Fagron genomics

Gene Comprehensive Nutrigenomic Report

Accession Number: ##########
Specimen Collected: ##/##/####
Specimen Received: ##/##/####
Report Generated: February 27, 2025
Specimen Type: Buccal Swab
Provider: ######### #########
Patient Name: ###### ######
Patient DOB: ##/##/####
Patient Gender: Male

Do not make any decisions about your health solely based on the information contained in this report. Always consult with a licensed and experienced health practitioner when you receive this report.

Fagron Genomics US | 844-258-5564 | FagronGenomicsUS.com
Lab | 807 Las Cimas Pkwy, Suite 145 | Austin, TX 78746
Laboratory Director: James W. Jacobson, Ph.D

– 46 – Male

(-/-) Normal Risk | (-/+) Medium Risk | (+/+) High Risk

rsID	Gene	Genetic Result	Therapeutics Associated With Positive Result	Highly Recommended Therapeutics - Designs for Health Formulas	Provider Discretion As Needed Formula Recommendations	Lifestyle Recommendations	Laboratory Recommendations
INFLAMMATORY							
	C3	T/T (+/+)	Anti-Inflammatory Therapy: Curcumin, Omega-3 Fatty Acids, Resveratrol, Quercetin, Low Dose Naltrexone (LDN), CBD Oil	**Inflammatone™** **SPM Supreme™** **ImmunoMod-A™ OR Curcum-Evail®** **BioFizz Immune®** **OmegaAvailTM Hi-Po**	CBD Oil Pregnenolone CRT™ if Inflammation Is Present Tegricel® Colostrum Prescription Low Dose Naltrexone (LDN)	Consider Anti-inflammatory Diet and Lifestyle	**General Inflammatory Markers:** Serum High Sensitivity C-Reactive Protein, Serum Iron and Ferritin, Erythrocyte Sedimentation Rate, Serum Complement C3, Serum Interleukin 6 Lymphocyte Profile AND/OR Antibody Testing **Additional Options:** Adrenal Stress Profile, Sex Hormone Panel, Full Thyroid Panel, Food Allergy Panel, Comprehensive Micronutrient Testing, Microbial Titer (Candida, Epstein-Barr Virus, etc.), Toxic Metal Testing, Environmental Allergy Testing
	CD14	A/A (+/+)					
	IL5	G/G (+/+)					
	IL13	C/C (-/-)					
	STAT4	C/G (+/-)					
	IL6	C/C (-/-)					
	TNF	G/G (-/-)					
	CTLA4	A/G (+/-)					
	NOS2	A/G (+/-)	Inducible Nitric Oxide Synthase (iNOS) Activity, Anti-Infectives, Beta Glucans	**Immunitone Plus™**		Increased iNOS Activity May Promote Higher Levels of Inflammation	

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EXTERNAL INFLAMMATORY							
Histamine Sensitivity							
	AOC1	C/T (+/-)	Poor Ability to Break Down External Histamine				
Gluten Sensitivity							
	HLA DQA1	C/C (-/-)	High Risk of Gluten and Casein Sensitivity, Broad Spectrum Enzyme				
	HLA DQB1	T/T (-/-)					
Microbiome Stability							
	FUT2	G/G (+/+)	Prebiotics and Probiotics Needed	**ProBioMed™** **GI Microb-X™ if Microbiome is Disrupted**		Consider Consumption of Prebiotic and Probiotic Foods	Microbiome Testing, such as **GI Spotlight**, if Digestive Disorders Present
Vitamin D							
	VDR	A/A (+/+)	Vitamin D, Vitamin K	**D-Evail™ 10K OR** **D-Evail™ Supreme**			Consider Checking Vitamin D Levels OR Comprehensive Micronutrient Testing
AUTOPHAGY							
	ATG12	C/C (+/+)	Curcumin, Lithium Orotate, D-Chiro-Inositol, Catechins, Resveratrol, Caffeine, 12 Hour Fasting	**Resveratrol Supreme** **Sensitol™**	GlucoSupreme™ Herbal OR Chromium Synergy™ May Be Beneficial if Blood Sugar Control Is an Issue	May Have Reduced Blood Sugar Control Intermittent Fasting (12-15 Hours) Exercise Regularly	Routine Blood Sugar, Insulin, and HbA1c
	ATG5	C/C (+/+)					
	ATG16L1	C/T (+/-)					

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MITOCHONDRIA							
	SIRT1	G/G (+/+)	Pterostilbene, Resveratrol, Quercetin, NAD+, Coenzyme Q10, Pyrroloquinoline Quinone (PQQ), L-Carnitine, Ornithine, Magnesium, Calcium	**CellGuard-NR™** to Boost NAD+ Levels and Induce Mitochondrial Biogenesis	**Mitochondria NRGTM** AND/OR **Mito-PQQTM** to Support Mitochondrial Health and Function	Exercise Regularly Caloric Restriction	Organic Acid Testing, such as **Metabolomics SpotlightTM**
	PPARGC1A	T/T (+/+)					
	TFAM	C/G (+/-)					
CoQ10							
	NQO1	G/G (-/-)	Coenzyme Q10, Pyrroloquinoline Quinone (PQQ), Riboflavin				
Oxidative Stress							
	NFE2L2	G/G (-/-)	Pterostilbene, Green Tea (Epigallocatechin Gallate), Turmeric, Sulforaphane, Endurance Exercise	BroccoProtect™ Ultimate Antiox Full Spectrum Stabilized R-Lipoic Acid Supreme™		Consume Antioxidant Rich Diet	
	SOD2	A/G (+/-)	High Dose Antioxidants, Curcumin, Sulforaphane, Vitamin C				
Antioxidants							
	SLC23A1	C/C (-/-)	High Dose Vitamin C				
	TTPA	T/T (+/+)	Vitamin E	**Annatto-E®**		Consume Foods High in Vitamin E	Serum Vitamin E OR Comprehensive Micronutrient Testing

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METHYLATION							
Folate Metabolism							
	SLC19A1	T/C (+/-)	Methyltetrahydrofolate (B9), Riboflavin (B2), Niacinamide (B3)	**L-5-MTHF OR Homocysteine Supreme™**			Complete Blood Count Serum and RBC Folate
	FOLR1	G/G (-/-)					
	DHFR	DEL/INS (+/-)					
	MTHFD1	C/T (+/-)					
	MTHFR A1298C	G/G (+/+)					
	MTHFR C677T	G/G (-/-)					
Vitamin B12 Metabolism							
	TCN1	A/G (+/-)	Methylcobalamin, Adenosylcobalamin	**Tricobalamin™ OR Vitamin B12**	Tricobalamin™ OR Vitamin B12		Serum Vitamin B12
	CUBN	G/G (-/-)					
	TCN2	C/C (-/-)					
	MTRR	G/G (+/+)	Methylcobalamin (B12)				Serum Vitamin B12 AND/OR Plasma Homocysteine

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HOMOCYSTEINE METABOLISM							
Remethylation							
	MTR	A/A (+/+)	Methyltetrahydrofolate, Methylcobalamin, Methionine	**Homocysteine Supreme™**		Avoid Smoking and Heavy Alcohol Consumption	Plasma Methylation Profile OR Plasma Homocysteine Serum Vitamin B12
	BHMT	A/G (+/-)	Choline, Trimethylglycine (Betaine)				Plasma Methylation Profile OR Plasma Homocysteine
Catabolism							
	CBS	G/A (+/-)	Methyltetrahydrofolate, Methylcobalamin, Pyridoxal 5'-Phosphate (B6), Choline, Trimethylglycine, Serine, N-Acetyl Cysteine		Homocysteine Supreme™	Avoid Smoking and Heavy Alcohol Consumption Consider Anti-Inflammatory Diet and Lifestyle	Plasma Methylation Profile OR Plasma Homocysteine
	CTH	G/T (+/-)	N-Acetyl Cysteine, Glutathione, Pyridoxal 5'-Phosphate		N-Acetyl-L-Cysteine OR S-Acetyl Glutathione Synergy, Especially if Exposed to Industrial Toxins, Anesthesia, Alcohol, Etc.	Avoid Smoking and Heavy Alcohol Consumption Avoid Herbicides and Pesticides	

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DETOXIFICATION							
	GSR	G/G (-/-)	Riboflavin, Reduced Glutathione				
	GCLC	G/G (-/-)	Glutathione				
	GSTP1	A/A (-/-)	N-Acetyl Cysteine (NAC), Glutathione				
	NAT2	T/T (-/-)	Silymarin, Alpha Lipoic Acid (ALA), P-5-P, Catechins				

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NEUROTRANSMITTER							
	COMT	A/G (+/-)	Riboflavin (B2), Taurine, Choline, Trimethylglycine (TMG), Dimethylglycine (DMG), Methionine, SAMe, Inositol, L-Methionine				
	MAOA	T (-/NA)	Riboflavin (B2), Taurine, Choline, Trimethylglycine (TMG), Dimethylglycine (DMG), Methionine, SAMe, Inositol, L-Methionine				
	MAOB	C (-/NA)					
	GAD1	C/C (-/-)	Prescription Amantadine, Ketamine, Glycine, N-Acetyl-Cysteine (NAC), Zinc, Magnesium, Oxaloacetate, Elderberry, L-Theanine, Melatonin				
	GAD1	G/G (-/-)					
	TRPM6	T/T (-/-)	Magnesium				

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HEALTH PRECAUTIONS							
Thyroid Health							
	PDE8B	A/A (+/+)	Iodine, Selenium, Increased Risk of Hypothyroidism		Thyroid Synergy™		Thyroid Panel Urinary Iodine OR Comprehensive Micronutrient/Mineral Analysis
Estrogen Conversion							
	CYP19A1	A/C (+/-)	High Activity of Aromatase, Higher Risk of Excess Estrogen Production		Consider DIM-Evail™ OR FemGuard + Balance™ for Women Presenting with Symptoms of Estrogen Dominance	Testosterone Therapy May Produce High Levels of Estrogen	Sex Hormones and Metabolites Panel including Progesterone, Testosterone, and Estrogen
Hypertension Risk							
	ACE	A/G (+/-)	Increased Risk of Salt Retention and Hypertension		HTN Supreme™	Increased Risk of Hypertension and Preeclampsia Salt Restriction, Especially after Age 40	
Caffeine Sensitivity							
	CYP1A2	A/A (-/-)	Caffeine Metabolism: Slow Metabolizer (CC genotype), Intermediate Metabolizer (CA genotype), Rapid Metabolizer (AA genotype)	Less Likely to Benefit from Caffeine due to Rapid Clearance May Result in Excess Consumption of Caffeine			
Clot Risk							
	F5	C/C (-/-)	Increased Risk of Blood Clots				
	F10	A/A (-/-)					

Summary for Pro7

Highly Recommended Therapeutics - Designs for Health Formulas	Provider Discretion: As Needed Formula Recommendations	Lifestyle Recommendations	Laboratory Recommendations
INFLAMMATORY			
• InflammatoneTM • SPM SupremeTM • ImmunoMod-ATM OR Curcum-Evail® • BioFizz Immune® • OmegaAvailTM Hi-Po	• CBD Oil • Pregnenolone CRTTM if Inflammation Is Present • Tegricel® Colostrum • Prescription Low Dose Naltrexone (LDN)	• Consider Anti-inflammatory Diet and Lifestyle	• General Inflammatory Markers: Serum High Sensitivity C-Reactive Protein, Serum Iron and Ferritin, Erythrocyte Sedimentation Rate, Serum Complement C3, Serum Interleukin 6 • Lymphocyte Profile AND/OR Antibody Testing • Additional Options: Adrenal Stress Profile, Sex Hormone Panel, Full Thyroid Panel, Food Allergy Panel, Comprehensive Micronutrient Testing, Microbial Titer (Candida, Epstein-Barr Virus, etc.), Toxic Metal Testing, Environmental Allergy Testing
• Immunitone PlusTM		• Increased iNOS Activity May Promote Higher Levels of Inflammation	
EXTERNAL INFLAMMATORY			
• ProBioMedTM • GI Microb-XTM if Microbiome is Disrupted		• Consider Consumption of Prebiotic and Probiotic Foods	• Microbiome Testing, such as GI Spotlight, if Digestive Disorders Present
• D-EvailTM 10K OR • D-EvailTM Supreme			• Consider Checking Vitamin D Levels OR Comprehensive Micronutrient Testing
AUTOPHAGY			
• Resveratrol Supreme • SensitolTM	• GlucoSupremeTM Herbal OR Chromium SynergyTM May Be Beneficial if Blood Sugar Control Is an Issue	• May Have Reduced Blood Sugar Control • Intermittent Fasting (12-15 Hours) • Exercise Regularly	• Routine Blood Sugar, Insulin, and HbA1c
MITOCHONDRIA			
• CellGuard-NRTM to Boost NAD+ Levels and Induce Mitochondrial Biogenesis	• Mitochondria NRGTM AND/OR Mito-PQQTM to Support Mitochondrial Health and Function	• Exercise Regularly • Caloric Restriction	• Organic Acid Testing, such as Metabolomics SpotlightTM
• BroccoProtectTM • Ultimate Antiox Full Spectrum • Stabilized R-Lipoic Acid SupremeTM		• Consume Antioxidant Rich Diet	
• Annatto-E®		• Consume Foods High in Vitamin E	• Serum Vitamin E OR Comprehensive Micronutrient Testing
METHYLATION			
• L-5-MTHF OR Homocysteine SupremeTM			• Complete Blood Count • Serum and RBC Folate
• TricobalaminTM OR Vitamin B12	• TricobalaminTM OR Vitamin B12		• Serum Vitamin B12 • Serum Vitamin B12 AND/OR Plasma Homocysteine

HOMOCYSTEINE METABOLISM

- Homocysteine SupremeTM

- Avoid Smoking and Heavy Alcohol Consumption

- Plasma Methylation Profile OR Plasma Homocysteine
- Serum Vitamin B12

- Homocysteine SupremeTM
- N-Acetyl-L-Cysteine OR S-Acetyl Glutathione Synergy, Especially if Exposed to Industrial Toxins, Anesthesia, Alcohol, Etc.

- Consider Anti-Inflammatory Diet and Lifestyle
- Avoid Herbicides and Pesticides

DETOXIFICATION

NEUROTRANSMITTER

HEALTH PRECAUTIONS

- Thyroid SynergyTM

- Thyroid Panel
- Urinary Iodine OR Comprehensive Micronutrient/Mineral Analysis

- Consider DIM-EvailTM OR FemGuard + BalanceTM for Women Presenting with Symptoms of Estrogen Dominance

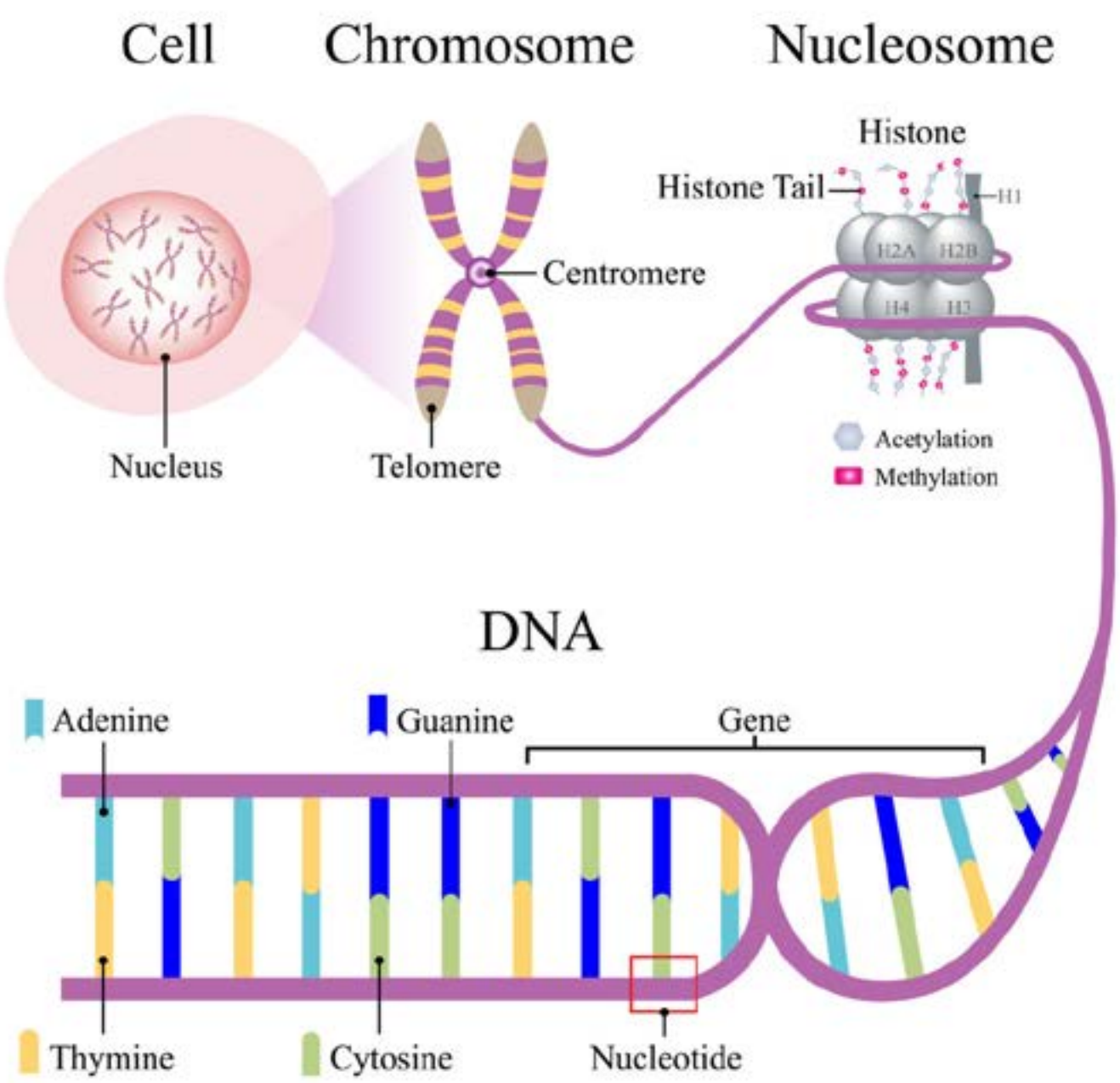
- Testosterone Therapy May Produce High Levels of Estrogen

- Sex Hormones and Metabolites Panel including Progesterone, Testosterone, and Estrogen

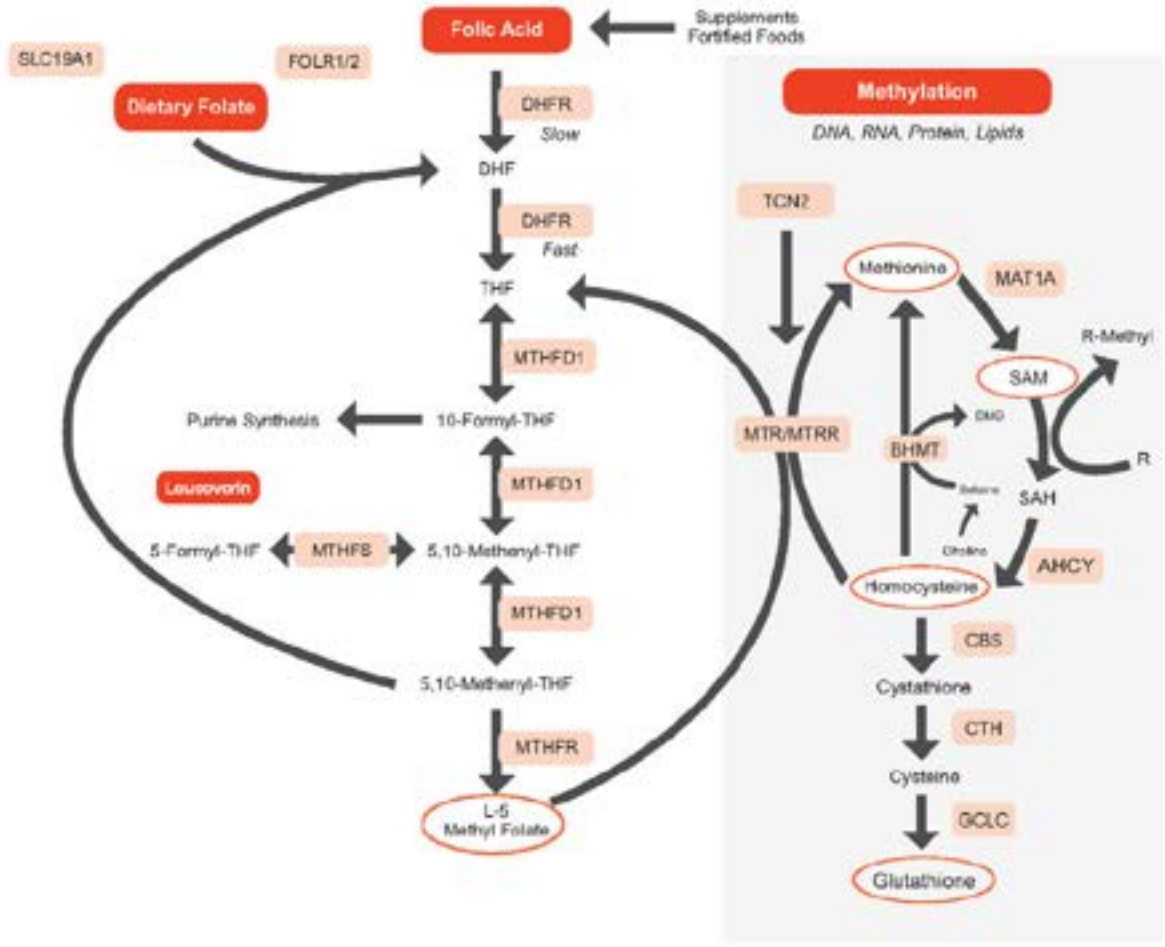
- HTN SupremeTM

- Increased Risk of Hypertension and Preeclampsia
- Salt Restriction, Especially after Age 40

- Less Likely to Benefit from Caffeine due to Rapid Clearance
- May Result in Excess Consumption of Caffeine


Cell
Chromosome
Nucleosome
Histone
Histone Tail
H1
H2A
H2B
H4
H3
Centromere
Nucleus
Telomere
Acetylation
Methylation
DNA
Adenine
Guanine
Gene
Thymine
Cytosine
Nucleotide

METHYLATION



Methylation

- Involves the addition of a methyl group (CH_3)
- Regulates gene expression and repression
- Reduces or removes toxins that eliminate essential nutrients
- Provides nutrients needed for processes such as detoxification, immune regulation, gut health

Methionine

- Used in protein formation and stabilization
- Elevated levels are associated with risk for coronary heart disease, stroke & neurological diseases

Glutathione

- Important for chemical detoxification & proper mitochondrial functioning
- Genes relevant for production include: AHCY, CTH, CGTP1, GSTM1, GSTM3, GSR, MTRR & MTR

5-Methyl Folate

- Important for dopamine and serotonin formation, detoxification and mitochondrial strength
- Genes relevant for production include: DHFR, FOLR1/2, MTHFD1, MTHFR, MTHFS

Homocysteine

- Elevated levels are associated with risk for coronary heart disease, stroke, neurological diseases
- Variants in the methylation pathway can be associated with increased/decreased levels

FOLATE

FOOD SOURCES


Eggs


Citrus Fruits


Leafy Greens


Legumes


Broccoli


Brussel Sprouts


Breads, Cereal, Pastas, Rice

FUNCTIONS (OR BENEFITS AS YOU AGE)

- Maintains structure & function of proteins
- Maintains structure & function of DNA
- Facilitates DNA replication, neurotransmitter production & detoxification

DEFICIENCY CAUSES

- Neural tube defects
- Cardiovascular disease
- Memory problems
- Depression
- Insomnia
- Irritability

VITAMIN B12

FOOD SOURCES


Eggs


Seafood – clams, trout, salmon, tuna


Meats – liver, beef, ham, chicken


Fortified Foods


Swiss cheese


Nori/Seaweed


Nutritional Yeast

FUNCTIONS (OR BENEFITS AS YOU AGE)

- Formation and maintenance of red blood cells (RBCs)
- Facilitates DNA synthesis
- Regulates homocysteine levels (decreases)
- Facilitates neurological functionting

DEFICIENCY & PATHWAY ALTERATIONS

- Increased production of homocysteine
- Decreased breakdown of homocysteine
- Circadian Rhythm Problems
- Cancers
- Memory-related disorders
- Cardiovascular diseases
- Fatigue
- Poor balance
- Mood disorders

VITAMIN D

FOOD SOURCES

Tuna

Mushrooms

Eggs

Mackerel

Milk Products (including fortified alternatives such as almond, coconut, oat, etc.)

BENEFITS AS YOU AGE

Lower Risk of Fractures

Improves Heart Function

Supports Immune System

Speeds Wound Healing

DEFICIENCY CAUSES

- Bone Pain
- Arthritis
- Obesity
- Backache
- Depression
- Diabetes
- Hypertension
- Osteoporosis
- Heart Disease
- Skin Conditions

MITOCHONDRIA

WAYS TO INCREASE MITOCHONDRIAL FUNCTIONING

Build muscle mass (strength conditioning)

Decrease toxin exposure (metals, persistent organic pollutants)

Vitamins
Glutathione
CoQ10
a-lipoic acid + acetyl-l-carnitine
Resveratrol
NAC
Vitamin E
PQQ
Ginkgo biloba
Proanthocyanidins

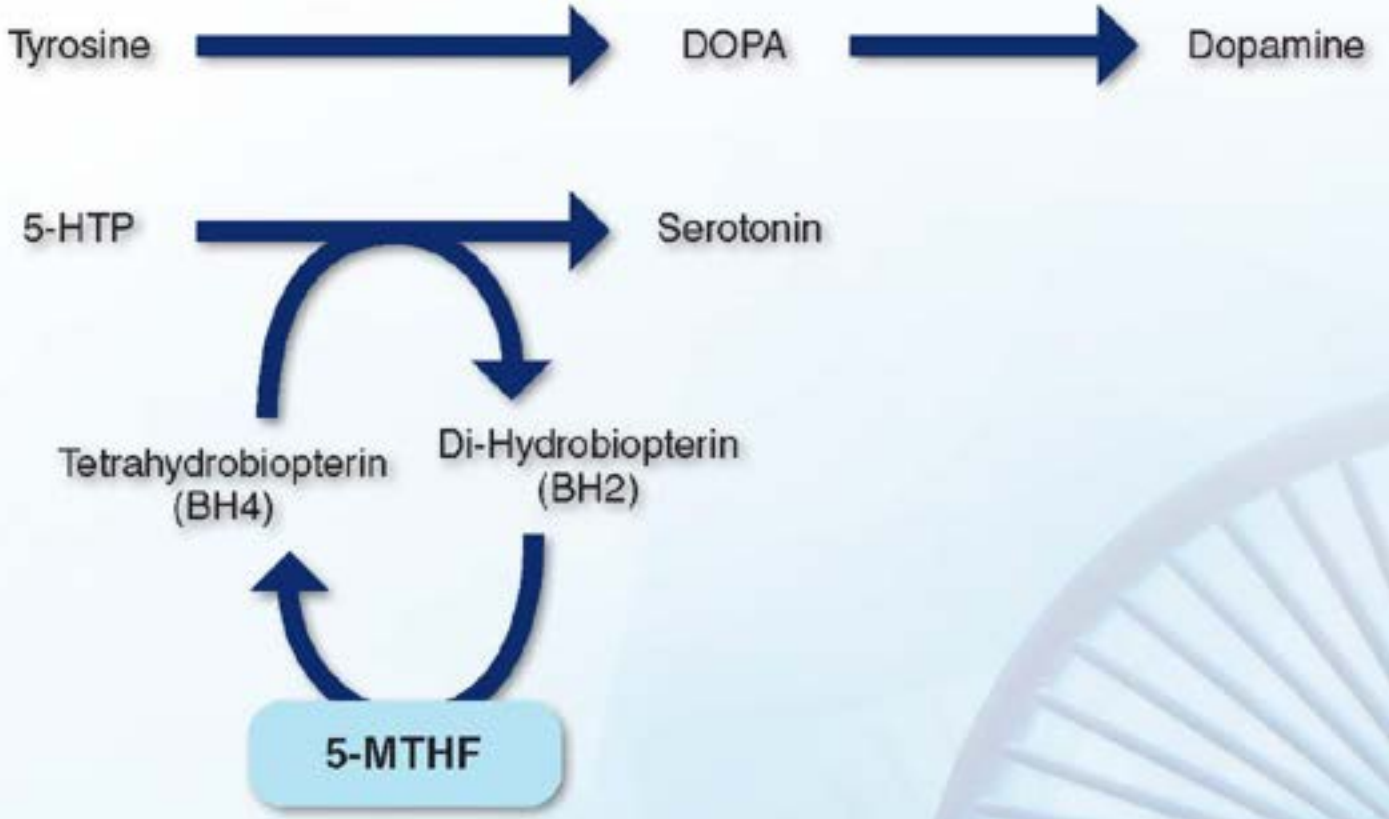
FUNCTIONS (OR BENEFITS AS YOU AGE)

- Energy production for growth, movement & homeostasis
- Programmed cell death for dysfunctional, old cells
- Calcium signaling for neuron excitability, neurotransmission & plasticity (strengthening)

DEFICIENCY CAUSES

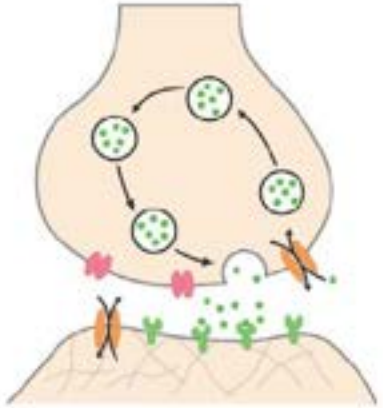
- Early Aging
- Neurological Disorders
- Diabetes
- Developmental Issues
- Psychiatric Disorders
- Cardiovascular Diseases
- Fatigue

5-MTHF & Neurotransmitter Production



NEUROTRANSMITTERS & PATHWAY

TRANSMIT INFORMATION FOR ESSENTIAL PROCESSES SUCH AS DIGESTION, BREATHING, HEARTBEAT, MOVEMENT, PAIN REGULATION ETC.



RELEVANT GENES

- **HTR2, TPH2, SLC6A4, MAO-A** genes are important in the synthesis, breakdown, transport and/or functioning of serotonin
- **COMT, MAO-A, MAO-B** genes are important for the breakdown of serotonin, norepinephrine and/or dopamine
- The **DBH** gene is important for norepinephrine synthesis
- The **GAD1** gene is important for GABA synthesis
- Variants in **COMT, MAO-A, MAO-B and GAD1** genes have been associated with mood, anxiety and focus issues

WAYS TO INCREASE LEVELS

Aerobic Exercise

Dietary Factors

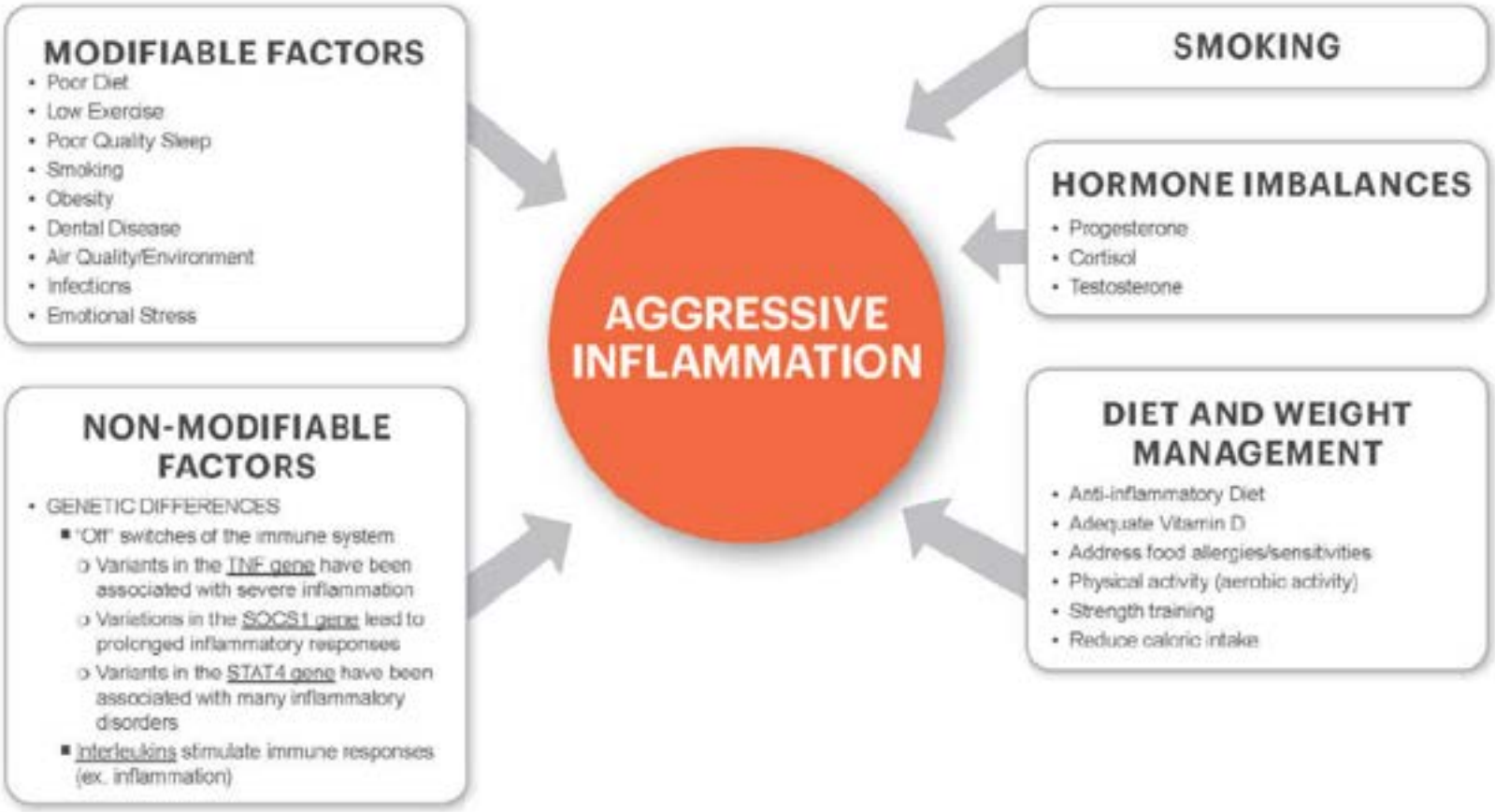
Mediation/Yoga

Increase Sun Exposure

ANTI-INFLAMMATORY

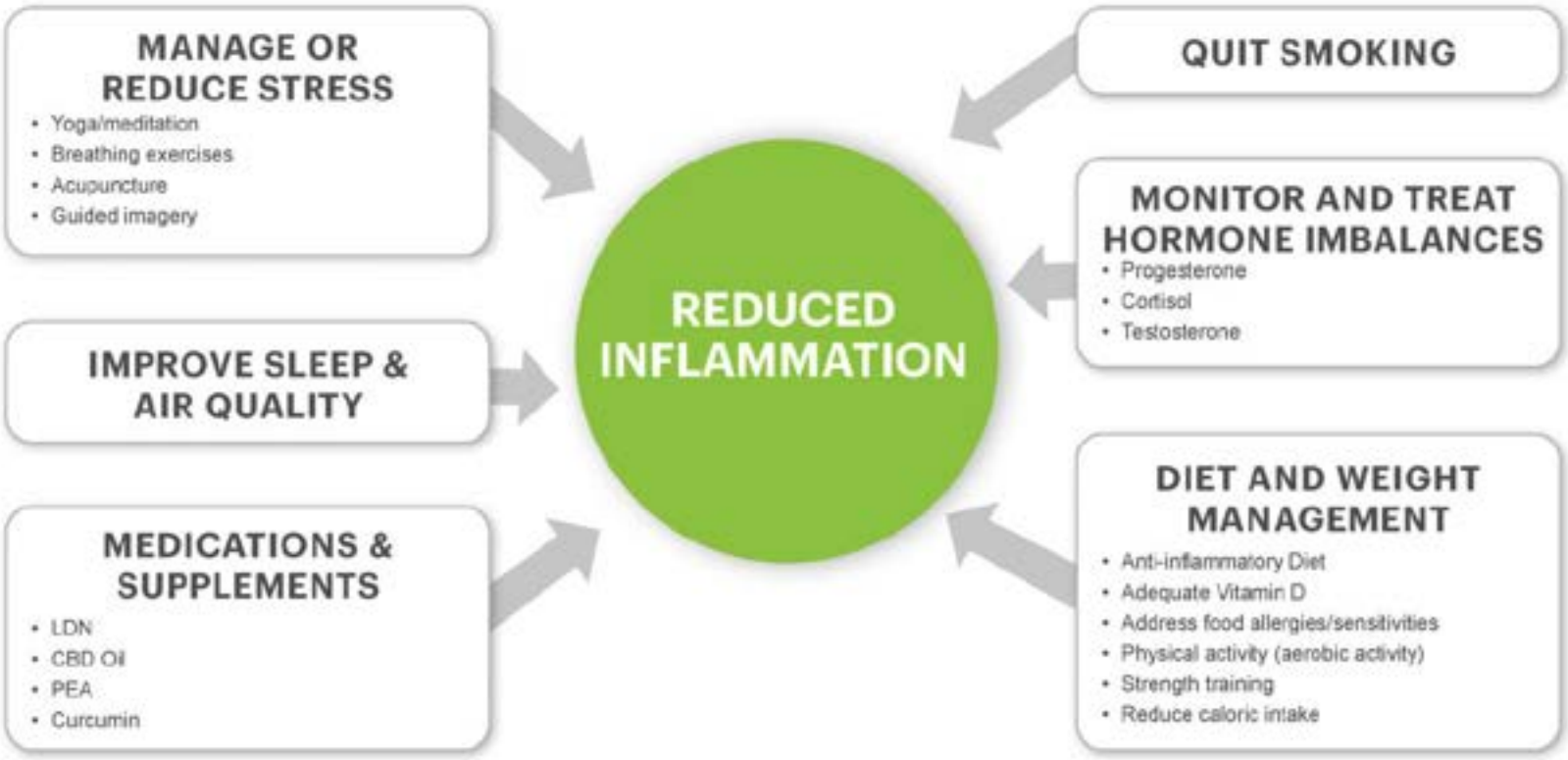
AN IMMUNE SYSTEM RESPONSE TRIGGERED BY HARMFUL STIMULI (EX. PATHOGENS, DAMAGED CELLS, TOXIC COMPOUNDS, IRRADIATION)

DRIVERS OF INFLAMMATION



ANTI-INFLAMMATORY

WAYS TO REDUCE INFLAMMATION



THE IMMUNE SYSTEM & AUTOIMMUNITY

WHAT DOES THE IMMUNE SYSTEM DO?

Prevent or limit infections by distinguishing between healthy and unhealthy cells

KEY PLAYERS & RELEVANT GENES

CYTOKINES

(ex. IL family, TNF-a)

- Helps with immune cell growth, activation, and function
- Interleukins (IL2, IL4, IL5, IL6, IL13, IL23R, IL2RA) stimulate the immune response
- SOCS1 & TNF are involved in cytokine signaling for the inflammatory response

LYMPHOCYTES

(ex. B, T & Natural Killer cells)

- Identify & kill infected cells
- Produces antibodies to fight future infections
- IDO1, CTLA4 & CD14 are involved in the suppression of T-cells
- C3, STAT4 & TRAF1 activate, form and/or differentiate T-cells

IMMUNE AGGRESSION

The immune system begins to attack healthy tissue

COMMON SYMPTOMS

Fatigue

Hair loss

Achy muscles

Inflammation

Skin rashes

Pain

Low-grade fever

Numbness and tingling in hands and feet

Trouble concentrating

MALFUNCTIONS LEAD TO

- Chronic inflammation
- Allergic reactions
- Immune aggressive diseases (Inflammatory bowel disease, skin & neurological disorders)

LOW-INFLAMMATORY

FOODS TO EAT

Fruits: strawberries, blueberries, cherries, oranges

Fatty fish: salmon, mackerel, tuna, sardines

Spices - turmeric, ginger

Green leafy vegetables & tomatoes

Dark chocolate

Olive oil

FOODS TO AVOID

Soda & other sugar-sweetened drinks

Dairy products

Fried foods

Red & Processed meats (hotdogs, sausage)

Refined carbohydrates: white bread, pastries

Margarine, shortening, lard

BENEFITS

Reduces inflammation

Reduces risk for cardiovascular disease & Type II diabetes

DETOXIFICATION

GLUTATHIONE IN DETOXIFICATION

Relevant genes for production are AHCY, CTH, GSTP1, GSTM1, GSTM3, GSR, MTRR & MTR

WHY IS IT IMPORTANT?

Maintains health by protecting the body from toxins

Regulates cell production and programmed cell death

Critical role in chemical detoxification

Vital for proper mitochondrial function

DEFICIENCY CAUSES

- Auto-immune diseases
- Cardiovascular diseases
- Neurodegenerative diseases
- Cell death
- Poor mitochoncrial function

WAYS TO INCREASE GLUTATHIONE

- Limit alcohol intake
- N-acetyl-cysteine (NAC)
- Glutathione therapies
- (ie. IV Glutatione, Glutatione suppository, Lipsomal Glutatione)
- Include whey in diet, unless allergic or intolerant
- Methylation Support - if necessary

SUPEROXIDES & ANTIOXIDANTS

- SOD1, SOD2, SOD3 genes are important to transform superoxides to protect against mitochondrial damage
- Reactive Oxygen Species (ROS) can damage mitochondria and cause cell death.
- Antioxidants such as Vitamin A, Vitamin C and Vitamin E act as a defense against ROS

HIGH ANTIOXIDANT DIET

BENEFITS

Protection from oxidative stress

Helps reduce risk of heart disease, cancers & diabetes

Helps maintain functions of the liver, kidney, brain and digestive system

FOODS HIGH IN ANTIOXIDANTS

Dark chocolate

Spices/herbs
(cinnamon, oregano, turmeric, cumin, sage, thyme)

Fruit (berries, red grapes, prunes, apples, cherries, black plums)

Whole grains
(unless gluten free)

Vegetables (artichokes, beets, dark leafy greens)

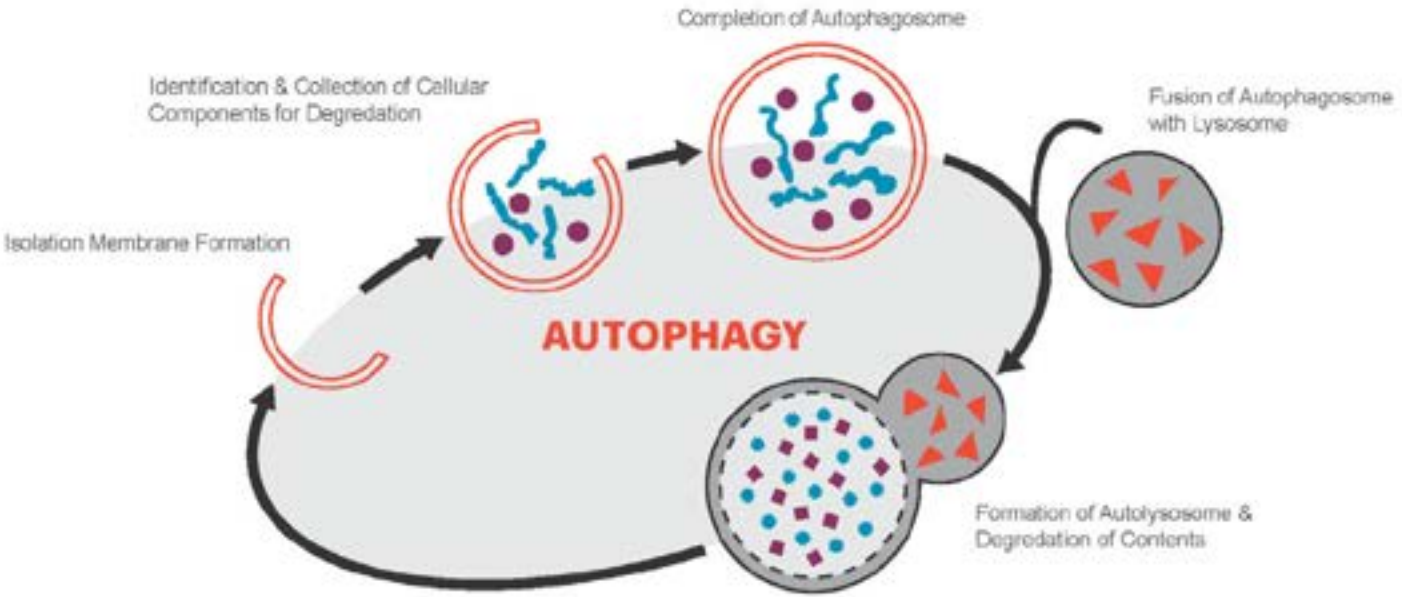
Nuts (pecans, walnut, hazelnut, pistachios, almonds, cashews, macadamias)

Beans
(pinto, red, kidney, black)

Beverages: juices
(apple, tomato, pomegranate, pink grapefruit juice),
teas (green, black)

AUTOPHAGY: Cellular Housekeeping

VARIANTS IN THE ATG GENES HAVE BEEN ASSOCIATED WITH CELLULAR BLOCKAGE



DEFECTS LEAD TO:

- Neurodegenerative Diseases
- Aging
- Heart Disease
- Developmental Disorders
- Type II Diabetes
- Insulin Resistance
- Fatty Liver
- Cancers

WAYS TO INCREASE

Intermittent fasting or low-calorie diet

Routine Exercise

Ketogenic diets (high fat, low carbs)

Medications & Supplements
D-Chiro Inositol (B8)
Metformin

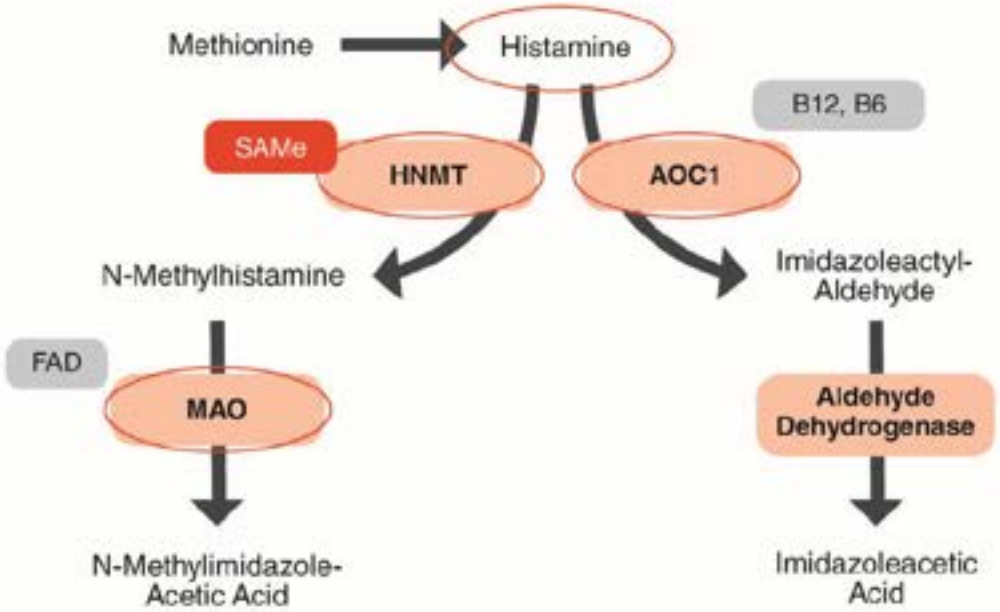
HISTAMINE

HISTAMINE

- Natural substance found in various foods

IMPLICATIONS

- Metabolic Enzymes: amine oxidases (ex. AOC1, MAO, DAO) & HNMT
- High histamine & low amine oxidase activity is associated with:
  - Diarrhea
  - Headaches
  - Nose congestion
  - Asthma
  - Hypotension
  - Arrhythmia
  - Flushing
  - Urticaria (hives)
  - Pruritus (itchy skin)
- Dietary histamine can be rapidly detoxified by amine oxidases, whereas persons with low amine oxidase activity are at risk of histamine toxicity



AOCI & HNMT POLYMORPHISM HISTAMINE

LOW HISTAMINE LEVEL FOODS

Meats & Fish
fresh meat (ex. chicken, turkey,pork and red meat),fresh fish (ex. hake, trout, plaice)

Egg yolk

Fresh fruits
(with the exception of strawberries)

Fresh vegetables

Grains

Milk substitutes
(Coconut milk, rice milk)

Cream cheese, butter

Most cooking oils

Most leafy greens and herbs

Beverages
(non-citric fruit juices, herbal teas)

HIGH HISTAMINE LEVEL FOODS

Egg whites

Processed, cured, smoked and fermented meats/fish (lunch meat, bacon, sausage, pepperoni, canned tuna)

Leftover meat
(After meat is cooked, the histamine levels increase due to microbial action as the meat sits)

Dairy products: All fermented milk products (ex. aged cheeses, yogurt, buttermilk, kefir)

Chocolate, cocoa

Bone broth

Fruits (oranges, grapefruit, lemons, lime, berries, dried fruit)

Vegetables (spinach, tomatoes, eggplant)

Artificial food colors and preservatives

Fermented & vinegar-containing foods
(sauerkraut, kombucha, pickles, relishes, ketchup, prepared mustard)

Spices (cinnamon, chili powder, cloves, nutmeg, curry powder, cayenne)

Beverages (Black Tea, alcohol)

VITAMIN E

VARIANTS IN THE TTPA GENE HAVE BEEN ASSOCIATED WITH VITAMIN E DEFICIENCY

BENEFITS

Promotes a strong immune system

Protects the body from damage against harmful substances called free radicals

Forms red blood cells

Helps prevent: heart diseases, cancers, eye disorders & cognitive decline

Prevents blood clots

DEFICIENCY VS HIGH INTAKE

Deficiency

Hemolytic anemia in premature babies

High intake

Risk of bleeding in the brain

Increased risk of birth defects

FOODS HIGH IN VITAMIN E

Vegetable oils
(wheat germ, sunflower, safflower, corn and soybean oils)

Fruit (kiwi, mango)

Vegetables
(spinach, broccoli, tomato)

Nuts
(almonds, peanuts, hazelnuts)

Sunflower seeds

Fortified foods (breakfast cereals, fruit juices, margarine, spreads)

IODINE

WAYS TO INCREASE LEVELS

Seafood – fish (tuna, cod), shrimp

Vegetables/Legumes – green peas, lima beans, corn

Seaweed

Iodized salt

Dairy products

Eggs

Whole grains (unless gluten free)

Supplements

Fruits – prunes, bananas

FUNCTIONS

Synthesizes thyroid hormones (T3 & T4) for metabolic pathways

Role in growth & development

Role in immune response

DEFICIENCY VS HIGH INTAKE

Deficiency

- Developmental issues
- Improper thyroid hormone production
- Fertility issues

High intake

- Thyroid disorders
- Acute poisoning
  - Burning in mouth & throat
  - Fever
  - Abdominal pain
  - Nausea
  - Vomiting
  - Diarrhea

CLOT RISK

THE F10 GENE (FACTOR X) HAS BEEN ASSOCIATED WITH INCREASED CLOT RISK & SENSITVITY TO ANTI-COAGULANT DRUGS

THE F5 GENE (FACTOR V) HAS BEEN ASSOCIATED WITH AN INCREASED RISK OF CLOTTING

DEEP VENOUS THROMBOSIS (DVTS)

The formation of blood clots in veins.

Factors Associated with Increased Risk:

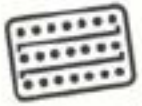

Pregnancy


Rheumatologic disorders


Cancer


Estrogen therapy


Inflammatory bowel disease


Oral Contraceptives


Obesity


Surgery

SYMPTOMS OF EXCESS ESTROGEN

- Pain
- Stiffness
- Swelling
- Redness in affected area (commonly the leg for DVTs)

WAYS TO REDUCE RISK FOR BLOOD CLOTS


Be active


Heart healthy diet


Anticoagulant medications


Weight management


Increase Vitamin A intake


Relevant genes

HYPERTENSION RISK FACTOR

HIGH BLOOD PRESSURE

- Ranges
  - Normal: 120/80
  - Range of concern: 140/90 or higher
- Risk factors: high salt diet, high alcohol intake, stress, little potassium intake, alcohol & tobacco use, obesity, genetics/family history, age, lack of physical activity
- Uncontrolled high blood pressure has been associated with an increased risk for cardiovascular diseases and stroke

AGT & ACE GENES

Variants have been associated with an increased risk for:

Salt retention

Kidney issues

Preeclampsia

Poor sports performance

Hypertension & other cardiovascular issues

LIFESTYLE CHANGES

Limit salt intake

Angiotensin II Receptor Blockers ("sartans")

Weight management & routine exercise

Mediterranean diet

Quit smoking

Heart-healthy diet/ Low-sodium diet/ DASH diet

DASH DIET

FOOD TO EAT

Fruits & vegetables

Egg whites

Whole grains (unless gluten free)

Nuts & nut butters

Lean, skinless meat & fish (salmon, trout, herring)

Legumes

Low-fat or fat free milk products

(Including fortified alternatives: Coconut, oat, almond)

Olive oils high in polyphenols

BENEFITS

Improves heart health

Improves and/ or reduces risk for hypertension, heart disease and stroke

FOODS TO AVOID AND/OR LIMIT

Red meat

Fried foods

Sweets

Processed meats - deli meat, hotdogs, sausage, bacon

Sugar-sweetened beverages

Fats/oils - Butter, margarine, tropical oils (coconut, palm)

High-salt foods

Gene Information Key

rsID	Gene	"-" variant	"+" variant
	ACE	A	G
	AOC1	C	T
	ATG12	T	C
	ATG16L1	C	T
	ATG5	T	C
	BHMT	G	A
	C3	C	T
	CBS	A	G
	CD14	G	A
	COMT	G	A
	CTH	G	T
	CTLA4	A	G
	CUBN	G	A
	CYP19A1	A	C
	CYP1A2	A	C
	DHFR	INS	DEL
	F10	A	G
	F5	C	T
	FOLR1	G	A
	FUT2	A	G
	GAD1	C	T
	GAD1	G	C
	GCLC	G	A
	GSR	G	A
	GSTP1	A	G
	HLA-DQA1	C	T
	HLA-DQB1	T	C
	IL13	C	T
	IL5	A	G

rsID	Gene	"-" variant	"+" variant
	IL6	C	G
	MAOA	T	G
	MAOB	C	T
	MTHFD1	C	T
	MTHFR: A1298C	T	G
	MTHFR: C677T	G	A
	MTR	G	A
	MTRR	A	G
	NAT2	T	C
	NFE2L2	G	T
	NOS2	A	G
	NQO1	G	A
	PDE8B	G	A
	PPARGC1A	C	T
	SIRT1	A	G
	SLC19A1	T	C
	SLC23A1	C	T
	SOD2	G	A
	STAT4	C	G
	TCN1	A	G
	TCN2	C	G
	TFAM	C	G
	TNF	G	A
	TRPM6	T	C
	TTPA	A	T
	VDR	G	A

Definitions

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Disclaimers

TESTING:

Testing Performed By: AC

METHODOLOGY AND LIMITATIONS DISCLAIMER:

Testing for genetic variation/mutation on listed genes was performed using ProFlex PCR and Real-Time PCR with TaqMan® allele-specific probes on the QuantStudio 12K Flex. All genetic testing is performed by GX Sciences, LLC d/b/a Fagron Genomics US (“Fagron Genomics US”) (807 Las Cimas Pkwy, Suite 145, Austin, TX. 78746). This test will not detect all the known alleles that result in altered or inactive tested genes. This test does not account for all individual variations in the individual tested. Test results do not rule out the possibility that this individual could be a carrier of other mutations/variations not detected by this gene mutation/variation panel. Rare mutations surrounding these alleles may also affect our detection of genetic variations. Thus, the interpretation is given as a probability. Therefore, this genetic information shall be interpreted in conjunction with other clinical findings and familial history for the administration of specific nutrients. Patients should receive appropriate genetic counseling to explain the implications of these test results. Details of assay performance and algorithms leading to clinical recommendations are available upon request. The analytical and performance characteristics of this laboratory developed test (LDT) were determined by Fagron Genomics US’s laboratory (Laboratory Director: James Jacobson, PhD) pursuant to Clinical Laboratory Improvement Amendments (CLIA) requirements (CLIA #: 45D2144988).

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If you have received the result variant Undetermined (UND) this indicates that we were not able to determine your carrier status based on your raw data. You may request your sample to be run again by emailing info@fagrongenomicsus.com

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