

Complete Gene Mutation Report for Customer: 5169023a-2a2f-4576-ba55-d69922902583

Instructions:

NutraHacker reports mutations (single nucleotide polymorphisms) in this uploaded genome. Genes not reported in this report are either normal, not actionable, or 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.

NOTICE:

State law allows any person to provide nutritional advice or give advice concerning proper nutrition--which is the giving of advice as to the role of food and food ingredients, including dietary supplements. This state law does NOT confer authority to practice medicine or to undertake the diagnosis, prevention, treatment, or cure of any disease, pain, deformity, injury, or physical or mental condition and specifically does not authorize any person other than one who is a licensed health practitioner to state that any product might cure any disease, disorder, or condition.

NutraHacker reports are for scientific, educational and nutritional information only and are not intended to diagnose, cure, treat or prevent any disease, disorder or condition.

Thank you for using NutraHacker. To your health!

Gender of customer: Male

A total of 55 mutations were detected at this time for your genome out of the 195 polymorphisms assessed.

There were 18 homozygous mutations.

There were 2 sex-linked mutations.

There were 35 heterozygous mutations.

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

Category	RSID	Gene	Expected	Genotype: Risk	Genotype Freq	Gene Function	Consequences	Encourage	Avoid
Detoxification	rs1131857	CPOX4	A	GT: 1/2	36.1087%	Coproporphyrinogen oxidase	N272H, his variant, referred to herein as 'CPOX4', both increases sensitivity to the neurobehavioral effects of Hg (Echeverria et al. 2006) and modifies urinary porphyrin excretion as a potential biomarker of this effect (Woods et al. 2005, Li and Woods 2009). The population frequencies of the homozygous wildtype (A/A), heterozygous (A/C) and homozygous mutant (C/C) genotypes within this cohort were 0.72, 0.25, and 0.03, respectively, and were equally prevalent among males and females, suggesting substantial exposure to the CPOX4 variant.	NAC, Glutathione, Possibly EDTA for chelation	Sources of mercury exposure
Detoxification	rs72547513	CYP1A2	C	AA: 2/2	N/A	Hydroxylation or dealkylation of xenobiotics, Phase I, metabolize E2 to 2-hydroxyestradiol	CYP1A2*11 allele with approximately 5% activity of that of the CYP1A2 wild type	Induce with broccoli, Cabbage, Diindolylmethane, Glucarate, NAC, Cardamom, Sulforaphane	Curcumin, Cumin, Grapefruit
Detoxification	rs762551	CYP1A2	A	AC: 1/2	46.8902%	Hydroxylation or dealkylation of xenobiotics, Phase I, metabolize E2 to 2-hydroxyestradiol	Slow to metabolize caffeine, Main liver pathway	Induce with broccoli, Cabbage, Diindolylmethane, Glucarate, NAC, Cardamom, Sulforaphane	Curcumin, Cumin, Grapefruit
Detoxification	rs1056827	CYP1B1	G	AC: 1/2	42.4033%	4-hydroxylation of estrogen	Increased enzyme activity, undesirable 4-hydroxylation of estrogen	Diindolylmethane	

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Detoxification	rs16947	CYP2D6	G	AG: 1/2	47.4512%	Detoxifies 20% of prescription drugs	Possible ultra metabolizer		Substrates of this enzyme
Detoxification	rs1050450	GPX1	C	AG: 1/2	39.2615%	Glutathione peroxidase functions in the detoxification of hydrogen peroxide, and is one of the most important antioxidant enzymes in humans.	Deficiency in glutathione peroxidase	Selenium, Iodine	
Detoxification	rs1800668	GPX1	C	AG: 1/2	22.4286%	Glutathione peroxidase functions in the detoxification of hydrogen peroxide, and is one of the most important antioxidant enzymes in humans.	Decreased activity of glutathione peroxidase	Selenium	
Detoxification	rs1695	GSTP1	G	AG: 1/2	42.4696%	Conjugation toxins to glutathione	Persons having the alleles AA or AG had an increase in inflammatory interleukin-6 (IL-6) upon supplementing alpha-tocopherol (the most common form of Vitamin E in a North American diet) while those with GG saw a decrease.	NAC, Whey	Vitamin E
Detoxification	rs1208	NAT2	A	GG: 2/2	14.6514%	This gene encodes an enzyme that functions to both activate and deactivate arylamine and hydrazine drugs and carcinogens.	Fast metabolizer	NAC, Vitamin B2, Vitamin B3, Vitamin B5, Molybdenum	
Detoxification	rs1799929	NAT2	C	TT: 2/2	N/A	This gene encodes an enzyme that functions to both activate and deactivate arylamine and hydrazine drugs and carcinogens.	Decreased activity	NAC, Vitamin B2, Vitamin B3, Vitamin B5, Molybdenum	
Detoxification	rs1801280	NAT2	T	CT: 1/2	46.1933%	This gene encodes an enzyme that functions to both activate and deactivate arylamine and hydrazine drugs and carcinogens.	Decreased activity	NAC, Vitamin B2, Vitamin B3, Vitamin B5, Molybdenum	

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Detoxification	rs1800566	NQO1	C	AG: 1/2	35.5447%	Reduces quinones to hydroquinones (vitamin E alpha-tocopherol quinone, menadione, benzene quinones)	This is a null mutation and removal of carcinogenic quinones is affected negatively		
Detoxification	rs182420	SULT2A1	A	CT: 1/2	25.5034%	Catalyze the sulfate conjugation of many hormones, neurotransmitters, drugs, and xenobiotic compounds	Decreased enzyme function	NAC, MSM, Taurine	
Neurotransmitter Levels	rs165722	COMT	A	CC: 2/2	32.6762%	Degrades catecholamines, Phase II, inactivates hydroxy-estrogens	Decreased COMT activity	Hydroxy B12 (hydroxycobalamin)	Methyl B12, Methyl donors
Neurotransmitter Levels	rs4646312	COMT	G	CT: 1/2	41.2943%	Degrades catecholamines, Phase II, inactivates hydroxy-estrogens	Decreased COMT activity	Hydroxy B12 (hydroxycobalamin)	Methyl B12, Methyl donors
Neurotransmitter Levels	rs6269	COMT	A	AG: 1/2	44.7595%	Degrades catecholamines, Phase II, inactivates hydroxy-estrogens	Decreased COMT activity	Hydroxy B12 (hydroxycobalamin)	Methyl B12, Methyl donors
Neurotransmitter Levels	rs2391191	DAOA	G	AG: 1/2	49.3000%	D-amino acid oxidase activator, which degrades D-serine, a potent activator of NMDA receptors	Associated with cognitive manic symptoms	Idebenone, Piracetam, Magnesium, Taurine, Lithium orotate	
Neurotransmitter Levels	rs701567	DAOA	G	CT: 1/2	49.9551%	D-amino acid oxidase activator, which degrades D-serine, a potent activator of NMDA receptors	Associated with cognitive manic symptoms	Idebenone, Piracetam, Magnesium, Taurine, Lithium orotate	
Neurotransmitter Levels	rs3749034	GAD1	A	GG: 2/2	68.6151%	Catalyzes production of GABA from glutamate	High glutamate, low GABA	Taurine, Theanine, NAC, Glycine, Vitamin B3	MSG
Neurotransmitter Levels	rs3828275	GAD1	G	TT: 2/2	7.46300%	Catalyzes production of GABA from glutamate	High glutamate, low GABA	Taurine, Theanine, NAC, Glycine	MSG
Neurotransmitter Levels	rs1137070	MAO-A	C	T: 1/1	N/A	Oxidizes serotonin, dopamine, epinephrine, norepinephrine	Increased expression MAO-A	Curcumin	
Neurotransmitter Levels	rs2283729	MAO-B	G	A: 1/1	7.93250%	Oxidizes phenethylamine, benzethylamine, dopamine	Lower mental energy		Quercetin, Other MAOB inhibitors

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Neurotransmitter Levels	rs2769605	NTRK2	C	CT: 1/2	43.9018%	Neurotrophic tyrosine kinase receptor type 2	Decreased BDNF	Theanine, Curcumin, Beta-alanine, Lithium orotate, Phosphatidylserine	
Neurotransmitter Levels	rs2070762	TH	T	AG: 1/2	47.8166%	Tyrosine hydroxylase, produces dopamine from tyrosine	Low dopamine	N-acetyl-tyrosine, Mucuna pruriens (with caution)	
Folate One-Carbon Metabolism / Methylation (FOCM)	rs651852	BHMT08	T	CT: 1/2	48.0752%	Methylates homocysteine to methionine	Downregulation	Phosphatidylcholine, TMG, Phosphatidylserine, Zinc	
Folate One-Carbon Metabolism / Methylation (FOCM)	rs1801181	CBS	G	AG: 1/2	38.8293%	Adds l-serine to homocysteine to produce l-cystathionine	Upregulation, high taurine, high ammonia, high sulfates, decrease in glutathione synthesis	Ornithine/Arginine, Manganese, Molybdenum, Zinc, SAME inhibits, CoQ10	Methyl donors, Vitamin B6 (P-5-P form ok), Taurine, Sulfates, BCAA
Folate One-Carbon Metabolism / Methylation (FOCM)	rs1643649	DHFR	T	CT: 1/2	27.2580%	Reduces dihydrofolate to tetrahydrofolate	Decreased function of enzyme	Reduced forms of folate, Glycine	Green tea, EGCG
Folate One-Carbon Metabolism / Methylation (FOCM)	rs6922269	MTHFD1L	G	AG: 1/2	30.5454%	MTHFD1L is an enzyme involved in THF synthesis in mitochondria	Mitochondrial folate abnormality	Vitamin B12, Choline	
Folate One-Carbon Metabolism / Methylation (FOCM)	rs1801131	MTHFR	A	GG: 2/2	0.00710%	Converts folic acid to 5-methyltetrahydrofolate	Low BH4, excess ammonia, low nitric oxide, does NOT lead to high homocysteine, however high superoxide	L-methylfolate, Vitamin B3, Potassium, Ornithine, Vitamin B6, Vitamin B12, Vitamin C, Rooibos, Manganese	Folinic acid, Folate
Folate One-Carbon Metabolism / Methylation (FOCM)	rs1805087	MTR	A	AG: 1/2	34.2065%	Converts homocysteine into methionine	Upregulation that can deplete methyl-b12.	Methyl B12, L-methylfolate, Lithium orotate, Grapeseed extract	
Folate One-Carbon Metabolism / Methylation (FOCM)	rs1801394	MTRR	A	GG: 2/2	19.7362%	Methylates, recycles vitamin b12	Poor methylation of Vitamin B12 leading to higher homocysteine levels.	Methyl B12, L-methylfolate	

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Folate One-Carbon Metabolism / Methylation (FOCM)	rs1802059	MTRR	G	AG: 1/2	42.7445%	Methylates, recycles vitamin b12	Less active enzyme	Methyl B12	
HPA axis / Endocrine	rs1501299	ADIPOQ	C	GT: 1/2	43.8136%	Important adipokine involved in the control of fat metabolism and insulin sensitivity, with direct anti-diabetic, anti-atherogenic and anti-inflammatory activities.	Decreased adiponectin	Omega-3 fatty acids like fish oil, Coffee, Leucine, Magnesium, Fiber, Exercise	
HPA axis / Endocrine	rs1501899	CaSR	G	AA: 2/2	14.7929%	Calcium sensitive receptor	s7652589 and rs1501899 were also associated with nephrolithiasis in patients with normal citrate excretion	Vitamin K, Magnesium	Calcium
HPA axis / Endocrine	rs1801260	CLOCK	A	AG: 1/2	34.2473%	Circadian Locomotor Cycles Kaput	Late sleeping time	Be mindful of sleep time	
HPA axis / Endocrine	rs2234693	ESR1	T	CC: 2/2	20.3175%	Estrogen receptor alpha	Female health affected	Diindolymethane	
HPA axis / Endocrine	rs9340799	ESR1	A	AG: 1/2	39.4495%	Estrogen receptor alpha	Female health affected	Diindolymethane	
HPA axis / Endocrine	rs1256030	ESR2	C	AG: 1/2	47.4890%	Estrogen receptor beta	Female health affected	Diindolymethane	
HPA axis / Endocrine	rs560887	G6PC2	T	CC: 2/2	72.8756%	This gene encodes an enzyme belonging to the glucose-6-phosphatase catalytic subunit family. These enzymes are part of a multicomponent integral membrane system that catalyzes the hydrolysis of glucose-6-phosphate, the terminal step in gluconeogenic and glycogenolytic pathways, allowing the release of glucose into the bloodstream. The family member encoded by this gene is found in pancreatic islets.	Fasting blood glucose level higher. This is actually the more common form	Chromium, Vanadium	High carb diets
HPA axis / Endocrine	rs1866388	NR3C1	G	AA: 2/2	60.1431%	Glucocorticoid receptor	Mutation associated with generalized glucocorticoid resistance, high cortisol, CFS	Phosphatidylserine, Possibly ketogenic diet	

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HPA axis / Endocrine	rs852977	NR3C1	G	AA: 2/2	56.1304%	Glucocorticoid receptor	Mutation associated with generalized glucocorticoid resistance, high cortisol, CFS	Phosphatidylserine, Possibly ketogenic diet	
HPA axis / Endocrine	rs1544410	VDR	G	CT: 1/2	42.7506%	Vitamin D Receptor	Downregulated Vitamin D receptor	Vitamin D3, Sage, Rosemary	Methyl donors
Cardiovascular	rs4654748	ALPL	C	CT: 1/2	45.9348%	alkaline phosphatase	Lower concentration b6	Vitamin B6	
Cardiovascular	rs5882	CETP	G	AG: 1/2	48.7481%	Cholesterol ester transfer protein	Cholesterol levels affected	Low fat diet	
Cardiovascular	rs854571	PON1	C	CT: 1/2	48.5938%	Major antiatherosclerotic component of HDL	Decreased function	Omega-3 fatty acids like fish oil, Fat soluble antioxidants, Vitamin K	Cholesterol, High fat diet
Cardiovascular	rs2516839	USF1	G	CT: 1/2	49.8381%	Upstream Stimulatory Factor 1	Cholesterol levels affected	Fiber	High fat diet
Digestion / Elimination	rs6564851	BCMO1	G	TT: 2/2	20.5608%	Key enzyme in beta-carotene metabolism to vitamin A.	reduced catalytic activity by 48%	Vitamin A	
Digestion / Elimination	rs6420424	BCMO1	A	AG: 1/2	49.4600%	Key enzyme in beta-carotene metabolism to vitamin A.	reduced catalytic activity by 59%	Vitamin A	
Digestion / Elimination	rs7501331	BCMO1	C	CT: 1/2	27.3055%	Key enzyme in beta-carotene metabolism to vitamin A.	poor converter	Vitamin A	
Digestion / Elimination	rs492602	FUT2	T	GG: 2/2	20.9144%	Fucosyltransferase 2 enzyme which determines 'secretor status'	Reduced intestinal microbiota diversity but higher vitamin B12 levels	Probiotics	
Digestion / Elimination	rs601338	FUT2	G	AA: 2/2	20.6845%	Fucosyltransferase 2 enzyme which determines 'secretor status'	Reduced intestinal microbiota diversity, non secretor	Probiotics	
Digestion / Elimination	rs602662	FUT2	G	AA: 2/2	21.8525%	Fucosyltransferase 2 enzyme which determines 'secretor status'	Reduced intestinal microbiota diversity. Interferes with absorption of B12. Individuals on vegetarian diet with GG (homozygous major genotype) have significantly lower levels of vitamin B(12).	Probiotics	

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Digestion / Elimination	rs10889677	IL-23R	C	AA: 2/2	15.1568%	Important part of the inflammatory response against infection. It promotes upregulation of the matrix metalloprotease MMP9, increases angiogenesis and reduces CD8+ T-cell infiltration.	Affects intestinal health	Probiotics, Omega-3 fatty acids like fish oil, Vitamin D3	
Energy / Oxidation	rs10370	SOD2	G	GT: 1/2	N/A	Mitochondrial Superoxide Dismutase 2	Decreased gene function. 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.	Manganese, Vitamin E in tocotrienol form	Alcohol, Noise (greater chance for hearing loss)
Energy / Oxidation	rs4880	SOD2	A	AG: 1/2	48.9123%	Mitochondrial Superoxide Dismutase 2	Decreased gene function. 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.	Manganese, Vitamin E in tocotrienol form	Alcohol, Noise (greater chance for hearing loss)