



Correcting the Molecular Basis of Depression and Anxiety

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Statistics

- 15 million Americans are depressed
- 1 in 4 women is on an anti-depressant medication
- Anxiety disorders are the **most common mental illness in the U.S.**, affecting 40 million adults (18% of the population)
- Anxiety disorders affect 1 in 8 children
- 13% of children ages 8 – 15 had a diagnosable mental disorder

Biochemical Individuality:

*Each of us has innate biochemical factors that influence traits such as **personality, behavior, mental health, immune function, and allergic tendencies.***

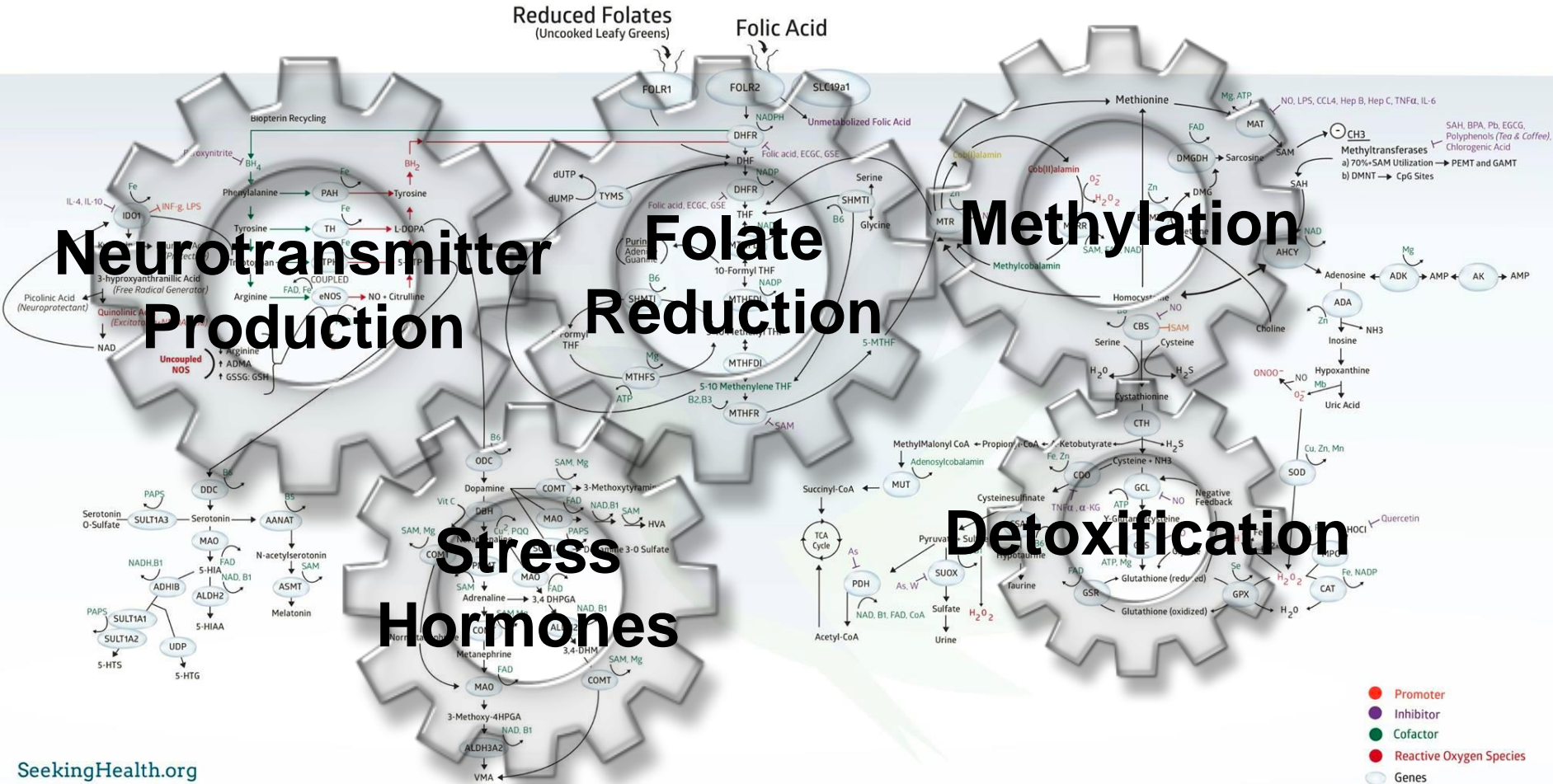
“One man’s meat is another man’s poison”

*What is the Molecular Basis of
Depression and Anxiety?*

Methylation!

Methylation

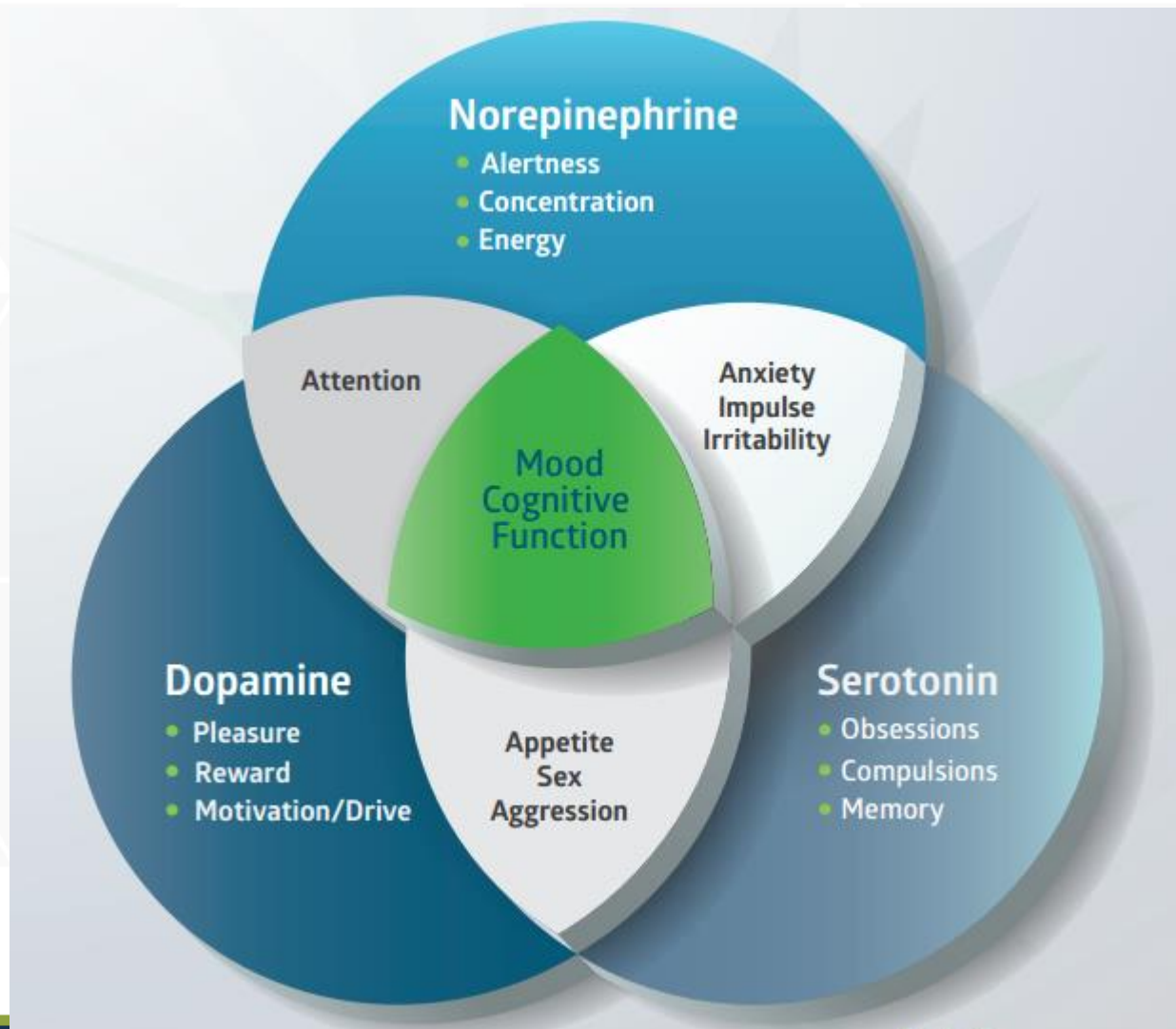
- Chemically speaking, methylation is the process of adding methyl groups (CH_3) to a molecule
- Methyl groups are chemically inert, adding them to a protein (the process of methylation) changes how that protein reacts to other substances in the body, thus affecting how that protein behaves.



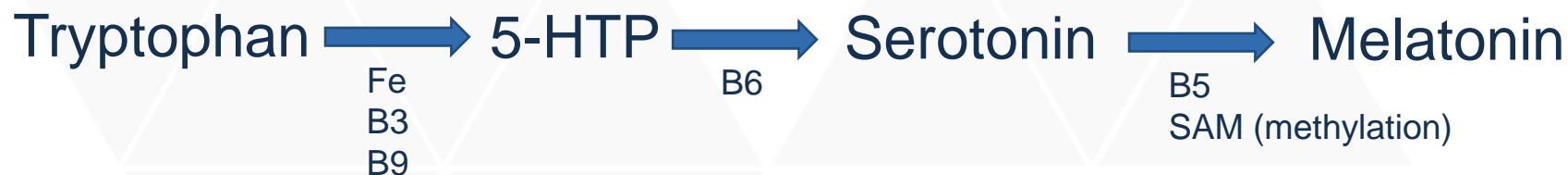
Undermethylated = too slow

Overmethylated = too fast

Functions of Neurotransmitters



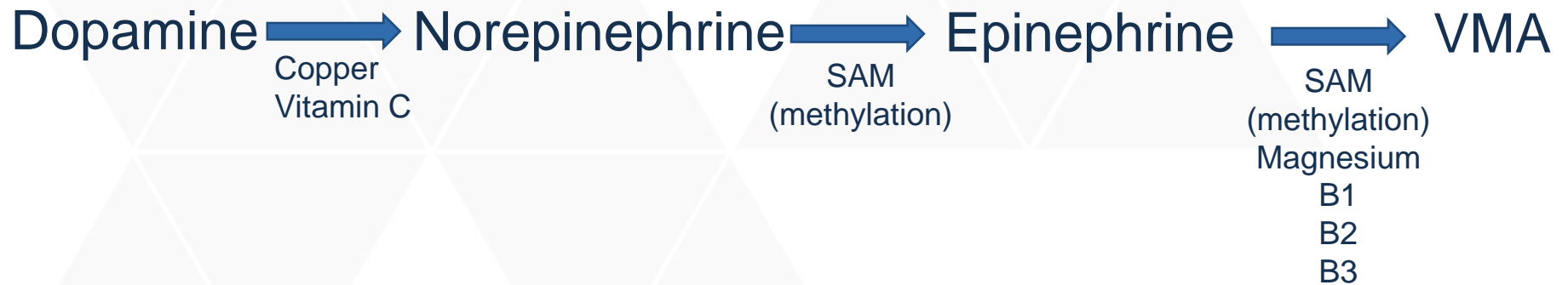
Production of Serotonin



Production of Dopamine



Production of Norepinephrine and Epinephrine



Depression

1. Undermethyalted Depression (38%)
2. Overmethyalted Depression (20%)
3. Hypercupremic (elevated Copper) Depression (17%)
4. Urinary Pyrrole Depression (15%)
5. Toxic Overload Depression (5%)

Traits of UNDERmethylated Depression

- Good response to SSRIs
- Adverse reaction to folic acid
- Obsessive-compulsive tendencies
- Self-motivated
- Good response to anti-histamines
- Low tolerance for pain
- Very strong-willed
- High suicidal tendency
- Sparse chest/leg/arm hair
- Denial of depression
- Family history of high accomplishment
- Rumination about past events

Traits of UNDERmethylated Depression (cont.)

- Good response to SAME and methionine
- High inner tension
- History of perfectionism
- Seasonal inhalant allergies
- High libido
- High fluidity (tears, saliva, etc.)
- Competitiveness in sports
- Addictiveness
- Calm demeanor
- Frequent headaches
- Noncompliance with therapies
- Oppositional defiance as a child

Traits of OVERmethylated Depression (Low Folate Depression)

- Improvement after folate therapy
- Adverse reaction to SSRIs
- Food and chemical sensitivities
- Dry eyes and mouth
- High artistic abilities and interest
- Nervous legs, pacing
- Noncompetitive in sports, games
- Hyperactivity
- Upper body/head/neck pain
- Estrogen intolerance

Traits of OVERmethylated Depression (Low Folate Depression) (cont.)

- High anxiety and panic tendency
- Improvement after benzodiazepines
- Absence of seasonal allergies
- Low libido
- Hirsutism
- Sleep disorder
- Underachievement in school
- High pain threshold
- Adverse reaction to SAMe and/or methionine
- Copper intolerance

Hypercupremic Depression

(Elevated Copper)

- Majority of this type are women
- First episode during puberty, childbirth or menopause
- Severe anxiety
- Sleep disorder
- Hormone imbalances
- Hyperactivity in childhood
- Skin sensitivity to metals and rough fabrics
- Tinnitus (ringing in the ears)
- Intolerance to estrogen, shellfish and chocolate

Urinary Pyrrole Depression

- Stress disorder
- Onset of depression triggered by severe emotional or physical trauma
- Severe mood swings
- Inability to cope with stress
- Rages
- Absence of dream recall
- Sunburn easily and inability to tan
- Morning nausea
- Sensitivity to bright lights and loud noises
- Slender wrists, ankles and neck – fat distribution around mid-section and thighs

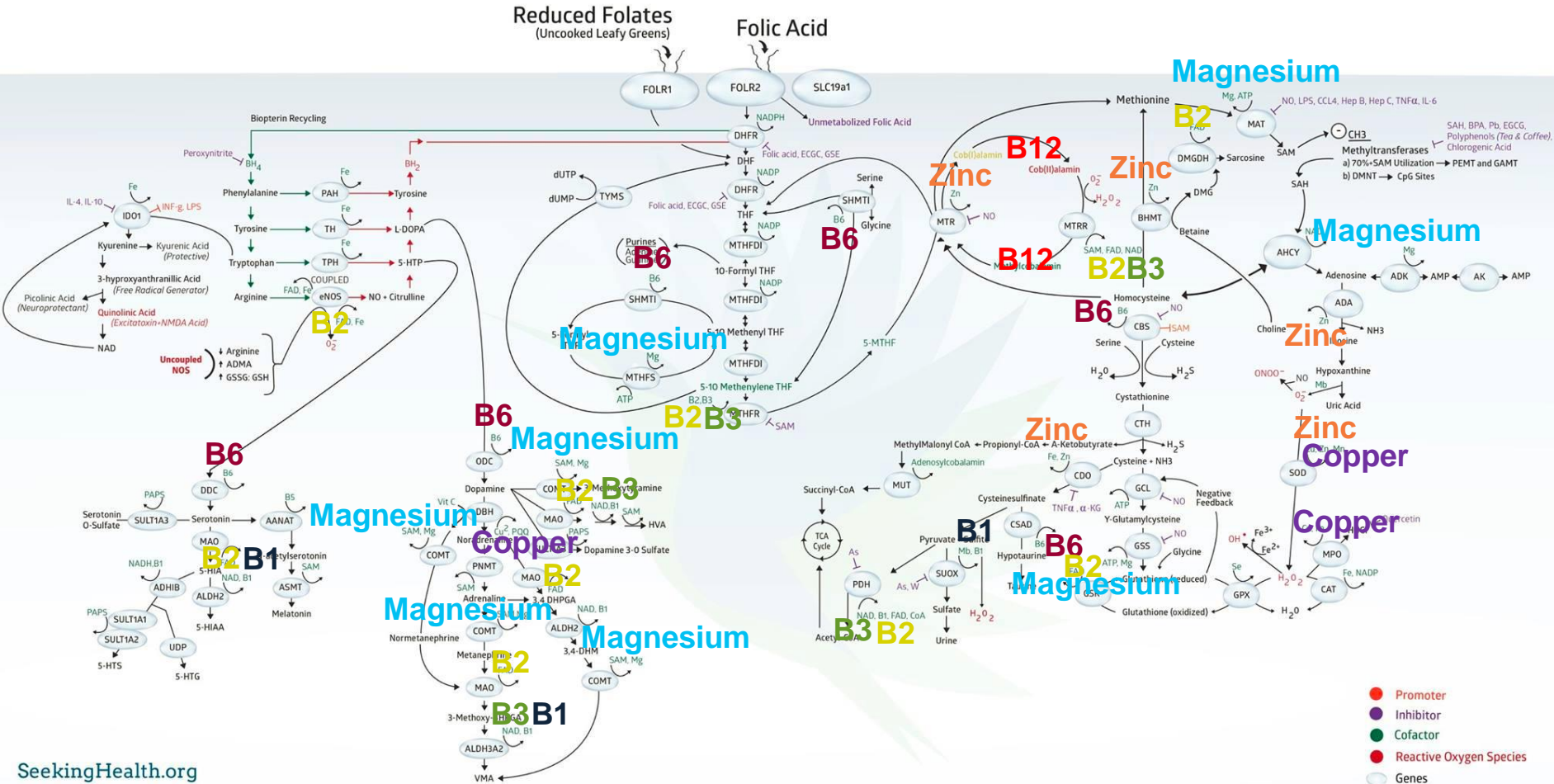
Urinary Pyrrole Depression (cont.)

- Disturbed menstrual cycle or amenorrhea
- Delayed puberty and significant growth after 16
- Great inner tension
- Reading disorders and academic underachievement
- Fearful and pessimistic
- Isolate themselves
- Rapid-cycling bipolar disorder
- Live in a world of fear – obsessed with disasters (terrorist attacks, natural disasters)
- Do best work late at night

What Disturbs Methylation?

1. Lack of cofactors driving methylation forward (zinc, magnesium, B6)
2. Genetic mutations (MTHFR, COMT)
3. Medications (antacids)
4. Specific nutrients depleting methyl groups (niacin)
5. Environmental toxicity, heavy metals, chemicals (acetaldehyde, arsenic, mercury)
6. Excessive substrate (high homocysteine)
7. Lack of sufficient methyl donors + specific medications such as methotrexate

Nutrient Cofactors

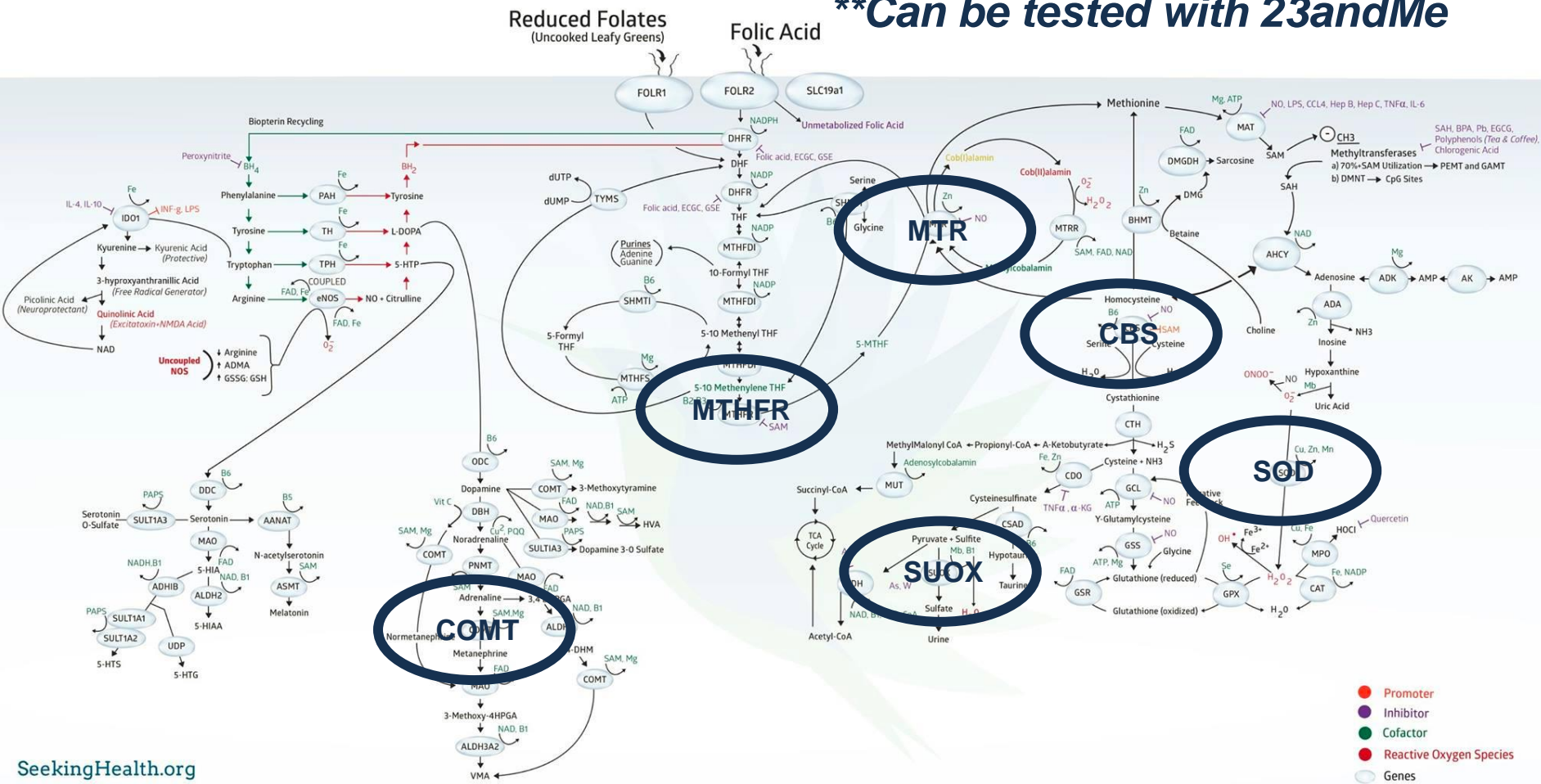


Methylation Lab Panel

Bio-Center Laboratory

- CoenzymeQ10
- Glutathione (RBC)
- Histamine
- Homocysteine
- B12
- Folate
- Vitamin B2
- Vitamin B6
- Magnesium
- Copper
- Zinc
- Pyrroles

****Can be tested with 23andMe**



Conditions related to Methylation Defects

- Diabetes
- Fibromyalgia/Chronic Fatigue Syndrome
- Cancer
- Pulmonary Embolism
- Addictive Behavior (alcoholism)
- Insomnia
- Autism or Down Syndrome
- Frequent miscarriages
- Bipolar or manic depression
- Allergies or Multiple Chemical Sensitivities
- Atherosclerosis
- Spina Bifida or Cleft Palate or Neural Tube Defects
- Multiple Sclerosis and other Autoimmune Disorders
- Hashimoto's or Hypothyroidism (The Thyroid Summit- available [here](#))
- ADD or ADHD
- Dementia/Alzheimer's
- Schizophrenia
- Anxiety
- Neuropathy
- Lyme Disease
- Chronic Viral Infections

Where do I start??



Too much, or too fast can jam up the methylation gears!!

1. Address Diet and Gut Function

- Poor diet = poor nutritional status
- Gut microbiome (prebiotics and probiotics)
- Poor absorption and leaky gut
- Lack of digestive enzymes
- Improper elimination

2. Reduce Environmental Toxicity

- People with methylation defects have a difficult time eliminating toxins
- Avoid chemicals found in air, water, food, environment, cosmetics, and medications

3. Use Medication with Caution

- Certain drugs can deplete methylation nutrients
- Watch out for:
 - methotrexate
 - metformin
 - antacids
 - acid blockers
 - proton pump inhibitors
 - corticosteroids
 - estrogen-containing drugs (birth control)

4. Limit Alcohol

- Alcohol can shut down methylation and deplete glutathione storage
- A by-product of alcohol consumption is acetaldehyde (this is also a potent neurotoxin released by Candida)

5. Manage Oxidative Stress

- Oxidative stress slows down the methylation cycle and slows output of methylated nutrients such as neurotransmitters and CoQ10
- Antioxidants "lubricate" and speed up and smooth out methylation AND all of the positive functions associated with methylation

6. If Undermethylated, Avoid Nutrients that “Steal” Methyl Groups

- High dose niacin (or the prescription version – Niaspan) can deplete methyl groups
- Niacin can slow down a “bad methyl folate trip”
- Niacin works great in paranoid schizophrenics who are overmethylated

7. Address Heavy Metal Toxicity

- Avoid mercury in the diet
- Remove mercury amalgams from the teeth
- Other heavy metals to avoid:
 - lead in your bloodstream
 - cadmium if you smoke
 - high copper
 - aluminum, arsenic, etc.

8. Reduce Stress

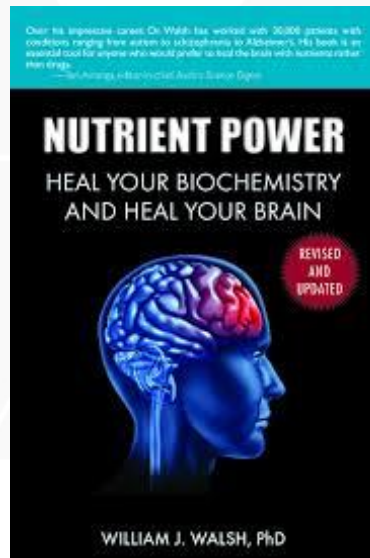
- Stress depletes key nutrients (magnesium and B vitamins)
- Stress “puts more demand” on the system
- Creates more oxidative stress

9. Know Your Status

- [23andMe.com](https://23andme.com) – you can test genetic errors in your enzymes
- Methylation Lab Panel – Bio-Center Laboratory

Reference Information:

- Dr. Ben Lynch (www.seekinghealth.org)
- Dr. William Walsh – “Nutrient Power”





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