic strep	
	1+ Staphylococcus aureus	
NG Clostridium spp.		

NG = No Growth

MICROSCOPIC YEAST

Result: None — Expected: None - Rare

The microscopic finding of yeast in the stool is helpful in identifying whether there is proliferation of yeast. Rare yeast may be normal; however, yeast observed in higher amounts (few, moderate, or many) is abnormal.

YEAST INFORMATION

Yeast normally can be found in small quantities in the skin, mouth, intestine and mucocutaneous junctions. Overgrowth of yeast can infect virtually every organ system, leading to an extensive array of clinical manifestations. Fungal diarrhea is associated with broad-spectrum antibiotics or alterations of the patient's immune status. Symptoms may include abdominal pain, cramping and irritation. When investigating the presence of yeast, disparity may exist between culturing and microscopic examination. Yeast are not uniformly dispersed throughout the stool, this may lead to undetectable or low levels of yeast identified by microscopy, despite a cultured amount of yeast. Conversely, microscopic examination may reveal a significant amount of yeast present, but no yeast cultured. Yeast does not always survive transit through the intestines rendering it unviable.

Sample 3

None Ova or Parasites

illness and fatigue. Chronic parasitic infections can also be associated with increased intestinal permeability, irritable bowel syndrome, irregular bowel movements, malabsorption, gastritis or indigestion, skin disorders, joint pain, allergic reactions, and decreased immune function.

In some instances, parasites may enter the circulation and travel to various

GIARDIA/CRYPTOSPORIDIUM IMMUNOASSAY

	Within	Outside	Reference Range
Giardia intestinalis	Neg		Neg
Cryptosporidium	Neg		Neg

Giardia intestinalis (lamblia) is a protozoan that infects the small intestine and is passed in stool and spread by the fecal-oral route. Waterborne transmission is the major source of giardiasis.

Cryptosporidium is a coccidian protozoa that can be spread from direct person-to-person contact or waterborne transmission.

Stool Testing: 2

	Within	Outside	Reference Range
DIGESTION / ABSORPTION			
Elastase	440		> 200 µg/mL
Fat Stain	Few		None - Mod
Muscle fibers	None		None - Rare
Vegetable fibers	Rare		None - Few
Carbohydrates	Neg		Neg
INFLAMMATION			
Lactoferrin	2.6		< 7.3 µg/mL
Calprotectin*		66	10 - 50 µg/g
Lysozyme*	271		<= 600 ng/mL
White Blood Cells	None		None - Rare
Mucus	Neg		Neg
IMMUNOLOGY			
Secretory IgA*		39.7	51 - 204 mg/dL

Elastase findings can be used for the diagnosis or the exclusion of exocrine pancreatic insufficiency. Correlations between low levels and chronic pancreatitis and cancer have been reported. **Fat Stain:** Microscopic determination of fecal fat using Sudan IV staining is a qualitative procedure utilized to assess fat absorption and to detect steatorrhea. **Muscle fibers** in the stool are an indicator of incomplete digestion. Bloating, flatulence, feelings of "fullness" may be associated with increase in muscle fibers. **Vegetable fibers** in the stool may be indicative of inadequate chewing, or eating "on the run". **Carbohydrates:** The presence of reducing substances in stool specimens can indicate carbohydrate malabsorption.

Lactoferrin and **Calprotectin** are reliable markers for differentiating organic inflammation (IBD) from function symptoms (IBS) and for management of IBD. Monitoring levels of fecal lactoferrin and calprotectin can play an essential role in determining the effectiveness of therapy, are good predictors of IBD remission, and can indicate a low risk of relapse. **Lysozyme*** is an enzyme secreted at the site of inflammation in the GI tract and elevated levels have been identified in IBD patients. **White Blood Cells** (WBC) and **Mucus** in the stool can occur with bacterial and parasitic infections, with mucosal irritation, and inflammatory bowel diseases such as Crohn's disease or ulcerative colitis.

Secretory IgA* (sIgA) is secreted by mucosal tissue and represents the first line of defense of the GI mucosa and is central to the normal function of the GI tract as an immune barrier. Elevated levels of sIgA have been associated

Blood Tests Suggesting Digestive Imbalance

- Total Protein
- Globulin
- BUN
- Phosphorus
- Creatinine
- Iron
- Calcium
- Sodium
- Uric Acid
- Alkaline Phosphatase
- GGT
- Hematocrit
- WBC
- Neutrophil
- Monocytes
- Lymphocytes
- Eosinophils

Blood Sugar

- ✓MPG: Map Postprandial Glucose
- ✓Waist to Hip Ratio
- ✓Blood Tests
  - ➢Glucose
  - ➢HbA1c
  - ➢Insulin
  - ➢Antibodies
  - ➢HDL
  - ➢Triglycerides
  - ➢HDL/Triglyceride Ratio

Blood Glucose Lab Testing

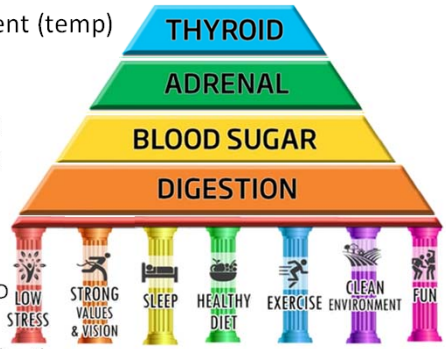
	Normal	Insulin Resistance	Metabolic Syndrome	Diabetes
Fasting Glucose	75-89	90-119	>=100	>=120
Triglycerides	>65	>90	>110	>110
HDL	50-90	<65	<55	<55
Fasting Insulin	2-5	Normal or >5 – varies on stage	>5	>5
Hemoglobin A1c	4.5-5%	5.3-6.5%	>5.7%	>5.7%

Adrenal

- ✓Saliva Cortisol and DHEA
- ✓DUTCH Test
- ✓Blood Tests
  - ➢Sodium
  - ➢Potassium
  - ➢Chloride

Thyroid

- ✓Self-Assessment (temp)
- ✓Blood Tests
  - ➢TSH
  - ➢Total & Free T4
  - ➢Total & Free T3
  - ➢Reverse T3
  - ➢Cholesterol
  - ➢Homocysteine
  - ➢Vitamin A and D
  - ➢TPO Ab
  - ➢Antithyroglobulin Ab

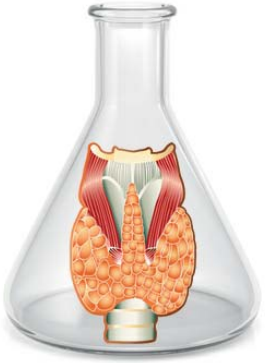


Thyroid Self-Assessment

- ✓**Symptom Survey**
- ✓**Physical Signs:**
  - ➢Cold hands and feet
  - ➢Loss of lateral 1/3 of eyebrow
  - ➢Dry skin and hair
  - ➢Scalloped edges and teeth marks on tongue
  - ➢Eyes "bug-out"
- ✓**Basal Body Temperature:**
  Broda Barnes
- ✓**Average Body Temperature:**
  Wilson's Temperature Syndrome

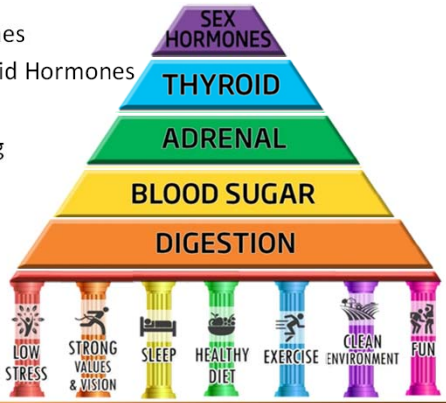
Thyroid Lab Analysis

- ✓TSH
- ✓Total T4 (thyroxine)
- ✓Total T3 (triiodothyronine)
- ✓Free T4
- ✓Free T3
- ✓Thyroid Antibodies
  - ➢Thyroid Peroxidase
  - ➢Antithyroglobulin
- ✓Reverse T3
- ✓Vitamin A
- ✓Vitamin D
- ✓Cholesterol



Sex Hormones

- ✓ Saliva Hormones
- ✓ 24-Hour Steroid Hormones
- ✓ DUTCH
- ✓ Cycle Mapping
- ✓ Blood Tests
  - ➢ Estrogen
  - ➢ Progesterone
  - ➢ Testosterone
  - ➢ DHEA
  - ➢ SHBG



Female Hormone Testing

Blood Testing

- Progesterone
- Pregnenolone
- Estrogen
- Testosterones
- DHEA-S
- Thyroid
- Estriol

Specialty Testing

- **Female Hormone Panel - Saliva**
  - Estradiol x 11
  - Progesterone x 11
  - Testosterone average
  - DHEA
  - LH x5 (expanded panel)
  - FSH x5 (expanded panel)
- **24-Hour Urine Comprehensive**
- **Dried Urine 4 Collection Test**
- **Fatty Acid Profile**
- **Adrenal Stress Index**

Male Hormone Testing

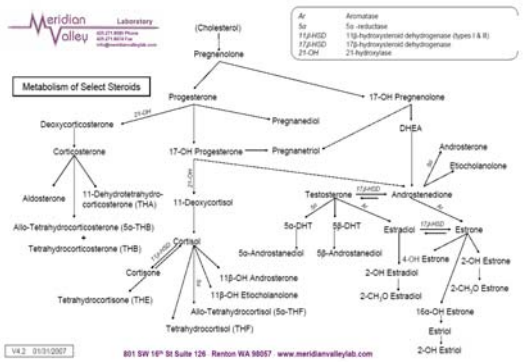
Blood Testing

- DHEA-S
- Testosterone
- Dihydrotestosterone
- Creatinine +
- Monocytes +
- PSA
- Progesterone
- Estrogen
- Thyroid

Specialty Testing

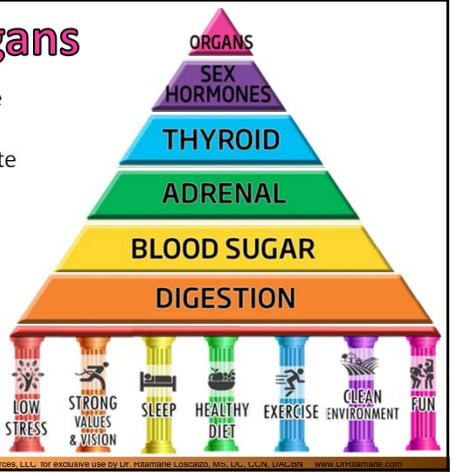
- **Male Hormone Panel - Saliva**
  - DHEA
  - Androstenedione
  - Testosterone
  - Dihydrotestosterone
  - Estrone
  - Progesterone
  - LH (expanded panel)
  - FSH (expanded panel)
- **24-Hour Urine Comprehensive**
- **Dried Urine 4 Collection Test**
- **Fatty Acid Profile**
- **Adrenal Stress Index**

24-Hour Urine Steroid Test



Organs

- ✓ Blood Pressure
- ✓ Pulse
- ✓ Respiration Rate
- ✓ Blood Tests
  - ➢ Kidney Panel
  - ➢ Liver Panel
  - ➢ Lipid Panel
  - ➢ Electrolytes
  - ➢ Hs-CRP
  - ➢ Homocysteine
  - ➢ Iron and Ferritin
  - ➢ Detailed cholesterol particle test



Lab Testing Resources

✓ **Blood Testing:**

Direct Labs: http://www.DirectLabs.com/drritamarie

- All blood tests
- Some functional tests: Genova, Doctor's Data

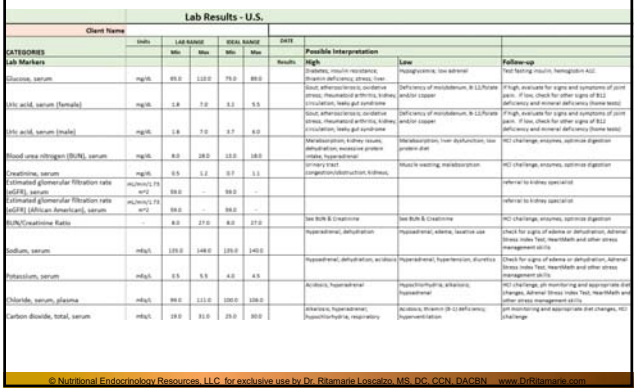
✓ **Saliva Adrenal Stress Testing:**

- Genova: http://www.gdx.net, via www.directlabs.com
- BioHealth: http://www.biohealthlab.com
- ZRT Labs: www.zrtlab.com

✓ **Steroid Hormones with Metabolites:**

- Meridian Valley: http://www.meridianvalleylab.com
- Genova: http://www.gdx.net, via www.directlabs.com
- Precision Analytical: https://dutchtest.com

Lab Testing Handout



Lab Results - U.S.

Client Name								
	Units	Lab Range		Ideal Range		Date		
CATEGORIES		Min	Max	Min	Max		Possible Interpretation	
Lab Markers						Results	High	Low
Glucose, serum	mg/dL	65.0	110.0	75.0	86.0		Diabetes, insulin resistance, thiamin deficiency, stress, liver	Hypoglycemia, low adrenal
Uric acid, serum (female)	mg/dL	1.8	7.0	3.1	5.5		Gout, atherosclerosis, oxidative stress, rheumatoid arthritis, kidney, circulation, leaky gut syndrome	Deficiency of molybdenum, B-12/folate and/or copper
Uric acid, serum (male)	mg/dL	1.8	7.0	3.7	6.0		Gout, atherosclerosis, oxidative stress, rheumatoid arthritis, kidney, circulation, leaky gut syndrome	Deficiency of molybdenum, B-12/folate and/or copper
Blood urea nitrogen (BUN), serum	mg/dL	8.0	18.0	13.0	16.0		Metabsorption, kidney issues, dehydration, excessive protein intake, hyperadrenal	Metabsorption, liver dysfunction, low protein diet
Creatinine, serum	mg/dL	0.5	1.2	0.7	1.1		primary tract congestion/obstruction, kidneys,	Muscle wasting, malabsorption
Estimated glomerular filtration rate (eGFR), serum	mL/min/1.73 m^2	59.0	-	99.0	-			
Estimated glomerular filtration rate (eGFR) (African American), serum	mL/min/1.73 m^2	59.0	-	94.0	-			
BUN/Creatinine Ratio	-	8.0	27.0	8.0	27.0		See BUN & Creatinine	See BUN & Creatinine
Sodium, serum	mEq/L	135.0	148.0	135.0	140.0		Hyperadrenal, dehydration	Hypoadrenal, edema, laxative use
Potassium, serum	mEq/L	3.5	5.5	4.0	4.5		Hyperadrenal, dehydration, acidosis	Hyperadrenal, hypertension, diuretics
Chloride, serum, plasma	mEq/L	99.0	111.0	100.0	108.0		Acidosis, hyperadrenal	Hypochlorhydria, alkalosis, hypoadrenal
Carbon dioxide, total, serum	mEq/L	19.0	31.0	25.0	30.0		Alkalosis, hyperadrenal, hypochlorhydria, respiratory	Acidosis, thiamin (B-1) deficiency, hyperventilation

Client Name								
	Units	Lab Range		Ideal Range		Date		
CATEGORIES		Min	Max	Min	Max		Possible Interpretation	
Lab Markers						Results	High	Low
Glucose, serum	mg/dL	65.0	110.0	75.0	86.0		Diabetes, insulin resistance, thiamin deficiency, stress, liver	Hypoglycemia, low adrenal
Uric acid, serum (female)	mg/dL	1.8	7.0	3.1	5.5		Gout, atherosclerosis, oxidative stress, rheumatoid arthritis, kidney, circulation, leaky gut syndrome	Deficiency of molybdenum, B-12/folate and/or copper
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Estimated glomerular filtration rate (eGFR) (African American), serum	mL/min/1.73 m^2	59.0	-	94.0	-			
BUN/Creatinine Ratio	-	8.0	27.0	8.0	27.0		See BUN & Creatinine	See BUN & Creatinine
Sodium, serum	mEq/L	135.0	148.0	135.0	140.0		Hyperadrenal, dehydration	Hypoadrenal, edema, laxative use
Potassium, serum	mEq/L	3.5	5.5	4.0	4.5		Hyperadrenal, dehydration, acidosis	Hyperadrenal, hypertension, diuretics
Chloride, serum, plasma	mEq/L	99.0	111.0	100.0	108.0		Acidosis, hyperadrenal	Hypochlorhydria, alkalosis, hypoadrenal
Carbon dioxide, total, serum	mEq/L	19.0	31.0	25.0	30.0		Alkalosis, hyperadrenal, hypochlorhydria, respiratory	Acidosis, thiamin (B-1) deficiency, hyperventilation

Bringing It All Home

SHINE CONFERENCE
with Dr. Ritamarie Loscalzo (MS, DC, CCN, DACBN)
SCIENTIFIC AND HOLISTIC INVESTIGATION OF NUTRITIONAL ENDOCRINOLOGY


Be Your Brilliant and Beautiful Self and Go Out and Change Lives!
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