

## Detox and Methylation Mutation Report for Customer: 51092f66-5c5d-4d88-92bc-c0e95df0b031

### Instructions:

This FREE NutraHacker report contains detox and methylation mutations (single nucleotide polymorphisms) in this uploaded genome. Genes not reported in this report are either normal, not actionable, available only in the paid service offered by NutraHacker, or are not currently detected by NutraHacker. The expected allele is the one seen in a normally functioning gene. The high risk alleles reported are the ones measured from the uploaded genome. NutraHacker reports the effects of these mutations as discovered by published empirical data and suggests nutritional supplements that can mitigate potential issues caused by these mutations.

This report is meant to serve as a guide for nutritional supplementation for the owner of the genome and is not applicable to any other individual. Supplement quantities and dosages are not included as they are indicated on the purchased product. Multiple recommendations for the same supplement does not mean that the dosage should be multiplied. In the case of a conflict (such as a particular vitamin being both encouraged and discouraged), the owner of the genome should assess his/her own personal biology to decide whether to include or discard that particular supplement.

Thank you for using NutraHacker. To your health!

A total of 19 mutations were detected at this time for your genome out of the 58 polymorphisms assessed.

There were 5 homozygous mutations.

There was 1 sex-linked mutation.

There were 13 heterozygous mutations.

Please continue to the next page to begin your discovery process.

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs3741049	ACAT1	G	AG: 1/2	Forms cholesterol esters from cholesterol	3-ketothiolase deficiency, depletes b12	Probiotics, b12 in recommended form, low fat diet	Cholesterol

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs819147	AHCY	T	CT: 1/2	Hydrolyzes S-adenosylhomocysteine to adenosine and homocysteine	Decreased homocysteine, more complex with concurrent CBS mutation	ornithine, molybdenum, manganese, zinc, carnosine, thiamine (reduced by high sulfates)	sulfur, sulfates

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs819171	AHCY	T	CT: 1/2	Hydrolyzes S-adenosylhomocysteine to adenosine and homocysteine	Decreased homocysteine, more complex with concurrent CBS mutation	ornithine, molybdenum, manganese, zinc, carnosine, thiamine (reduced by high sulfates)	sulfur, sulfates

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs651852	BHMT08	T	CC: 2/2	Methylates homocysteine to methionine	Downregulation	phosphatidylcholine, TMG, phosphatidylserine, zinc	

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs234706	CBS	G	AG: 1/2	Adds l-serine to homocysteine to produce l-cystathionine	Results in slightly faster disposal of homocysteine. This is a very small up-regulation, and should not result in sulfur or ammonia problems.	Vitamin B6	

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs4633	COMT	C	TT: 2/2	Degrades catecholamines, Phase II, inactivates hydroxy-estrogens	Same amino acid sequence, lower expression of gene, less breakdown of catecholamines, CFS	Hydroxy b12 (hydroxycobalamin)	methyl b12, other methyl donors

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs4680	COMT	G	AA: 2/2	Degrades catecholamines, Phase II, inactivates hydroxy-estrogens	Slower breakdown dopamine, oestrogen, worrier, prone to anxiety, more sensitive to green tea	Hydroxy b12 (hydroxycobalamin)	methyl b12, other methyl donors, cannabis

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs762551	CYP1A2	A	AC: 1/2	Hydroxylation or dealkylation of xenobiotics, Phase I, metabolize E2 to 2-hydroxyestradiol (GOOD)	Slow to metabolize caffeine, Main liver pathway	Induce with broccoli, cabbage, DIM, glucarate, NAC, cardamom, sulfaphorane	inhibit with curcumin, cumin, grapefruit

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs16947	CYP2D6	G	AG: 1/2	Detoxifies 20% of prescription drugs	Possible ultra metabolizer		Substrates of this enzyme

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs1695	GSTP1	G	AA: 2/2	Conjugation toxins to glutathione		NAC, whey	Vitamin E

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs6323	MAO A	G	T: 1/1	Oxidizes serotonin, dopamine, epinephrine, norepinephrine	Lower expression of MAO A, decreased placebo response, more prone to aggression	Progesterone (however wide range of effects, possibly carcinogenic)	Curcumin, estrogens, androgens

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs1801131	MTHFR	A	GG: 2/2	Converts folic acid to 5-methyltetrahydrofolate	Low BH4, excess ammonia, low nitric oxide, does NOT lead to high homocysteine, however high superoxide	L-methylfolate, niacin, potassium, ornithine, b6, b12, Vitamin C, rooibos, manganese	Folinic acid, folate

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs1801394	MTRR	A	AG: 1/2	Methylates, recycles vitamin b12	Poor methylation of b12. Results in higher homocysteine and lower methionine. B12 supplementation may help. If sensitive to methyl groups at all, hydroxyB12 should be a safer form than methylB12. If taking methylB12, be careful of potassium issues.	Methyl b12, l-methylfolate	

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs1801280	NAT2	T	CT: 1/2	This gene encodes an enzyme that functions to both activate and deactivate arylamine and hydrazine drugs and carcinogens.	Slow metabolizer	NAC	

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs1208	NAT2	A	AG: 1/2	This gene encodes an enzyme that functions to both activate and deactivate arylamine and hydrazine drugs and carcinogens.	Fast metabolizer		

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs4880	SOD2	C	AG: 1/2	Mitochondrial superoxide dismutase 2	Increase risk of heart disease for females with diabetes, less active enzyme	Manganese	Alcohol, noise (greater chance for hearing loss)

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs4880	SOD2	C	AG: 1/2	Manganese superoxide dismutase	Mutations in this gene have been associated with idiopathic cardiomyopathy (IDC), sporadic motor neuron disease, and cancer. Noise induced hearing loss, rs10370 'TT', rs4880 'GG' diplo-genotype (diplotype) was associated with more gray matter shrinkage in 76 individuals who report chronic high levels of alcohol consumption.	Vitamin E in tocotrienol form	alcohol

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs1544410	VDR	G	CT: 1/2	Vitamin D Receptor	Downregulated Vitamin D receptor, may be more complex	D3, Sage, Rosemary	methyl donors

RSID	Gene	Expected	Alleles: Risk	Gene Function	Consequences	Encourage	Avoid
rs731236	VDR	A	AG: 1/2	Vitamin D Receptor	Downregulated Vitamin D receptor, can affect dopamine levels, may be more complex	D3, Sage, Rosemary	methyl donors