



Patient ID: DNAflux-0101

Patient Name: Mr. Shantanu Rathore

“Within our DNA lies the blueprint of our past and the potential of our future.”

“The beauty is that even a slight genetic variation could have a greater impact on your health and longevity.”

“Decode your DNA, Redefine your destiny”



• GET TO THE ROOT CAUSE •

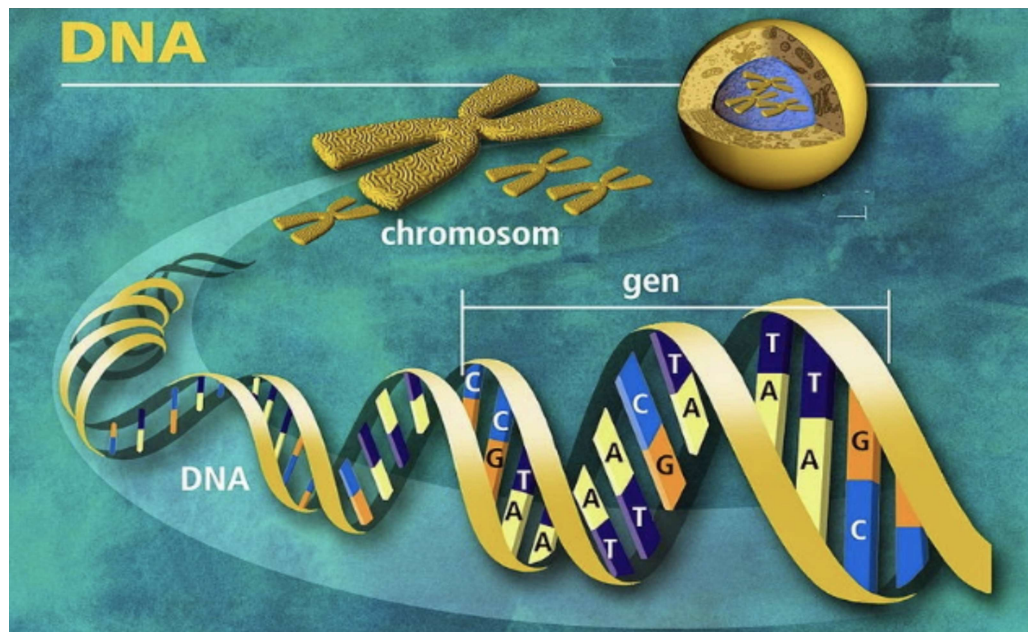
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Introduction

What you're about to uncover in these upcoming pages is extremely powerful. By discovering your unique genetic makeup using DNAflux, you will learn how you can truly optimize your life. Genetic variants may work slower & some naturally work faster. Unless you know your code, you've no idea how your choices impact you.

You cannot change the genetic code in DNA. But you change the way your genes function by changing your environment, mindset, food and lifestyle. Welcome to the emerging field of Epigenetics (control over genes). Your DNAflux report helps you make Targeted Choice to create the optimal environment for your genes thereby empowering your genes. You'll ultimately function at your best. Your journey to the best version of you is about to begin.



DNAFlux - The Blueprint of your health and longevity

- We humans as individuals are so unique from our fingerprints, facial structure to intelligence and self-confidence because of small variations in our genetic code called as Single Nucleotide Polymorphisms (SNPs). SNPs occur normally throughout a person's DNA. The human genome contains a vast number of SNPs, with estimates ranging from 4 to 5 million in a typical individual. Most SNPs have no effects on human health or development. But there are a significant number of SNPs that can have a bigger impact on health and influence everything from disease risk to response to medications.
- DNAflux analysis over such 330 clinically relevant significant genetic variations or SNPs and provides tremendous opportunities for personalized prevention and treatment plans. You can visually see, and learn, how your unique genetic pathways function. Getting your SNPs tested unlocks a wealth of insights into optimizing wellness and avoiding chronic illnesses you may be genetically predisposed to. The prospects of unlocking your genetic blueprint to guide tailored lifestyle and wellness recommendations is compelling. Personalized Solutions based on genetic testing is "the Future of Healthcare".
- Genes cannot be switched on and off by themselves. Factors such as our environment, diet, lifestyle and relationships can influence our genetic expression through GXE interaction. Epigenetic mastery is the cornerstone of DNAflux.

STEPWISE ACTIONABLE INSIGHTS

- Step 1 : Understand how the Epigenetic Control Points (Inhibitors & Inducers) influence genetic expression.
- Step 2 : Ensure repletion of Co-factors for optimal enzyme activity.
- Step 3 : Know how your Genetic Polymorphisms (SNPs) are impacting enzyme activity (Slow/ Fast) or receptor function (upregulated/ downregulated).
- Step 4 : Precision diet / Supplementation and Lifestyle modification to negate the ill effects of genetic variations.

Although we decode your whole DNA to understand the susceptibility to diseases, we simply don't stop with that process. Perhaps we provide the most epigenetic influences that control the epigenetic expression of each genetic variation without changing the genetic code thereby providing a tool to empower you.

Even if you are having genetic variations, just relax !! You can very well lead a healthy life with our epigenetic tools.

Representations

Typical	(by default)
Heterozygous Variant	
Homozygous Variant	
Fast	
Slow	

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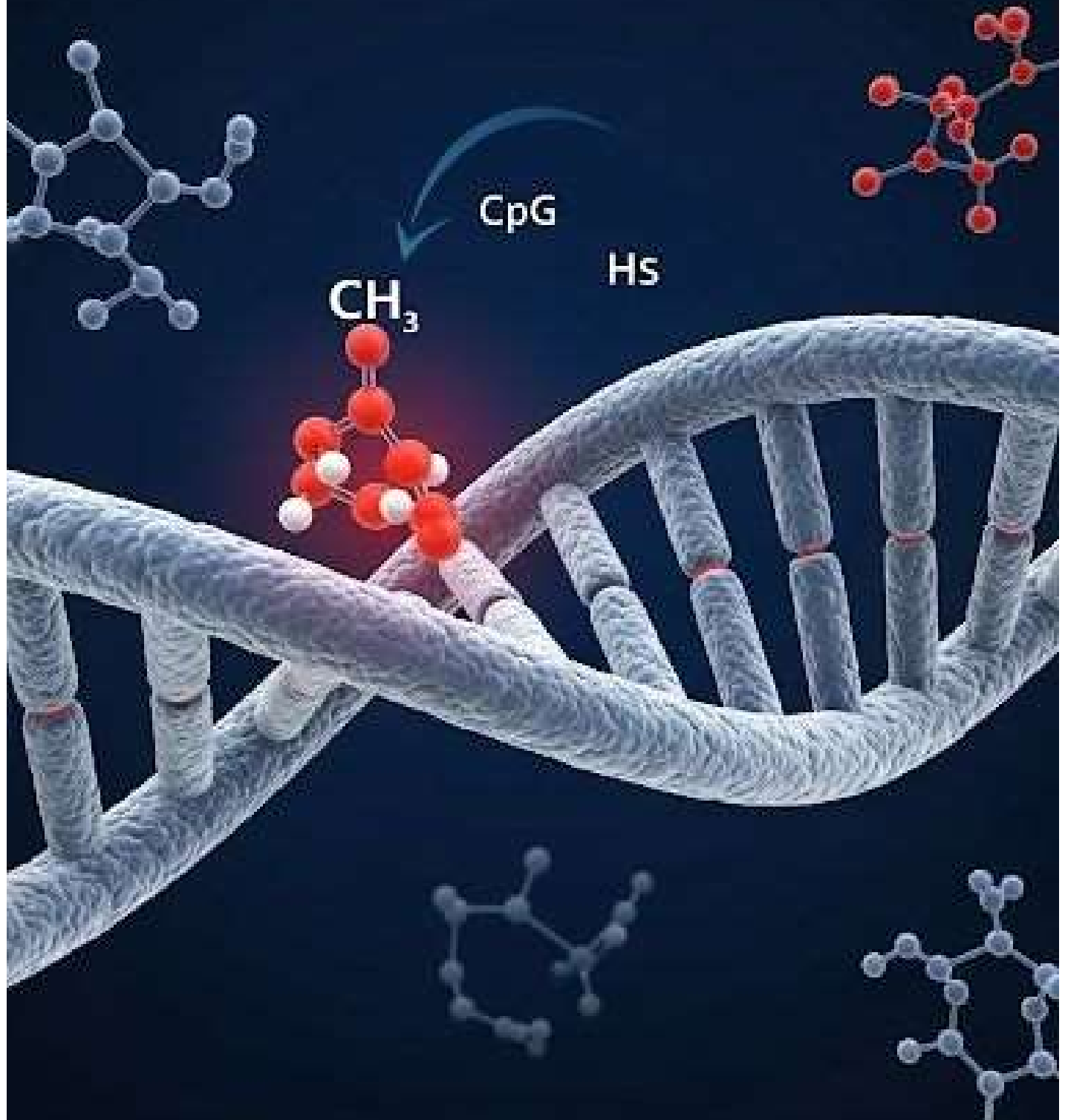
Genetic Summary

You have compound heterozygous MTHFR with 50-60% reduction in MTHFR enzyme activity. No worries, it can be modulated by Epigenetic control points are elucidated for optimal functioning of enzymes.

Include Leafy greens in your diet.

Methylated B-vitamins are recommended - active B complex is optimal.

Methylation



Methylation is a biochemical process in which methyl groups (CH₃) are transferred or donated between molecules, thereby changing their structure and function. This happens billions of times per second in every cell throughout the body. The methylation cycle is dependent on amino acids, vitamin cofactors, and minerals obtained from the diet to ensure adequate function of this biochemical pathway.

Methylation pathways are vital for regulating gene expression, cellular processes, and detoxification. They involve the addition of a methyl group (CH₃) to DNA, proteins, and other molecules, which affects their function and activity. Key aspects of methylation include:

1. DNA Methylation: The addition of methyl groups to DNA can turn genes on or off, playing a role in gene expression and cellular differentiation. Abnormal methylation patterns are linked to diseases like cancer and neurological disorders.
2. Folate Cycle: Folate (vitamin B9) is essential for the methylation process, especially in the conversion of homocysteine to methionine. Methionine is a precursor for S-adenosylmethionine (SAMe), a key methyl donor.
3. Homocysteine Regulation: Proper methylation helps regulate homocysteine levels; a type of amino acid linked to heart disease when elevated. Deficiencies in B vitamins (B6, B12, and folate) can impair methylation and lead to high homocysteine levels.
4. Gene-Specific Methylation: Methylation is also involved in regulating important genes like tumor suppressors and immune system genes, influencing cancer risk, autoimmune disorders, and inflammation.

Methylation is crucial for cell function, genetic stability, and detoxification. Disruptions in methylation pathways can contribute to genetic diseases, cardiovascular problems, and neurological conditions like Alzheimer's.

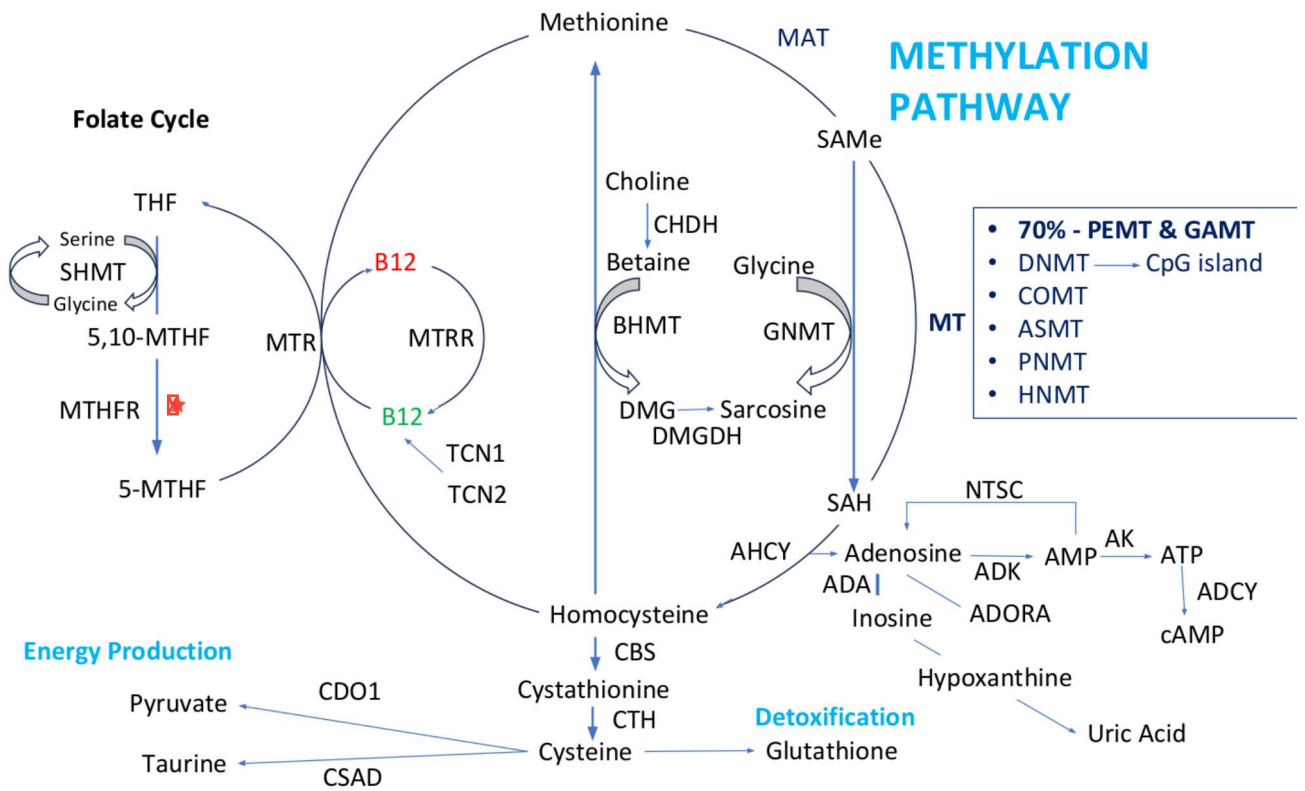
Methyl groups are switches that turn on and off genes based on environmental cues. This is called Epigenetics. Additionally, methyl groups signal which hormones, brain chemicals, and amino acids need to be broken down and removed, maintaining a healthy balance in the body. The “methylation cycle” involves an interplay between folate metabolism, methionine metabolism, and homocysteine transsulfuration. Rate limiting enzyme is MTHFR. The body continually adapts these interconnected pathways in order to maintain homeostasis.

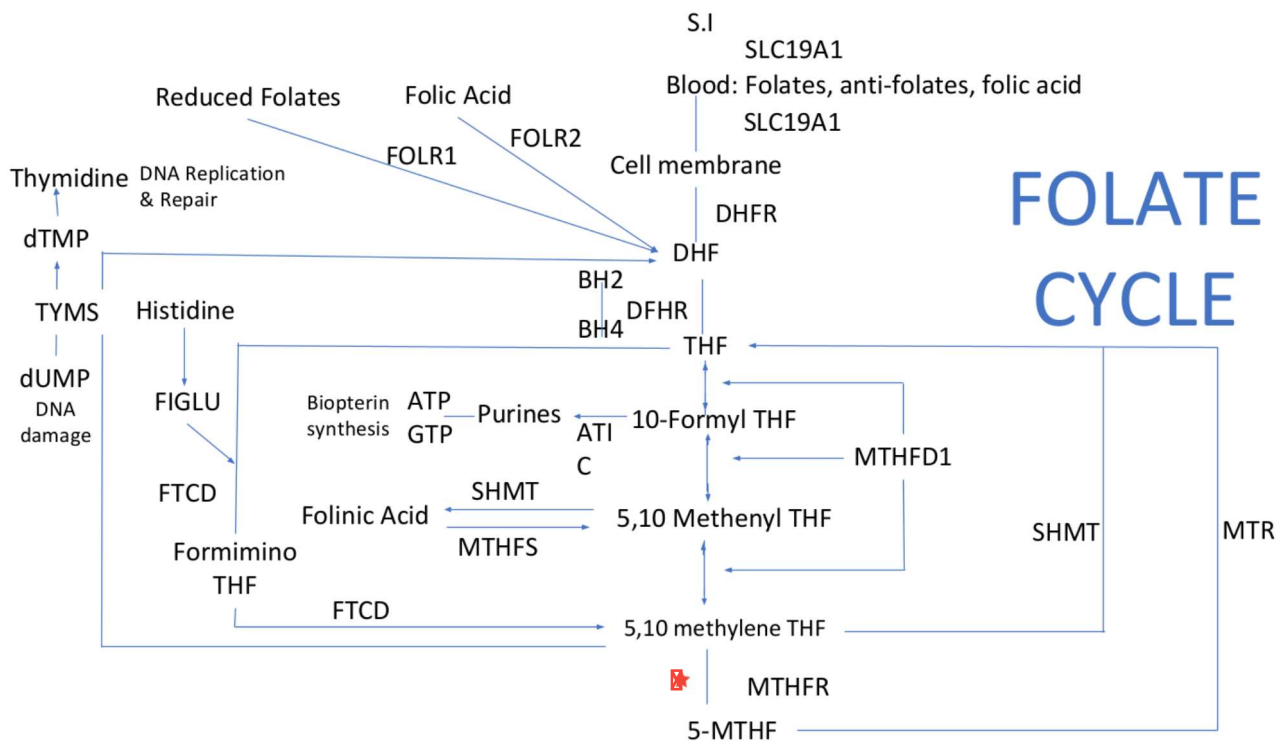
There is a relative balance that exists between the methylation and transsulfuration pathways. This balance ensures that adequate levels of glutathione are produced to counteract oxidative stress and that an adequate amount of SAM is made for methylation reactions. However, key amino acid deficiencies, a lack of vitamin and mineral cofactors, genetic enzymatic predispositions, and a wide array of oxidative stressors can impact multiple enzymes leading to a disruption in a patient’s overall methylation status.

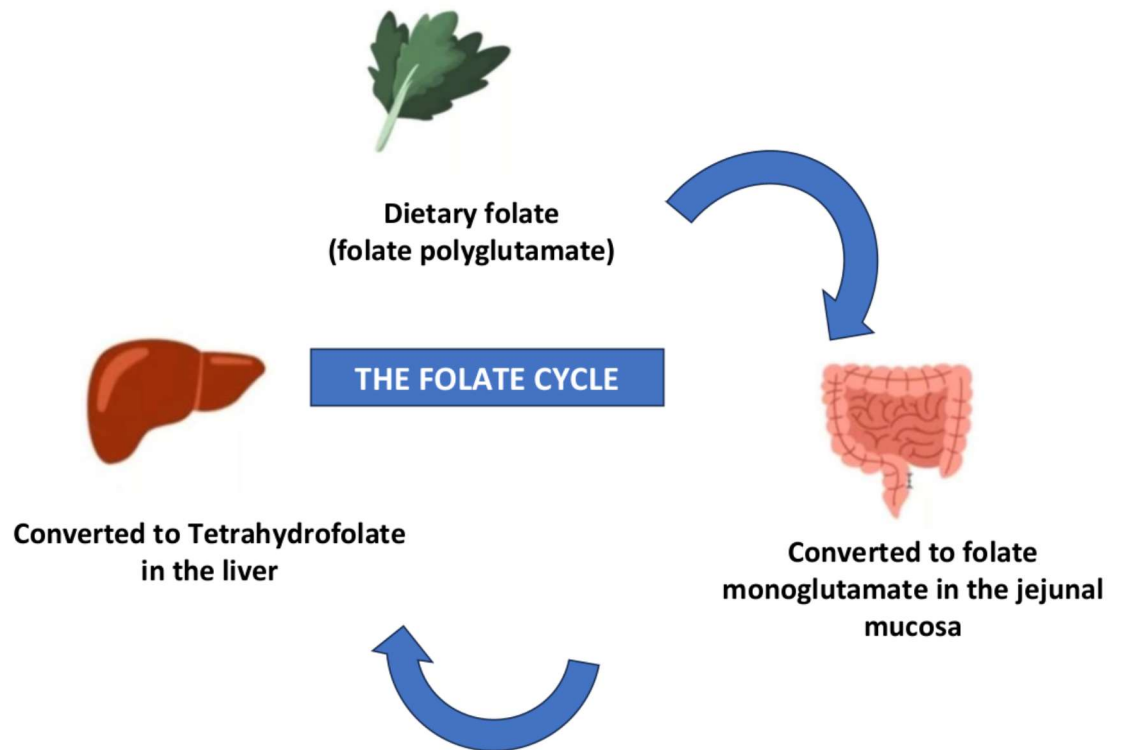
Methylation is essential for

- Creatine Production for Skeletal Muscle Contraction
- DNA and RNA Synthesis
- Gene Regulation (Epigenetics)
- Hormone Regulation and Detoxification
- Energy Production
- Cell Membrane Repair
- Fat Metabolism
- Myelination
- Immune Function
- Neurotransmitter Production and its Metabolism
- Vascular Endothelial Function and Nitric Oxide Production

GENE	SNP	Genotype
MTHFR	rs1801133	GA ●
MTHFR	rs1801131	TG ●







MTHFR

MTHFR (Methylene Tetra Hydro Folate Reductase) produces body's primary form of folate (methyl folate-80% of total folate level). It is the rate limiting step, both in the generation of 5-MTHF & SAMe.

5-MTHF is utilized in the production of SAMe which in turn regulates 200 processes including DNA methylation, neurotransmitter & phospholipid production.

The MTHFR gene connects the folate pathway, via 5-MTHF with the SAM cycle via the MTR gene.

Cofactors: FAD, NADPH (Vit B2)

Epigenetic Control Points

Inhibitors

- Arsenic, Lead, Mercury
- Thyroid issues, Insulin resistance
- Food or beverages enriched with folic acid
- Folic acid, Aspirin, NSAIDs
- Increased SAM
- Alcohol, Smoking, Excess Sulfur

Inducers

- Vitamin B2 (cofactor)
- Conditions:
 - Low Methionine,
 - Reduced SAM:SAH ratio
- B6, B9, B12, TMG, Mg

SNP: rs1801133

Genotype: GA

30-40% reduced activity

SNP: rs1801131

Genotype: TG

Slightly reduced activity

Interpretation & Actionable Insights

Your Story with MTHFR: You usually don't eat leafy greens everyday You can focus and concentrate well You are often tired and toxic You may have exercise induced asthma You are likely to have shortness of breath/ red face after exercising You have fluctuating moods between irritability and depression. You cannot tolerate alcohol easily N2O (Laughing gas) at the dentist or doctor's office makes you horrible Treat Hypothyroidism if present: Support thyroid function with low stress, sleep, adrenal support, Healing gut, avoiding chemicals, filtering water and fighting off infections. Supplements: B2 (20-400 mg/day) L-5-MTHF 400 mcg and then dose up No or poor response to methyl folate may be due to Folate Receptor Ab Folic acid B12 deficiency (Folate trap) D-methyl folate supplements Heavy metals Oxidative stress Infections/Meds Living in sunny areas and over exposure leads to increased folate demand to repair sun-damaged skin. Naturally dark skin can reduce demand, but not entirely. Riboflavin rich, choline and betaine rich , natural folate rich, polyphenol rich supports its function. Supplements: 5-MTHF may be useful. Consider lower amounts 400-1000 mcg to avoid side effects. Most

Interpretation & Actionable Insights

importantly, C677T polymorphisms respond very well to high doses of Vit B2 with adequate folate supply. Creatine & Phosphatidyl choline (non-GMO, sunflower derived) conserve SAM and generate less homocysteine. Consider calcium, betaine, omega-3, ALA & DHA. Vit C decrease hypermethylation of MTHFR in a positive way. Consider more folinic acid, L-5-MTHF or Choline during prolonged sun exposure, during pregnancy and breast feeding.

METHYLATION PEARLS:

Excess alcohol consumption depletes B vitamins and increases the risk of Choline deficiency. It can also worsen the impact of your genetics by blocking MTR & PEMT. It may even increase the risk of different congenital disorders like Fetal Alcohol Spectrum Disorders (FASD). Alcoholics and lactating women are at risk of folate deficiency. Methyl-cobalamin is the active form of B12, suitable in poor methylation. Active B complex along with omega-3 lowers Hcy, suitable for people at risk of dementia or heart disease. SAME supplementation may help with Joint pain, Liver disease & Depression.

SAM-e may not be safe in Bipolar disorder as it interacts with 5-HTP, St. John's wort, and different medications. Combining it with anti-depressants can be life-threatening. Never take SAM-e supplements without consulting your doctor.

Extreme exercise may contribute to heart rhythms, irregular periods, and more.

Zn is important for folate absorption, its role and healthy methylation.

Creatine may help reduce your requirements for methylation, especially if you have high Hcy.

The Common Barriers to Optimal Methylation are as follows:

1. GI dysbiosis
2. Increased oxidative stress
3. Poor stress management
4. Exposure to environmental toxins
5. Nutritional insufficiencies
6. Poor sleep
7. Medications (antacids, NSAIDs, glucocorticoids)

Avoid Exposure to heavy metals helps with methylation.

Avoid BPA (Bisphenol A) Exposure as it demands methylation for detox and glutathione for neutralization.

People with methylation issues may have increased needs for B vitamins & Choline, the deficiencies of which may lead to liver dysfunction, NTDs and more.

BHMT is primarily found in liver & kidneys. Avoid High Dose Niacin supplements (>500 mg may lower T4-mediated through TBG). Niacin in large amounts can deplete methyl donors like S-AdoMet.

Beetroot naturally contains betaine (TMG) which acts as a methyl donor in the body. TMG supplementation (1.5-4 g/day) for 2-6 months may lower HCY levels. Doses above 4g/day may increase LDL & Triglycerides levels. Direct or functional (genetic polymorphisms & alcohol intake) Vit B12 deficiency: MTR cannot convert Hcy to Methionine NOR can it return 5-MTHF to THF for use in Folate cycle.

Supplementation with methylated folate may be ineffective for patients with poor B12 status.