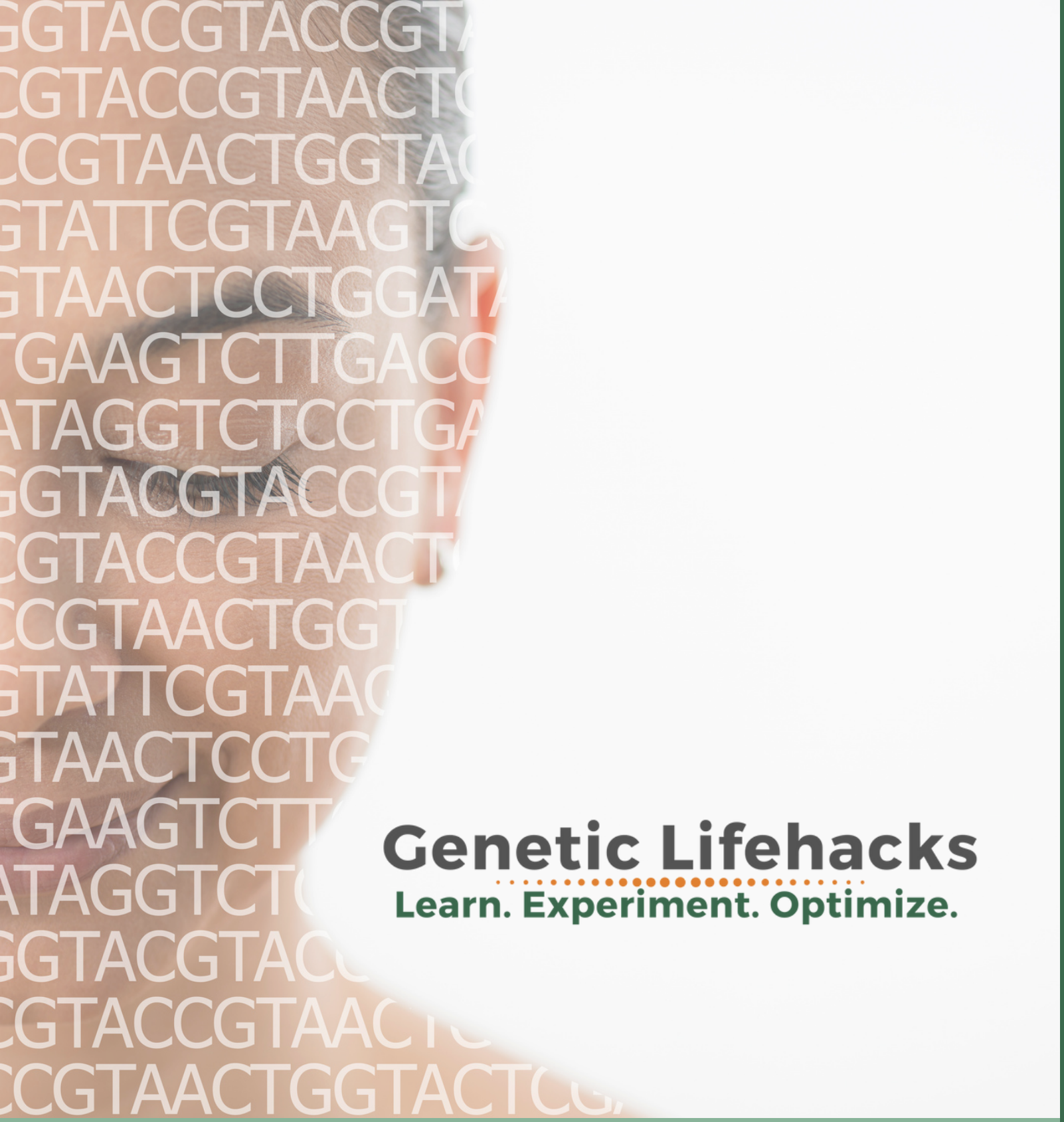


Genetic Lifehacks

Learn. Experiment. Optimize.

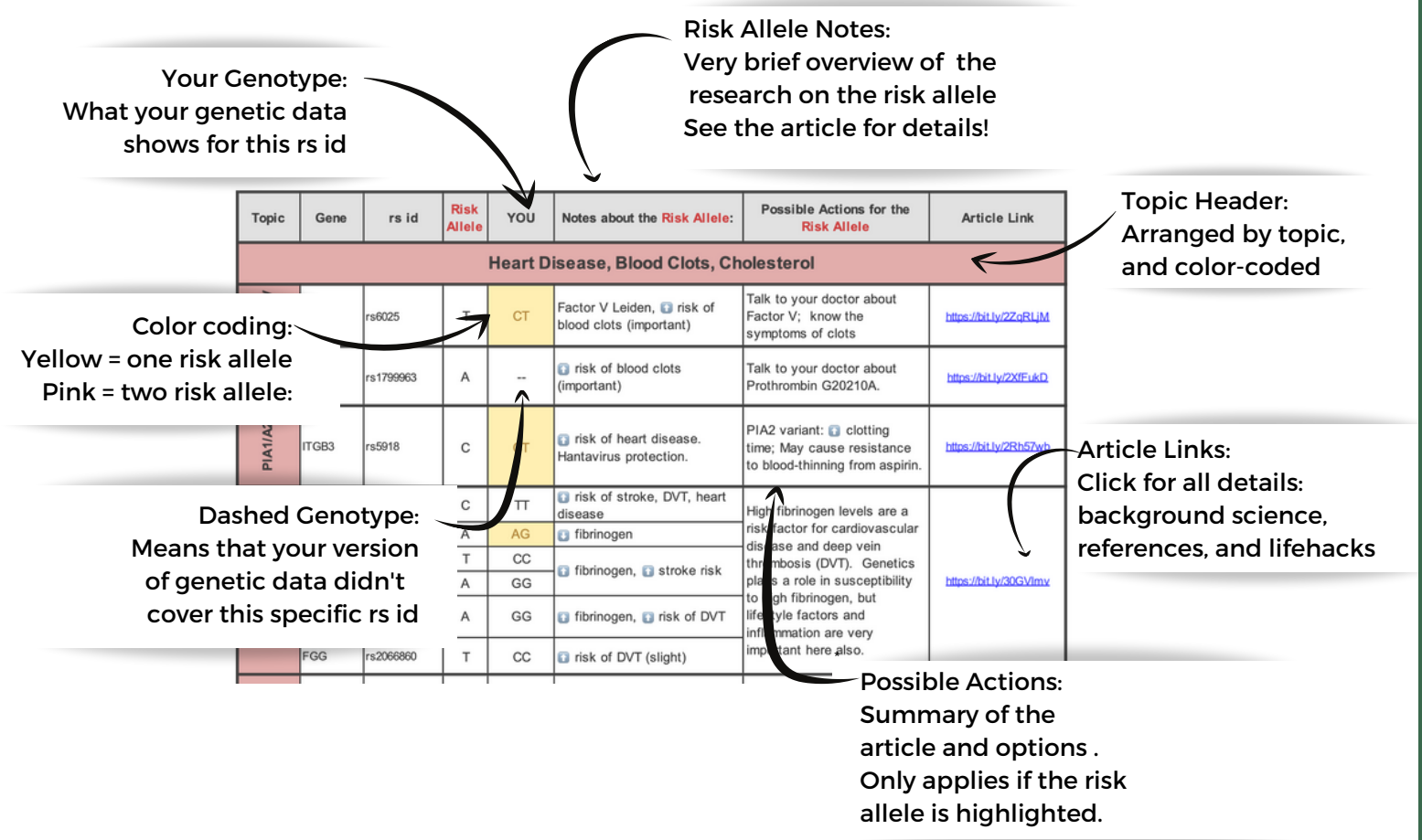
ULTIMATE CHEAT SHEET

Genetic Overview

Introduction

What does this Cheat Sheet tell you?

- Matches your genetic data to the articles on Genetic Lifehacks
- Easy way to see which articles are relevant to you
- Click on the article links to read all the details, including peer-reviewed references



Topic	Gene	rs id	Risk Allele	YOU	Notes about the Risk Allele:	Possible Actions for the Risk Allele	Article Link
Heart Disease, Blood Clots, Cholesterol							
		rs6025	T	CT	Factor V Leiden, risk of blood clots (important)	Talk to your doctor about Factor V; know the symptoms of clots	https://bit.ly/2ZqRLjM
		rs1799963	A	--	risk of blood clots (important)	Talk to your doctor about Prothrombin G20210A.	https://bit.ly/2XfFukD
PIA1/A2	ITGB3	rs5918	C	CT	risk of heart disease. Hantavirus protection.	PIA2 variant: clotting time; May cause resistance to blood-thinning from aspirin.	https://bit.ly/2Rh57wh
			C	TT	risk of stroke, DVT, heart disease	High fibrinogen levels are a risk factor for cardiovascular disease and deep vein thrombosis (DVT). Genetics plays a role in susceptibility to high fibrinogen, but lifestyle factors and inflammation are very important here also.	https://bit.ly/30GVlmv
			A	AG	fibrinogen		
			T	CC	fibrinogen, stroke risk		
			A	GG			
			A	GG	fibrinogen, risk of DVT		
	FGG	rs2066860	T	CC	risk of DVT (slight)		

What does it mean when the genotype is highlighted?

- Yellow highlight: Your genotype matches one copy of the risk allele
- Pink highlight: Your data matches with two copies of the risk allele

Does the Cheat Sheet show every possible risk for a certain disease or trait?

- No. Genetic data from 23andMe or AncestryDNA covers less than 1% of your full genome.
- Genetics research is still relatively new, and researchers continually make new discoveries.

How accurate is this information?

- Errors are always possible, including errors in your genetic data, typos on the cheat sheet, and errors in the research studies.
- Always seek qualified medical advice before making medical decisions.

If I'm at an increased risk for a disease, does this mean that I will get the disease?

- No. For most diseases, your genetic risk factors combine with your environment (diet, toxin exposure, gut microbiome, pathogens, activity level, where you live, sleep quality, and more).
- The good news is that you can use this information to prevent chronic diseases for which you are at risk by altering your environmental factors.

Topic	Gene	rs id	Effect Allele	YOU	Notes about the Effect Allele:	Possible Actions for the Effect Allele	Article Link
Heart Disease, Blood Clots, Cholesterol							
Factor V	F5	rs6025	T	CC	Factor V Leiden, Increased risk of blood clots (important)	Talk to your doctor about Factor V Leiden; know the symptoms of blood clots	bit.ly/2Rh57wb
DVT (prothrombin)	F2	rs1799963	A	AG	Increased risk of blood clots (important)	Talk to your doctor about Prothrombin G20210A.	bit.ly/2XfFukD
	F2	i3002432	A	--	Increased risk of blood clots (important)		
	F2	rs3136516	G	AA	Slightly increased risk of venous thromboembolism		
PIA1/A2	ITGB3	rs5918	C	TT	Increased risk of heart disease. Hantavirus protection.	PIA2 variant: Increased clotting time; May cause resistance to blood-thinning from aspirin.	bit.ly/2Rh57wb
Fibrinogen	FGA	rs6050	C	CT	Increased risk of stroke, DVT, heart disease	High fibrinogen levels are a risk factor for cardiovascular disease and deep vein thrombosis (DVT). Genetics plays a role in susceptibility to high fibrinogen, but lifestyle factors and inflammation are very important here also.	bit.ly/30GVImv
	FGA	rs2070022	A	GG	Decreased fibrinogen		
	FGB	rs1800787	T	CT	Increased fibrinogen, Increased stroke risk		
	FGB	rs1800789	A	AG			
	FGB	rs1800790	A	AG			
	FGG	rs2066865	A	AG	Increased fibrinogen, Increased risk of DVT		
	FGG	rs2066860	T	CC	Increased risk of DVT (slight)		
Additional Blood clot risk factors	VWF	rs1063856	C	CT	Likely to have increased von Willebrand factor	Slightly higher risk of blood clots, especially in people with type A, B, or AB blood	bit.ly/32k3Ydk
	VWF	rs1063857	G	AG	Likely to have increased von Willebrand factor		
	G6P	rs1613662	G	GG	Increased platelet stickiness	Slightly higher risk of heart attacks	
	F11	rs2036914	C	CT	CC only: increased coagulation	Increased risk of thromboembolism	
Lipoprotein(a)	LPA	rs3798220	C	TT	risk of elevated Lp(a), increased risk for heart disease (important)	High Lipoprotein(a) is a **significant** risk factor for heart disease. If you carry the risk allele for elevated Lp(a), talk with your doctor and get an Lp(a) test done.	bit.ly/2RqRNYI
	LPA	rs10455872	G	AA	risk of elevated Lp(a), increased risk for heart disease (important)		
	LPA	rs6919346	T	CT	Lower LPA levels (good)		
	LPA	rs41272114	T	CC	Lower LPA levels (good)		
	LPA	rs143431368	C	TT	Lower LPA levels (good)		
Blood Pressure	AGTR1	rs5186	C	AC	Increased risk of high blood pressure; Incr. risk of fatty liver, insulin resistance.	This angiotensin II receptor variant increases the risk of blood pressure.	bit.ly/2JJvbNV
	AGTR1	rs3772622	C	CT	Increased risk of fatty liver, especially in CVD		
	AGTR1	rs1492078	T	CC	T/T: Decreased risk of kidney cancer (good)		
Aldosterone Synthase	CYP11B2	rs1799998	G	AA	Increased risk of high blood pressure, stroke	Aldosterone is a steroid hormone that regulates blood pressure and plasma sodium and potassium levels.	bit.ly/3I7qsC2
	CYP11B2	rs61757294	G	AG	For two copies, aldosterone synthase deficiency possible (rare mutations)		
	CYP11B2	rs104894072	G	TT			
	CYP11B2	rs28931609	A	GG			

Topic	Gene	rs id	Effect Allele	YOU	Notes about the Effect Allele:	Possible Actions for the Effect Allele	Article Link
BP, MTHFR	MTHFR	rs1801133	A	AA	MTHFR C677T allele; linked to high blood pressure	increased relative risk of high blood pressure, especially combined with riboflavin deficiency	bit.ly/3ttYx9p
CRP	CRP	rs1205	T	CT	Lower CRP levels (good)	Lower CRP is associated w/ lower risk of heart disease and colon cancer	bit.ly/2Rh36QD
	CRP	rs3091244	G	GG	Lower CRP levels (good)		
	CRP	rs1800947	G	CC	Lower CRP levels (good)		
	CRP	rs3093058	A	TT	Higher CRP levels	Higher CRP is linked to inflammation, heart disease, and diabetes	
	CRP	rs3093059	G	AA	Higher CRP levels		
PCSK9 (Cholesterol)	PCSK9	rs11591147	T	GG	These variants cause decreased LDL-cholesterol and a significantly lower risk of heart disease. **(good)**	Talk with your doctor about options if you carry the PCSK9 variants linked to high LDL. There are medications that target PCSK9 specifically, and berberine, a natural supplement, also targets PCSK9.	bit.ly/31tsC9Q
	PCSK9	rs28362286	A	CC			
	PCSK9	rs67608943	G	CC			
	PCSK9	rs72646508	T	CC			
	PCSK9	rs505151	G	AA	Increased LDL, increased risk of heart disease		
	PCSK9	rs28942112	C	TT	High LDL (important)		
	PCSK9	i5000370	C	--	High LDL (important)		
	PCSK9	rs28942111	A	TT	High LDL (important)		
LDL and Total Cholesterol Levels	PCSK9	rs11591147	T	GG	Lower LDL; Decreased risk of heart disease (good)	If you carry a variant related to high LDL, get your cholesterol level checked, and talk with a good doctor if it is high. Knowing which variant you have may help to target the best option for lowering your high LDL. Read through the article for specific gene-related ways to lower LDL levels.	bit.ly/2Km3KLU
	PCSK9	rs28362286	A	CC			
	PCSK9	rs67608943	G	CC			
	PCSK9	rs72646508	T	CC			
	PCSK9	rs505151	G	AA	Increased LDL		
	PCSK9	rs28942111	A	TT	Familial hypercholesterolemia possible (important)		
	PCSK9	i5000370	C	--			
	PCSK9	rs28942112	C	TT			
	APOB	rs693	A	AG	Higher LDL, total cholesterol		
	APOB	rs6752026	A	GG	Lower LDL		
	ABCA1	rs2230806	T	CC	Increased risk heart disease		
	LDLR	rs6511720	T	GG	Decreased LDL		
	GPER1	rs11544331	T	CT	Increased LDL-C, especially in women		
	HMGCR	rs3846662	G	AG	Statins may not work as well		
	APOB	rs144467873	A	GG	Pathogenic for hypercholesterolemia (important)		
	APOB	rs5742904	T	CC			
	APOB	rs12713559	A	GG			
	LDLRAP1	rs121908324	A	GG			
	LDLRAP1	rs121908325	T	CC			
	APOB	i4000339	A	--			
Triglyceride Levels	APOA5	rs662799	G	AG	Higher triglycerides	High triglycerides are a risk factor for cardiovascular disease and metabolic syndrome. Studies show that high fructose corn syrup increases triglyceride levels, so cut out the soda and junk food. Reducing overall carbohydrate consumption helps some people lower their triglycerides. Fish oil supplements, or eating a diet high in fish, may also help to lower triglycerides.	bit.ly/2NTd6Bn
	APOA5	rs2075291	A	CC	Higher triglycerides, especially in Asian ancestry		
	APOA5	rs3135506	C	GG	Slightly higher triglycerides		
	APOA5	rs651821	C	CT			
	LPL	rs328	G	CC	Slightly lower triglycerides		
	LPL	rs320	G	TT			
	LPL	rs268	G	AA	High triglycerides		
	GCKR	rs780094	T	CT	Slightly higher triglycerides		
	APOC2	rs5126	C	AA	Really high triglycerides (important)		
	APOC2	rs120074114	C	AA			
	GPD1	rs199673455	A	GG			

Topic	Gene	rs id	Effect Allele	YOU	Notes about the Effect Allele:	Possible Actions for the Effect Allele	Article Link
Salt Sensitive Genes	AGTR1	rs4524238	A	GG	lower blood pressure with a low-salt diet	Sodium impacts blood pressure through the fluid balance regulation in the kidneys as well as through interacting directly with the lining of your blood vessels. Salt sensitivity of blood pressure varies across populations Genetic variations significantly influence individual salt sensitivity, with certain genotypes making people more prone to high blood pressure in response to high salt intake.	bit.ly/3yqkH2w
	SLC4A5	rs7571842	A	AG	blood pressure more likely to be sensitive to higher salt diet		
	SLC4A5	rs10177833	C	AC	blood pressure less likely to be sensitive to salt		
	ACE	rs4343	G	AA	A/G: ACE deletion/insertion, blood pressure somewhat sensitive to high salt; G/G: ACE deletion/deletion —blood pressure not as sensitive to salt		
	LSS	rs2254524	A	CC	a low salt diet more likely to work for high blood pressure		
	NPPA	rs5063	T	CC	blood pressure more susceptible to salt consumption		
	ADD1	rs4961	T	GG	blood pressure likely to be salt-sensitive		
	SGK1	rs2758151	C	CT	C/C: blood pressure sensitive to salt intake; C/T: blood pressure not as salt-sensitive		
	LSD1	rs587168	A	CC	blood pressure increases significantly with high dietary salt		
	UMOD	rs4293393	G	AG	protective against salt-sensitive blood pressure, increased kidney stone risk		
	UMOD	rs13333226	G	AG	protective against salt-sensitive blood pressure		
Plant Sterols	CYP7A1	rs3808607	T	GG	TT: no cholesterol lower benefit from plant sterols	Plant sterols, such as beta-sitosterol, are often recommended to prevent heart disease. For some people, increased plant sterol consumption may backfire and increase heart disease. For others, sterols may have a benefit.	bit.ly/3e3e0Fe
	CETP	rs5882	G	AG	G/G: plant sterols shown to lower triglycerides		
	ABCG8	rs41360247	C	TT	Reduce phytosterol absorption, lower CAD		
	ABCG8	rs4148217	A	CC	Reduced risk of heart disease		
	ABCG8	rs4245791	C	CT	Increased cholesterol and sterol absorption, Increased CAD		
	ABCG8	rs4299376	G	GT	Increased risk of heart disease		
	ABCG8	rs11887534	C	GG	Increased susceptibility to CAD, greatly increased risk of gallstones		
	ABCG8	rs137854891	G	CC	Sitosterolemia (pathogenic)		
	ABCG8	rs199689137	A	GG	Sitosterolemia (pathogenic)		
	ABCG8	rs119479065	A	GG	Sitosterolemia (pathogenic)		
	ABCG8	rs137852987	A	GG	Sitosterolemia (pathogenic)		
	ABCG5	rs6720173	C	GG	4-fold greater decrease in LDL with plant sterol consumption		
HDL Cholesterol	CETP	rs1800777	A	GG	Lower HDL, increased sepsis risk	HLD is often referred to as the 'good' cholesterol. You need to have enough HDL, but extremely high levels can be a problem.	bit.ly/2IqOs8X
	CETP	rs5882	G	AG	Higher HDL, lower risk of heart attack (good)		
	CETP	rs708272	A	GG	Higher HDL, lower risk of heart attack (good)		
	CETP	rs3764261	A	CC	Higher HDL (good)		
	LIPC	rs4775065	A	GG	AA only: lower HDL		

Topic	Gene	rs id	Effect Allele	YOU	Notes about the Effect Allele:	Possible Actions for the Effect Allele	Article Link
Thrombocytopenia, clots	ADAMTS13	rs28647808	G	CC	Decreased ADAMTS13	ADAMTS13 and VWF are important in blood clotting. Activation of platelets from viruses can cause thrombocytopenia. Read through the article for further details and considerations.	bit.ly/3A8qDcU
	ADAMTS13	rs685523	T	CC	Decreased ADAMTS13		
	ADAMTS13	rs142572218	T	CC	Decreased ADAMTS13 (important, rare)		
	ADAMTS13	rs148312697	C	GG	Decreased ADAMTS13 (important, rare)		
	VWF	rs1063856	C	CT	Increased von Willebrand factor		
	VWF	rs1063857	G	AG	Increased von Willebrand factor		
Aspirin Therapy	GUCY1A3	rs7692387	G	GG	GG: Decreased risk of heart disease with aspirin	For some, low dose aspirin therapy decreases the risk of heart disease. Talk to your doctor if you think it is a benefit for you.	bit.ly/3IdqjUs
	COMT	rs4680	A	AA	AA: decreased risk of heart disease with aspirin (women)		
	IGTB3	rs5918	C	TT	May not benefit from aspirin for heart attack prevention		
Ferritin	FTL	rs104894685	A	GG	carrier of a rare mutation related to ferritin	Ferritin is a blood protein that contains iron. It is how the body stores iron so that iron is available when needed. Having iron in your blood at the right level is essential for life. But iron also has to be tightly regulated in the body. Too much cellular iron can cause oxidative damage, resulting in cell death.	bit.ly/3GSbDRX
	FTL	rs397514540	T	CC			
	SLC40A1	rs11568350	A	CC	higher ferritin levels (African American men)		
	TF	rs1799852	T	CC	lower serum transferrin levels, slightly higher ferritin level		
	TF	rs3811647	A	GG	higher ferritin		
	TMPRSS6	rs855791	A	AG	lower ferritin levels (Caucasian men)		
	SLC17A1	rs17342717	T	CC	higher ferritin		
	BTBD9	rs9296249	C	CT	higher serum ferritin levels		
	BTBD9	rs3923809	A	GG	lower serum ferritin levels		
	VWF	rs1800386	C	TT	lower ferritin in premenopausal women, check for VWF deficiency		
	F5	rs6025	T	CC	increased ferritin levels in women (due to decreased menstrual bleeding)		
ADRA1	ADRA1A	rs1048101	G	AG	G/G: more likely to faint with vagal syncope; lower peripheral vascular response to cold in men, higher increase in heart rate with stress in women	The α1-adrenergic receptors (ADRA1A) are essential in how the muscles surrounding your blood vessels contract to change blood pressure and flow. ADRA1A receptors are also important in the control of heart rate, as well as the gastrointestinal and urinary system sphincters.	bit.ly/3AfDXNT
	ADRA1A	rs486179	T	CC	increased risk of heroin addiction		
	ADRA1A	rs3730287	C	CC	increased risk of memory impairment after heroin use disorder		
	ADRA1A	rs17426222	T	CC	T/T: increased risk of generalized anxiety disorder		
Niacinand Heart Disease	ACMSD	rs10496731	T	GT	risk of major cardiovascular events with higher niacin intake	A new study shows that people with genetic variants that increase niacin metabolites are at increased cardiovascular risk with higher niacin intake.	bit.ly/3Lf2IPf
	ACMSD	rs6430553	C	CT	risk of major cardiovascular events with higher niacin intake		
	ACMSD	rs6729702	G	AG	increased risk of major cardiovascular events with higher		

Topic	Gene	rs id	Effect Allele	YOU	Notes about the Effect Allele:	Possible Actions for the Effect Allele	Article Link
Coronary Artery Disease	CDKN2B-AS1	rs2383206	G	AA	Increased risk for CAD	Coronary artery disease is what most people think of as heart disease. Understanding the pathway that elevates your risk of heart disease can give you a starting point for CAD prevention. Please read through the article for all the details on this complex topic. (Note that many of these variants are also included in other articles listed on this cheat sheet.)	bit.ly/3H260Rk
	CDKN2B-AS1	rs10757274	G	AA	Increased risk for CAD		
	TCF7L2	rs7903146	T	CC	Increased risk of CAD, type 2 diabetes.		
	ALOX5AP	rs17222842	A	GG	Decreased risk of heart disease		
	ALOX5AP	rs4769874	A	GG	Increased risk of CAD		
	ACE	rs4343	G	AA	ACE deletion; increased risk of CAD		
	LRP8	rs5174	T	CT	Increased risk of CAD		
	LOX1	rs11053646	G	CC	Increased risk of CAD		
	NOS3	rs891512	A	GG	Increased risk of CAD, blood pressure		
	NOS3	rs1800779	G	AA	Increased risk of CAD		
	PCSK9	rs11591147	T	GG	Significantly lower risk of heart disease. (good)		
	PCSK9	rs28362286	A	CC			
	PCSK9	rs67608943	G	CC			
	PCSK9	rs72646508	T	CC			
	PCSK9	rs505151	G	AA	Increased LDL, increased heart disease (berberine, quercetin may work)		
	PCSK9	i5000370	C	--			
	PCSK9	rs28942111	A	TT			
	LPA	rs3798220	C	TT	Risk of elevated Lp(a), increased risk for heart disease		
	LPA	rs10455872	G	AA			
	LDLR	rs6511720	T	GG	Lower LDL, decreased heart disease risk		
	LDLRAP1	rs121908324	A	GG	Carrier of rare mutation linked to familial hypercholesterolemia		
	LDLRAP1	rs121908325	T	CC			
	ABCA1	rs2230806	T	CC	Decreased risk of CAD		
	MEF2A	rs121918529	T	CC	Rare, significantly increased risk of CAD.		
	APOB	rs144467873	A	GG	Pathogenic mutation for hypercholesterolemia		
	APOB	i4000339	A	--			
	APOB	rs5742904	T	CC			
	APOB	rs12713559	A	GG			
	MEF2A	i5003637	T	--	Rare, significantly increased risk of CAD.		
	PCSK9	rs28942112	C	TT	Increased LDL, increased heart disease		

Topic	Gene	rs id	Effect Allele	YOU	Notes about the Effect Allele:	Possible Actions for the Effect Allele	Article Link
Hypertrophic Cardiomyopathy	MYBPC3	rs397516074	T	CC	Carrier of a mutation linked to hypertrophic cardiomyopathy (important)	Hypertrophic cardiomyopathy causes changes to the heart muscle leading to an enlargement in the ventricle. Please see the article for more details.	bit.ly/3VcXiYH
	MYBPC3	i5046177	T	--			
	MYBPC3	rs375882485	A	GG			
	MYBPC3	i5046172	A	--			
	MYBPC3	rs397515963	G	AA			
	MYBPC3	i5046245	G	--			
	MYH7	rs3218713	T	CC			
	MYH7	rs3218714	T	GG			
	MYH7	rs121913626	A	CC			
	TNNT2	rs74315380	A	GG			
	TNNT2	i5006646	A	--			
	TNNT2	rs727503512	A	GG			
	TNNT2	i5048752	A	--			
	TNNT2	rs397516456	A	GG			
Neuropilins	NRP1	rs2228638	T	CC	increased risk of cyanotic congenital heart disease, increased relative risk of TOF	Neuropilins (NRPs) are cell receptors that have several roles, including in promoting the growth of blood vessels and lymph vessels. NRP1 and NRP2 are receptors for SARS-CoV-2, located in the endothelium, on neurons, and on immune system cells — all key locations linked to symptoms experienced after exposure to the SARS-CoV-2 spike protein.	bit.ly/3q0EjkD
	NRP1	rs10080	G	GG	GG: linked to altered neurological response to COVID-19		
	NRP1	rs2506142	G	--	increased risk for menstrual migraines		
	NRP2	rs849563	G	GT	increased relative risk of autism spectrum disorder, increased risk of secondary lymphedema		
	NRP2	rs849530	C	AA	increased risk of secondary lymphedema		
PAI-1	SERPINE1	rs1799768	D	TT	higher circulating PAI-1 levels; increased relative risk of blood clots	~ Plasminogen Activator Inhibitor (PAI-1) is an important enzyme in regulating the breakdown of blood clots and fibrosis. ~ Elevated PAI-1 levels are associated with an increased relative risk of heart attack, stroke, blood clots, tissue fibrosis, miscarriage, and more.	bit.ly/479693F
	SERPINE1	rs2227631	A	AA	increased PAI-1; increased relative risk of ACS and stroke		
	SERPINE1	rs7242	G	GG	increased relative risk of myocardial infarction		
	SERPINE1	rs6092	A	GG	higher levels of plasminogen activator in COVID patients		
	SERPINE1	rs2227692	T	CC	slightly higher risk of gastric cancer		
Homocysteine	MTHFR	rs1801133	A	AA	MTHFR C677T, higher homocysteine levels, especially if folate is lacking	~ Research shows that high homocysteine levels can cause excess oxidative stress and endoplasmic reticulum stress. ~ Epidemiologic studies show that high homocysteine levels are strongly linked to an increased relative risk of cardiovascular diseases. ~ Homocysteine is an intermediate produced in the methionine cycle and can be remethylated to methionine or converted to cysteine. ~ Genetic variants in several pathways interact with what you eat (or don't eat) to increase homocysteine levels.	bit.ly/3ZwPzr3
	NOX4	rs11018628	C	TT	decreased homocysteine, decreased stroke risk		
	MTR	rs1805087	G	AG	increased risk of cognitive impairment due to higher homocysteine		
	MTR	rs2275565	T	GT	associated with higher homocysteine levels		
	MTRR	rs1801394	G	GG	somewhat increased homocysteine levels, especially if riboflavin is low		
	CBS	rs5742905	G	AA	risk of increased homocysteine, responsive to vitamin B6		
	PON1	rs662	C	TT	higher homocysteine-thiolactone levels		
	PEMT	rs7946	T	TT	TT: homocysteine increases with low folate diet		
	BHMT	rs3733890	A	AG	reduced conversion of choline to betaine		
Nitric Oxide Synthase	NOS3	rs891512	A	GG	Increased risk of high blood pressure and heart disease	Nitric oxide acts as a signaling molecule in the endothelium, impacting blood pressure, cardiovascular disease, brain health, and more. Lifestyle factors are important here also.	bit.ly/3qtgHaH
	NOS3	rs1800779	G	AA			
	NOS3	rs4496877	T	GG	Increased risk of high blood pressure		
	NOS3	rs2070744	C	TT	Increased risk of heart disease, osteoporosis		

Topic	Gene	rs id	Effect Allele	YOU	Notes about the Effect Allele:	Possible Actions for the Effect Allele	Article Link
Vitamins & Minerals							
MTHFR	MTHFR C677T	rs1801133	A	AA	Decreased MTHFR enzyme, which affects the methylation cycle	Increase your consumption of folate-rich foods and include choline in your diet. Consider methyl folate.	bit.ly/2IediWW
	MTHFR A1298C	rs1801131	G	TT			
More MTHFR	MTHFR	rs2274976	T	CC	Decreased folate conversion; increased risk schizophrenia, homocysteine	There is more to the methylation cycle than just the MTHFR C677T variant (although it is important). Take these MTHFR variants into account when looking at your folate needs.	bit.ly/3o0YK10
	MTHFR	rs9651118	C	TT	Decreased risk of liver cancer, lower homocysteine (good)		
	MTHFR	rs13306560	T	CC	Lower blood pressure, protective against Parkinson's (good)		
	MTHFR	rs17367504	G	AA	Protective against hypertension and preeclampsia (good)		
	MTHFR	rs4846049	G	GG	GG: Decreased risk of migraines (good)		
MTR & MTRR	MTR	rs1805087	G	AG	increased enzyme activity; increased risk of cognitive impairment (likely due to higher homocysteine	Increase your consumption of folate-rich foods. B12 is only found in animal-based foods so vegans and vegetarians might consider supplementation.	bit.ly/3NZUOfd
	MTR	rs1050993	A	AG	Increased relative risk of breast cancer, heart disease		
	MTR	rs2275565	T	GT	Higher homocysteine levels		
	MTRR	rs1801394	G	GG	Decreased enzyme efficiency; increased risk for male infertility, slightly increased risk for cancer		
MTHFD1	MTHFD1	rs2236225	A	AG	decreased MTHFD1 enzyme stability, more of a reliance on choline as a methyl donor	The MTHFD1 gene encodes the methylenetetrahydrofolate dehydrogenase enzyme, which is an essential part of the folate cycle	bit.ly/3Jr578J
	MTHFD1	rs1076991	T	CT	minor decrease in enzyme activity		
	MTHFD1	rs1950902	G	AG	G/G: increased risk of congenital heart defects in offspring		
COMT	COMT	rs4680	A	AA	GG= higher activity AA= lower activity	Low COMT activity can make you sensitive to certain supplements. Watch for side effects with methylB12, SAMe, TMG	bit.ly/2Wl4dtq
	COMT	rs4633	T	TT	CC = higher activity TT= lower COMT activity		
	COMT	rs6267	T	GG	Higher pain sensitivity		
	COMT	rs165599	A	AA	Incr. risk of anxiety in combination with rs4680		
Vitamin B12	MTRR	rs1801394	G	GG	Decreased MTRR, affects B12	Insufficient B12 may cause high homocysteine	bit.ly/2RgyZbP
	FUT2	rs601338	A	AA	AA only: non-secretor, serum B12 tests may be inaccurate	The MMA test may be more accurate for B12 levels	
	TCN1	rs526934	G	AG	B12 transporter, lower circulating B12	Ensure that you are getting adequate B12 through diet or supplements	
	TCN2	rs9606756	G	AA	B12 binding protein, reduced B12 levels		

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Riboflavin (Vitamin B2)	MTHFR	rs1801133	A	AA	Riboflavin may help lower homocysteine	Riboflavin (vitamin B2) is an important cofactor in many cellular reactions. Foods high in riboflavin include liver, lamb, and milk. Riboflavin supplements are available as well, and it should be included in a B-complex.	bit.ly/3rBgL8U
	FMO3	rs1736557	A	GG	Decreased FMO3, which breaks down nitrogen containing amines. Some people helped with riboflavin.		
	FMO3	rs3832024	D	TT			
	FMO3	rs2266782	A	AA			
	FMO3	rs909531	C	CT			
	FMO3	rs2266780	G	AG			
	FMO3	rs61753344	T	GG			
	FMO3	rs909530	T	CT			
	ETFDH	i5007876	A	--	Multiple ACAD (important)		
	ETFDH	rs121964954	A	GG	Multiple ACAD (important)		
	SLC52A3	i5008314	A	--	Brown-Vialetto-Van Laere (important)		
	SLC52A3	rs267606684	A	GG	Brown-Vialetto-Van Laere (important)		
	SLC52A2	rs782345472	T	CC	Brown-Vialetto-Van Laere (important)		
	SLC52A2	rs375088539	T	CC	Brown-Vialetto-Van Laere (important)		
	SLC25A32	rs147014855	T	CC	Exercise intolerance that responds to riboflavin		
Vitamin B6	ALPL	rs1256335	G	AG	Decreased vit. B6 levels	Vitamin B6 is essential for over a hundred reactions in the body including neurotransmitter levels and glucose levels. Signs of deficiency can include seizures, peripheral neuropathy, inflammatory conditions, and weakened immune system.	bit.ly/31DIBTv
	ALPL	rs1697421	T	CT	Slightly decreased vitamin B6 levels		
	ALPL	rs1780316	T	CT			
	ALPL	rs4654748	C	CT			
	ALDH7A1	rs121912707	G	CC	mutation linked to vitamin B6 dependent epilepsy (rare)		
	ALDH7A1	rs121912708	A	GG			
Vitamin C Levels	SLC23A1	rs6133175	G	AG	Higher plasma vitamin C levels	Prioritize getting enough vitamin C rich fruits and vegetables each day. Consider supplemental vitamin C if you don't get enough in your diet.	bit.ly/31XXILM
	SLC23A1	rs12479919	T	TT			
	SLC23A1	rs6053005	T	CT			
	SLC23A1	rs33972313	T	CC	Lower plasma vit. C		
	SLC23A1	rs10063949	C	CT			
Biotin (B7) Deficiency	BTD	rs13078881	C	GG	Reduced enzyme activity	Foods with biotin (B7) include egg yolks, nutritional yeast, nuts, chicken liver, and dairy. Supplemental biotin is readily available.	bit.ly/31zaPxW
	BTD	rs28934601	G	AA	These mutations are possibly pathogenic for biotinidase deficiency if you carry two copies. (**important**)		
	BTD	rs13073139	A	GG			
	BTD	rs80338684	T	GG			
	BTD	rs34885143	A	GG			
Zinc	IL-6	rs1800795	G	CG	Zinc modulates inflammation	Zinc deficiency is linked to decreased immune function, impaired wound healing, and an increased risk of type 2 diabetes. Foods high in zinc include oysters, beef, crab, lobster, and pumpkin seeds.	bit.ly/2WAPB1x
	SLC30A8	rs13266634	T	CC	Zinc may decrease blood glucose (if high)		
	SLC30A8	rs11558471	A	AA			
	SLC30A2	rs587776926	C	TT	Zinc transporter deficiency		
	SLC30A2	rs185398527	T	CC			
	SLC30A2	rs117153535	A	CC			
	SLC39A2	rs2234632	T	GT	Zinc reduces inflammation		
	SLC39A13	rs121434363	A	GG	Mutation linked to Ehlers-Danlos, zinc dependent		
	CA1	rs1532423	A	AG	AA: higher serum zinc		

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Thiamine - Vitamin B1	SLC19A2	rs2038024	C	AC	Increased risk of venous thromboembolism	Foods high in thiamine include wheat germ, oatmeal, sunflower seeds, peas, Brussels sprouts. For pathogenic mutations, consider adding a thiamine supplement. Even if you eat well, it may be worthwhile to experiment with a thiamine supplement for a short period of time to see if you have a benefit. Talk with your doctor/nutritionist if you have questions.	bit.ly/31xl59T
	SLC19A2	rs28937595	A	CC	Carrier of a mutation linked to thiamine-responsive megoblastic anemia		
	SLC19A2	rs121908540	A	GG			
	SLC19A2	rs74315373	A	GG			
	SLC19A2	rs74315374	T	CC			
	SLC19A2	rs74315375	T	CC			
	SLC19A3	rs121917884	C	TT	Rare mutation related to basal ganglia disease		
	SLC19A3	rs121917882	A	CC			
	SLC22A1	rs72552763	D	GG	reduced thiamine transport		
	TPK1	rs371271054	C	TT	Carrier of thiamine-related mutation		
	SLC25A19	rs119473030	G	CC	Mutation for microcephaly		
	SLC25A19	rs387906944	G	CC	Carrier of a rare mutation linked to thiamine metabolism dysfunction syndrome-4		
	PHDC	rs28933391	A	GG	AA = pathogenic for Pyruvate dehydrogenase deficiency (Important)		
	PHDC	rs28935769	C	TT	CC = pathogenic for Pyruvate dehydrogenase deficiency (important)		
	BCKDHB	i3002808	C	--	Maple syrup urine disease - responsive to thiamine (important)		
	BCKDHB	rs386834233	A	GG			
	BCKDHB	i4000422	A	--			
	BCKDHB	rs74103423	A	CC			
Choline deficiency	PEMT	rs7946	T	TT	Decreased PEMT activity, phosphatidylcholine	Foods high in choline include eggs, liver, shitake mushrooms, milk, meat. Supplements for choline include CDP-choline, phosphatidylcholine, alpha-GPC. Choline is important in the methylation cycle. It is also important for pregnancy.	bit.ly/2XgEe0B
	PEMT	rs12325817	G	GG	Increased risk of organ dysfunction with low choline diet		
	CHKA	rs10791957	A	AA	Decr. turnover of methionine to phosphatidylcholine		
	BHMT	rs3733890	A	AG	Decreased conversion of choline to betaine		
	FMO3	rs2266782	A	AA	Choline used less as a methyl donor		
	MTHFD1	rs2236225	A	AG	More likely to have choline deficiency (check diet)		
Vitamin A Conversion	BCMO1	rs7501331	T	CT	Decreased conversion of beta-carotene to retinol (active) vitamin A	If you don't convert beta-carotene very well, plants will not be a great source of vitamin A for you. Either include meat in your diet or supplement with retinol based vitamin A at low doses.	bit.ly/2KR3eF2
	BCMO1	rs12934922	T	AA			
	BCMO1	rs11645428	G	AG	Decrease conversion of beta-carotene to A by up to 50% for homozygous.		
	BCMO1	rs6420424	A	AG			
	BCMO1	rs6564851	G	GT			
Vitamin D	CYP2R1	rs2060793	A	AG	Lower vitamin D levels	A blood test is your best way of knowing your current vitamin D levels. If you are below optimal vitamin D levels, try to get more sun exposure on your skin, or supplement with vitamin D3.	bit.ly/2XdVBiz
	CYP2R1	rs1562902	T	CT	Higher vitamin D levels		
	CYP27B1	rs10877012	T	GT	Increased fracture risk (elderly)		
	CYP27B1	rs28934607	A	GG	Pathogenic for vitamin D related rickets **(important)**		
	CYP27B1	rs28934605	T	CC			
	CYP27B1	rs28934604	T	CC			
	CYP2R1	rs10741657	G	AG	More likely to have vitamin D insufficiency or deficiency		
	GC	rs2282679	G	TT	Lower vitamin D levels		
	GC	rs7041	A	AA			
	GC	rs1155563	C	TT			
	VDR-TaqI	rs731236	A	AG			
	VDR-BsmI	rs1544410	T	CT			
	VDR FokI	rs2228570	G	AG			
	GC	rs12512631	C	TT	Increased vitamin D (both 25 and 1,25) levels		
	VDR	rs10783219	T	AA	Lower vitamin D levels, even with supplementation		
	VDR	rs7975232	C	AC	VDR ApaI variant		

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Magnesium	TRPM6	rs3750425	T	CC	Lower serum magnesium levels (watch for magnesium deficiency)	Some people genetically are more likely to be deficient than others, based on genetic variants that impact magnesium absorption. Understanding your genes can help you decide whether you may need more magnesium in your diet or via supplements.	bit.ly/3rVeIMy
	TRPM6	rs2274924	C	TT			
	TRPM6	rs121912625	A	GG	Rare mutation linked to hypomagnesia		
	TRPM7	rs8042919	A	AG	Increased sensitivity to low magnesium levels,		
	CNNM2	rs12413409	A	GG	Decreased risk of hypertension; CAD (good!)		
	CNNM2	rs11191548	C	TT	Decreased risk of hypertension; higher levels of 25(OH)D 9 (good!)		
Folic Acid Conversion	DHFR	rs70991108	D	AA	More unmetabolized folic acid in blood	The DHFR gene metabolizes folic acid into the form that can be used by the MTHFR gene in the methylation cycle. Impaired DHFR can increase unmetabolized folic acid in the blood stream. This can then block that ability of cells to use folate.	bit.ly/2Xf3lRq
	DHFR	rs1677693	T	TT	Affects folic acid metabolism; folic acid supplementation may increase colon cancer risk		
	DHFR	rs1650697	A	GG	Decr. conversion of folic acid, alters methotrexate response		
	MTHFR	rs1801133	A	AA	Reduced MTHFR efficiency, may need more folate, B12		
Selenium	SEP15	rs5845	A	GG	Decreased selenium transport; increased risk of lung cancer, lower verbal memory scores	Selenium is essential in protecting against oxidative stress. Avoid toxicants that can deplete selenium. Important to stop smoking. Eat more selenium rich foods.	bit.ly/3BdmntI
	SEP15	rs561104	C	TT	Increased selenium		
	SEPP1	rs7579	T	CC	Lower serum selenium levels		
	SEPP1	rs3877899	T	CT			
	SELENOS	rs34713741	T	CC	Increased risk of colon and gastric cancers		
	GPX4	rs713041	T	TT	Altered GPX4 function, increased risk of colon cancer or breast cancer with low selenium		
	GPX1	rs1050450	A	AG	Lower GPX enzyme activity		
Vitamin K	CYP4F2	rs2108622	T	CT	Reduced CYP4F2, possibly Increased warfarin dosage	Foods high in vitamin K include dark leafy greens, broccoli, and natto.	bit.ly/2IMrBRN
	CYP4F2	rs1558139	A	AG	Lower risk of stroke (inc. vit. K)		
	VKORC1	rs9934438	G	AG	Decreased VKORC1		
	VKORC1	rs9923231	T	CT	Decreased VKORC1, possibly lower warfarin dose		
Folate Receptors	FOLR1	rs144637717	C	TT	cerebral folate deficiency possible, especially when combined with another FOLR1 variant	~ While the reduced folate carrier (SLC19A1) is the dominant folate receptor throughout the body, two other folate receptors - FOLR1 and FOLR2 - enhance folate uptake in a few specific tissues.	bit.ly/4d58hfL
	FOLR1	rs1540087	A	GG	lower odds of skin lesions with arsenic exposure (methyl groups are utilized for arsenic detoxification, better methylation cycle) (good)		
	FOLR1	rs2071010	A	GG	A/A: increased relative risk of congenital heart disease in offspring; increased relative risk of high homocysteine		
	FOLR2	rs514933	C	CT	reduced relative risk of congenital heart disease in offspring (good)		
Creatine	GATM	rs1346268	C	CC	Reduced risk of muscle pain with statins; likely higher levels of GATM	Animal based protiens are high in creatine. Consider supplementing if vegan or vegetarian. Creatine is made from arginine and glycine. Consider supplementation of you don't get a lot of those amino acids.	bit.ly/3VSbgQu
	GATM	rs80338737	A	CC	Rare mutation linked to Arginine:glycine amidinotransferase deficiency		
	CKM	rs8111989	C	TT	Found in higher frequency in elite combat sport athletes; slightly better physical performance; possibly more creatine kinase		
	CKM	rs11559024	C	TT	Decreased creatine kinase levels		
	CKM	rs4884	G	GG	Protective against knee osteoarthritis (good)		

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Foods and Nutrients							
Lactose	LCT	rs4988235	G	AG	For GG only: no lactase produced as an adult (lactose intolerant)	Don't drink too much milk... *Lactobacillus* probiotics may help.	bit.ly/2ZrTqFH
	MCM6	rs145946881	A	CC	For AA only: no lactase produced as an adult (African ancestry)		
Fish Oil	FADS1	rs174546	T	CT	The FADS variants decrease conversion of linoleic acid to arachidonic acid, and alpha-linolenic acid to EPA and DHA.	The plant based omega-3's (flaxseed, chia seed) won't provide much DHA or EPA. Instead, add fish to your diet or take fish/krill oil.	bit.ly/2IKGqo1
	FADS2	rs1535	G	AG			
Histamine Intolerance	AOC1	rs10156191	T	TT	Reduced production of DAO, which is needed to break down histamine in the intestines.	High histamine levels in foods can cause headaches, hives, sinus drainage, insomnia, stomach problems, and more. Investigate and experiment with a low histamine diet. Read through the article for gene specific suggestions.	bit.ly/2ReMB7q
	AOC1	rs2052129	T	TT			
	AOC1	rs1049742	T	CC			
	AOC1	rs1049793	G	CC			
	AOC1	rs2071514	A	GG	slightly higher DAO		
	HMNT	rs1050891	A	AA	Reduced breakdown of histamine in tissues throughout the body		
	HMNT	i3000469	T	--			
	HMNT	rs2071048	T	CT			
	HMNT	rs11558538	T	CC			
	HDC	rs2073440	G	TT	Decreased histamine production		
	HDC	rs267606861	A	CC	Pathogenic mutation		
	HRH1	rs901865	T	CT	Increased H1 receptor		
	HRH2	rs2067474	A	GG	Decreased H2 receptor		
	HRH4	rs11662595	G	AA	Decreased H4 receptor		
AHCY	AHCY	rs41301825	T	CC	mutation in AHCY, considered benign	~ AHCY converts SAH to homocysteine. ~ It is key to regulating methylation levels and SAMe levels. ~ AHCY interacts with circadian rhythm genes to regulate DNA methylation throughout the day	bit.ly/460E52s
	AHCY	rs13043752	A	GG	uncommon, considered benign		
	AHCY	rs819146	G	TT	G/G: slightly higher relative risk of early-onset ischemic stroke		
	AHCY	rs121918608	C	TT	carrier of rare mutation linked to AHCY deficiency		
Tyramine Intolerance (Cheese Effect)	MAOA	rs6323	T	TT	Decreased MAOA	Tyramine intolerance - the 'cheese effect' - refers to having a sudden increase in blood pressure from eating foods, such as aged cheeses and meats, that are high in tyramine. Tyramine can be broken down by three different enzymes (MAOA, FMO3, and CYP2D6). This article is relevant for someone with variants in all three genes - MAOA, FMO3, and CYP2D6. It may also pertain to someone with decreased MAOA and one of the (important) FMO3 variants, even without a CYP2D6 variant.	bit.ly/2ILSFAJ
	FMO3	rs1736557	A	GG	Decreased FMO3		
	FMO3	rs2266780	G	AG	Milder decrease in FMO3		
	FMO3	rs2266782	A	AA			
	FMO3	rs909530	T	CT			
	FMO3	rs909531	C	CT			
	FMO3	rs3832024	D	TT	Decreased function of FMO3		
	FMO3	rs61753344	T	GG			
	CYP2D6	rs3892097	T	CT	Decreased or non-functioning CYP2D6 enzyme		
	CYP2D6	rs5030655	D	AA			
	CYP2D6	rs1065852	A	AG			
	CYP2D6	rs16947	A	GG			
	CYP2D6	rs5030867	G	TT			
	CYP2D6	rs5030656	D	CC			
	CYP2D6	rs28371706	A	GG			

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Saturated Fat	ACE	rs4343	G	AA	Increased risk of high blood pressure and heart disease with high saturated fat diet	Experiment with your diet and reducing saturated fat to see if it makes a difference. A lot of the studies on saturated fat used people on a standard Western diet, so the results may not hold true if you aren't eating carbs with the saturated fat.	bit.ly/2Zic6ro
	APOA2	rs5082	G	AA	Increased risk of obesity with high saturated fat; overall, a lower risk of heart disease		
	TCF7L2	rs7903146	T	CC	Increased risk of type 2 diabetes &metabolic syndrome with high saturated fat diet		
Mush-rooms	SLC22A4	rs1050152	T	CC	Likely to be intolerant of ergothioneine (in mushrooms) with IBD	Experiment with eliminating mushrooms if you have IBD or other intestinal problems.	bit.ly/2WGiKL2
Amylase	AMY1	rs11185098	A	AG	Higher amylase activity, enzyme that breaks down carbohydrates	You should be able to easily digest carbohydrates.	bit.ly/2ZoMkBD
Meat / Colon Cancer	GATA3	rs4143094	T	GG	Increased risk of colon cancer with high processed meat consumption	Take this into consideration if you have a family history of colon cancer.	bit.ly/2KjnOPc
	GATA3	rs1269486	A	GG			
	AHR	rs2066853	A	GG	Increased polyp risk with high meat intake		
	CCAT	rs6983267	T	TT	Decreased colon cancer if you don't eat processed meat		
Alcohol	ADH1B	rs1229984	T	CC	Faster metabolism of alcohol into acetaldehyde, buildup of acetaldehyde makes you feel bad	While there are ways to mitigate the symptoms of alcohol flush and feeling bad, you probably should just drink less alcohol...	bit.ly/33kYxiv
	ADH1B	rs2066702	A	GG			
	ADH1C	rs698	A	CT	Slow metabolizer of alcohol		
	ALDH2	rs671	A	GG	Alcohol flush reaction (aka Asian flush)		
Caffeine	CYP1A2	rs762551	C	AC	Caffeine metabolism: AC: Intermediate CC: Slow	If you are a slow caffeine metabolizer, caffeine in the afternoon or evening likely affects your sleep quality.	bit.ly/2KMVtQA
	ADORA2A	rs2298383	C	CT	CC: High caffeine intake may make you anxious		
	ADORA2A	rs5751876	T	CT	TT only: high caffeine intake may make you anxious		
Food Allergies	HLA-DQB1	rs9275596	C	TT	Increased risk of peanut allergy	Food allergies are an immune system reaction usually involving IgE. Genetics is only part of the picture here, and many of the variants are really common. If you have allergies, check the article for specific lifehacks that address the individual variants as well as ways to modulate immune response.	bit.ly/3GLWXoE
	HLA-DRA	rs7192	T	GT			
	FLG	rs61816761	A	GG	Increased risk of peanut allergy; atopic dermatitis		
	FLG	i4000499	D	AA			
	FLG	rs558269137	D	--			
	RBFOX1	rs74575857	C	AA	Incr. risk of wheat allergy		
	HLA-DQA1	rs9271588	C	CT			
	IL18	rs1946518	G	GT			
	HLA-DQ	rs9275596	C	TT	CC: Increased risk shrimp allergy		
	IL13	rs20541	A	GG	AA: Increased risk shrimp allergy		
	IL13	rs1800925	T	CC	TT: Increased risk shrimp allergy		
	TMPRSS6	rs855791	A	AG	AA: 3-fold Increased milk allergy		
	IL10	rs1800896	C	CT	Increased risk of food allergies		
	IL13	rs1295686	T	CC			
	IL4	rs2243250	T	CC	Incr. food allergies with vitamin D deficiency		
	CCL26	rs2302009	C	AC	Increase risk eosinophilic esophagitis		
CBS	CBS	rs234706	A	GG	Increased LDL and trigs, decreased risk of cleft lip	The CBS gene plays a role in the methylation cycle.	bit.ly/3mrFv0i
	CBS	rs1801181	A	GG	AA: slight increases risk of lymphoma with low B6 levels		
	CBS	rs4920037	A	GG	better arsenic detoxification		
	CBS	rs234709	T	CC	better arsenic detoxification		
	CBS	rs5742905	G	AA	Increased homocysteine, responsive to vitamin B6		

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BHMT	BHMT	rs3733890	A	AG	Reduced conversion of choline to betaine; increased risk of early onset heart disease with poor diet.	BHMT is important in how the body converts homocysteine into methionine. Deficiencies here can negatively affect the methylation cycle.	bit.ly/3yDxaMh
	BHMT	rs651852	C	CC	C/C: increased risk of cleft lip, an indicator of low methyl groups		
	BHMT	rs567754	T	CC	Decreased risk of ER-negative breast cancer (good)		
Oxalates and Kidney Stones	CASR	rs1501899	A	GG	Increased risk of kidney stones	High oxalate foods, such as spinach, rhubarb, swiss chard, & blackberries can increase the risk of kidney stones in some people. If you have one of the pathogenic AGXT variants (even one copy), talk to your doctor and investigate a low oxalate diet. High oxalate foods can also cause joint pain.	bit.ly/2XTA2kk
	UMOD	rs4293393	G	AG			
	DGKH	rs4142110	T	CT	Decreased risk of kidney stones		
	CLND14	rs219780	T	CC			
	AGXT	rs34116584	T	CC	Adds to hyperoxaluria risk; Increased risk kidney stones		
	GRHPR	i5012629	D	AA	Pathogenic for hyperoxaluria for homozygous. (important)		
	GRHPR	i5012628	D	GG			
	GRHPR	rs180177309	D	AA			
	GRHPR	rs80356708	D	GG			
Hunter-Gatherer	CLTC1	rs1061325	C	TT	C/C: farmer allele - better able to handle carbs	Genetic variant dating to the beginning of agriculture.	bit.ly/3Mf29Gj
Fructose Intolerance	ALDOB	rs78340951	C	GG	Carrier of a fructose intolerance mutation	~ Fructose intolerance can be hereditary (genetic) or dietary (due to intestinal absorption problems). ~ Rare genetic mutations in the ALDOB gene cause hereditary fructose intolerance. ~ Carriers of a single ALDOB mutation (more common) can still process some fructose, but they may be prone to insulin resistance with higher fructose consumption.	bit.ly/3L9u3m1
	ALDOB	rs76917243	C	GG	Carrier of a fructose intolerance mutation		
	ALDOB	rs1800546	G	CC	Carrier of a fructose intolerance mutation		
	ALDOB	i5012664	C	--	Carrier of a fructose intolerance mutation		
	ALDOB	i5008215	C	--	Carrier of a fructose intolerance mutation		
	ALDOB	rs387906225	D	GG	Carrier of a fructose intolerance mutation		
	ALDOB	i5012665	D	--	Carrier of a fructose intolerance mutation		
	ALDOB	rs118204428	A	GG	Carrier of a fructose intolerance mutation		
Nickel Allergy	TNF	rs1800629	A	GG	Higher TNF-alpha levels; increased risk of nickel sensitivity	Avoid contact with nickel-containing items, decrease the amount of high-nickel foods in diet.	bit.ly/3VOR7uN
	CLDN1	rs17501010	T	GG	Increased risk of nickel contact sensitization		
	NTN4	rs2367563	A	AA	Slightly increase risk of nickel allergy		
	FLG	rs61816761	A	GG	Increased risk allergies, atopic dermatitis, and nickel sensitivity		
	FLG	i4000499	D	AA			
	FLG	rs558269137	D	--			

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Inflammatory Response							
Emulsifier Inflammation	IL10	rs1800896	C	CT	Increased risk of intestinal inflammation (Crohn's, IBD, etc) due to the emulsifiers and surfactants commonly found in processed foods, supplements and medications.	Check your supplements and prescription meds for surfactants/emulsifiers. Look at the ingredients on what you are eating. Read the article for the details.	bit.ly/31xjfGf
	IL10	rs1800871	G	AG			
	IL10	rs3024505	A	GG			
	NOD2	rs2066844	T	CC			
	NOD2	rs2066845	C	GG			
	NOD2	rs2066847	I	GG			
IL-17 and Inflammation	IL17A	rs2275913	A	AG	Increased risk of autoimmune, periodontal, and bowel disease	IL17 genetic variants can add to the risk of chronic inflammation. Sulforaphane can inhibit the pathway, which may decrease inflammation.	bit.ly/3MgXn8x
	IL17A	rs279548	T	CC	Somewhat increased IL17A, increased risk of asthma, atopy		
	IL17F	rs763780	C	TT	Increased risk of rheumatoid arthritis		
	IL17A	rs8193037	A	GG	Decreased risk of some inflammatory conditions, decreased IL-17A		
	IL17F	rs3819025	A	GG			
TNF-Alpha	TNF	rs1800629	A	GG	Increased production of TNF-alpha. Increased risk of chronic inflammation such as rheumatoid arthritis, heart disease, or autoimmune diseases.	TNF alpha variants can add to chronic inflammation. Natural TNF-alpha inhibitors include: Curcumin, rosmarinic acid, luteolin, hesperidin, magnesium, glycine- see article for details.	bit.ly/31xs8PZ
	TNF	rs361525	A	GG			
	TNF	rs1799964	C	TT			
	TNF	rs1799724	T	CC			
	TNFRSF1A	rs1800693	C	CT			
	TNFRSF1A	rs767455	C	CT			
	TNFRSF1B	rs1061622	G	TT			
	TNF	rs1800610	A	GG	Lower TNF; more susceptible to infectious diseases		
Inflammation: Depression or Anxiety	TNF	rs1800629	A	GG	Increased TNF-alpha	Higher chronic inflammatory cytokines can be a root cause of depression or anxiety. The chronic inflammation causes changes to neurotransmitters. See the article for full details and options for decreasing these specific inflammatory cytokines.	bit.ly/2P2WXuG
	IL6	rs1800796	G	GG	GG only: incr. depression with inflammation		
	IL6	rs1800795	C	CG	CC only: increased risk of depression with stress		
	IL6	rs1800797	A	AG	Incr. depression risk		
	IL6R	rs4129267	C	TT	CC only: increased risk anxiety, depression		
	IL1B	rs16944	G	GG	GG only: Incr. IL1B, incr. risk depression		
	IDO1	rs9657182	C	CC	CC only: more likely to have depr. with inflammation		
	KMO	rs1053230	C	CC	CC only: higher depression risk		
Back Pain	IL1A	rs1800587	A	AG	Increased risk of pain from degenerative disc disease	A lot of people have disc degeneration without pain. Your genetic variants play a role in whether that disc degeneration causes your back to hurt. Read through the article for solutions specific to the gene.	bit.ly/2KPNZfO
	IL6	rs1800795	C	CG	C/C: less risk of disc degeneration		
	CILP	rs2073711	A	AG	Decr. risk of disc disease		
	COL1A1	rs1800012	A	AC	Increased risk of pain from degenerative disc disease		
	COL2A1	rs2276454	G	AG			
	COL11A1	rs1676486	A	AG			
	COL11A1	rs2076311	A	AC			
	CASP9	rs4645978	C	CC			
	PARK2	rs926849	C	CT			

Topic	Gene	rs id	Effect Allele	YOU	Notes about the Effect Allele:	Possible Actions for the Effect Allele	Article Link
Gum Disease	TNF	rs1800629	A	GG	Increased risk of periodontitis or gingivitis	Inflammation of the gums - gingivitis and periodontitis - is linked with genetic variants that increase the risk of inflammation. Check out the article for specific lifehacks to decrease inflammation based on your genetic variants.	bit.ly/2ky1AxB
	IL1A	rs1800587	A	AG			
	IL1B	rs1143634	A	AG			
	IL6	rs1800795	C	CG			
	IL8	rs4073	A	AA			
	IL2	rs2069763	A	CC			
	IL10	rs1800896	C	CT			
	CCR5	i3003626	D	--	Decreased risk of periodontitis		
Cavities	DEFB1	rs11362	C	CT	Increased risk for cavities	Your genes can cause susceptibility to cavities in different ways. Some are involved in the immune system and interact with the bacteria that causes cavities. Others are involved in saliva and enamel formation. Read through the article to see which areas you should target in cavity prevention.	bit.ly/2ojB3W4
	DEFB1	rs1799946	T	CT	Increased risk for cavities		
	IL32	rs4786370	C	TT	More likely to carry the bacteria that causes cavities		
	GALK2	rs11635005	C	CT	C/C: Carrying S. mutans significantly increases the risk of cavities, lower GALK2 enzyme activity		
	AMELX	rs946252	T	CC	Increased risk for cavities		
	AQP6	rs1996315	A	AG	Decreased risk of cavities		
	WNT10A	rs121908120	A	TT	Fewer decayed teeth		
	C5orf66	rs1122171	T	CT	Average of 1-2 more cavities than normal		
Mast Cell Related Variants	KIT	i5007903	T	--	KIT D816V mutation (see article for caveats)	Mast cell activation is a huge, wide-reaching topic. The genes listed here tangentially relate to mast cell related conditions. Additionally, look at the histamine intolerance section of this sheet. Read through the mast cell article for more information.	bit.ly/3trpdsq
	KIT	rs121913507	T	AA			
	IL-13	rs1800925	T	CC	Increased risk of systemic mastocytosis, rhinitis, asthma		
	IL4R	rs1801275	A	AA	better prognosis in systemic mastocytosis		
	FCER1A	rs2298805	A	GG	Decreased risk of hives, lower IgE		
	FCER1A	rs2251746	C	CT	Decreased IgE		
	FCER1A	rs2427827	T	CT	Increased IgE, increase sinus problems, allergic reactions		
	CMA1	rs1800875	T	TT	Decreased IgE, lower risk of a-fib		
	PTPN22	rs2476601	T	AG	Increased psoriasis, arthritis, T1D, lupus, urticaria risk		
	IL33	rs1342326	A	AC	Increased risk asthma, hay fever		
	IL33	rs3939286	T	CT	Increased risk of asthma		
	IL33	rs928413	G	AG	Increased risk hay fever, asthma		
	ALDH2	rs671	A	GG	Increases mast cell activation		
	PTGS2	rs4140564	G	AA	Increased risk osteoarthritis		
NLRP3	CIAS1	rs35829419	A	CC	Increased NLRP3 activation	The NLRP3 inflammasome amplifies the cellular signal for inflammation. If you are dealing with chronic inflammation, you may want to look into ways to modulate this response. Supplements to look into include zinc, CBD, EGCG, and vitamin D. Read the article for details.	bit.ly/3eE446e
	CIAS1	rs1539019	A	AC	AA only: Increased NLRP3		
	CIAS1	rs10754558	C	CC	Somewhat increased NLRP3 activation		
	CIAS1	rs3806265	C	TT			
	CIAS1	rs10733113	A	GG			
	CIAS1	rs12048215	G	AA			
	CIAS1	i5007539	G	--	Carrier of a mutation linked to familial cold urticaria		
	CIAS1	rs28937896	C	TT			
	CIAS1	rs121908147	A	GG			
	CIAS1	rs121908148	G	AA			
	CIAS1	rs121908150	T	CC			

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Chronic Sinus Infections	TAS2R38	rs10246939	C	TT	less likely to have chronic sinus infections	Chronic sinus infections are linked to both higher levels of inflammatory cytokines and reduced levels of nitric oxide, which kills off pathogens.	bit.ly/3HguIOT
	TAS2R38	rs713598	G	CC			
	NOS1	rs9658281	T	CC			
	ALOX15	rs34210653	A	GG	Increased risk of chronic rhinosinusitis		
	IL1RL1	rs13431828	T	CC	Reduced risk of sinusitus		
	SERPINA1	rs1243168	A	AG	Reduced risk for nasal polyps and chronic sinus infections		
	TNF	rs1800629	A	GG	Increased TNF-alpha; Increased risk of nasal polyps and sinus infections		
Sudden Hearing Loss	EDN1	rs5370	T	GG	Increased risk of sudden sensorineural hearing loss (related to vasoconstriction)	Sudden sensorineural hearing loss is often related to either inflammation/oxidative stress in the inner ear and/or endothelial dysfunction in the inner ear. This can be triggered by viral infections, autoimmune diseases, chronic diseases that involve inflammation, chemotherapy, or vaccinations that cause inflammation.	bit.ly/3ALmeNf
	F5	rs6025	T	CC	Factor V Leiden (clot related)		
	MTHFR	rs1801133	A	AA	Increased risk of SSNHL (folate-related)		
	SOD1	rs4998557	A	GG	A/A only: increased relative risk of SSNHL		
	IL1R2	rs4141134	G	AG	Increased risk of SSNHL		
	UCP2	rs659366	T	CC	Increased risk of SSNHL		
	IL6	rs1800796	G	GG	Higher IL-6; increased risk of SSHL		
	HSP70	rs2763979	T	CC	Increased risk of noise-induced hearing loss		
	CYP1A1	rs1799814	T	GG	Increased CYP1A1 activity		
ME/CFS, long-term viral effects	PTPN22	rs2476601	A	AG	Increased susceptibility to CFS/ME (in patients with infectious disease onset)	The research studies for Chronic Fatigue Syndrome (CFS/ME), fibromyalgia, and other post-viral conditions show a theme of an altered immune system response. That theme is carried out further when you look at the genetic variants linked to an increased susceptibility to those conditions. Some of these immune system genetic variants also overlap with autoimmune diseases and the response to different pathogens.	bit.ly/3Eosmg8
	CTLA4	rs3087243	G	GG	Increased risk of CFS/ME (patients with infectious disease onset only)		
	TNF	rs1799724	T	CC	higher TNF-alpha; increased susceptibility to ME/CFS		
	INFG	rs2430561	T	AT	TT: increased susceptibility to CFS/ME		
	NLRP3	rs35829419	A	CC	Increased susceptibility to fatigue after EBV or other viruses		
	NLRP3	rs121908147	A	GG	(rare) autoinflammatory disease in combo with other genes		
	TRPM8	rs11563204	A	GG	increased risk of CFS/ME (cold, menthol receptor)		
	TRPM3	rs6560200	C	CT	CC: higher risk of CFS/ME		
	TRPM3	rs1891301	T	CT	TT: higher risk of CFS/ME		
	CFB	rs4151667	A	TT	AA: increased risk of CFS/ME		
	CFH	rs1061170	C	CC	CC: decreased risk of CFS/ME		
Alpha-gal Syndrome	ABO	rs8176719	D	TT	DD: likely to be blood type O, not protected against alpha-gal syndrome; DI: could be type A or type B	~ Tick bites can cause some people to make IgE antibodies to galactose-alpha-1,3-galactose (alpha-gal). ~ Some people with alpha-gal IgE antibodies have gastrointestinal reactions, hives, or even anaphylaxis a few hours after eating meat. ~ The delayed allergic reaction can make it difficult to pinpoint the source of the reaction, leading to misdiagnosis and many frustrating allergic reactions.	bit.ly/4clUdYE
	ABO	rs8176746	T	GT	T/T: likely two type B alleles; less susceptible to alpha-gal; G/T: likely one type B allele (AB or BO)		
	IL13	rs20541	A	GG	higher IgE levels; higher risk of allergies in general		
	IL13	rs1800925	T	CC	higher IgE levels		
	STAT6	rs1059513	T	TT	increased sensitivity to allergens, IgE;		
	FCER1A	rs2298805	A	GG	half the risk of chronic urticaria (itchiness); lower serum IgE levels;		
	FCER1A	rs2251746	C	CT	lower serum IgE levels		
	FCER1A	rs2427827	T	CT	higher serum IgE levels		

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Chronic Inflammation	TNF	rs1800629	A	GG	Increased risk of chronic inflammatory conditions	At the heart of many chronic diseases lies chronically elevated inflammatory cytokines. Understanding where your genetic susceptibility lies may help you to better target you causes of chronic inflammation. Please read through the article for details as well as specific ways to target either elevated cytokines or susceptibility to toxicants.	bit.ly/3OyyHKO
	TNF	rs361525	A	GG			
	IL8	rs4073	A	AA	A/A: Increased IL8; increased risk of periodontitis, gastritis, Alzheimers, diabetic nephropathy		
	IL6	rs1800795	C	CG	C/C: lower risk of gingivitis		
	IL1B	rs16944	G	GG	G - Typical risk of septic shock; A/A: Increased risk of septic shock		
	IL1B	rs1143634	A	AG	Increased risk of gingivitis		
	IL1A	rs1800587	A	AG	Increased IL1A, increased risk of gum disease, tinnitus, acne, hearing loss		
	IL10	rs1800896	C	CT	CC: higher IL-10 (usually good!)		
	NLRP3	rs35829419	A	CC	Increased susceptibility chronic inflammation		
	HMGB1	rs1045411	T	CC	increased sepsis risk, higher HMGB1 levels in infection		
	INFG	rs2430561	A	AT	Increased interferon-gamma		
	MTHFR	rs1801133	A	AA	Decreased MTHFR; decreased detoxification of mercury and arsenic		
	GSTM1	rs366631	A	AA	AA: GSTM1 null, increased risk of cancer, increased negative effects of smoking		
	GSTO1	rs4925	A	AA	Decreased detoxification of arsenic; increased risk of PCOS		
	GSTA1	rs3957357	A	AG	Decreased detoxification, increased risk of depression,		
	NFE2L2	rs6721961	T	GG	Decreased Nrf2, increased risk of male infertility, CVD		
	AS3MT	rs11191439	C	CT	Arsenic is more harmful		
	NQO1	rs1800566	A	GG	Increased risk of cancer from benzene and smoking, increased risk of Parkinson's		
	SOD1	rs1041740	T	TT	Increased ROS, increased risk of kidney problems, heart disease		
	SOD2	rs5746136	T	CC	Increased ROS, increased risk of asthma, PCOS		
Specialized Pro-resolving Mediators	FADS1	rs174546	T	CT	Lower FADS1 enzyme activity, benefit more from direct EPA/DHA intake	The resolution of inflammation is an active process that relies on the production of specialized pro-resolving mediators. These lipid mediators are created from the conversion of DHA and EPA. Without sufficient DHA, EPA, or conversion enzymes, inflammation may not completely resolve and instead leads to chronic diseases.	bit.ly/4dxkrOV
	FADS2	rs1535	G	AG	Lower FADS1 enzyme activity, benefit more from direct EPA/DHA intake		
	ALOX5	rs4987105	T	CT	Decreased risk of type 2 diabetes, lower levels of C-reactive protein (good)		
	ELOVL2	rs3734398	C	CT	Decreased conversion of EPA to DHA		
	ALOX5AP	rs17216473	A	GG	Increased risk of heart attack		
	ALOX12	rs1126667	A	AG	Slightly decreased risk of breast cancer, lower blood pressure		
	COX2	rs4648310	C	TT	Low DHA/EPA intake associated with a significantly increased risk of prostate cancer, but high DHA/EPA ameliorates the increased risk		
	COX2	rs5275	G	GG	Increasing intake of EPA/DHA reduces prostate cancer risk by 70%		
	GPR18	rs3742130	A	AA	SPM receptor; alters risk of IBD		
	CMKLR1	rs1878022	C	CT	Increased resolvin E1 receptor expression, reduced inflammation in obesity		
	GPR37	rs149031046	A	GG	Protectin D1 receptor mutation; possibly important in autism (rare)		
MRGPRX2	MRGPRX2	rs10833049	C	TT	decreased receptor function, decreased mast cell activation	Hypersensitivity reactions to drugs can be due to mast cell activation by the MRGPRX2 receptor.	bit.ly/3SzKoEz
	MRGPRX2	rs11024970	G	TT	Change in MRGPRX2 function, but still responds to pain stimulation (substance P)		

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Fatigue	TNF	rs1800629	A	GG	Higher TNF-alpha	Higher levels of inflammatory cytokine production cause the feeling of fatigue, aka chronic inflammation. Fatigue is a totally normal response to inflammation: when your immune system is kicking into higher gear, this usually means you're sick or wounded. And when you are sick or wounded, you should want to lie down and rest.	bit.ly/3rDkO3T
	TNF	rs3093662	G	AA	Higher TNF-alpha;		
	IL1B	rs4848306	G	AG	GG: more fatigue in chronic disease		
	IL1B	rs1143643	T	CT	More fatigue in chronic illness		
	IL6	rs1800795	G	CG	Increased fatigue		
	INFG	rs2430561	A	AT	Increased fatigue risk when interferon-gamma is elevated		
	NLRP3	rs35829419	A	CC	Increased risk of severe fatigue with inflammation		
Reactions to Antibiotics	MS4A2	rs569108	G	AA	G/G: increased risk of eczema with childhood antibiotic use	Immediate allergic reactions to antibiotics are fairly common, ranging from skin rashes to more severe reactions. Additionally, delayed reactions to antibiotics can cause liver damage or other problems. See the article for more details.	bit.ly/3wynSUI
	IL13	rs20541	A	GG	increased risk of atopic dermatitis with childhood antibiotic use		
	HLAB	rs114892859	T	GG	increased risk of penicillin allergy and clindamycin adverse reactions		
	PTPN22	rs2476601	A	AG	slightly increased relative risk of liver injury with augmentin		
	HLA-DR	rs2395029	G	TT	45 to 80-fold increased risk of drug-induced liver injury with flucloxacillin (important)		
	HLA-DRB1	rs3135388	A	GG	increased relative risk of liver injury with augmentin		
	HLAB	rs9263726	A	GG	increased relative risk of reaction to sulfamethoxazole (Bactrim)		
	HLAA	rs2523822	G	AG	increased relative risk of drug-induced liver disease with augmentin		
	LGALS3	rs11125	T	AA	increased risk of beta-lactam antibiotic allergy		
	GSTM1	rs366631	A	AA	A/A: deletion (null) increased risk of adverse cutaneous reactions to sulphonamides in AIDS		
Meniere's and Tinnitus	NFKB1	rs3774937	C	CC	Faster progression to hearing loss in Meniere's	Meniere's disease is caused by alterations in the inner ear that cause tinnitus and vertigo. Tinnitus (whether from Meniere's or not) is described as a ringing in the ears. Read through the article for specific lifehacks for each genetic variant.	bit.ly/3cQyXQY
	NFKB1	rs4648011	G	GG			
		rs4947296	C	TT	Increased risk of Meniere's		
	KCNE1	rs1805127	T	TT			
	KCNE3	rs2270676	G	AA			
	IL1A	rs1800587	A	AG	A: lower risk of hearing loss in Meniere's; G/G: (common) Higher risk of sudden hearing loss in Meniere's		
	ADD1	rs4961	T	GG	Increased risk of tinnitus		
	IL1A	rs1800587	G	AG			
IL-13	Il13	rs20541	A	GG	higher IgE levels; higher risk of allergies, allergic rhinitis; asthma; COPD;	Interleukin 13 (IL-13) is a cytokine secreted by Th2 cells, mast cells, basophils, eosinophils, and natural killer T cells. Variants link to hyperresponsiveness (asthma), and IgE synthesis (allergies).	bit.ly/3AevLMN
	Il13	rs1800925	T	CC			
	Il13	rs1295686	T	CC	increased risk of asthma		
	Il13	rs848	A	CC	increased risk of asthma, increased risk of alopecia areata		

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Estrogen, Mast Cells, & Histamine	AOC1	rs10156191	T	TT	Reduced production of DAO	Key is to balance estrogen levels. Include cruciferous vegetables in your diet to help metabolize estrogen. Add supplements like calcium d- gluarate to help with estrogen excretion. Avoid estrogen-mimicking compounds like BPA and PBCs. Low histamine diets can decrease the amount of circulation histamine.	bit.ly/45jq3ie
	AOC1	rs2052129	T	TT			
	AOC1	rs2071514	A	GG	Possibly higher DAO		
	HNMT	rs1050891	A	AA	Reduced breakdown of histamine compared to G/G		
	HNMT	rs11558538	T	CC	Reduced HNMT activity, higher histamine levels		
	HNMT	rs2071048	T	CT	T/T: increased risk of asthma (and higher histamine), common variant		
	MTHFR	rs1801133	A	AA	Decreased MTHFR function (C677T allele)		
	ESR1	rs9340799	G	AA	G/G: increased risk of endometriosis, likely higher estrogen receptors		
	GPER1	rs11544331	T	CT	Decreased estrogen receptor activation, lower risk of fibroids		
	AOC1	rs1049742	T	CC	Reduced production of DAO		
	AOC1	rs1049793	G	CC			
Rosacea	TNF	rs1800629	A	GG	higher TNF alpha, increased risk of rosacea	~ Rosacea is an inflammatory skin condition that causes facial redness. ~ Increased inflammatory activation due to various environmental factors causes redness, increased vascularization, and altered skin permeability. ~ Genetic variants associated with increased inflammation and vascularization are associated with rosacea.	bit.ly/3ymaML2
	IRF4	rs12203592	T	CC	increased risk of rosacea		
	IL13	rs847	T	CC	increased risk of rosacea		
	HLA-DRA	rs763035	A	GG	increased risk of rosacea		
	NOD2	rs2066844	T	CC	increased intestinal permeability, IBD; increased risk of rosacea		
	VDR	rs731236	A	AG	lower vitamin D levels; increased relative risk of rosacea with low serum vitamin D levels		
	VEGF	rs2010963	G	CG	increased risk of rosacea		
	MCR1	rs1805007	T	CT	more photoaging, facial aging, increased relative risk of rosacea		
	HERC2	rs1129038	T	TT	increased relative risk of rosacea		
Lymphedema	ALOX5	rs4987105	T	CT	Lower levels of inflammation and possibly lower lymphedema, decreased risk of type 2 diabetes	~ Lymphedema is caused by interstitial fluid building up under your skin, often in the legs or arms. ~ Impairments to the lymphatic vessels prevent the fluid from moving out of the tissue.	bit.ly/3VCaFEE
	LTA4H	rs1978331	G	AG	Lower levels of LTA4H, which catalyzes the final step in the synthesis of leukotriene B4		
	MMP2	rs1030868	A	GG	Higher risk of secondary lymphoma		
	MMP2	rs2241145	C	CG	Higher risk of secondary lymphoma		
	FOXC2	rs34221221	C	TT	Increased gene expression (likely higher risk of secondary lymphedema)		
	TNF	rs1800629	A	GG	Higher TNF-alpha levels; increased risk of complications with lymphedema		
	TLR4	rs4986791	T	CC	Increased risk of complications with lymphedema		
	VEGFR3	rs10464063	T	CT	Increased risk of secondary lymphedema (study of cancer patients)		
Grass Allergy	HLA-DQB1	rs7775228	C	TT	More likely to be allergic to grass pollen (hay fever)	You probably already know whether you're allergic to grass...	bit.ly/2XRFk04
	FLG	rs61816761	A	GG			
	IL2	rs2069762	C	CC			
	IL33	rs928413	G	AG			

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Asthma	TSLP	rs3806932	G	AA	increased relative risk of childhood allergic asthma and adult-onset asthma	~ Asthma can be broadly categorized into T2-high and T2-low phenotypes, each characterized by different cellular and molecular mechanisms and different inflammatory cytokines. ~ Genetic variants play a big role in susceptibility to asthma, but genes alone do not cause asthma. ~ Environmental and lifestyle factors, such as exposure to allergens, pollution, smoking, obesity, and aging, significantly influence asthma phenotypes.	bit.ly/3RWTBGv
	TSLP	rs1837253	T	CC	decreased risk of adult asthma		
	IL4	rs2243250	T	CC	increased relative risk of asthma		
	IL33	rs928413	G	AG	increased risk of asthma, allergies, and COPD		
	IL33	rs7037276	C	TT	increased relative risk of asthma		
	IL33	rs1342326	C	AC	increased relative risk of asthma		
	IL33	rs3939286	T	CT	increased relative risk of asthma		
	TBX21	rs4794067	C	TT	increased risk of aspirin-induced asthma, increased risk of asthma in children		
	TBX21	rs11650354	C	CC	increased risk of asthma		
	IL17A	rs2275913	A	AG	Higher IL17A, Increased risk of inflammatory diseases including periodontitis, inflammatory bowel disease, asthma; 3-fold increased risk of COPD (smokers)		
	IL17A	rs279548	T	CC	somewhat increased IL17A, increased risk of asthma		
	TNF	rs1800629	A	GG	Higher TNF-alpha levels. Increased risk of asthma and COPD		
	TNF	rs361525	A	GG	higher TNF-alpha levels, increased risk of p asthma, COPD		
	IFNG	rs2069705	A	AA	Increased relative risk of asthma		
	IL1R1	rs3771166	A	GG	Decreased risk of asthma		
	NLRP3	rs10754558	C	CC	higher inflammation, increased relative risk of asthma		
	IL13	rs20541	A	GG	higher IgE levels; higher risk of allergies, increased risk of COPD, increased dust mite allergies increased risk of asthma		
	IL13	rs1295686	T	CC	increased risk of asthma		
	IL13	rs1800925	T	CC	increased IgE levels; increased risk of asthma; increased risk of periodontitis, increased risk of COPD		
	IL13	rs848	A	CC	increased risk of asthma, increased risk of alopecia areata		
	HNMT	rs2071048	T	CT	increased risk of asthma (and higher histamine), common variant		
	HRH1	rs901865	T	CT	increased asthma risk (likely increase HRH1)		
	MTHFR	rs1801133	A	AA	two copies of MTHFR C677T, enzyme function decreased by 70 – 80%, increased relative risk of asthma		
	GSTA1	rs3957357	A	AG	low/ non-functioning enzyme; increased risk of asthma, allergies		
	GSTP1	rs1138272	T	CC	Increased risk of asthma and exacerbations with higher air pollution exposure		
	GSDMB	rs7216389	T	CC	Increased risk of childhood asthma 3-fold increased risk of asthma with known mold exposure		
	GSDMB	rs2305480	G	AA	increased risk of asthma, especially with cigarette smoke exposure		
	SOD2	rs5746136	T	CC	higher phthalate metabolite levels, almost 3-fold increased risk of asthma		
	CDHR3	rs6967330	A	GG	higher levels of CDHR3, increased risk of rhinovirus infections and severe asthma in children		
	ADRB2	rs1042713	A	AA	more likely to have poor response to long-acting β2-agonist (LABA), increased exacerbations in children treated with LABAs plus inhaled corticosteroids (but not corticosteroids alone)		
	ARG1	rs2781659	G	AA	lower acute response to inhaled beta-agonists in children with asthma		

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Autoimmune Risk Factors							
Thyroid Levels	TSHR	rs1991517	G	CC	Increased risk hypothyroidism	Get your thyroid levels tested before making changes so that you know your baseline. Stop the Thyroid Madness website has a lot of good information if you think you might have thyroid problems. The DIO1 and DIO2 genetic variants may play a role in whether a T4 supplement works or whether a natural combo of T4 and T3 is better.	bit.ly/2WHJo1s
	TSHR	rs121908866	A	GG	Congenital hypothyroidism		
	PDE8B	rs4704397	A	AA	Increased serum TSH		
	PDE8B	rs6885099	A	GG	Decreased TSH		
	FOXE1	rs7850258	A	AA	Decreased risk hypothyroidism		
	FOXE1	rs965513	A	AA	Decreased TSH		
	TSHR	rs3783938	T	CC	Increased risk of Hashimoto's		
	TSHR	rs12101255	T	CC	Increased risk of Graves' (common)		
	TSHR	rs179247	A	GG			
	TPO	rs2071403	G	GG	Increased risk of autoimmune thyroid		
	PTPN22	rs2476601	A	AG			
	DIO1	rs2235544	A	AA	Decreased fT3		
	DIO1	rs11206244	T	CT	Higher rT3, lower fT3		
	DIO2	rs225014	C	CT	Decreased T4 to T3 conversion		
	SERPINA7	rs28933689	T	AA	Thyroxine-binding globulin deficiency		
	SERPINA7	rs2234036	T	CC			
	THRB	rs28933408	T	GG	Thyroid hormone resistance		
Celiac Disease	HLA-DQ2.5	rs2187668	T	CC	You need either of these for celiac disease to be possible	If you think you might have celiac, go to the doctor and get the tests done first before trying a gluten-free diet. The blood test can be inaccurate if you are gluten free.	bit.ly/3ATdghh
	HLA-DQ8	rs7454108	C	TT			
	HLA- DQ2.2 (all three)	rs4713586	A	AA	AA only: DQ2.2 with below 2 alleles		
		rs2395182	T	GT	DQ2.2 with other alleles		
		rs7775228	C	TT	DQ2.2 with other alleles		
	LPP	rs1464510	A	CC	These add to the risk of celiac disease, but only if you have one of the above HLA types.		
	intergenic	rs842647	A	AA			
	intergenic	rs2816316	A	AA			
	intergenic	rs917997	T	CT			
	intergenic	rs6441961	T	CT			
Lupus Risk Factors	HLA-DQA1	rs2187668	T	CC	HLA-DRB1*0301. 2-fold increase in risk for lupus.	If you have lupus, knowing where your susceptibility comes from may help. For example, if you have variants in the interferon signaling pathway, interferon medications may not work the same way for you. (Most people with these risk variants will not get lupus. They add to your risk, but the risk is pretty low in the first place.)	bit.ly/2KQfmWS
	TNXB	rs1150754	T	CC	2-fold increase in lupus risk		
	TNF	rs1800629	A	GG	Some increase in Lupus risk.		
	TNFAIP3	rs5029939	G	CC	2x Increased risk of lupus		
	STAT4	rs7574865	T	GG	Increased risk of discoid lupus		
	STAT4	rs10181656	G	CC	Increased risk of lupus		
	IRF5	rs3807306	T	GG	Increased risk of lupus		
	IRF8	rs2280381	C	CT	Decreased risk of lupus		
	IFIH1	rs1990760	T	CT	Increased risk of lupus		
	BLK	rs13277113	A	AG	B lymphoid tyrosine kinase -- B cells leading to lupus.		
	BLK	rs2248932	A	AG			
HLA-B27	HLA	rs4349859	A	GG	Higher likelihood of carrying HLA-B27	HLA-B27 is associated with Increased susceptibility to several inflammatory related autoimmune diseases.	bit.ly/2FbGuvM
	Inter-gen	rs13202464	G	AA	Higher likelihood of carrying HLA-B27		
Psoriasis	HLA-C	rs10484554	T	CC	Increased risk of psoriasis	Read through the article for suggestions that may work for specific variants	bit.ly/2XeXDz0
	HLA-C	rs1265181	C	GG	Increased risk of psoriasis		
	HLA-B*5701	rs2395029	G	TT	Increased risk of psoriasis		
	IL23	rs11209026	A	GG	Decreased risk of psoriasis		
	PTPN22	rs1217414	A	GG	AA: increased risk of psoriasis		
	L12B	rs4085613	T	GG	Increased risk of psoriasis		

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CTLA4	CTLA4	rs231775	G	AG	Increased risk of autoimmune conditions including Hashimoto's, Graves, type-1 diabetes	Autoimmune diets and DHA may help here.	bit.ly/2BV17KZ
	CTLA4	rs3087243	G	GG			
POTS	SLC6A2	rs7194256	T	TT	Increased risk of POTS	POTS (postural orthostatic tachycardia syndrome) is a problem with the way that your autonomic nervous system regulates heart rate	bit.ly/2Q1WF40
	GNB3	rs5443	T	CC			
	NOS3	rs2070744	C	TT	CC: Decreased Risk of POTS		
	ADRB2	rs1042713	A	AA	AA: Increased norepinephrine response		
Autoimmune (PTPN22)	PTPN22	rs2476601	A	AG	Slightly Increased risk for RA	PTPN22 is a well-research risk factor for autoimmune diseases including RA, vitiligo, T2D, thyroid	bit.ly/38ZarNJ
	PTPN22	rs6679677	A	AC			
	PTPN22	rs1310182	G	AG	GG only: Increased risk autoimmune diseases		
Alopecia Areata	CTLA4	rs1024161	T	CT	Increased risk of alopecia areata	Alopecia areata is an autoimmune-like disease that causes sudden and rapid hair loss. Often it causes circular bald patches at random spots on the scalp.	bit.ly/3kkILJz
	CTLA4	rs231775	G	AG	Increased risk of several autoimmune diseases; increased risk of alopecia areata		
	PTPN22	rs2476601	A	AG	3 to 4-fold increased risk of alopecia areata		
	HLA	rs660895	G	AA	HLA-DRB1*0401; increased risk of alopecia areata		
	IL17F	rs763780	C	TT	CC: increased risk of alopecia areata		
	IL17RA	rs879577	T	CC	Decreased risk of alopecia areata		
	IL18	rs1946518	T	GT	T/T: lower risk of AA		
	IL2	rs7682241	T	GT	Increased risk of alopecia areata		
	IL2RA	rs3118470	T	CT	Increased risk of alopecia areata		
	MIF	rs755622	G	CG	Decreased risk of alopecia areata		
	TNF	rs1800629	A	GG	Higher TNF; increased risk of alopecia areata		
Multiple Sclerosis Susceptibility	HLA-DRB1	rs3135388	A	GG	HLA-DRB1*1501; up to 3x - 6x increase in risk for MS	Genetics plays a role in the susceptibility to MS, but there are other factors also involved. Many of these are common genetic variants, so most people will have some of these risk factors. The HLA types are one of the biggest genetic risk factors.	bit.ly/3TWxKRd
	HLA-G	rs4959039	G	AG	1.5x increased risk of MS		
	C6orf10	rs3129934	T	CC	Increased risk of MS		
	IL2RA	rs12722489	C	CC	decreased risk of MS; reduced interaction of IL2RA with estrogen receptor alpha		
	IL2RA	rs2104286	C	TT	C/C: decreased risk of MS		
	IL7R	rs6897932	C	CC	Increased risk of MS		
	IL7R	rs987107	A	GG	A/A: Increased risk of MS		
	CYP27B1	rs703842	G	AG	Decreased risk of MS		
	TNFRSF1A	rs1800693	C	CT	Slightly increased risk of MS		
	CD6	rs17824933	G	CC	Increased risk of MS		
	IRF8	rs17445836	A	GG	Decreased risk of MS		
	IL12B	rs2546890	A	GG	Slightly increased risk of MS		
	CD86	rs9282641	A	GG	Slightly decreased risk of MS		
	EVI5	rs11808092	A	AC	Slightly increased risk of MS		
	IDO1	rs7820268	C	CC	C/C: 1.5-fold increased relative risk of MS		
	ARNTL	rs3789327	G	AG	G/G: increased relative risk of MS		
	CLOCK	rs6811520	C	CC	C/C: increased relative risk of MS		
	FADS2	rs174611	C	CT	Decreased relative risk of MS		
	FADS2	rs174618	C	CT	Decreased relative risk of MS		
	CD58	rs2300747	G	AG	Decreased relative risk of MS		
Raynaud's Syndrome	NOS1	rs527590	T	CC	Increased susceptibility to Raynaud's syndrome	Raynaud's Syndrome (or Phenomenon) is an episodic vasospastic disorder causing decreased blood flow and numbness in the fingers and other extremities. As the blood vessels constrict, it reduces the blood flow to the fingers or other extremities. Cold or stress (physical or mental) can trigger it.	bit.ly/38dYJlz
	IL1B	rs1143634	G	AG	Increased risk of antisynthetase syndrome (autoimmune disorder w/Raynaud's)		
	IFNG	rs2069718	G	AG	GG: increased risk of Raynaud's in connective tissue disorders		
	TNF	rs1800630	A	CC	Increased risk of Raynaud's in lupus patients		
	HTR1B	rs6297	C	TT	Increased risk of Raynaud's due to hand/arm vibrations		

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Rheumatoid Arthritis	HLADRB1	rs660895	G	AA	Higher risk for RA	Rheumatoid arthritis is thought to be caused by a combination of genetic risk factors along with environmental triggers such as smoking, exposure to silica dust, periodontal disease, and more.	bit.ly/2A0kC7s
	PTPN22	rs2476601	A	AG	Increased risk for RA		
	TRAF1	rs10818488	A	AG	Increased risk for RA (2-fold)		
	TRAF1	rs2900180	T	CT	Increased risk for RA		
	STAT4	rs7574865	T	GG	Increased risk for RA		
	TNFAIP3	rs6920220	A	GG	Increased risk for RA (2-fold)		
	CCR6	rs3093024	A	AG	Slightly Increased risk for RA		
	ANG2	rs12674822	T	GG	Increased risk of RA (2-fold)		
Sjogren's	HLA-DRB1	rs2187668	T	CC	HLA-DRB1*03:01 allele; increased risk of Sjorgren, as well as other autoimmune disorders	~Sjögren's syndrome, an autoimmune disorder affecting 1% of the population, attacks specific proteins produced in the body. ~ The first symptoms are usually dry eyes and dry mouth.[ref] ~Genetic variants can increase susceptibility to Sjogren's — and can point towards natural solutions that may help. Keep in mind that these variants are common and don't cause Sjogren's alone. Instead, genetic susceptibility combines with other factors.	bit.ly/4ajrrwU
	HLA-DRA	rs3135394	G	AA	3-fold increased risk of Sjögren's		
	HLA-DQB1	rs3129716	C	TT	3-fold increased risk of Sjögren's		
	HLA-DQA1	rs9271588	C	CT	half the normal risk of Sjögren's (protective)		
	IRF5	rs4728142	A	GG	slightly increased risk of Sjögren's		
	IRF5	rs10954213	A	GG	A/A: slightly higher risk of Sjögren's		
	IL12A	rs485497	A	AA	slightly increased risk of Sjögren's		
	TNIP1	rs6579837	T	GG	slightly increased risk of Sjögren's		
	STAT4	rs10168266	T	CC	increased risk of Sjögren's		
	STAT4	rs11889341	T	CC	increased risk of Sjögren's		
	OAS1	rs10774671	G	AA	decreased risk of Sjögren's (protective)		
	GTF2I	rs117026326	T	CC	2 to 3-fold increased risk of anti-SSA positive Sjögren's		
	TNFAIP3	rs2230926	G	TT	increased risk of Sjögren's; increased risk of lymphoma in Sjögren's patients, especially in younger ages		
	TNF	rs1800629	A	GG	Higher TNF-alpha levels. Increased risk of Sjögren's syndrome		
Familial Mediterranean Fever	MEFV	rs61732874	A	CC	Familial Mediterranean fever (FMF) is a genetic condition of inflammatory episodes that cause painful joints, pain in the abdomen, or pain in the chest, and is most often accompanied by a fever. (Auto-inflammatory disease)	People from all ethnic backgrounds can have this (not just Mediterranean). Eat healthy and reduce stress. There are prescription medications available to reduce the frequency of FMF episodes.	bit.ly/2RgS7qe
	MEFV	rs3743930	G	CC			
	MEFV	rs104895083	C	GG			
	MEFV	rs104895094	C	TT			
	MEFV	rs28940580	G	CC			
	MEFV	rs28940578	T	CC			
	MEFV	rs11466023	A	GG			
	MEFV	rs104895097	T	CC			
	MEFV	rs28940579	G	AA			
	MEFV	i4000409	A	--			
	MEFV	i4000403	C	--			
	MEFV	i4000407	C	--			
	MEFV	rs61752717	C	TT			
	MEFV	i4000406	C	--			
	MEFV	i4000410	T	--			

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Metabolic Health							
Diabetes Risk Factors	MTNR1B	rs10830963	G	CC	Increased fasting glucose levels, increased risk of type 2 diabetes (2-fold) when eating late at night	Knowing why you are susceptible to diabetes may give you an idea of where to start if you are prediabetic. For example, if you have the SLC30A8 variant, go get your zinc levels tested and supplement with zinc if needed.	bit.ly/32XHwof
	TCF7L2	rs7903146	T	CC	Increased risk of diabetes, decreased beta cell function.		
	TCF7L2	rs12255372	T	GG			
	SLC30A8	rs13266634	T	CC	T/T: lower risk for type-2 diabetes (zinc related)		
	IRS1	rs2943641	C	CC	Slightly higher risk for diabetes		
	WFS1	rs10010131	A	AG	Protective against diabetes		
	HHEX	rs7923837	G	GG	Increases risk of impaired glucose-stimulated insulin response		
	HHEX	rs1111875	C	CC			
	PPARG	rs1801282	G	CC	Increased risk of met. syndrome		
	KCNJ11	rs5219	T	CC	decreased insulin response to glucose		
PCOS	LHCRG	rs13405728	G	AA	Increased risk of PCOS	Control insulin through diet (low carb?) or with supplements such as berberine, inositol, resveratrol, and selenium. Block blue light at night for higher melatonin. Avoid BPA.	bit.ly/2IDgYRa
	LHCRG	rs2293275	T	CC	Increased risk of PCOS (3-4x)		
	DENND1A	rs10818854	A	GG	Increased risk of PCOS (2x)		
	FSHB	rs11031006	A	AG	Increased LH levels		
	FSHR	rs6166	C	TT	Increased risk of PCOS		
	ADIPOQ	rs2241766	T	TT	Increased risk of PCOS (2x)		
	ADIPOQ	rs1501299	T	GT	Decreased risk of PCOS		
	MTNR1B	rs10830963	G	CC	Increased risk of PCOS - melatonin receptor		
	TNF	rs1799964	C	TT	Increased TNF levels; increased relative risk of PCOS		
	TNF	rs4645843	T	CC	Increased relative risk of PCOS		
Blood glucose and Insulin Resistance	KCNJ11	rs5219	T	CC	impaired insulin secretion, higher blood glucose	Higher blood glucose levels are damaging over the long term, so it is best to keep your blood sugar in the low-normal range. Read through the article for the specific lifehacks for each of the different variants.	bit.ly/3fmDdwz
	ABCC8	rs757110	A	AA	AA: impaired insulin release		
	GCK	rs1799884	T	CT	Increased fasting plasma glucose		
	CDKAL1	rs7754840	C	CG	Decreased insulin release in response to glucose		
	IRS1	rs2943641	C	CC	CC: impaired insulin signaling		
	IRS1	rs1801278	T	CC	impaired insulin signaling		
	ENPP1	rs1044498	C	AA	Increased insulin resistance		
	KCNH2	rs1805123	G	TT	Decreased fasting glucagon		
	GLP1R	rs6923761	A	GG	Decreased insulin resistance, lower BMI (good!)		
	MTNR1B	rs10830963	G	CC	Increased fasting glucose if eating later at night		

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NAFLD (fatty liver)	PNPLA3	rs738409	G	CC	Significant increase in risk of NAFLD	Non-alcoholic fatty liver disease (NAFLD) is now the leading cause of liver problems worldwide, bypassing alcoholic liver disease. It is estimated that almost half of the population in the US has NAFLD caused by a combination of genetic susceptibility, diet, and lifestyle factors. Eliminating junk food and sugar should help. Getting plenty of choline in the diet is also important. Check the article for lifehacks specific to the genes.	bit.ly/2OaIzzC
	TM6SF2	rs58542926	T	CC	Increased risk NAFLD		
	HSD17B13	rs6834314	G	AA	Liver fat, but less inflammation		
	MBOAT7	rs641738	T	TT	Increased risk NAFLD (Caucasian)		
	GCKR	rs1260326	T	CT	Increased triglycerides and fatty liver		
	CYP2E1	rs2031920	T	CC	Increased liver fat with alcohol		
	HFE	rs1800562	A	GG	Iron build up, risk of NAFLD		
	HFE	rs1799945	G	CC	Iron build up, risk of NAFLD		
	PEMT	rs7946	T	TT	TT only: Increased NAFLD, choline related		
	SERPINA1	rs28929474	T	CC	Alpha-1 antitrypsin, Increased risk of NAFLD and liver disease		
	SOD2	rs4880	A	AG	AA only: Increased fibrosis in NAFLD (oxidative stress)		
	NCAN	rs2228603	T	CC	Increased risk of NAFLD		
	IFNL3	rs12979860	C	CC	CC only: Increased liver damage in NAFLD		
Medium Chain Acyl-CoA Dehydrogenase Deficiency	ACADM	rs77931234	G	AA	Two copies of these mutations can cause medium chain acyl-CoA dehydrogenase deficiency (MCADD), which impairs the body's ability to use medium chain fatty acids for energy. It makes it hard to fast or go low carb. (important)	People with one copy of the risk allele may find that they do better eating carbohydrates regularly. A high fat, low carb diet may lead to low blood sugar. Fasting may also cause low blood sugar.	bit.ly/2IUWIL9
	ACADM	rs121434280	C	TT			
	ACADM	rs373715782	T	CC			
	ACADM	i5012755	T	CC			
	ACADM	rs121434281	T	CC			
	ACADM	rs121434282	C	GG			
	ACADM	rs121434277	A	GG			
	ACADM	rs121434274	A	GG			
	ACADM	i5012759	G	--			
	ACADM	i5012760	T	--			
	ACADM	i5003117	T	--			
Short-chain Acyl CoA Dehydrogenase Deficiency	ACADS	rs1800556	T	CC	Two copies of these mutations can cause SCADD, which impairs the body's ability to use short chain fatty acids for energy. It makes it hard to fast or go low carb. **(important)**	Carrying one risk allele may make it harder to do a low carb, high fat diet (keto). Fasting may also lead to low blood sugar.	bit.ly/2X7XL3m
	ACADS	rs28940874	T	CC			
	ACADS	rs61732144	T	CC			
	ACADS	rs28940872	T	CC			
	ACADS	i5007492	T	--			
	ACADS	rs121908006	T	CC			
	ACADS	i5007490	A	--	Adds to SCADD risk		
	ACADS	rs28941773	T	CC	Pathogenic for short-chain acyl-CoA dehydrogenase deficiency		

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SIRTfoods Diet	SIRT1	rs3758391	T	CT	Elevated SIRT1 levels; lower cardiovascular disease mortality (good)	Sirtuins respond to the energy level changes in a cell. They regulate the transcription of other proteins based on how much energy is available. In addition to removing acetyl groups in the cell nucleus, some sirtuins are active in the mitochondria and the cytoplasm of the cell. These mitochondrial sirtuins are important in energy production, metabolism, and cellular health.	bit.ly/3vdIDmc
	SIRT1	rs12778366	C	TT	Reduced risk of diabetes complication, better glucose tolerance (good)		
	SIRT1	rs932658	A	AC	Increased SIRT1 activity (usually good)		
	SIRT3	rs511744	T	CC	T/T: increased lifespan		
	SIRT3	rs11246020	T	CC	Reduced SIRT3; Increased risk of metabolic syndrome		
	SIRT3	rs185277566	C	CC	Reduced SIRT3; Increased risk of heart attack		
	SIRT6	rs352493	C	TT	Increased severity in heart disease		
SCD1	SCD	rs1393492	G	AA	Lower risk of met syndrome, lower SCD1	Stearoyl-CoA desaturase (SCD1 gene) is the rate-limiting enzyme needed for the body's creation of monounsaturated fatty acids from saturated fatty acids. Variants in the SCD gene may cause alterations to metabolic health.	bit.ly/3v9Wp8q
	SCD	rs2060792	T	TT	TT only: higher palmitic and lower stearic acid, higher CRP		
	SCD	rs1502593	A	AA	Increased risk of metabolic syndrome		
	SCD	rs7849	C	TT	Lower BMI, increased insulin sensitivity		
	FTO	rs9939609	A	TT	Increased BMI, higher SCD1 with high carb		
	CYP1B1	rs1056836	G	GG	GG: Decreased estradiol metabolism		
GLP-1	GLP1R	rs10305492	A	GG	Lower fasting glucose	GLP-1 is a hormone released in response to eating. It controls insulin release and appetite.	bit.ly/38K2CvL
	GLP1R	rs6923761	A	GG	DPP-4-inhibitors may not be as effective		
	GLP1R	rs1042044	A	AA	AA: higher anhedonia		
	PCSK1	rs6232	C	TT	Increased risk of obesity		
	PCSK1	rs6234	C	GG	Increased risk of obesity		
	GCG	rs4664447	C	TT	CC: lower fasting glucose		
Insulin Resistance: Genetics and Root Causes	PPM1K	rs1440581	C	CT	C/C: On average, higher BCAA levels compared to TT. For people on a reduced-calorie diet, a low-fat diet worked better for reducing insulin resistance.	~ The term insulin resistance indicates that the signal from insulin is not properly received by cells and the receptors do not move to the cell surface to take up more glucose. ~ Insulin resistance can lead to diabetes. Even before diabetes develops, insulin resistance can have negative health consequences. ~ Genetic variants can make you more or less likely to develop insulin resistance, depending on your diet. ~ Importantly, genetics can show which cellular pathways are involved, including the role of BCAAs in insulin resistance.	bit.ly/3LcWTSv
	PPM1K	rs9637599	C	AC	On average, higher BCAA levels; Increased risk of insulin resistance and diabetes with high BCAA intake		
	BCAT1	rs2242400	G	AA	increased BCAAs, increased risk of diabetes		
	GPRC6A	rs2274911	G	AG	G/G: decreased risk of insulin resistance (amino acid receptor)		
	IRS1	rs1801278	T	CC	impaired IRS1 signaling, increased risk of insulin resistance and diabetes (insulin receptor)		
	ENPP1	rs1044498	C	AA	increased risk of insulin resistance, metabolic syndrome (helped by exercise))		
	PCK1	rs2179706	C	CT	C/C: When consuming higher omega-3 PUFA, individuals had lower insulin resistance levels on average		
	IGF1	rs35767	G	GG	lower insulin sensitivity, increased risk of insulin resistance		
	NAT2	rs1208	G	AA	decreased risk of insulin resistance		
	IRS1	rs2943641	C	CC	C/C: increased risk of insulin resistance; C/T: typical risk; T/T: lower risk of type 2 diabetes in people with high vitamin D levels		

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Intermittent Fasting Related Genes	GNB3	rs5443	T	CC	T/T: worst mood, most hunger when fasting	Intermittent fasting may hold health benefits for some people. For others, it may not be the best option. Read through the article on intermittent fasting to understand how SCADD mutations may impact your ability to fast, and why fasting to upregulate autophagy may benefit some.	bit.ly/38lU2GK
	ACADS	rs1800556	T	CC	Mutation linked to SCADD		
	ACADS	rs28940874	T	CC	Mutation linked to SCADD		
	ACADS	rs61732144	T	CC	Mutation linked to SCADD		
	ACADS	rs28940872	T	CC	Mutation linked to SCADD		
	ACADS	i5007491	A	--	Mutation linked to SCADD		
	ACADS	i5007492	T	--	Mutation linked to SCADD		
	ACADS	i5007490	A	--	Adds to SCADD risk		
	ACADS	i5007492	A	--	Mutation linked to SCADD		
	ACADS	rs28940874	T	CC	Mutation linked to SCADD		
	ACADS	rs28941773	T	CC	Mutation linked to SCADD		
	ATG16L1	rs2241880	G	GG	increased risk of IBD		
	ATG16L1	rs10210302	T	TT	increased risk of IBD		
	ATG5	rs573775	A	AG	Lower ATG5 (autophagy gene)		
	ATG5	rs6568431	A	CC	Lower ATG5 (autophagy gene)		
	IRGM	rs13361189	C	TT	Increased risk of Crohn's (autopahgy gene)		
	IRGM	rs10065172	T	CC	Increased risk of Crohn's (autopahgy gene)		
	IRGM	rs4958847	A	GG	Increased risk of Crohn's (autopahgy gene)		
Glucose + Caffeine	ADORA2A	rs5751876	C	CT	CC: caffeine plus carbs increases postprandial glucose response	Consuming caffeine with carbohydrate increases the glucose response for people with both of these genetic variants.	bit.ly/3314M61
	CYP1A2	rs762551	C	AC	Caffeine plus carbs causes glucose to remain elevated longer		
Fasting	GNB3	rs5443	T	CC	TT only: impacts mood and hunger when fasting (Hangry)	This doesn't mean that you can't fast, just that you are likely to be irritable.	bit.ly/2IMTitQ
Carbohydrate metabolism	IRS1	rs2943641	C	CC	C/C: no differences in diabetes risk based on low-carb vs low-fat diet (higher overall diabetes risk)	You may want to quantify your blood glucose levels by using a test kit. Blood glucose test kits are not that expensive and can give you a fairly accurate picture of how your body reacts to different meals.	bit.ly/3MPPBEL
	BDNF	rs6265	T	TT	Low-protein, high-carb (but not excessive calories) protective against T2D		
	FTO	rs9939609	T	TT	Greater decrease in HOMA-IR on lower fat diet		
	CLOCK	rs1801260	G	AG	Less common variant, no benefit in insulin resistance w/ low-fat		
	UCP3	rs1800849	A	GG	Less weight loss and no decrease in glucose or insulin levels on a low carb diet		
Diabetes and Coffee	C12orf51	rs2074356	A	GG	Decrease in diabetes risk for coffee drinkers	The main polyphenol in coffee is chlorogenic acid, which inhibits glucose-5-phosphatase production in the liver. This may cause decreased glucose output by the liver, thus reducing blood glucose levels.	bit.ly/3oowYzt
	ACAD10	rs11066015	A	GG			
	MYL2	rs12229654	G	TT			
HbA1c	G6PD	rs1050828	T	CC	G6PD deficiency carrier; lower HbA1c levels	Talk with your doctor if you have diabetes about how your specific genetic variants may need to be considered when looking at specific HbA1c targets for diabetes.	bit.ly/3BXrHBP
	HBB	i3003137	A	--	Sickle cell trait carrier; lower HbA1c by 0.31% units		
	HFE	rs1800562	A	GG	C282Y (hemochromatosis risk); often higher hemoglobin and lower HbA1c		
	TMPRSS6	rs855791	A	AG	Lower ferritin levels; higher HbA1c levels (due to lower hemoglobin levels)		
	HK1	rs16926246	T	CC	Slightly lower HbA1c levels		
	ANK1	rs4737009	A	AG			
	MYO9B	rs11667918	C	CC			
	FNK3	rs1046875	A	AA			
	HBB	rs334	A	--	Sickle cell trait carrier; lower HbA1c by 0.31% units		

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Disease Risk Factors (Chronic Diseases)							
Lower Alzheimer's Risk	APP	rs63750847	T	CC	Resistance to Alzheimer's **(important)**	This is rare, but really good!	bit.ly/2ZlrOlB
	HMGCR	rs3846662	A	AG	decreased risk of Alzheimer's		
	APOE	rs199768005	A	TT	one copy of a rare mutation that significantly decreases the risk of Alzheimer's		
	APOE	i5000207	A	--	one copy of a rare mutation that significantly decreases the risk of Alzheimer's		
	APOE	rs267606661	G	CC	one copy of a rare mutation that significantly decreases the risk of Alzheimer's		
	APOE	i5000206	G	--	one copy of a rare mutation that significantly decreases the risk of Alzheimer's		
	MAPT	rs8070723	G	AA	Slightly reduces risk of Alzheimer's, greatly reduced risk of palsy, Parkinson's	These are more common and decrease the risk of Alzheimer's by about 10-15% (just a little bit).	
	ZCWPW1	rs1476679	C	TT	Slightly reduces the risk of Alzheimer's		
	CLU	rs11136000	C	CT			
	PICALM	rs3851179	C	CT			
	APOE	rs7412	C	CC	No APOE ε2 allele		
TREM2, Alz.	TREM2	rs75932628	T	CC	Incr. risk of Alzheimer's (important)	TREM2 is important in the microglia (brain health)	bit.ly/362CWK5
	TREM2	rs143332484	T	CC	Somewhat incr. risk of Alz		
APOE, Alz Risk	APOE	rs429358	C	CC	TT + CC = E3/E3 CT + CC = E3/E4 CC + CC = E4/E4 TT + CT = E2/E3 CT + CT = E2/E4	The APOE E4 allele increases the risk of Alzheimer's disease. APOE isn't available/accurate from AncestryDNA data	bit.ly/2Zp1Zks
	APOE	rs7412	C	CC			
Fibronectin	FN1	rs116558455	A	GG	Lower fibronectin, protective against Alzheimer's in APOE E4 individuals	Fibronectin interacts with amyloid-beta and the blood-brain barrier.	bit.ly/44IicnG
	FN1	rs140926439	T	--	Lower fibronectin, protective against Alzheimer's in APOE E4 individuals (reduced risk by 70%)		
	FN1	rs1250229	T	CT	Somewhat lower fibronectin, significantly decreased risk of heart disease in familial hypercholesterolemia		
Parkinson's Disease Risk	LRRK2	rs34637584	A	GG	increased risk of Parkinson's (important)	Parkinson's is a neurological disorder caused by the degradation of the dopamine-producing neurons in the substantia nigra. There are both environmental causes (trichlor, paraquat, and other chemicals) and genetic risk factors. For most, it is a combo of the genetic risk factors along with an environmental component.	bit.ly/2PgkMyo
	LRRK2	rs34778348	A	GG	increased risk of Parkinson's		
	LRRK2	rs33995883	G	AA	Slightly increased risk of Parkinson's, increasesd risk of Crohn's		
	SNCA	rs2736990	G	GG	Slightly increaed risk of Parkinson's		
	SNCA	rs356218	G	AA			
	PER1	rs2253820	C	CT	Slightly increased risk of Parkinson's; circadian gene		
	SLC2A13	rs1994090	G	TT	increased risk of Parkinson's, glucose transport gene		
	ALDH2	rs671	A	GG	increased risk of Parkinson's with pesticide exposure		
	GBA	rs421016	G	AA	Increased risk of Parkinson's and possibly Gaucher's disease		
	GBA	rs387906315	I	GG			
	GBA	rs2230288	T	CC			
	GBA	i4000417	I	AA	increased risk for Parkinson's, II - increased risk of Gaucher's		
	BChE	rs1803274	T	CC	increased risk for Parkinson's with organophosphate exposure; K-variant		
	BChE	rs1126680	T	CC	reduced risk of Parkinson's disease		
	GBA	i4000415	C	--	type 1 Goucher's risk; increased PD risk		
	GBA	rs76763715	C	TT	type 1 Goucher's risk; increased PD risk		

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HIF1A	HIF1A	rs11549465	T	CC	Increased HIF1A; increased cancer risk	HIF1a is the regulator of cell processes when oxygen is low. See article for details and link to cancer risk.	bit.ly/33wsKFE
	HIF1A	rs11549467	A	GG			
	HIF1A	rs2057482	T	CC	Decreased HIF1A, decreased cancer		
Iron Build Up (Hemochromatosis)	HFE C282Y	rs1800562	A	GG	Hemochromatosis, iron build up **(important)**	Iron building up in the body increases oxidative stress and can lead to organ damage. Giving blood is the best way to lower your iron levels. Take the HFE mutations seriously.	bit.ly/2N2iLVx
	HFE H63D	rs1799945	G	CC	Iron build up, (milder) hemochromatosis risk if 2x		
	HFE S65C	rs1800730	T	AA	Iron build up, (milder) hemochromatosis risk		
	BMP2	rs235756	A	AG	Increased ferritin levels with HFE (above)		
	BTBD9	rs3923809	G	GG	Higher ferritin levels		
	SLC40A1	rs1439816	C	GG	More liver damage with HFE		
	TMPRSS6	rs855791	G	AG	Increased iron stores (men)		
	SLC40A1	rs11568350	A	CC	Higher ferritin levels		
	HIF1A	rs11549465	T	CC	Increased high iron in hemochromatosis patients		
	SLC40A1	rs28939076	T	GG	Hemochromatosis type 4		
	HFE2	rs121434375	T	--	Hemochromatosis type 5		
	HFE2	i5001498	T		hemochromatosis type 2A		
	HFE2	i5001502	A	--	Hemochromatosis type 2A		
	HFE2	i5001501	C	--	Hemochromatosis type 2A		
G6PD Deficiency	G6PD	rs5030868	A	GG	G6PD deficiency mutation	There are quite a few foods (legumes, etc) and pharmaceuticals that should be avoided. Look this one up and possibly talk with your doctor.	bit.ly/2IImBxy
	G6PD	rs72554664	T	CC	G6PD deficiency mutation		
	G6PD	rs1050828	T	CC	G6PD deficiency mutation		
	G6PD	rs72554665	T	CC	G6PD deficiency mutation		
	G6PD	rs5030869	T	CC	G6PD deficiency mutation		
	G6PD	rs137852327	T	CC	G6PD deficiency mutation		
	G6PD	rs137852330	A	GG	G6PD deficiency mutation		
	G6PD	i5012739	T	--	G6PD deficiency mutation		
	G6PD	i3003411	T	--	G6PD deficiency mutation		
	G6PD	i5008436	T	--	G6PD deficiency mutation		
	G6PD	i5008440	A	--	G6PD deficiency mutation		

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Skin Cancer Risk Factors	MC1R	rs1805008	T	CC	increased risk of melanoma and basal cell carcinoma	If you have questions about an odd-looking skin patch, go get it checked out. The earlier skin cancer is detected, the more likely you will have a good outcome. Nicotinamide may help reduce skin cancer risk through boosting NAD.	bit.ly/34BMIBQ
	MC1R	rs1805007	T	CT			
	MC1R	rs1805006	A	CC			
	MC1R	rs1805009	C	GG			
	ASIP	rs1015362	C	CT	increased risk of skin cancer, sunburns, freckles		
	ASIP	rs4911414	T	GT			
	EXOC2	rs12210050	T	CC	Slightly increased risk skin cancer		
	SLC45A2	rs16891982	G	GG	C/G: reduced risk of skin cancer (Caucasians)		
	PADI6	rs7538876	A	GG	AA: increased risk of skin cancer		
	IRF4	rs12203592	T	CC	increased risk of skin cancer, moles		
	MC1R	i3002507	C	--	Increased risk of melanoma and basal cell carcinoma		
Osteoporosis	TNFSF11	rs2277438	G	AA	GG only: lower bone mineral density	Knowing why you are susceptible to osteoporosis may help you figure out which treatment to pursue. There are several natural RANKL inhibitors that may be worth experimenting with (or talking with your doctor about) if you have any of the TNSF11 variants.	bit.ly/2WH47ak
	TNFSF11	rs2277439	G	AA	Lower bone mineral density		
	TNFSF11	rs12585014	G	GG	Lower femoral strength, BMD		
	OPG	rs3102735	C	TT	CC only: lower BMD		
	LRP5	rs3736228	T	CC	Increased risk of osteoporosis		
	SQRDL	rs1044032	C	TT	Decreased risk of osteoporosis		
	VDR	rs1544410	T	CT	Increased risk of low BMD, osteoporosis		
	VDR FokI	rs2228570	A	AG	Adequate vitamin D is important here		
	ESR2	rs4986938	T	CC	TT only: lower BMD		
	TGFB1	rs1800470	G	AA	Decreased risk of osteoporosis (Asian)		
	COL1A1	rs1800012	A	AC	Lower bone mineral density		
DPYD	DPYD	rs3918290	T	CC	DPYD*2A mutation, reduced activity, may react negatively to 5-fluorouracil or capecitabine	Variants in the DPYD gene impact 5-fluorouracil metabolism. In cancer patients the impaired function can interact negatively with certain chemotherapy drugs called fluoropyrimidines. Knowing your genetics here can give you the "heads up" to talk with your doctor about DPYD variants before cancer treatment.	bit.ly/4bolHCz
	DPYD	rs55886062	C	AA	reduced activity, may react negatively to 5-fluorouracil or capecitabine		
	DPYD	rs1801160	T	CC	reduced activity, may react negatively to 5-fluorouracil or capecitabine		
	DPYD	rs67376798	A	TT	moderately reduced activity, may react negatively to 5-fluorouracil or capecitabine		
	DPYD	rs75017182	C	GG	moderately reduced activity, may react negatively to 5-fluorouracil or capecitabine		

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Gallstones	ABCG8	rs11887534	C	GG	Increased risk of gallstones, Increased cholesterol secretion	Insulin resistance increases the risk of gallstones, especially with these variants. Plant sterols may be counter indicated if you carry the ABCG8 variants.	bit.ly/2INjSTk
	ABCG8	rs6756629	A	GG	Increased risk of gallstones		
	ABCG8	rs4299376	G	GT	Increased risk of gallstones (Caucasian populations)		
	ABCG8	rs4245791	C	CT	Increased risk of gallstones		
	ABCB4	rs2230028	C	TT	Increased risk of gallstones		
Alpha-1	SERPINA1	rs17580	A	TT	Alpha-1 Antitrypsin Deficiency mutation Pi*S	A genetic mutation in the SERPINA1 gene causes alpha-1 antitrypsin deficiency.	bit.ly/36SYZq5
	SERPINA1	rs28929474	T	CC	Alpha-1 Antitrypsin Deficiency mutation Pi*Z		
	SERPINA1	rs28929473	A	TT	Null mutation (rare)		
	SERPINA1	rs199422211	A	TT	Null mutation (rare)		
	SERPINA1	rs28931572	T	AA	Null mutation (rare)		
	SERPINA1	rs28931568	T	CC	Pi Mineral Springs mutation		
	SERPINA1	rs61761869	A	GG	Pi Procida mutation		
	TNFSF11	rs361525	A	GG	Increased likelihood of having chronic bronchitis with Pi*Z mutation		
	GSTP1	rs1695	G	AA	G/G: reduced function, increased risk of COPD in AAT deficiency		
Gout and High Uric Acid	ABCG2	rs2231142	T	GG	Increased risk of gout, higher uric acid	High uric acid is the biggest cause of gout, but high uric acid (without gout) is also linked with an Increased risk of heart problems.	bit.ly/3bSr6T9
	ABCG2	rs72552713	A	GG			
	SLC2A9	rs6449213	C	CC	Decreased risk for gout, lower uric acid		
	SLC2A9	rs7442295	G	GG			
	SLC2A9	rs12510549	C	CT			
	SLC2A9	rs12498742	G	GG			
	SLC2A9	rs16890979	T	TT			
	SLC2A9	rs1014290	G	GG			
	SLC2A9	rs10805346	T	CC			
	SLC22A12	rs475688	C	CT	Higher risk of gout (common)		
	GCKR	rs780094	C	CT	Decreased risk of gout		
	SLC28A2	rs2271437	G	TT	Increased risk of gout		
Trimethylaminuria	FMO3	rs2266782	A	AA	Decreased FMO3 function, increased risk of hypertension	Often referred to as 'fish odor disease', trimethylaminuria causes a strong odor in sweat, urine, and breath. The FMO3 enzyme is needed to break down the TMA. Mild decreases in FMO3 are unlikely to cause strong odor, but several variants could combine with a diet high in choline or fish to cause transient odor. See article for details.	bit.ly/3rSKie0
	FMO3	rs2266780	G	AG	Somewhat decreased FMO3 function		
	FMO3	rs909530	T	CT	Somewhat decreased FMO3 function		
	FMO3	rs1736557	A	GG	Decreased FMO3 function		
	FMO3	rs72549332	A	GG	Decreased FMO3 function		
	FMO3	rs72549326	T	CC	Decreased FMO3 function		
	FMO3	rs72549322	G	AA	Decreased FMO3 function		
	FMO3	rs61753344	T	GG	Decreased FMO3 function		
	FMO3	rs3832024	D	TT	Decreased FMO3 function		

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Dry Eyes	IL1B	rs1143634	G	AG	Incr. dry eyes due to increased tear osmolality	Dry eyes can be due to increased tear osmolarity and/or increased inflammation of the surface of the eye.	bit.ly/3GlkH2g
	PTPN22	rs33996649	T	CC	Incr. dry eyes, immune system		
	VDR	rs7975232	C	AC	Incr. dry eyes, vit. D receptor		
	MUC1	rs4072037	C	CT	Incr. dry eyes, mucin		
	TRPM8	rs10166942	C	TT	Decreased cold receptor		
	TACR1	rs3771863	T	CC	Reduced risk dry eyes		
	BDNF	rs6265	T	TT	Incr. dry eyes, decreased BDNF		
	THBS1	rs2228262	G	AA	Increased risk of dry eyes after laser surgery		
	THBS1	rs2292305	G	AA			
	FGF10	rs104893889	T	CC	Rare, possible problems producing tears		
MSH3	MSH3	rs26279	G	AA	Increased relative risk of cancers, especially colon and breast	MSH3 is one way that cells check to make sure there isn't an error when replicating DNA.	bit.ly/3kNo1KB
	MSH3	rs863221	G	TT	Increased survival rate in colon cancer (good)		
Essential Tremor	CTNNA3	rs12764057	G	GG	Increased relative risk of ET	Essential tremor (ET) is a neurological disease that causes a hand or arm to shake during activities such as writing or eating. The tremor can also progress to involve the neck, voice, jaw, or other body regions. Researchers think that ET is caused by excess activation and excess synapses in certain types of nerve cells.	bit.ly/3wJ2QiF
	CTNNA3	rs7903491	A	GG	Increased relative risk of ET		
	FUS	rs186547381	T	CC	(rare) linked to essential tremor		
	SCN11A	rs138607170	A	GG	(rare) linked to essential tremor		
	LINGO1	rs11856808	T	CC	Increased relative risk of ET		
	LINGO1	rs9652490	G	AA	Increased relative risk of ET		
	MAPT	rs1052553	G	AA	Increased relative risk of ET		
	TREM2	rs75932628	T	CC	Reduced intracellular signaling, increased risk of Alzheimer's disease, increased risk of essential tremor		
	HTRA2	rs72470545	A	GG	Rare mutation, significantly increased risk of ET		
	MTHFR	rs1801133	A	AA	Increased risk of essential tremor, possibly linked to reduced detoxification		
	DRD3	rs6280	C	TT	Increased risk of essential tremor (especially voice tremor) - dopamine receptor		
	VDR	rs2228570	A	AG	AA - reduced risk of essential tremor; vitamin D receptor		
	CYP2C19	rs4244285	A	GG	Increased risk of essential tremor (avoid cigarette smoke)		

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Small Fiber Neuropathy	SCN9A	rs6746030	A	GG	increased risk of arthritis pain, back pain (lumbar disc), and phantom pain	In small fiber neuropathy, the tiniest nerve fibers break down and cause burning pain, numbness, odd sensations, or autonomic nervous system issues. Small fiber neuropathy is a type of peripheral neuropathy, but the symptoms can differ from what you would typically think of as neuropathy. The SCN9A, SCN10A, and SCN11A genes encode sodium voltage-gated channels that transmit signals in small fiber neruons.	bit.ly/3HLsGZK
	SCN9A	rs4369876	A	CC	More sensitive to pain, increased risk of small fiber neuropathy		
	SCN9A	rs74449889	G	AA	Increased risk of neuropathic pain		
	SCN9A	rs80356470	T	AA	(rare) primary erythromelalgia		
	SCN9A	rs182650126	C	TT	(rare) increased risk of neuropathy pain		
	SCN10A	rs6795970	A	AG	Higher pain threshhold; decreased pain in inflammatory bowel disease		
	SCN10A	rs12632942	G	AG	GG: lower pain threshold		
	SCN10A	rs151090729	T	CC	(rare) hyperexcitable NaV1.8; increased risk of small fiber neuropathy		
	SCN11A	rs138607170	A	GG	(rare) familial episodic pain syndrome, hereditary autonomic neuropathy		
	SCN11A	rs483352921	C	GG			
	SCN11A	rs483352920	G	AA			
	SCN11A	rs141686175	G	AA			
	TRPV1	rs8065080	C	CT	C/C: higher pain tolerance to pinprick pain		
Pernicious Anemia	PTPN22	rs6679677	A	AC	Increased risk of autoimmune diseases and pernicious anemia	Anemia is a general term that means you don't have enough properly formed red blood cells to provide enough oxygen through the body. Pernicious anemia is a type of B12 deficiency that causes fewer red blood cells to form. It is a type of megaloblastic anemia caused by defective DNA synthesis.	bit.ly/43svSlE
	AIRE	rs74203920	T	CC	Increased risk of pernicious anemia		
	IL2RA	rs2476491	A	AA	Increased risk of pernicious anemia		
	HLA-DRB1	rs3135388	A	GG	tagging SNP for HLA-DRB1*15:01; possibly increased risk of pernicious anemia		
	TCN2	rs9606756	G	AA	possibly reduced B12, more likely to have pernicious anemia with autoimmune gastritis		
	CBLIF	rs150884181	G	AA	intrinsic factor deficiency possible (rare)		
Gilbert Syndrome	UGT1A1	rs887829	T	CC	increased bilirubin levels	Gilbert's syndrome is the name for elevated bilirubin levels due to genetic reasons. It is somewhat common and is often diagnosed through routine blood tests. It affects about 5-10% of the population.	bit.ly/3IUVqzW
	UGT1A1	rs4148323	A	GG	increased bilirubin levels		
	UGT1A1	rs4124874	G	GT	increased bilirubin levels		
	UGT1A1	rs6742078	T	GG	increased bilirubin levels		
	UGT1A1	rs35003977	G	TT	increased bilirubin levels		
Age Related Macular Degeneration	CFH	rs1061170	C	CC	Increased risk of AMD	If you don't carry the ARMS2 variant, antioxidants may help to protect against age related macular degeneration. Clinical trials found that zinc, lutein, zeaxanthin, and vitamin C may be effective for people without ARMS2. Read through the article for a full explanation on how the complement system is important in AMD.	bit.ly/2WDdtBu
	CFH	rs1410996	A	GG	AA: increased risk of AMD		
	CFH	rs800292	G	GG	GG: increased risk of AMD		
	CFH	rs10922109	A	CC	Decreased risk of AMD		
	CFI	rs10033900	T	CT	TT: increase risk of AMD		
	C3	rs147859257	G	TT	Increased risk of AMD (rare)		
	ARMS2	rs10490924	T	GT	TT: increase risk of AMD		
	LIPC	rs10468017	T	CT	Decreased risk of AMD		
	C2	rs547154	T	GG			
	C2	rs4151667	A	TT			
	C2	rs641153	A	GG			
	C2	rs9332739	C	GG			
Serotonin 2A Alzheimers	HTR2A	rs6313	G	AG	Increased risk of Alzheimer's in people without the APOE E4 allele	In Alzheimer's patients, the expression of the serotonin 2A receptors is significantly decreased in the brain when compared to people their age without cognitive dysfunction.	bit.ly/3JXLup9
	HTR2A	rs6314	A	GG	Reduced serotonin 2A receptors in the prefrontal cortex, increased risk of social withdrawal, diminished hippocampal response to novel stimuli		
	MAOA	rs6323	T	TT	Reduced MAOA activity		

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Prostate Genes	8q24	rs188140481	A	TT	>4 fold increased risk of prostate cancer (important)	Part of the susceptibility to prostate cancer and other benign prostate problems is genetic. This article explains the genetic variants that increase your risk of prostate problems. Importantly, some of the prostate risk genetic variants are related to environmental toxins that you can mitigate.	bit.ly/3NZyqRC
	HOXB13	rs138213197	T	CC	>5 fold increased risk of prostate cancer (important, rare)		
	FGFR4	rs2011077	C	CT	increased risk of prostate cancer and BPH (up to 6-fold increase for Japanese ancestry)		
	HNF1B	rs4430796	A	AG	increased relative risk of prostate cancer (additive risk)		
	CASC17	rs1859962	G	TT	increased relative risk of prostate cancer (additive risk)		
	8q24	rs16901979	A	CC	increased relative risk of prostate cancer (additive risk)		
	8q24	rs6983267	G	TT	increased relative risk of prostate cancer (additive risk)		
	DAB2IP	rs1571801	T	GG	increased risk of aggressiveness in prostate cancer		
	17p12	rs4054823	T	CT	T/T: increased risk of aggressiveness in prostate cancer		
	CASC8	rs1447295	A	CC	increased relative risk of prostate cancer, and increased aggressiveness in prostate cancer		
	11q13	rs11228565	A	GG	increased aggressiveness in prostate cancer		
	ESR2	rs2987983	G	AA	G/G: increased risk of prostate cancer, but risk mitigated by adding phytoestrogens or isoflavonoids to the diet		
	COX2	rs5275	G	GG	G/G: decreased risk of prostate cancer with salmon consumption, fish oil (good)		
	GSTM1	rs366631	A	AA	A/A: deletion (null) GSTM1 gene; increased risk of prostate cancer in Caucasians		
	GSTP1	rs1138272	T	CC	increased risk of prostate cancer		
	GSTP1	rs1695	G	AA	G/G: increased risk of prostate cancer		
	CYP3A4	rs2740574	C	TT	increased risk of aggressive prostate cancer in African Americans		
	GPX4	rs3746165	G	AA	G/G: 35% lower risk of prostate cancer lethality; higher gamma-tocopherol intake decreases the risk even more		
	CYP1B1	rs1056836	G	GG	decreased estradiol metabolism		
	CYP19A1	rs700518	T	CT	TT: increased risk of BPH		

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Primary Sclerosing Cholangitis	HLA-DRB1	rs2187668	T	CC	HLA-DRB1*0301; significantly increased susceptibility to PSC	Primary sclerosing cholangitis (PSC) is a life-altering condition that impacts the liver. For anyone dealing with PSC, research over the past couple of decades points to ways to mitigate some of the damage. Genetics points to immune response and inflammation as being pathways to target.	bit.ly/44x5Dei
	HLA-B	rs3099844	A	CC	increased susceptibility to PSC		
	HLA-B	rs2844559	T	CC	increased susceptibility to PSC		
	FUT2	rs601338	A	AA	A/A: non-secretor of blood type; increased risk of Candida infections in the bile ducts, increased episodes of cholangitis, increased risk of dominant stenosi		
	SLCO1B1	rs4149056	C	TT	slightly decreased risk of PSC		
	PNPLA3	rs738409	G	CC	Increased liver fat, NAFLD; increased fibrosis by 3-fold in PSC		
	NR1I2	rs1054190	T	CC	Reduced median survival in PSC		
	MMP3	rs650108	G	GG	increased risk of progression and need for liver transplant in PSC patients		
	TNF	rs1800629	A	GG	Higher TNF levels; 3-fold increased risk of PSC		
	MMEL1	rs3748816	G	AA	Decreased risk of PSC		
Fluoride	VDR	rs2228570	G	AG	Possibly decreased vitamin D levels; increased risk of skeletal fluorosis in people drinking tea with F	Too much fluoride is linked to skeletal and dental fluorosis, decreased IQ levels, and problems with thyroid hormone production. Genetic variants impact your resilience to the negative effects of chronic fluoride consumption. Some people are more likely to be affected at lower levels, while others may not notice problems until fluoride exposure reaches higher levels. There are many ways to reduce your exposure to systemic fluoride if you want to concentrate the fluoride on your teeth.	bit.ly/3rwDhSE
	GSTP1	rs1695	G	AA	Reduced function, decreased risk of skeletal fluorosis with high fluoride consumption		
	SOD2	rs5746136	T	CC	T/T: Increased risk of dental fluorosis		
	SOD2	rs10370	T	TT	T/T: Increased risk of dental fluorosis		
	CREB1	rs2253206	G	GG	G/G: Lower total T4 (thyroid hormone) in children exposed to high fluoride levels		
	CREB1	rs6740584	C	TT	Lower total T4 (thyroid hormone) in children exposed to high fluoride levels		
	ANKK1	rs1800497	A	AG	A/A: Reduced number of dopamine binding sites; linked to lower IQ in children exposed to higher levels of fluoride in their water (study in China)		
Dental Implants	IL1A	rs1800587	A	AG	increased relative risk of peri-implant disease and implant failure	Genetic variants can have a surprisingly large impact on the likelihood of peri-implantitis and the long-term success of your dental implant. Inflammatory cytokines and bone formation genes are important.	bit.ly/3NU9fjb
	IL1B	rs16944	A	GG	increased relative risk of peri-implant disease and implant failure		
	IL1B	rs1143634	A	AG	increased relative risk of peri-implant disease and implant failure		
	TNF	rs1800629	A	GG	increased TNF, increased risk of peri-implantitis		
	CD14	rs2569190	G	AA	G/G: increased risk of peri-implantitis and higher concentrations of RANKL, which increases bone resorption		
	IL4	rs2070874	T	CC	T/T: decreased susceptibility to dental implant loss (good)		

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BH4 Tetrahydrobiopterin	GCH1	rs3783641	A	AT	reduced BH4 production, especially in combination with T allele of rs8007267 and G allele of rs10483639	BH4 is an essential cofactor needed for the production of neurotransmitters, nitric oxide, and more. Your BH4 levels are important for heart health, immune response, and cognitive disorders. Genetic variants affect how likely you are to have low BH4 during times of oxidative stress or inflammation. There are natural ways to improve low BH4 levels, as well as safety considerations.	bit.ly/3QfRDRH
	GCH1	rs8007267	T	CT	reduced BH4 production, especially when inherited with A allele of rs3783641 and G allele of rs10483639		
	GCH1	rs10483639	C	CG	reduced BH4 production, especially when inherited along with A allele of rs3783641 and T allele of rs8007267		
	GCH1	rs10137071	T	CT	slightly lower plasma biopterin levels		
	GCH1	rs17128077	T	CC	increased risk of cleft lip		
	GCH1	rs104894433	A	GG	rare loss of function GCH1 mutation, dystonia		
	GCH1	rs137852633	C	GG			
	GCH1	i5000643	C	--			
	GCH1	rs104894445	T	CC			
	GCH1	i5000644	T	--			
	GCH1	rs104894434	G	AA			
	GCH1	i5000652	G	--			
	GCH1	rs104894438	T	CC			
	GCH1	i5000654	T	--			
	GCH1	rs104894437	A	TT			
	GCH1	i5000655	A	--			
	SPR	rs1876487	A	AC	A/A only: earlier age of onset in Parkinson's disease		
	SPR	rs121917747	T	AA	carrier of a rare SPR mutation		
	SPR	i5004360	T	--	carrier of a rare SPR mutation		
	SPR	rs121917746	T	CC	carrier of a rare SPR mutation		
	SPR	rs104893666	T	CC	carrier of a rare SPR mutation		
	SPR	i5004361	T	--	carrier of a rare SPR mutation		
	DHFR	rs70991108	D	AA	deletion in part of the DHFR gene, more likely to have unmetabolized folic acid when consuming more than 500 mcg/day		
	DHFR	rs1650697	A	GG	decreased DHFR expression		
	AGMO	rs916943	T	CC	increased susceptibility to tuberculosis		
	TPH2	rs4570625	T	GG	generally decreased risk of depression; less aggressiveness and lower anxiety (likely more TPH2 conversion)		
	TPH2	rs11178997	A	TT	somewhat increased risk of depression		
	TPH2	rs1843809	G	GG	decreased risk of depression		
	TPH2	rs4290270	T	AA	T/T: circadian disruption in people with depression		
	NOS3	rs891512	A	GG	higher blood pressure (likely lower NOS3)		
	NOS3	rs1800779	G	AA	decreased NOS3 expression		
	NOS3	rs4496877	T	GG	increased risk of hypertension		
	NOS3	rs2070744	C	TT	increased risk of hypertension		

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CoQ10 Deficiency	PDSS1	rs863224162	T	GG	carrier of a rare mutation related to CoQ10 deficiency	~ CoQ10 is essential for mitochondrial energy (ATP) production. ~ In addition, CoQ10 acts as an antioxidant, protecting against neuroinflammation and cell death. ~ CoQ10 levels generally decrease with age, and optimizing CoQ10 levels may help with aging. Common medications can interfere with CoQ10 production.	bit.ly/3TWk20F
	PDSS1	rs863224163	D	CC			
	CoQ9	rs786205897	D	GG			
	COQ8A	rs771578775	T	CC			
	COQ8A	rs578189699	T	CC			
	COQ8A	rs119468004	A	GG			
	COQ2	rs121918233	T	CC			
	COQ2	rs121918232	C	TT			
	COQ2	rs121918231	T	CC			
	COQ2	rs121918230	C	TT			
	CoQ3	rs6925344	T	CC	TT: possibly lower CoQ10 levels, CT: supplementing more effective		
	NQO1	rs1800566	A	GG	lower CoQ10 levels		
	CD36	rs1761667	A	AA	higher serum levels of CoQ10 with supplements (better response, better physical and mental health)		
	CYP7A1	rs3808607	T	GG	T/T: higher serum levels of CoQ10 with supplements (better response)		
	NPC1L1	rs2072183	C	CG	C/C: higher serum levels of CoQ10 with supplements (better absorption)		
Wilson's Disease Copper	ATP7B	rs76151636	T	GG	mutation that can cause Wilson's disease (2 copies needed)	~ Copper is necessary in small amounts, but too much copper can cause neurological and liver problems. ~ Mutations in the ATP7B gene can cause an excess of copper in the liver and brain. This is called Wilson's disease. ~ About 1 in 90 people carry one copy of the mutation. While Wilson's disease is usually only found in people with two copies of ATP7B mutations, people with one mutation may have more subtle changes to copper levels.	bit.ly/43BSHnG
	ATP7B	rs28942074	A	CC	mutation that can cause Wilson's disease (2 copies needed)		
	ATP7B	rs137853283	T	CC	mutation that can cause Wilson's disease (2 copies needed)		
	ATP7B	rs72552255	A	GG	mutation that can cause Wilson's disease (2 copies needed)		
	ATP7B	rs60431989	G	AA	mutation that can cause Wilson's disease (2 copies needed)		
	ATP7B	rs28942076	T	CC	mutation that can cause Wilson's disease (2 copies needed)		
	SOD2	rs4880	A	AG	A/A: adds to risk in males		
	MTHFR	rs1801133	A	AA	earlier age of onset of Wilson's disease symptoms		
	MTHFR	rs1801131	G	TT	earlier age of onset of Wilson's disease symptoms		

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Pancreatitis	TLR4	rs4986790	G	AA	protective against acute biliary (gallstone) pancreatitis	~ Acute pancreatitis is a painful, severe inflammation of the pancreas. ~ Recent research shines new light on the underlying mechanisms that cause pancreatitis. ~ Genetic variants increase susceptibility to pancreatitis, and understanding these genetic pathways may help to prevent a recurrence. ~ Targeting the right pathways with diet and natural supplements may help.	bit.ly/43rmw8F
	TLR4	rs4986791	T	CC	protective against acute biliary (gallstone) pancreatitis		
	CCL2	rs1024611	G	AA	increased susceptibility to mild or moderate pancreatitis		
	IL-8	rs4073	A	AA	A/A: increased susceptibility to pancreatitis		
	IL1B	rs1143634	A	AG	A/A: increased inflammation; increased susceptibility to pancreatitis		
	IL1B	rs16944	A	GG	A/A: increased inflammation; increased susceptibility to pancreatitis		
	MORC4	rs12688220	T	CC	increased susceptibility to pancreatitis		
	TPH1	rs211105	G	GT	G/G: increased susceptibility to pancreatitis		
	MTHFR	rs1801133	A	AA	MTHFR C677T allele, increased susceptibility to pancreatitis		
	CLDN2	rs7057398	C	TT	increased susceptibility to pancreatitis in Caucasians		
	PRSS1	rs111033565	A	GG	A/G: carrier of a rare mutation linked to hereditary pancreatitis		
	PRSS1	rs111033568	T	CC	C/T: carrier of a rare mutation linked to hereditary pancreatitis		
	PRSS1	rs144422014	G	AA	likely doesn't cause hereditary pancreatitis on its own, but may interact with other variants to increase pancreatitis risk		
	SPINK1	rs17107315	C	TT	increased risk of hereditary pancreatitis		
	CTCR	rs121909293	T	CC	increased risk of hereditary pancreatitis		
	CPA2	rs199695765	T	CC	C/T: rare mutation, linked to pancreatitis in ALL patients		
	TNF	rs1800629	A	GG	higher TNF levels; AA increased risk of severe acute pancreatitis		
	PRSS1	i5005351	A	--	A/G: carrier of a rare mutation linked to hereditary pancreatitis		

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Gut Health							
Irritable Bowel Syndrome	SI	rs9290264	A	AC	Reduced sucrase-isomaltase enzyme	If IBS-D, try reducing sugar and starches	bit.ly/2IfWTBl
	LCT	rs4988235	G	AG	GG = no lactase (lactose intolerant)	Try reducing dairy products or add lactobacillus	
	HTR3E	rs56109847	A	GG	Big increase in IBS risk	These serotonin receptor variants affect the transit speed through the intestines	
	HTR3A	rs1062613	T	CC	Increased risk of IBS-D		
	KLB	rs17618244	G	AG	GG only: faster transit time in IBS-D		
	TRPM8	rs10166942	C	TT	Slower colonic transit, Increased risk of IBS-C		
Gut Microbiome	FUT2	rs601338	A	AA	AA only: low/no Bifidobacteria	Your genes impact which gut microbes are likely to inhabit your microbiome. Check the article for specific dietary interactions.	bit.ly/3fusjFf
	VDR	rs7974353	T	CC	Influences Parabacteroides		
	LCT	rs182549	C	CT	No lactase as an adult; likely to have more bifidobaceria		
	SLC39A8	rs13107325	T	CT	Altered gut barrier function		
	APOA5	rs651821	C	CT	Reduced Bifidobacteria, higher triglycerides		
	ALDH1L1	rs2276731	C	TT	higher SHA-98		
	IL4	rs2243250	T	CC	Increased C. difficile risk in IBD		
Mannose Binding Lectin	MBL2	rs1800450	T	CC	These variants decrease mannose binding lectin, which increases the risk of infections if you have a compromised immune system.	If you aren't having problems with getting sick a lot, then don't worry about this one. If you are having problems, Lactobacillus plantarum probiotic might help.	bit.ly/2Kjet9L
	MBL2	rs7096206	G	CC			
	MBL2	rs1800451	T	CC			
	MBL2	rs5030737	A	GG			
	MASP2	rs72550870	C	TT			
Aspirin & Colon Cancer	CASC8	rs6983267	T	TT	Decreased risk of colon cancer with regular aspirin use	Studies find that a regular aspirin use Decreased colon cancer risk.	bit.ly/2WJw6X2
	SMAD7	rs4939827	C	CT			
	TCF7L2	rs7903146	T	CC			
Secretor	FUT2	rs601338	A	AA	AA only: non-secretor of blood type; resistant to norovirus	Probiotics with bifidobacteria may help if digestive troubles.	bit.ly/2Ki3RZ1
	FUT2	rs1047781	T	AA	TT only: non-secretor if Japanese or Korean ancestry		
SI gene (FODMAPs not the solution)	SI	rs147207752	C	TT	SI deficiency, FODMAPs less likely to work	SI stands for the sucrase-isomaltase enzyme produced in the small intestines to break down sugar and starches. Variants here can cause IBS due to eating sugar/starch.	bit.ly/31Y4WiS
	SI	rs146785675	G	AA			
	SI	rs9290264	A	AC			
	SI	rs121912615	C	AA	SI gene, rare mutations that cause SI deficiency		
	SI	rs200451408	A	GG			
	SI	rs79717168	C	AA			

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Infectious Disease Risk Factors / Immune System							
HIV	CCR5	i3003626	D	--	CCR5 delta 32 mutation	Two copies of the delta 32 mutation gives resistance to some HIV strains. One copy reduces the risk of AIDS from HIV.	bit.ly/3sH4RKG
	CCR5	rs333	D	GG			
COVID-19 GWAS	IFNAR2	rs2236757	G	GG	GG only: decreased risk for severity in COVID	These genetic variants were identified as increasing or decreasing the risk for severe SARS-CoV-2 infections in adults (avg. age 54).	bit.ly/3ri9U1R
	OAS3	rs10735079	G	AA	GG only: decreased risk for severity in COVID		
	DPP9	rs2109069	A	GG	increased risk of severity in SARS-CoV-2		
	NOTCH	rs3131294	A	GG	AA only: decreased risk for severity in COVID		
	HLA-G	rs9380142	G	AG	GG: decreased risk for COVID		
SARS-CoV-2	ABO	rs657152	A	AC	increased risk for SARS-CoV-2 severity (blood type)	Research is consistently showing that people with type O blood are less likely to have the severe complications from SARS-CoV-2. The ABO blood type variant here usually indicates that you do not carry the protective type O blood.	bit.ly/3qdXZBG
	CXCR6	rs10490770	C	TT	increased risk for SARS-CoV2 severity		
	F3	rs72729504	T	CC	2-fold increased risk for severe SARS-CoV-2		
	Inter-gen	rs45574833	A	GG	Increased hospitalization risk with SARS-CoV-2		
	Inter-gen	rs12064775	G	AA			
	TYK2	rs34536443	C	GG	increased relative risk of severe COVID-19		
	TMEM181	rs117665206	T	CC	mutation found more frequently in COVID-19 patients who died		
	ALOXE3	rs147149459	A	GG	mutation found more frequently in patients who died		
Flu, Coronavirus, other viruses	HLA-DRB1	rs2187668	T	CC	Significantly less likely to have SARS coronavirus	We all have different susceptibility to various viruses. These genetic differences make some of us resistant to certain pathogens and others more susceptible.	bit.ly/2Vhw45t
	CCL2 gene	rs1024611	G	AA	Increased susceptibility to SARS coronavirus		
	CD209	rs4804803	G	AA	Increased susceptibility to malaria, tuberculosis, chronic hepatitis		
	MBL2	rs1800450	T	CC	Increased susceptibility to tuberculosis, SARS		
	OAS1	rs10774671	A	AA	AA only: Increased risk of West Nile Virus		
	OAS1	rs2660	G	AA	Protective against SARS		
	MX1	rs17000900	A	AC	Protective against SARS		
	FUT2	rs601338	A	AA	AA: resistant to norovirus and rotavirus		
	IL1B	rs16944	G	GG	GG only: less than half the risk of H3N2 flu		
	IL28	rs8099917	G	TT	Half the risk for H3N2 flu		
	TNF	rs361525	A	GG	AA only: Increased risk for H1N1 flu complications		
	CD55	rs2564978	T	CT	TT: Increased risk for H1N1 flu		
	CCR5	rs333	D	GG	DD: resistant to most strains of HIV		
	TLR3	rs3775291	T	CT	Decreased risk of hep B, dengue fever and HSV2		
	IFIH1	rs1990760	T	CT	Decreased risk for several RNA viruses		

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Response to Vaccines	HLA-DQ2	rs2187668	T	CC	Decreased antibody response to hep. B and measles vaccine	There is a lot of individual variation in how people respond to vaccines - based in large part on genetic differences.	bit.ly/2XQ0MVn
	HLA-DPB1	rs3117230	G	AA	Low antibody response to rubella vaccine		
	SLAM	rs3796504	T	GT	4 to 8-fold lower antibody response to measles vaccine		
	CD46	rs2724384	G	AA	Lower response to measles vaccine, Increased antibody response to mumps		
	TLR3	rs7657186	A	GG	Lower antibody response to MenC vaccine		
	IL12B	rs3212227	G	GT	Low response to some flu vaccines		
	IL-12RB2	rs2201584	A	GG	Lower response to mumps vaccine		
	IL6	rs1800796	G	GG	GG: Increased response to some flu vaccine		
	IL-28B	rs8099917	G	TT	Twice as likely to produce antibodies for flu vaccine		
	intergenic	rs10489759	T	CC	Greatly Decreased response to smallpox vaccine		
Acute Respiratory Distress Syndrome	VEGFA	rs3025039	T	CT	Lower VEGF; Increased risk of mortality in ARDS	Acute respiratory distress syndrome can occur when there is extreme stress to lung cells due to infection (viral, bacterial) or mechanical stress (ventilator, high oxygen, etc). Read through the article for full details.	bit.ly/3I0LCAW
	ANGPT2	rs2442608	C	CT	CC: Increased ANG2, slightly Increased risk ARDS		
	ANGPT2	rs2442630	G	AA	slightly Increased risk of ARDS		
	ANGPT2	rs2515475	T	CC			
	MBL2	rs1800450	T	CC	Lower MBL, Increased risk of getting ARDS		
	MYD88	rs7744	G	AA	Decreased ARDS risk in adults <60		
	TNF	rs1800629	A	GG	Increased TNF-alpha, Increased ARDS risk in adults <60		
	IL17	rs2275913	A	AG	Decreased IL17, Decreased ARDS risk, Decreased mortality		
	NAMPT	rs9770242	C	AC	Slightly Increased risk of ARDS		
HMGB1	HMGB1	rs1045411	T	CC	Increased risk of sepsis,	HMGB1 sounds the alarm and increases inflammation when there is trauma or a pathogen present.	bit.ly/39n8Cfw
	HMGB1	rs1412125	T	TT	Increased risk for acquired pneumonia		
	HMGB1	rs1360485	C	TT	Increased risk of progression in breast cancer		
Vaccines and autoimmune	HLA-DRB1	rs660895	G	AA	Poss. Increase risk of ASIA	The link between vaccines and autoimmune diseases is specific to certain vaccines combined with certain genetic variants. Please read the article for details here. This is a complex issue.	bit.ly/3qsXqi7
	HLA-DRB1	rs3135388	A	GG	increased risk of MS from a specific flu vaccine		
	IL2	rs2069763	A	CC	high antibody response to measles vax; Increased risk of T1D		
	PTPN22	rs2476601	A	AG	Increased risk of autoimmune diseases, altered response to trivalent flu		
	IL-17F	rs763780	C	TT	Increased risk of autoimmune thrombocytopenia		
Malignant hyperthermia	RYR1	rs121918593	A	GG	Possibility of susceptibility to malignant hyperthermia	People with mutations in the RYR1 gene may be susceptible to malignant hyperthermia when exposed to inhaled anesthesia. ~ Malignant hyperthermia is a severe reaction to inhaled anesthesia, which can be fatal if not promptly recognized and treated.	bit.ly/3Sa8SF4
	RYR1	rs200563280	T	CC			
	RYR1	rs118192177	T	CC			
	RYR1	i6017606	T	--			
	RYR1	rs118192172	T	CC			
	RYR1	i6017613	T	--			
	RYR1	rs118192176	A	--			
	RYR1	i5000015	A	GG			
	RYR1	rs121918592	A	--			
	RYR1	i5900460	A	GG			

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Cold Sores	POU5F1	rs885950	C	AA	increased risk of cold sores	Cold sores are caused by the herpes simplex virus, which remains latent along trigeminal nerve cells. Not everyone gets cold sores from the virus, though. Genetics plays a big role, along with triggers such as stress or UV radiation.	bit.ly/41cJ7p2
	C21orf91	rs10446073	G	GG	increased likelihood of cold sores		
	C21orf91	rs1062202	G	--			
	VDR	rs2228570	A	AG			
	IL1A	rs1304037	T	CT	increased chance of recurrent cold sores		
	HCP5	rs4360170	G	--	increased risk of cold sores		
Lyme Disease	TLR1	rs5743618	C	AC	CC only: Increased risk of antibiotic-resistant Lyme arthritis	Lyme disease is transmitted by ticks. Your immune system plays a role in whether you are likely to have continuing problems with Lyme symptoms after completing antibiotic treatment.	bit.ly/2OyHy4h
	HLA-DRB1	rs660895	G	AA	Increased risk of Lyme arthritis		
	TLR2	rs5743708	A	GG	Reduced risk of Lyme		
	ANO10	rs41289586	T	CC	Increased risk of Lyme		
	ABCB1	rs1128503	G	AG	AG only: Increased risk of post-treatment Lyme		

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Phase I Detoxification Genes							
CYP2A6	CYP2A6	rs1801272	T	AA	CYP2A6*2 allele, reduced activity	CYP2A6 is involved in nicotine metabolism as well as valproic acid and several cancer drugs.	bit.ly/3nrWTTq
	CYP2A6	rs5031017	A	CC	CYP2A6*5 allele, reduced activity		
	CYP2A6	rs5031016	G	AA	CYP2A6*7 allele, reduced activity		
	CYP2A6	rs28399444	D	TT	CYP2A6*20 non-functioning variant		
	POR	rs1057868	T	CT	May increase CYP2A6 enzyme activity in people with normal		
	CYP2A6	rs28399453	A	GG	Increased CYP2A6 activity		
CYP2B6	CYP2B6	rs3745274	T	TT	CYP2B6*6, decreased activity	CYP2B6 encodes the enzyme involved with breaking down certain medication (e.g. bupropion and ketamine) as well as estradiol.	bit.ly/3KqcOtF
	CYP2B6	rs2279343	G	GG	CYP2B6, decreased activity		
	CYP2B6	rs12721655	G	AA	Reduced enzyme activity		
	CYP2B6	rs28399499	C	TT	Reduced enzyme activity		
	CYP2B6	rs3211371	T	CC	Reduced enzyme activity		
CYP2C8	CYP2C8	rs10509681	C	TT	CYP2C8*3 decreased enzyme function	CYP2C8 is involved in metabolism of NSAIDs and arachidonic acid, as well as several other medications.	bit.ly/3zYQILj
	CYP2C8	rs11572103	A	TT	CYP2C8*2 decreased enzyme function		
	CYP2C8	rs1058930	C	GG	CYP2C8*4 slightly decreased enzyme function		
	CYP2C8	rs7909236	T	GG	CYP2C8*1B; increased enzyme activity		
CYP2C9	CYP2C9	rs1799853	T	CC	CYP2C9*2	CYP2C9 metabolizes losartan, ibuprofen, celecoxib, naproxen, montelukast, and more.	bit.ly/3KoOeLd
	CYP2C9	rs1057910	C	AA	CYP2C9*3 Decreased function		
	CYP2C9	rs2256871	G	AA	CYP2C9*9 - poor function		
	CYP2C9	rs9332131	D	AA	CYP2C9*6		
	CYP2C9	rs28371685	T	CC	CYP2C9*11		
CYP2C19	CYP2C19	rs4244285	A	GG	*2 - non functioning	Metabolizes valium, citalopram, sertraline, escitalopram, and more. Two copies of *2 cause Plavix not to work.	bit.ly/33lKHMT
	CYP2C19	rs4986893	A	GG	*3, poor metabolizer		
	CYP2C19	rs12248560	T	CT	Ultrafast metabolizer		
CYP2D6	CYP2D6	rs3892097	T	CT	CYP2D6*4 decreased function	CYP2D6 metabolizes about 25% of prescription drugs. Genetic variants in CYP2D6 affect how medications work for an individual.	bit.ly/46Wu5qP
	CYP2D6	rs5030655	D	AA	CYP2D6*6 decreased function		
	CYP2D6	rs5030656	D	CC	CYP2D6*9 decreased function		
	CYP2D6	rs1065852	A	AG	CYP2D6*10 decreased function		
	CYP2D6	rs28371725	T	CC	CYP2D6*41 decreased function		
	CYP2D6	rs1135824	C	TT	CYP2D6*3 decreased function		
	CYP2D6	rs5030867	G	TT	CYP2D6*7 decreased function		
	CYP2D6	rs28371706	A	GG	Possibly decreased function		
	CYP2D6	rs16947	A	GG	CYP2D6*2 variant; possibly reduced function		
CYP2E1	CYP2E1	rs2031920	T	CC	Less likely to have alcohol poisoning, slight decrease in lung cancer risk	CYP2E1 metabolizes alcohol and acrylamide (carcinogen).	wp.me/p5Mrdp-62
	CYP2E1	rs3813867	C	GG			
	CYP2E1	rs2515641	T	CT	less likely to have adverse drug reactions with Rifapentine		
CYP3A4/5	CYP3A4	rs4987161	G	AA	Decreased enzyme function	CYP3A4 and CYP3A5 metabolize about 50% of the drugs on the market today. Both genes (3A4 and 3A5) encode a similar enzyme, so variants in one gene can be compensated for by the other gene. Most population groups are likely to have variants in one or the other genes -- the problems come with variants in both genes.	wp.me/p5Mrdp-6r
	CYP3A4	rs4986909	A	GG			
	CYP3A4	rs2740574	C	TT	Slightly incr. risk of ovarian, prostate cancer		
	CYP3A5	rs28365083	T	GG	TT = non-functioning		
	CYP3A5	rs776746	T	CC	TT= non-functioning		
	CYP3A5	rs55817950	A	GG	AA = non-functioning		
	CYP3A5	rs41279854	G	AA	GG = non-functioning		
	CYP3A5	rs56244447	C	AA	CC = non-functioning		
	CYP3A4	rs28371759	G	AA	CYP3A4*18, increased function		
CYP1A1	CYP1A1	rs1799814	T	GG	Slow, lower risk of lung cancer	CYP1A1 breaks down the poly-aromatic hydrocarbons, such as in cigarette smoke or vehicle exhaust. It is also important in the metabolism of estrogen.	wp.me/p5Mrdp-4Z
	CYP1A1	rs1048943	C	TT	Decreased estrogen breakdown		
	CYP1A1	rs2472297	T	--	Associated with increased coffee consumption		
	CYP1A1	rs2606345	A	AA	Protective against testicular cancer, 2x risk of depression in women		
CYP1A2	CYP1A2	rs762551	C	AC	AC, CC - slower metabolizer (caffeine)	CYP1A2 metabolizes caffeine, acetaminophen, and aflatoxin B1. If you are a slow caffeine metabolizer, you may find that caffeine later in the day disrupts sleep.	wp.me/p5Mrdp-54
	CYP1A2	rs12720461	T	CC	Decreased enzyme activity		
	CYP1A2	rs72547517	A	GG	Decreased enzyme activity		
	CYP1A2	rs72547515	A	GG	Decreased enzyme activity		

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Phase II Detoxification							
Antioxidant Defense - SOD1	SOD1	rs1041740	T	TT	Decreased SOD1; increased risk of kidney problems with diabetes	SOD1 is part of our natural antioxidant system. Look into acai, resveratrol, and zinc for SOD problems.	bit.ly/2XLFrdp
	SOD1	rs2070424	G	AA	Increased SOD1; protective against Alzheimer's and hearing loss		
	SOD1	i5000864	A	GG	Rare mutations linked to ALS		
	SOD1	i5048521	C	--	Rare mutations linked to ALS		
	SOD1	rs10432782	G	TT	Higher SOD1 enzyme activity, greater risk of noise-induced hearing loss		
	SOD1	rs121912436	A	--	Rare mutations linked to ALS		
	SOD1	rs121912431	C	GG	Rare mutations linked to ALS		
Glucuronidation: UGT family	UGT1A1*6	rs4148323	A	GG	Reduced activity; increased bilirubin	The UGT family of enzymes are responsible for an important part of phase II detoxification. UGT are important for metabolizing bilirubin, estrogens, cortisol, medications, and pesticides.	wp.me/p5Mrdp-5J
	UGT1A1*60	rs4124874	G	GT	Reduced activity; increased bilirubin		
	UGT1A1*28	rs6742078	T	GG	TT only: increased bilirubin and gallstone risk		
	UGT1A1	rs8330	G	CC	GG: Reduced activity		
	UGT1A1	rs35003977	G	TT	higher bilirubin, Gilbert's syndrome possible		
	UGT1A6	rs17863783	T	GG	Increased UGT1A6		
	UGT1A8	rs6714486	A	AT	AA: increased UGT activity		
Nrf2 Detoxification	NFE2L2	rs6726395	G	AG	Increased Nrf2; greater lung volume in smokers	The Nrf2 pathway regulates the expression of antioxidants and phase II detoxification enzymes. This pathway is important in how well your body combats oxidative stress and gets rid of toxins.	wp.me/p5Mrdp-6b
	NFE2L2	rs13001694	G	AG	Increased Nrf2; reduced all cause mortality		
	NFE2L2	rs1806649	T	CT	Increased Nrf2; Reduced risk of death in COPD		
	NFE2L2	rs6721961	A	GG	Diminished Nrf2 expression, Increased lung cancer risk		
NATs	NAT1	rs4986782	A	GG	Slow acetylator	The NAT enzymes are important for ridding the body of possible carcinogens including cigarette smoke and aromatic amines.	wp.me/p5Mrdp-7c
	NAT1	rs15561	A	AA	Reduced function		
	NAT1	rs6586714	A	GG	Decreased risk of colon cancer from processed meat		
NQO1, Benzene	NQO1*3	rs1131341	A	GG	Decreased function; Increased risk of cancers from benzene; involved in vit. K	NQO1 is a Phase II detoxification enzyme that is involved in getting rid of benzene, estrogens, and other toxicants. It is also important in conversion of vitamin K to active form.	bit.ly/2mSJV4z
	NQO1	rs1800566	T	GG	Decreased function; Higher cancer risk due to benzene toxicity		
GSTs	GSTM1	rs366631	A	AA	AA: GSTM1 deletion	The glutathione S-transferase genes code for enzymes involved in the removal of a variety of carcinogens and toxins.	bit.ly/3pYFPDV
	GSTA1	rs3957357	A	AG	Low (AG) or non-functioning (AA) enzyme		
	GSTP1	rs1695	G	AA	Somewhat reduce enzyme function		
	GSTO1	rs4925	A	AA	Altered enzyme function, Increased risk of PCOS		

Topic	Gene	rs id	Effect Allele	YOU	Notes about the Effect Allele:	Possible Actions for the Effect Allele	Article Link
Detoxification - Response to Specific Medications, Toxicants							
Phthalate metabolism	GSTP1	rs1695	G	AA	Reduced function, slower elimination of phthalates	Get rid of air fresheners & fake fragrances. Don't microwave your food in plastic. Dust your house. Look into saunas. Increase vitamin C. Inhibit beta glucuronidase with calcium d-glucarate and probiotics.	bit.ly/2IggVLZ
	SOD2	rs5746136	T	CC	Higher phthalate levels, increased asthma risk		
	CYP2B6	rs3745274	T	TT	TT: decreased CYP2B6 enzyme needed for eliminating phthalates		
	GSTM1	rs366631	A	AA	AA: GSTM1 null' women with high phthalates exposure at 5-fold increased risk of fibroids		
	HSPA1L	rs2227956	A	AG	Common genotype; more likely to develop insulin resistance with phthalate exposure		
BPA Detoxification	COX2	rs5277	C	CC	C/C: increase in risk for liver dysfunction with BPA exposure	Stop drinking out of plastic water bottles. Some receipt paper has BPA in it, which can be absorbed through your skin. Cruciferous veggies may help increase your UGT detoxification.	bit.ly/2MO0QBP
	CAT	rs769217	T	CC	Increased risk of liver dysfunction in the elderly with BPA exposure		
	SOD2	rs4880	A	AG	increased risk of liver dysfunction with BPA exposure		
	UGT2B15	rs1902023	A	CC	AA: decreased enzyme activity		
	UGT1A1	rs34983651	I	CC	Decreased liver clearance of BPA		
	SULT1A1	i6018900	T	CT	low activity of the enzyme		
Statins	SLCO1B1	rs4149056	C	TT	Reduced breakdown of some drugs. Increased risk of muscle pain from statins	Read through the article for other drugs impacted by this gene.	bit.ly/35vwCJ7
BChE - Anesthesia and organophosphates	BChE	rs1803274	T	CC	K-variant; Decreased BChE; possible problems w/ organophosphates and nightshades	BChE variants can be important when recovering from anesthesia. These variants decrease your ability to handle organophosphate exposure, so avoid pesticides and nerve gas. These variants could are linked to a possibility of nightshade vegetable sensitivity.	bit.ly/2YsTLu7
	BChE	rs1799807	C	TT	A-variant; possibly delayed recovery from succinylcholine (anesthesia) (**important**)		
	BChE	rs28933389	A	GG	F1-variant; possibly delayed recovery from succinylcholine (anesthesia) (**important**)		
	BChE	rs28933390	A	CC	F2-variant; possibly delayed recovery from succinylcholine (anesthesia) (**important**)		
	BChE	rs2668207	C	TT	Minor decrease in BChE levels		
	BChE	rs1126680	T	CC	Decreased BChE; Increased risk of hyperhidrosis combined with K-variant		
Tamiflu Response	CES1	rs71647871	T	CC	Decreased CES1 function; possibly poor response to Tamiflu	Tamiflu is a prodrug that needs to be metabolized using CES1 in order to be active. Read through the article for more info	bit.ly/2xXPTX1
	CES1	rs121912777	T	CC			
	ABCB1	rs1045642	A	AG	AA: reduced drug efflux from cell; increasd risk adverse events from Tamiflu		

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Opioid Receptors	OPRM1	rs1799971	G	AA	Reduced opioid receptor; decreased response to opioids and increased risk for dependence	Read through the article & references. Quite a few studies showing that there is an Increased risk of opioid dependence for these risk alleles, and thus caution for opioid usage.	bit.ly/2wS4cZz
	OPRM1	rs10485057	G	AG	Increased risk of alcohol use disorder		
	OPRM1	rs2281617	T	CC	Less euphoria with amphetamine		
	OPRM1	rs510769	T	CT	Less euphoria depending on dose of amphetamine		
Neonicotinoid Pesticides	CHRNA4	rs1044396	A	AG	Possibly less affected by neonicotinoids	Neonicotinoids are weak agonists of the nicotinic acetylcholine receptors. They are broken down by CYP3A4. Reduced CYP3A4 function may lead to more neonics in your system.	bit.ly/2ZpBJGB
	CYP3A4	rs4987161	G	AA	Altered enzyme function, possibly more problems from neonicotinoids.		
	CYP3A4	rs4986909	A	GG			
	CYP3A4	rs2740574	C	TT			
	CYP3A4	rs4986910	G	AA			
	CYP3A4	rs4986907	T	CC			
Glyphosate	CYP1A1	rs1048943	C	TT	More likely to have low acetylcholinesterase with glyphosate exposure.	Glyphosate is the main ingredient in Roundup. Avoid exposure, especially high levels	bit.ly/2nEdRl6
Lead Exposure Genetics	ALAD	rs1800435	G	CC	possible higher blood lead levels when exposed to lead (not all studies agree); more susceptible to kidney problems from lead exposure	~ Lead exposure increases oxidative stress, and lead can take the place of other ions in the cell. ~ At higher levels, lead is toxic for everyone, but that tipping point isn't the same for everyone. ~ Genetic variants can increase your susceptibility to health problems from lead at lower levels.	bit.ly/3xDzaaZ
	HFE	rs1800562	A	GG	C282Y mutation; increased QT interval with higher blood lead; higher levels of lead in bones		
	HFE	rs1799945	G	CC	H63D variant; possibility of increased QT interval with higher blood lead; possibly higher levels of lead in bones		
	SLC11A2	rs224589	T	GG	higher blood lead levels		
	GPX1	rs1050450	A	AG	increased risk of brain tumors with higher lead levels		
	GSTM1	rs366631	A	AA	A/A only: GSTM1 null, common in many population groups, increased inflammation from higher blood lead levels		
	TNF	rs1800629	A	GG	higher TNF-alpha (inflammatory cytokine); more inflammation in metal workers exposed to lead		
	TNF	rs1799964	C	TT	C/C: usually higher TNF-alpha (inflammatory cytokine); more inflammation in metal workers exposed to lead		

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Mold and Mycotoxin	XPC	rs2228001	G	GT	Increased relative risk of liver cancer with aflatoxin B1 exposure	Mycotoxins are naturally occurring toxins produced by filamentous fungi (molds). They are found in trace amounts on moldy nuts, grains, coffee, and dried fruits. Molds growing on damp building materials can also produce mycotoxins. Different mycotoxins are broken down using specific detoxifcation genes. Check the article for specific gene-related detoxification options if you are dealing with mold-related symptoms.	bit.ly/3DX4xfY
	CYP1A2	rs12720461	T	CC	Decreased CYP1A2 enzyme activity, which may impact detoxification of aflatoxin B1		
	CYP1A2	rs72547517	A	GG	Decreased CYP1A2 enzyme activity, which may impact detoxification of aflatoxin B1		
	CYP1A2	rs72547515	A	GG	Decreased CYP1A2 enzyme activity, which may impact detoxification of aflatoxin B1		
	CYP3A4	rs4987161	G	AA	CYP3A4*17, decreased function of enzyme; involved in phase I detoxification of aflatoxin G1		
	CYP3A4	rs4986909	A	GG	CYP3A4*13, decreased function of enzyme; involved in phase I detoxification of aflatoxin G1		
	CYP3A4	rs2740574	C	TT	CYP3A4*1B, decreased function of enzyme; involved in phase I detoxification of aflatoxin G1		
	CYP3A4	rs4986910	G	AA	CYP3A4*3, decreased function of enzyme; involved in phase I detoxification of aflatoxin G1		
	CYP3A4	rs4986907	T	CC	CYP3A4*15A, decreased function of enzyme; involved in phase I detoxification of aflatoxin G1		
	GSTM1	rs366631	A	AA	A/A: deletion (null) GSTM1 gene; increased risk of liver cancer with aflatoxin B1 exposure		
	GSTA1	rs3957357	A	AG	GSTA1*B, low/ non-functioning enzyme; increased risk of kidney disease with ochratoxin A exposure		
	GSTP1	rs1695	G	AA	G/G: reduced function, increased risk of liver damage with aflatoxin B1 exposure		
	SLCO1B1	s4149056	C	--	Increased risk of liver damage with aflatoxin B1 exposure		

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Multiple Chemical Sensitivity	CYP2C9	rs1799853	T	CC	T/T: CYP2C9*2 – poor metabolizer; increased susceptibility of MCS	Multiple chemical sensitivity is a systemic response to common environmental chemicals that don't normally cause reactions. Genetic research points to interactions between detoxification genes and the olfactory system. Targeting the right genetic pathways may help alleviate reactions.	bit.ly/3P0llJL
	CYP2C9	rs1057910	C	AA	C/C: CYP2C9*3 – poor metabolizer; increased susceptibility to MCS		
	GSTP1	rs1695	G	AA	increased susceptibility to MCS		
	SOD2	rs5746136	T	CC	increased susceptibility to MCS		
	CAT	rs1001179	T	TT	increased susceptibility to MCS		
	GSTM1	rs366631	A	AA	A/A: deletion (null) GSTM1 gene; increased relative risk of MCS		
	NOS3	rs2070744	T	TT	T/T: most common genotype, higher nitrate levels in MCS patients when exposed to triggers		
Mercury	GSTM1	rs366631	A	AA	AA: deletion (null) GSTM1 gene. Decreased mercury detoxification.	~ Mercury exposure has long been known to cause neurological problems. ~ Organic mercury is more likely to cause health issues than inorganic mercury. ~ Genetic variants play a role in how quickly you excrete mercury; diet and lifestyle factors are also important.	bit.ly/3TF5MrA
	GSTP1	rs1695	G	AA	GG: reduced function; decreased mercury detoxification, higher mercury levels		
	GCLM	rs41303970	A	GG	Higher blood mercury levels; Decreased/slower mercury detoxification		
	CPOX4	rs1131857	G	TT	Increased sensitivity to neurobehavioral effects of mercury		
Arsenic	AS3MT	rs11191439	C	CT	An increased risk of skin lesions with arsenic exposure	Arsenic can be found in food and well water. At higher levels, it causes oxidative stress in the cells. Symptoms include skin lesions. Chronic low exposure uses up glutathione.	bit.ly/3TWeByE
	AS3MT	rs3740393	C	GG	CC: more arsenic excreted		
	GSTO1	rs4925	A	AA	Increased skin lesions and decreased arsenic excretion		
	MTHFR	rs1801133	A	AA	Increased skin lesions and decreased arsenic excretion		
Organophosphate pesticides	BCHE	rs1803274	T	CC	Increased risk of Parkinson's from organophosphate exposure	Some people are more sensitive to harms from organophosphate pesticides. Consider choosing organic fruits and vegetables. Avoid spraying organophosphate pesticides.	bit.ly/2KlfpKL
	PON1	rs662	C	TT	Increased risk of problems from organophosphate pesticides		
	Inter-gen	rs4242382	A	GG	Exposure to permethrin increases the risk of prostate cancer		
	CYP2B6	rs3745274	T	TT	Altered CYP2B6 activity, less toxicity from chlorpyriphos (pesticide)		
	CYP2B6	rs2279343	G	GG			

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Mood and Brain Health							
Seasonal Affective Disorder	PER3	rs139315125	G	AA	Decreased PER3; increased risk of Seasonal Affective Disorder (SAD)	Seasonal affective disorder (SAD) can often be helped by bright light therapy. Also look into your circadian rhythm, since these are all core circadian clock genes. Keep circadian rhythm in sync by getting outside into daylight each morning and blocking blue light or shutting off screen time two hours before bed.	bit.ly/2WHSGue
	PER3	rs150812083	G	CC	Decreased PER3, higher risk of SAD		
	PER3	rs228697	G	CC	Evening preference; Increased risk of SAD		
	OPN4	rs2675703	T	CC	Greatly increased risk of SAD; responsive to day length		
	OPN4	rs1079610	C	CT	Attenuated response to light; earlier sleep/wake timing		
	CLOCK	rs1801260	G	AG	Decreased risk of SAD; higher activity in evening		
	HTR2A	rs731779	C	AA	CC only: singificantly increased risk of SAD		
Oxytocin	OXTR	rs53576	A	GG	Less oxytocin; likely to be less empathetic; optimistic	Genes can play a role in personality, and understanding this can make you more tolerant of other people's quirks.	bit.ly/31zxEll
	OXT	rs1042778	T	TT	Less empathetic, more socially inhibited; possibly more creative		
Resilience Childhood Trauma	CRHR1	rs242924	G	GG	Increased risk of depression and anxiety due to childhood trauma	Corticotrophin releasing hormone is one of the controls for adrenal hormones including cortisol	bit.ly/2KjpHvb
	CRHR1	rs110402	G	GG			
BDNF	BDNF	rs6265	T	TT	Decreased BDNF; higher levels of introversion	Brain derived neurotrophic factor (BDNF) is involved in dopamine and serotonin response in the brain. Exercise and exposure to sunlight increases BDNF. See the article for research-backed supplements that increase BDNF.	bit.ly/2WCOzzv
	BDNF	rs56164415	A	GG	Altered BDNF in areas of brain; Increased risk schizophrenia; PTSD		
	BDNF	rs11030101	T	AA	Minor decrease in BDNF		
	BDNF	rs7103411	C	CC	Minor decrease in BDNF; Increased impulsivity children		
BDNF & Serotonin	BDNF	rs6265	T	TT	Decreased BDNF levels	The variants of these two genes combine to increase the risk of mood disorders.	bit.ly/33cgIXT
	HTR1A	rs6295	G	CG	Increased risk of depression when combined with BDNF		
Lithium & B12	MTR	rs1805087	G	AG	Affects B12 which could interact with lithium	Lithium orotate is available as a supplement. It comes in 5mg and 10mg amounts. Vitamin B12 is also important here. Some clinicians theorize that these B-12 related variants (MTR, MTRR) also impact how much of an effect someone notices from low-dose lithium orotate.	bit.ly/2MMM65X
	MTRR	rs1801394	G	GG	Decreased MTRR, which affects B12 and could interact with lithium		
	COMT	rs4680	A	AA	AA: Lower COMT activity; lower pain tolerance		
	ACCN1	rs11969731	C	GT	Increased response to lithium for bipolar disorder		
	CACNG2	rs2284018	C	CT	Increased response to lithium for bipolar disorder		
	BDNF	rs6265	T	TT	Decreased BDNF; introversion		
	GADL1	rs17026688	T	CC	More likely to respond to lithium carbonate for bipolar disorder		

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COMT / Neurotransmitters	COMT	rs4680	A	AA	GG = higher activity; AG=Intermediate activity; AA = lower activity	Those with lower activity levels for COMT will want to be careful when supplementing with methyl donors such as theanine, SAMe, curcumin, DMG, TMG, MSM, methylb12, methyl folate.	bit.ly/2Wl4dtq
	COMT	rs4633	T	TT	CC = higher activity ; TT = lower COMT activity		
	COMT	rs6267	T	GG	Minor decrease in COMT		
	COMT	rs165599	A	AA	Minor decrease in COMT		
GABA	GAD1	rs3749034	A	AA	Increased risk panic disorders	GABA is the inhibitory neurotransmitter that balances out the excitatory glutamate neurons. Too much excitation (too little GABA compared to glutamate) can cause anxiety disorder, depression, PTSD, and seizures. See the article for a full explanation on lifehacks for low GABA.	bit.ly/31RUlOk
	GAD1	rs1978340	A	GG	AA only: higher GABA		
	GAD1	rs769390	A	AC	AA only: higher GABA		
	GAD1	rs3791878	T	GG	Less susceptibility to PTSD		
	GABRA1	rs2279020	G	AA	Increased risk epilepsy; susceptibility to propofol		
	GABRA1	rs121434579	A	CC	Increased risk epilepsy (rare)		
	GABRG2	rs211037	T	CC	Increased risk of seizures		
	ALDH5A1	rs3765310	T	CC	Reduced ALDH1; increased GHB in blood		
	ALDH5A1	rs2760118	T	CT	Reduced ALDH1; increased risk of impaired cognitive function		
	ALDH5A1	rs62621664	T	GG	Reduced ALDH1		
	GABRA2	rs279858	C	CT	Linked to aggression and alcohol use in people who had stressful life events as teens		
	GABRG2	rs796052504	T	CC	Rare mutation linked to epilepsy		
	GABRA2	rs279871	T	CT	T/T: increased risk of alcohol use disorder		
Highly Sensitive People	CRHBP	rs10062367	A	GG	Greater sensory processing sensitivity in children exposed to negative parenting conditions	~HSPs are more sensitive to visual and auditory stimuli, more easily excited, and more attuned to the emotions of those around them. ~Genetic research shows that variants in the dopamine pathway, stress-related pathways, and pain sensitivity pathways are common in HSPs.	bit.ly/4bwoDfl
	NTSR2	rs12612207	T	CC	T/T: lower scores on the HSP scale (less sensitive); C/T: typical score on the HSP scale		
	SLC6A3	rs27072	T	CC	Increased sensory sensitivity		
	DRD2	rs7131056	A	AA	A/A: statistically higher scores on the HSP scale; A/C: lower HSP score than A/A		
	TH	rs4929966	G	CC	Scores higher on the HSP scale		
	TH	rs3842748	C	CG	Scores higher on the HSP scale		
	TRPV1	rs8065080	C	CT	C/C: less TRPV1 receptor activation, less heat and pain discomfort (not as sensitive, physical); C/T: typical receptor function		
	COMT	rs4680	A	AA	A/A: slow COMT, lower pain threshold, more pain in chronic pain situations; A/G: intermediate COMT activity (most common)		
	COMT	rs6267	T	GG	Higher pain sensitivity		

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HPA Axis (Cortisol)	NR3C1	rs6189	T	CC	Glucocorticoid receptor mutation linked to cortisol resistance	Read through the whole HPA axis article if you have several variants listed here. There are quite a few ways to influence cortisol levels a little bit. Yoga, meditation, outdoor time, good sleep, and chewing gum all decrease cortisol a little. Adaptogens such as ashwagandha and rhodiola may help here.	bit.ly/2wR2A2c
	NR3C1	rs6190	T	CC	Glucocorticoid receptor mutation linked to cortisol resistance		
	NR3C1	rs6198	C	TT	Glucocorticoid receptor mutation linked to cortisol resistance		
	NR3C1	rs56149945	C	--	Increased sensitivity to glucocorticoids;increased risk of obesity; hypertension		
	NR3C1	rs41423247	C	CG	Hypersensitivity to glucocorticoids		
	NR3C1	rs6191	A	AC	GR variant linked to some resistance to cortisol (minor)		
	NR3C1	rs10052957	A	GG	Linked to hypersensitivity to cortisol (minor)		
	NR3C2	rs5522	C	TT	Associated with resistance to cortisol; depression.		
	CRHR1	rs110402	G	GG	Elevated adult cortisol if exposed to childhood trauma; increased risk of depression or anxiety		
	CRHR1	rs242924	G	GG			
	CRHR1	rs242941	A	AA	Increased risk of depression		
	CRHR1	rs242939	C	TT	Increased risk of depression		
	FKBP5	rs1360780	T	CT	Incomplete cortisol recovery; risk of depression; anxiety		
	FKBP5	rs3800373	C	AC	Incomplete cortisol recovery; risk of depression; anxiety		
	MC2R	rs1941088	A	AG	low cortisol response		
	MC2R	rs28940892	C	TT	Mutation linked to ACTH resistance (important)		
	SERPINA6	rs11621961	T	CT	Less cortisol binding globulin; lower plasma cortisol		
	SERPINA6	rs941601	T	CT	Less cortisol binding globulin; lower plasma cortisol		
	NR3C1	i4990006	C	TT	Increased sensitivity to glucocorticoids		

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Anxiety Related Genes	ADORA2A	rs5751876	T	CT	TT: Increased risk panic disorder; Increased anxiety with high caffeine	Anxiety disorders can be due to genetic susceptibility combined with environmental factors. Finding out where your genetic susceptibility lies may help you figure out the right solution. See article for Lifehacks.	bit.ly/3HQZqyE
	OXTR	rs53576	A	GG	less sensitive to social rejection (more resilient); G/G: increased separation anxiety risk		
	GNB3	rs5443	T	CC	When combined with OXTR rs5443 GG - Increased separation anxiety		
	SLC6A4	rs140701	T	CT	Increased risk panic disorder; social anxiety disorder		
	BDNF	rs6265	T	TT	Decreased BDNF; Increased risk anxiety disorders		
	FKBP5	rs1360780	T	CT	TT only: incomplete cortisol recovery; Increased anxiety after psychosocial stress		
	CHCR1	rs110402	G	GG	Increased cortisol in childhood trauma		
	ACCN2	rs10875995	C	CT	Heightened reactivity to high CO2 levels; Increased risk panic disorders		
	ACCN2	rs685012	C	CT	Heightened reactivity to high CO2 levels; Increased risk panic disorders		
Inflammation: Depression or Anxiety	TNF	rs1800629	A	GG	Increased TNF-alpha	Higher chronic inflammatory cytokines can be a cause of depression or anxiety. The chronic inflammation causes changes to neurotransmitters. See the article for full details and options for decreasing these specific inflammatory cytokines.	bit.ly/2P2WXuG
	IL6	rs1800796	G	GG	GG only: Increased depression with inflammation		
	IL6	rs1800795	C	CG	CC only: Increased risk depression with stress		
	IL6	rs1800797	A	AG	Increased depression risk		
	IL6R	rs4129267	C	TT	CC only: Increased risk anxiety; depression		
	IL1B	rs16944	G	GG	GG only: Increased IL1B; Increased risk depression		
	IDO1	rs9657182	C	CC	CC only: more likely to have depr. with inflammation		
	KMO	rs1053230	T	CC	increased 3-OH-kynurenine, decreased risk of bipolar with psychosis (good)		

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Alcohol Use Disorder	OPRM1	rs1799971	G	AA	Stronger alcohol cravings	Alcohol use disorder is a combination of genetic susceptibility along with environmental factors such as stressful life events, access to alcohol, etc. Alcohol use disorder eventually changes the way the brain is wired due to constant upregulation of stress-related pathways.	bit.ly/3CPHdys
	SNCA	rs17015982	G	AA	Increased risk of alcoholism		
	SLC6A4	rs1042173	A	AC	Stronger alcohol cravings		
	DRD2	rs1076560	A	AC	Increased risk of alcoholism		
	DRD3	rs2134655	T	CT	TT: Increased risk of alcoholism		
	GCKR	rs1260326	T	CT	Slight Increased risk of alcoholism		
	KLB	rs11940694	A	GG	Greater consumption		
	ADH1B	rs1229984	T	CC	Reduced risk alcoholism		
	ADH1B	rs2066702	A	GG	Reduced risk alcoholism		
	ALDH2	rs671	A	GG	Reduced risk alcoholism		
	ADH1C	rs698	C	CT	Incr. risk pancreatitis		
Cannabis Receptors	CNR1	rs806368	C	TT	Higher risk of cannabis dependence, substance abuse, obesity	Cannabis (marijuana) binds to your body's cannabinoid receptors - CNR1 and CNR2. These receptors act on neurons as well as the immune system. If you are going to use cannabis, whether for medical or recreational purposes, it is good to know your risk for dependence. Cannabis affects everyone differently.	bit.ly/2XNsOhV
	CNR1	rs1049353	T	CT	Decreased risk of cannabis dependence		
	CNR1	rs1406977	C	CC	Reduced CB1 levels; reduced working memory		
	CNR2	rs2501432	T	CT	Increased CB2 response; Decreased risk of schizophrenia		
	FAAH	rs324420	A	CC	Increased anandamide; Increased risk of substance abuse		
	ABCB1	rs1045642	A	AG	Lower serum THC levels, may stay in cells longer		
	AKT1	rs2494732	C	TT	More likely to have psychotic response (common genotype)		
	FAAH	rs4141964	T	CC	Increased risk of cannabis use disorder; increased anandamide		
	CNR1	rs806380	A	AA	Decreased risk of cannabis dependence		
VMAT2	SLC18A2	rs363276	T	CC	Decreased VMAT2 levels, increased risk of PTSD	Inhibiting VMAT2 too much can cause Parkinson's-like symptoms due to its effect on dopamine. The positive side of VMAT2 inhibitors is that they theoretically may help with addiction treatment for cocaine or meth.	
	SLC18A2	rs363387	T	TT	Increased risk of alcohol dependence (likely decreased VMAT2)		
	SLC18A2	rs363324	A	AA	Lower risk of Parkinson's (likely higher VMAT2)		
	SLC18A2	rs363227	T	CC	Increased risk of psychotic disorders, poorer cognitive function		
CBD oil	TRPV1	rs8065080	C	CT	Reduced receptor function, usually less pain; may not benefit from CBD for pain	Read through the whole article on CBD. These genes are the receptors that CBD targets, but the connections between the variants and CBD are not tested through research. Instead, these are assumptions made based on the functioning of the receptor.	bit.ly/2KfYr0F
	TRPV1	rs161364	T	CT			
	TRPV1	rs224534	A	AG			
	HTR1A	rs6295	G	CG	Increased serotonin receptor; CBD may work for depression		
	ADORA2A	rs5751876	T	CT	Adenosine receptor variant; CBD may work better for anxiety		
	GPR55	rs3749073	A	CC	Reduced function; caution about using CBD with eating disorders		

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Schizophrenia	DISC1	rs821616	T	AA	decreased neural progenitor proliferation, increased relative risk of schizophrenia	~ Schizophrenia involves multiple pathways in the brain. ~ Genetic variants play a large role in susceptibility to schizophrenia, but genetics alone doesn't cause schizophrenia for most. ~ Immune system challenges and other stressors at specific times of brain development are also involved.	bit.ly/3VONUMd
	DISC1	rs3738401	A	GG	decreased neural progenitor proliferation, increased relative risk of schizophrenia		
	DISC1	rs6675281	T	CC	changes DISC1 upon T. gondii infection; increased relative risk of schizophrenia		
	RELN	rs7341475	A	GG	decreased relative risk of schizophrenia (females)		
	NRG1	rs35753505	C	TT	increased relative risk of schizophrenia (Asian population)		
	BDNF	rs6265	T	TT	increased relative risk of schizophrenia, earlier age of onset; lower hippocampal brain volume in schizophrenia		
	ANK3	rs10761482	T	CT	increased relative risk of schizophrenia; slightly increased risk of bipolar disorder		
	CACNA1C	rs1006737	A	AG	increased relative risk of schizophrenia, bipolar disorder, schizoaffective disorder		
	CACNA1C	rs4765905	C	CG	increased relative risk of schizophrenia		
	DRD1	rs4532	C	CT	increased relative risk of treatment-resistant schizophrenia		
	DRD1	rs5326	T	CC	decreased DRD1 in certain brain areas; increased relative risk of schizophrenia		
	DRD2	rs6277	A	GG	decreased risk of schizophrenia, especially in Caucasians		
	DRD2	rs1801028	C	GG	may not respond as well to risperidone; increased risk of schizophrenia		
	COMT	rs4680	A	AA	A/A: more likely to respond well to antipsychotic treatment in schizophrenia		
	GRIN2A	rs9922678	A	GG	increased relative risk of schizophrenia, younger age of onset		
	SLC1A2	rs12294045	T	CT	increased relative risk of schizophrenia (Chinese population group)		
	SLC39A8	rs13107325	T	CT	increased relative risk of schizophrenia		
	C4A	rs13194505	A	AA	increased relative risk of schizophrenia		
	GCH1	rs10137071	T	CT	somewhat lower plasma biopterin levels; linked to schizophrenia patients		
	IL-18	rs2272127	C	CC	increased relative risk of schizophrenia with herpes simplex virus 1 seropositivity (more common genotype)		
	MTHFR	rs2274976	T	CC	increased risk of schizophrenia		
	CNR2	rs2501432	T	CT	increased CB2 receptor response, a decreased risk for schizophrenia		
	RELN	rs736707	A	AG	increased relative risk of schizophrenia and other psychiatric disorders (Asian population)		

Topic	Gene	rs id	Effect Allele	YOU	Notes about the Effect Allele:	Possible Actions for the Effect Allele	Article Link
Tryptophan - Serotonin vs Kynurenine	IDO1	rs3808606	A	AA	AA only: more conversion to kynurenine	Tryptophan can be used in two pathways: kynurenine (which can increase quinolinic acid) or serotonin (which can then become melatonin). Quinolinic acid is neurotoxic and implicated in depression. This is a complex topic. Read through the article for a lot more information and details on tryptophan.	bit.ly/2Led9D4
	IDO1	rs9657182	C	CC	probably more conversion to kynurenine		
	KMO	rs1053230	T	CC	Increased conversion to kynurenine		
	TPH2	rs4570625	T	GG	generally decreased risk of depression; less aggressiveness and lower anxiety		
	TPH2	rs11178997	A	TT	Increased risk of depression		
	TPH2	rs1843809	G	GG	Decreased risk of depression		
	TPH2	rs4290270	T	AA	TT only: circadian disruption in people with depression		
	IDO2	rs10109853	T	CT	Decreased IDO2 function		
	IDO2	rs4503083	A	TT	Decreased IDO2 function		
	IDO1	rs7820268	C	CC	C/C: 1.5-fold increased relative risk of MS		
Susceptibility to Migraines	TRPM8	rs10166942	T	TT	TT: increased risk of migraines (temperature and menthol receptor gene)	There are lots of different genes and pathways implicated with migraines. Read through the article and see which possible solutions match up with your genetic variants.	bit.ly/2YMML95
	BDNF	rs6265	T	TT	Increased risk of migraines due to lower BDNF		
	MMP16	rs10504861	T	CT	Reduced risk of migraines		
	NNMT	rs694539	T	CC	TT only: 4-fold increase in migraine risk (methylation cycle)		
	MTHFR	rs1801133	A	AA	Increased risk of migraines (methylation cycle)		
	C7orf10	rs4379368	T	CC	Decreased risk of migraines (serotonin)		
	SLC6A4	rs2066713	A	AG	Decreased risk of migraines (serotonin)		
	AOC1	rs1049793	G	CC	Increased risk of migraines (histamines from foods)		
	AOC1	rs10156191	T	TT	Increased risk of migraines (histamines from foods)		
	TNF	rs3093664	G	AA	Increased risk of migraines (inflammatory pathway)		
	TNF	rs1800750	A	GG	Increased risk of migraines (inflammatory pathway)		
	TNF	rs1800629	A	GG	Increased risk of migraines (inflammatory pathway)		
	IL1A	rs17561	A	AC	Increased risk of migraines (inflammatory pathway)		
	KCNK18	rs869025175	D	CC	rare mutation (talk with your doctor)		
	MTDH	rs1835740	T	CC	This variant is linked to glutamate regulation. Glutamate is an excitatory neurotransmitter.		
	LRP1	rs11172113	C	CC	Less likely to have migraines caused by cholesterol		
	NRP1	rs2506142	G	--	2-fold increased risk of menstrual migraine		
Serotonin Levels	TPH2	rs4570625	T	GG	decreased risk of depression, less anxiety, and aggression, more likely to be honest	Neurotransmitters are tricky. Read and understand what you are doing before you experiment. If you are on an antidepressant, talk with a doctor before making any changes. Even natural supplements or changes in sleep can affect your mood.	bit.ly/31xnotN
	HTR1A	rs6295	C	CG	C/C: higher impulsiveness, increased risk for depression		
	HTR1B	rs6296	G	CG	increased risk of depression, anxiety after stressful life events, increased risk of childhood aggressive behavior, ADHD		
	HTR2A	rs6314	A	GG	reduced serotonin 2A receptors in the prefrontal cortex, increased risk of social withdrawal		

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Depression and mitochondrial function	SOD2	rs4880	A	AG	AA only: higher chronic inflammation, increased relative risk of depression and psychological stress	Mitochondrial dysfunction can lie at the heart of major depressive disorder for some people. When mitochondria are stressed out for a period of time, they increase oxidative stress in the brain. This can alter brain plasticity - the way the brain is wired. Reducing oxidative stress and supporting mitochondrial function are key here. Read through the article for more background and for lifehacks specific to the individual variants.	bit.ly/35OVyN5
	GSTA1	rs3957357	A	AG	Low/ non-functioning enzyme; increased relative risk of psychiatric illness		
	BDNF	rs6265	T	TT	TT: decreased BDNF; decreased hippocampus volume if exposed to early life stress		
	MTHFD1L	rs11754661	A	GG	Increased risk of depressive rumination and increased lifetime risk of depression		
	ATP6V1B2	rs1106634	A	GG	Increased relative risk of major depressive disorder		
	FKBP5	rs1360780	T	CT	Increased relative risk for depression, incomplete cortisol recovery, and increased anxiety after psychosocial stress		
	FKBP5	rs3800373	C	AC	Increased relative risk of major depressive disorder		
	CRHR1	rs110402	G	GG	GG: elevated cortisol in people exposed to childhood trauma		
	CRHR1	rs242924	G	GG	GG: elevated cortisol in people exposed to childhood trauma		
	CRHR1	rs242941	A	AA	slightly increased relative risk of depression		
	CRHR1	rs242939	C	TT	increased relative risk of depression		
	TOMM40	rs2075650	G	AG	increased susceptibility to depression (mitochondrial membrane protein)		
MTHFR Mood	MTHFR	rs1801133	A	AA	Decreased MTHFR enzyme; Increased risk of depression.	The MTHFR variants are linked to increased risk of mood disorders especially with low folate.	bit.ly/3vZbclw
	MTHFR	rs1801131	G	TT			
Brain Fog	FGA	rs121909612	A	TT	possibly carrier of a rare mutation related to fibrinogen amyloidosis	People describe it as having trouble remembering words or names, having difficulty with multitasking, being forgetful, being inattentive or uninterested in things, or just having plainly hazy thinking. If you are dealing with brain fog, read the article for solutions based on genetics.	bit.ly/3fP9SgU
	SERPINF	rs8074026	T	CC	increase venous clotting risk, reduced breakdown of microclots		
	GPX1	rs1050450	A	AG	increased risk of brain fog in Long Covid patients		
	GSTM1	rs366631	A	AA	A/A: deletion (null) GSTM1 gene. more common genotype in people with Long Covid brain fog		
	TLR4	rs10759931	G	AA	G/G: common genotype, more likely to have poor cognitive outcomes from mild-Covid		
	HFE	rs1800562	A	GG	C282Y variant, most common cause of hereditary hemochromatosis, iron buildup could cause brain fog		
	HFE	rs1799945	G	CC	higher iron levels, more of a problem if two copies (GG) or if combined with C282Y		

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Plasmalogens	FADS1/2	rs174535	C	CT	lower plasmalogen levels	~ Plasmalogens are a type of phospholipid that make up cell membranes and can act as an antioxidant to neutralize oxidative stress. ~ Research suggests that plasmalogen depletion plays a causal role in Alzheimer's disease and other neurodegenerative disorders	bit.ly/3QInNog
	PEDS1	rs6020298	G	AG	increased long covid susceptibility		
	GNPAT	rs11558492	G	AA	increased risk of familial porphyria cutanea tarda, altered GNPAT levels		
	GCKR	rs780094	T	CT	lower choline plasmalogen levels		
	ITGA9	rs197770	G	AG	altered ethanolamine plasmalogen levels		
ANK3 and Bipolar Disorder	ANK3	rs10994336	T	CC	Increased risk of bipolar disorder, decreased executive function	ANK3 impacts neuronal formation and transmission and is tied to an increased risk of psychiatric disorders.	bit.ly/3WN047O
	ANK3	rs1938526	G	AA	Increased risk of bipolar disorder, decreased executive function		
	ANK3	rs9804190	T	CC	Greater ANK3 expression; lower risk of bipolar disorder		
	ANK3	rs10761482	T	CT	Increased relative risk of schizophrenia; slightly increased risk of bipolar disorder		
	ANK3	rs41283526	C	TT	Decreased risk of bipolar disorder and schizophrenia		
Dyslexia	KIAA0319	rs4504469	T	TT	Higher risk of dyslexia (Caucasian populations only)	Dyslexia is a reading disorder that is about 50% heritable. The KIAA0319 variants are involved in how neurons migrate and cell-to-cell interactions in the brain. The DCDC2 gene is involved in the way that neurons form.	bit.ly/3wqzGXU
	KIAA0319	rs9461045	T	CC	Higher risk of dyslexia		
	KIAA0319	rs2038137	T	TT	TT: Higher risk of dyslexia		
	KIAA0319	rs761100	C	AA	CC: Higher risk of dyslexia		
	KIAA0319	rs6935076	T	CC	Higher risk of dyslexia		
	DCDC2	rs793862	A	AG	3 to 5x greater risk of dyslexia		
	DCDC2	rs807701	G	AG	2 to 5x greater risk of dyslexia, amplified if in combination with rs793862		
ADHD	HNMT	rs1050891	A	AA	reduced breakdown of histamine compared to G/G; increased hyperactivity due to food additives	There is no "ADHD" gene, per se. Instead, researchers have discovered many genetic markers that contribute in small ways to the condition. Genes related to dopamine, circadian rhythm, neuronal formation, serotonin transporters, tryptophan, and the breakdown of neurotransmitters have all been identified as playing a small role in ADHD. The small changes from multiple variants add up to form the risk for ADHD. It's called a polygenic risk, meaning from multiple gene variants	bit.ly/3A1unxl
	MAOA	rs6323	T	TT	reduced MAOA activity (less dopamine breakdown); T/T: protective against ADHD in girls		
	SNAP25	rs3746544	T	TT	T/T: increased inattention, omission errors in ADHD children (common genotype)		
	HTR1B1	rs6296	G	CG	increased ADHD scores		
	SLC6A2	rs36021	T	TT	T/T: common genotype, increase risk of ADHD if mother smoked during pregnancy		
	SLC6A3	rs27072	T	CC	less common genotype, lower risk of ADHD		
	DRD4	rs1800955	C	CT	more likely to be a novelty seeker, more impulsive		
	DRD4	rs916455	C	CT	more likely to have ADHD persist into adulthood		
	ANKK1	rs1800497	A	AG	increased risk of ADHD		
	CLOCK	rs1801260	G	AG	delayed sleep; increased risk of ADHD		
	ARNTL2	rs2306074	T	TT	higher risk of ADHD (common genotype)		
	PER1	rs2518023	G	GT	higher risk of ADHD (common genotype)		
	TPH2	rs1843809	G	GG	decreased risk of ADHD		
	COMT	rs4680	A	AA	lower function connectivity in the brain of children with ADHD; decreased grey matter volume		

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Intelligence	PDE1C	rs10236197	T	CT	Associated with increased intelligence (common allele)	Intelligence is considered to be a highly heritable trait. There are hundreds of genetic variants that may influence IQ a little bit. In addition to IQ, researchers have also looked at other forms of intelligence, such as musical ability.	bit.ly/3Xn4RNj
	LINC01104	rs13010010	T	CT	Associated with increased intelligence		
	LINC01104	rs12206087	A	AA	Associated with increased intelligence		
	ADAMS12	rs4962322	A	CC	Linked to high intelligence in a GWAS		
	ADAMS12	rs10794073	A	CC	Less likely to have high intelligence (GWAS)		
	CHRM2	rs324640	G	AA	Linked to higher verbal intelligence		
	CHRM2	rs2061174	G	AA	Linked to higher intelligence in adults		
	LRRN2	rs11584700	G	AG	Decreased years of education		
	DTNBP1	rs2619522	C	AA	Linked to lower cognitive ability scores		
	DTNBP1	rs1018381	A	GG	Linked to lower cognitive ability scores		
	REC114	rs7171755	A	AG	Slightly lower IQ and thinner left hemisphere cortex		
	HMGA2	rs10784502	C	TT	Larger cranial capacity and higher IQ (2.6 pts)		
	BDNF	rs6265	T	TT	Decreased BDNF, better performance in executive function.		
	VRK2	rs848293	G	AG	Increased beat synchronization ability		
	MAPT	rs4792891	T	GT	Increased beat synchronization ability		
	ANKK1	rs1800497	A	AG	A/A: Lead exposure in childhood decreases IQ by 9 points		
Nootropics	BDNF	rs6265	T	TT	Decreased BDNF; noopept increases BDNF	Nootropics are supplements used to boost cognition and memory. Genetic variants can interact with supplements and understanding these interactions can help you to know why a supplement works well for you - or doesn't work at all for you.	bit.ly/3HgGnQ3
	GRIA1	rs548294	T	TT	increased risk of migraines, possibly due to decreased AMPA receptor function; Noopept acts on this receptor		
	BDNF	rs56164415	A	GG	Decreased BDNF; noopept increases BDNF		
	HIF1A	rs11549465	T	CC	increased HIF-1a; Noopept increases HIF1 also		
	NPTN	rs7171755	A	AG	lower expression of NPTN in the brain; Bacopa monnieri increases NPTN		
	TNF	rs1800629	A	GG	Higher TNF-alpha levels; Bacopa reduces TNF-alpha		
	TNF	rs361525	A	GG	Higher TNF-alpha levels; Bacopa reduces TNF-alpha		
	NLRP3	rs35829419	A	CC	Increased NLRP3 activation; methylene blue decreases NLRP3 inflammasome		
	ABCB1	rs1045642	A	AG	may take longer for St. Johns wort to work (attenuated intestinal transport		
	GSTM1	rs366631	A	AA	A/A: deletion (null) GSTM1 gene; possible increased photosensitivity with St. John's Wort		
	HIF1A	rs11549467	A	GG	increased HIF-1a; Noopept increases HIF1 also		

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Dopamine Receptor Function	DRD1	rs4532	C	CT	Increased risk of nicotine dependence & treatment-resistant schizophrenia	Dopamine is a neurotransmitter that is important for movement, reward, memory, attention and sleep regulation. The genetic variants in the dopamine receptors can influence the risk of different diseases. All of these variants are somewhat common and don't cause a disease alone - instead, it is often the combo of genetic susceptibility and environment.	bit.ly/2BHNuhM
	DRD1	rs5326	T	CC	Decreased DRD1 in certain brain regions; poor strategic planning		
	DRD1	rs686	G	AG	GG: Decreased dopamine recpt1		
	DRD2	rs6277	A	GG	Increased dopamine receptor 2; better rule-based learning		
	DRD2	rs1801028	C	GG	Increased risk of schizophrenia		
	ANKK1	rs1800497	A	AG	Reduced dopamine recpt; Increased risk of PTSD; ADHD		
	DRD3	rs6280	C	TT	Poorer executive function; Increased risk alcoholism		
	DRD4	rs1800955	C	CT	More likely novelty seeker		
	COMT	rs4680	A	AA	AA: slower breakdown of dopamine		
	SLC6A3	rs27072	T	CC	Increased risk of bipolar disorder, increased risk of early smoking onset		
Brain Fog from Statins	HMGCR	rs17244841	A	AA	A/A: statins are more likely to work well in reducing LDL through inhibiting HMGCR	~ The mevalonate pathway produces cholesterol, CoQ10, and other compounds, and statins decrease the production of these compounds. ~ Some studies show that statins may cause memory problems and brain fog. Both cholesterol and CoQ10 are important in cognitive function.	bit.ly/43FFVo5
	HMGCR	rs12916	C	CT	C/C: less cholesterol-lowering response on moderate doses of statins		
	HMGCR	rs17238540	T	TT	T/T: statins are more likely to work well in reducing LDL through inhibiting HMGCR		
	HMGCR	rs3846662	G	AG	typical response to statins		
Dopamine Synthesis	TH	rs10770141	A	GG	Higher TH activity, more prone to procrastination (women), higher risk of opioid dependence, increased risk of stress-induced hypertension	The synthesis of dopamine from l-tyrosine involves either the tyrosine hydroxylase (TH) enzyme of the DDC enzyme. Genetic variants can affect dopamine levels (a little).	bit.ly/3w4UdSU
	TH	rs10770140	C	TT	Higher TH activity, higher risk of opioid dependence, increased risk of stress-induced hypertension		
	DDC	rs3735273	T	CT	increased relative risk of ADHD and conduct disorder		
	DDC	rs921451	T	CT	T/T: slightly higher DDC expression; increased relative risk of ADHD		
MAOA and MAOB	MAOA	rs6323	T	TT	T/T or T: reduced MAOA activity; linked with aggression in men who had traumatic childhoods	~ Monoamine oxidase (MAO) enzymes break down neurotransmitters, helping to regulate neuron firing in the brain. ~ Higher or lower MAO enzyme levels can affect mood by altering neurotransmitter levels. ~ Genetic variants in MAOA and MAOB are linked to mood and aggression based on gender and environmental factors.	bit.ly/3WGDy36
	MAOA	rs1137070	T	CC	T/T or T: linked to hostility behavior in internet gaming disorder		
	MAOB	rs3027452	A	GG	AA or A: lower MAOB activity; negative mood response to tryptophan treatment		
	MAOB	rs1799836	T	TT	T/T or T: faster response to antidepressants in women		

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Glutamate Synthesis	GLS2	rs2657879	G	AA	G/G lower GLS2, lower glutamate levels	~ Glutamate is the most abundant neurotransmitter in the brain and periphery. ~ Cells can make glutamate from glutamine or alpha-ketoglutarate. ~ There are genetic variants that impact glutamate levels a bit, but overall, glutamate levels are tightly controlled by multiple pathways. ~ Altered glutamate signaling is implicated in schizophrenia, OCD, and migraines.	bit.ly/4brtZcm
	GLS2	rs2638315	G	GG	increased serum glutamine levels		
	GLUL	rs10911021	T	CT	T/T: decreased relative risk of mortality in people with cardiovascular disease, decreased risk of cardiovascular disease in type 2 diabetes		
	GLUL	rs80358215	A	GG	A/G: rare, glutamine deficiency		
	GLUD1	rs121909730	A	GG	A/G: rare mutation linked to hyperinsulinemia hyperammonemia		
	GLUD1	rs121909731	A	GG	A/G: rare mutation linked to hyperinsulinemia hyperammonemia		
	GLUD1	rs797045597	T	CC	C/T: rare mutation linked to hyperinsulinemia hyperammonemia		
	SLC1A1	rs2228622	A	AG	increased relative risk of OCD		
	SLC1A1	rs301430	C	CT	higher expression, more anxiety in autism spectrum disorder; increased OCD risk		
	SLC1A2	rs3794087	T	GG	increased relative risk of essential tremor (Caucasian, Taiwanese population groups)		
	SLC1A2	rs12294045	T	CT	increased relative risk of schizophrenia (Chinese population group)		
	SLC1A2	rs12294045	T	CT	increased relative risk of schizophrenia (Chinese population group)		
Psychopathy	MAO	rs6323	T	TT	Reduced MAOA activity	ASPD and psychopathy clearly points to alterations in the brain due to both genetic susceptibility and maltreatment of some sort during brain development. Protect the vulnerable.	
	LINC00951	rs4714329	A	AG	Increased risk of antisocial personality disorder with childhood maltreatment		
	HTR2B	rs79874540	T	GG	Increased risk of aggressiveness and impulsiveness, exacerbated with alcohol		
	OXTR	rs237887	G	AA	G/G: linked in many studies to be more likely to have antisocial behavior		
	OXTR	rs237885	T	GG	T/T: more likely to have callous-unemotional traits		
	OXTR	rs53576	A	GG	Not as empathetic, more antisocial		
	OXTR	rs1042778	T	TT	T/T: Less emotional and social; more likely to have callous-unemotional traits		
	SNAP25	rs3746544	T	TT	T/T: more common genotype in males with antisocial personality disorder		

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Hormones							
Uterine Fibroids	ACE	rs4343	G	AA	Increased risk of fibroids	Uterine fibroids are benign tumors that are common in women over age 30. Possible solutions include avoiding phthalates, BPA. The flavonoids in green tea may help.	bit.ly/2PKE2kG
	XPC	rs2228000	A	GG	Decreased risk of fibroids		
	XPG	rs873601	A	AA	AA: Increased risk of fibroids		
	CYP1B1	rs1056827	C	AA	Increased risk of fibroids		
	ESR1	rs2234693	T	CT	TT: Decreased risk of fibroids		
	CCND1	rs9344	A	--	Increased risk of fibroids		
	FASN	rs4247357	T	GG	Increased risk of fibroids		
	GSTM1	rs366631	A	AA	AA: Increased risk of fibroids		
PMS / PMDD	HTR1A	rs6295	C	CG	Increased risk of PMDD	Look into GABA, Zinc, glycine, vitamin D and chasteberry for PMS/ PMDD. Read the article for more info.	bit.ly/2IeHlOq
	ESR1	rs9340799	G	AA	GG only: Increased risk of PMS		
	COMT	rs4680	G	AA	GG only: Increased risk of PMS, especially with ESR1		
Estrogen - Creation and Metabolism	CYP1A1	rs1048943	C	TT	Decreased CYP1A1, Increased risk of estrogen related problems	Estrogen related problems include Increased risk of fibroids, breast cancer, prostate cancer, endometriosis, etc. The increase in cancer risk isn't huge. Read through the article for specific lifehacks for the different phase I and phase II enzymes for reducing 'bad' estrogen metabolites or encouraging the good estrogen metabolites.	bit.ly/2kGfltS
	CYP1B1	rs1056827	A	AA	Increased risk of estrogen related problems		
	CYP3A4	rs2740574	C	TT	Increased CYP3A4, Increased estrogen metabolism to 16a-OHE1		
	COMT	rs4680	A	AA	AA only: low COMT, Increased risk of estrogen quinone metabolites		
	GSTP1	rs1695	G	AA	Reduced GSTP1, Decreased metabolism of estrogen quinone metabolites		
	GSTM1	rs366631	A	AA	AA only: GSTM1 null, increase risk of estrogen related problems		
	UGT1A6	rs2070959	G	AA	Lower enzyme activity, Increased risk of estrogen problems		
	NQO1	rs1800566	A	GG	Low NQO1 activity, Increased risk of estrogen related problems		
	CYP19A1	rs4646	A	CC	AA only: lower estrogen levels		
	CYP19A1	rs700518	T	CT	TT only: higher estrogen levels, Increased risk of prostate problems		
	GPER1	rs11544331	T	CT	Decreased receptor activation; lower risk of fibroids		
	CYP17A1	rs743572	G	AG	Decreased risk of breast cancer		
Testosterone	SHBG	rs12150660	G	GT	Lower free testosterone	For hormones, genetics can tell you the probability of being higher or lower, but you need testing to know your actual levels.	bit.ly/2ZtP019
	SHBG	rs6258	T	CC			
	SHBG	rs6259	A	GG	Higher SHBG levels		
	SHBG	rs1799941	A	AG			
	FAM9B	rs5934505	T	TT	Lower free testosterone		
	LIN28B	rs7759938	C	CT			
	FSHB	rs10835638	T	GT			

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Progesterone	PGR	rs1042838	A	AC	increased PGR, increased relative risk of ovarian cancer, uterine fibroids, breast cancer, endometrial cancer	~ Progesterone is an important hormone in women's health, regulating menstruation, and for pregnancy. ~ Progesterone is important for everyone, men and women, for brain health and overall well-being. ~ Genetic variants play a role in how your body makes progesterone, how it uses progesterone, and how it breaks down and eliminates progesterone.	bit.ly/3TAzhL9
	PGR	rs471767	G	AA	linked to an increased risk of preterm birth (which can be due to lower progesterone during pregnancy)		
	PGR	rs1042839	G	AG	decreased risk of ovarian cancer		
	CYP3A4	rs4987161	G	AA	CYP3A4*17, decreased function of enzyme that breaks down progesterone		
	CYP3A4	rs4986909	A	GG	CYP3A4*13, decreased function of enzyme that breaks down progesterone		
	CYP3A4	rs2740574	C	TT	CYP3A4*1B, altered function of enzyme that breaks down progesterone		
	CYP3A4	rs4986910	G	AA	CYP3A4*3, decreased function of enzyme that breaks down progesterone		
	CYP3A4	rs4986907	T	CC	CYP3A4*15A, decreased function of enzyme that breaks down progesterone		
	CYP2C19	rs4244285	A	GG	decreased metabolism of supplemental progesterone		
	PGR	rs10895068	T	CT	possibly increased relative risk of breast cancer (studies show mixed results), endometrial cancer		
Thyroid Hormone	TSHR	rs1991517	G	CC	Congenital hypothyroidism	~ The thyroid is a master regulator that controls many of your body's systems including metabolism, body temperature, heart rate, breathing, and body weight.[ref] ~ There are two major forms of thyroid hormone: T4 and T3. ~ Your genes impact how your body produces and converts T4 to T3, the production of TSH, and your susceptibility to autoimmune thyroid problems.	bit.ly/2WHJo1s
	TSHR	rs121908866	A	GG	Congenital hypothyroidism		
	PDE8B	rs4704397	A	AA	Increased serum TSH		
	PDE8B	rs6885099	A	GG	Decreased TSH		
	FOXE1	rs7850258	A	AA	Decreased odds of hypothyroidism		
	FOXE1	rs965513	A	AA	Decreased TSH		
	TSHR	rs3783938	T	CC	Increased risk of Hashimoto's		
	TSHR	rs12101255	T	CC	Increased risk of Graves' (common)		
	TSHR	rs179247	A	GG			
	TPO	rs2071403	G	GG	Increased risk of autoimmune thyroid		
	PTPN22	rs2476601	A	AG			
	DIO1	rs2235544	A	AA	Decreased fT3		
	DIO1	rs11206244	T	CT	Higher rT3, lower fT3		
	DIO2	rs225014	C	CT	Decreased T4 to T3 conversion		
	SERPINA7	rs28933689	T	AA	Thyroxine-binding globulin deficiency		
	SERPINA7	rs2234036	T	CC	Thyroxine-binding globulin deficiency		
	THRB	rs28933408	T	GG	Thyroid hormone resistance		

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Sleep and Circadian Rhythm							
Sleep	ADA	rs73598374	T	CC	Decreased adenosine deaminase; more slow-wave sleep; groggy in the morning.	Sleep is essential to your overall health! To increase melatonin at night, block out blue light from electronics and overhead lights for a couple of hours before bed. Go outside in the morning to get some sunshine in your eyes.	bit.ly/31upB9q
	MEIS1	rs2300478	G	GT	Increased risk of restless leg syndrome and/or periodic limb movement disorder		
	GABRA	rs2229940	T	GG			
	BTBD9	rs3923809	A	GG			
	BTBD9	rs9357271	T	CT			
	MAP2K5	rs6494696	G	CC			
	PTPRD	rs1975197	A	AG			
	HLA-DRB	rs3135388	A	GG	HLA-DRB1*1501, Increased risk of narcolepsy		
	HLA-DRB	rs1154155	G	TT	Increased risk of narcolepsy		
	CLOCK	rs1801260	G	AG	Higher activity level in the evening, often leading to delayed sleep		
	CLOCK	rs11932595	G	AG	Increased risk of sleep difficulty or sleep disturbances		
	PER2	rs35333999	T	CT	Likely to stay up later with evening chronotype; this variant is linked to a longer circadian period		
	AANAT	rs28936679	A	GG	Increased risk of Delayed Sleep Phase Disorder (rare)		
	GSK3B	rs334558	G	AG	Increased risk of insomnia in depression		
	PER2	rs7602358	G	GT	Increased risk of insomnia, especially when stressed		
	TPH2	rs4290270	T	AA	Increased risk of waking early, increased risk of depression		
	GABRA6	rs3219151	T	CT	Increased risk of insomnia with adverse life events, increased risk of panic disorder		
Restless Leg / PLMD	MEIS1	rs2300478	G	GT	Increased risk of restless leg and/or periodic limb movement disorder	Check out the article for the links between RLS, PLMD, low iron, and possible solutions.	bit.ly/33md9sF
	MEIS1	rs12469063	G	AG			
	GABRA	rs2229940	T	GG			
	BTBD9	rs3923809	A	GG			
	BTBD9	rs9357271	T	CT			
	MAP2K5	rs6494696	G	CC			
	IL1B	rs1143643	T	CT			
	IL-14A	rs8193036	C	CT			
	PTPRD	rs1975197	A	AG			
Circadian / Insomnia	GSK3B	rs334558	G	AG	Increased risk of insomnia in depression	Sleep in the dark, block blue light at night, and get some sunlight during the day.	bit.ly/2WGVaZZ
	PER2	rs7602358	G	GT	Increased risk of insomnia, especially when stressed		
	CLOCK	rs1801260	G	AG	Decreased risk of insomnia (women)		
	GABRA6	rs3219151	T	CT	Increased risk of insomnia with adverse life events, Increased risk of panic disorder		
Short Sleep	DEC2	rs121912617	T	GG	Rare, short sleeper (6 hours per night)	A rare mutation causes less sleep	wp.me/p5Mrdp-4kk
Slow-Wave Sleep	BDNF	rs6265	T	TT	Decreased BDNF, averages over 20 minutes less of deep sleep	Harder to bounce back after a sleepless night. May need a little more time asleep.	bit.ly/37Fj6Z7
	ADA	rs73598374	T	CC	Decreased adenosine deaminase; more slow-wave sleep; groggy in the morning.		
Shift Work	MTNR1A	rs12506228	A	CC	Fewer melatonin receptors in brain	Shift work is harder. Increased risk of Alzheimer's.	bit.ly/2XTG9Wd
Melatonin	TPH2	rs4290270	T	AA	Decreased tryptophan conversion, Increased early waking	Melatonin is important for Alzheimer's, longevity, dementia, and cancer prevention. Block blue light at night and get sunlight during the day to increase endogenous production. Tryptophan is the amino acid used for serotonin and melatonin production.	bit.ly/2XNo3VB
	TPH2	rs4570625	G	GG	Decreased tryptophan conversion		
	AANAT	rs28936679	A	GG	Melatonin production issue, DSPD		
	MTNR1A	rs2375801	C	CT	Melatonin receptor - increases cancer metastasis		
	MTNR1A	rs6553010	A	AG			
	MTNR1A	rs12506228	A	CC	Fewer melatonin receptors in the brain		
	MTNR1B	rs10830963	G	CC	Melatonin receptor - Increased fasting glucose		
	MTNR1B	rs1387153	T	CC			

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Mood, Depression, Circadian	CRY1	rs10861688	T	CC	Increased risk of depression	Many studies link depression and mood issues to circadian rhythm - for some people. Read through the article for more tips on getting your circadian rhythm on track.	bit.ly/3gvjUPG
	CRY2	rs10838524	G	AG			
	PER2	rs934945	T	CC	Increased severity, depression		
	PER3	rs139315125	G	AA	Increased risk of depression		
	PER3	rs228697	G	CC			
	NPAS2	rs11123857	G	AA	Increased risk of depression		
	NR1D1	rs2314339	T	CT			
	OPN4	rs2675703	T	CC	Increased seasonal depression		
Circadian Rhythm - Depression, bipolar	PER3	rs707467	C	AA	Increased risk of depression	These genetic variants specifically link bipolar disorder and depression to circadian rhythm dysfunction. Read the article. Get your circadian rhythm on track. Note that there are other genes related to depression that are not related to circadian rhythm, so this is not an exhaustive list. Talk with your doctor if you are on medications because changing your sleep and circadian rhythm could affect you.	bit.ly/2ReX0A5
	PER3	rs139315125	G	AA	Increased risk of depression, delayed sleep		
	PER3	rs228697	G	CC	Increased risk of depression		
	CRY2	rs3824872	A	AC	AA: decreased risk of persistent mild depression		
	NPAS2	rs11123857	G	AA	Increased risk of bipolar, depression		
	NPAS2	rs13025524	A	AG	Increased risk for bipolar, depression		
	CLOCK	rs1801260	G	AG	Increased manic in bipolar, evening pref.		
	NR1D1	rs2314339	T	CT	Decreased risk of bipolar disorder		
	GNB3	rs5443	T	CC	Increased risk of depression, anxiety		
	PER2	rs4663868	T	CC	Increased risk of bipolar		
Bruxism	HTR2A	rs2770304	C	CT	Increased risk of bruxism	Check out the article for ideas on targeted ideas for teeth grinding.	bit.ly/3hvd1jF
	HTR2A	rs6313	A	AG	Increased risk of bruxism		
	DRD1	rs686	G	AG	Increased risk of bruxism		
BMAL1 (core clock)	ARNTL1	rs6486122	T	TT	Increased risk of heart disease, diabetes	This is a core clock gene that impacts several circadian related diseases. Eat during the daytime to decrease risk of diabetes. Block blue light at night. Selenium upregulates BMAL1.	bit.ly/2ILnTrq
	ARNTL1	rs11022775	T	CC	Increased risk of diabetes		
	ARNTL1	rs969485	G	AG	Increased risk of breast cancer with night shift work		
	ARNTL1	rs2278749	T	CT	Night shift work is less likely to increase cancer		
Early Waking	TPH2	rs4290270	T	AA	Increased risk of waking early; increased risk of depression	Get more bright light early in the morning. Try wearing blue-blocking glasses at night. Consider supplementing with low-dose time-release melatonin.	bit.ly/448eSQX
	TPH2	rs12229394	A	GG	Depression with fatigue (women),increased risk of short sleep duration (males)		
Cancer & Light at Night	ARNTL1	rs969485	G	AG	Increased risk of breast cancer with night shift work	Get full-specturm light exposure during the day. Try wearing blue-light blocking glasses in the evening and using light-blocking curtians or eyemask.	bit.ly/4ahQU91
	ARNTL1	rs2278749	T	CT	Night shift work less likely to increase breast cancer risk (good)		
	CRY2	rs7123390	A	AG	Decreased risk of ER estrogen and progesterone receptor-negative breast		
	MTNR1A	rs2375801	C	CT	Increased risk of cancer metastasis (melatonin receptor)		
	MTNR1A	rs6553010	A	AG			
Glycine & Sleep	ADA	rs73598374	T	CC	More deep sleep, but may feel sleepy when waking up too soon	Check out the article for research studies on glycine for sleep quality.	bit.ly/3DUsBjN
	BDNF	rs6265	T	TT	Averages 20 minutes less of deep sleep		

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Longevity and Healthy Living							
Longevity	FOXO3A	rs2802292	G	GT	Increased longevity	The FOXO3 gene regulates apoptosis and is a tumor suppressor. These variants are often found in centenarians.	bit.ly/2Ih478q
	FOXO3A	rs1935949	A	AG			
	FOXO3A	rs479744	T	GT			
	IGF1R	rs2229765	A	GG			
	TP53	rs104252	G	--			
	IMPK	rs6481383	T	CC	TT: Longer lifespan in women.		
	IL-6	rs2069837	G	AG	Increased inflammation; fewer centenarians carry this allele.		
	CYP2B6	rs3745274	T	TT	TT only: reduced CYP2B6, longevity disadvantage due to cancer risk in toxicant exposure.		
	TP53	rs1042522	G	CC	Increased longevity		
	COMT	rs4680	A	AA	AA only: genotype more likely to be found in the elderly		
	CETP	rs5882	G	AG	Longer lifespan, lower risk of dementia		
Autophagy	ATG16L1	rs2241880	G	GG	Decreased autophagy, Increased risk of IBD	Autophagy is your body's way of getting rid of junk in your cells. For example, mitochondria that are no longer functioning well are broken down and recycled through the autophagy process. This is important, especially for healthy aging.	bit.ly/2F42qlh
	ATG16L1	rs10210302	T	TT	Decreased autophagy, Increased risk of Cohn's disease		
	ATG5	rs573775	A	AG	Inc risk of lupus (with IL-10)		
	ATG5	rs6568431	A	CC	Decreased autophagy, Increased risk cerebral palsy		
	IRGM	rs13361189	C	TT	Increased risk of Crohn's, leprosy		
	IRGM	rs10065172	T	CC	Decreased autophagy		
	IRGM	rs4958847	A	GG			
Telomere Length	TERT	rs10069690	T	CC	Decreased telomerase	Telomeres protect the end of your chromosomes when your cells replicate. After a certain number of cell divisions (around 50), the telomeres have shortened to the point that the cell can no longer divide. Oxidative stress in cells can also cause shortening of the telomeres. Telomere length is used as a proxy of 'biological age'.	bit.ly/2Zq2OtF
	TERT	rs2736100	A	AC	AA only: Decreased telomere length		
	TERT	rs2853669	G	AA	Decreased survival rate in cancers with TERT mutations		
	TERT	rs2736122	A	AG	Increased risk of heart disease, stroke		
	TERT	rs2242652	A	GG	Decreased telomerase expression		
	TERT	rs2736108	T	CC	Longer telomeres		
	TERC	rs10936599	T	CC	Decreased telomere length		
	NAF1	rs7675998	A	AG	Decreased telomere length		
	OBFC1	rs9420907	C	AC	Longer telomeres		
Klotho / Aging	KL	rs9536314	G	TT	Increased klotho, Increased lifespan, Decreased cognitive decline, Decreased Alzheimers risk in APOE4	Klotho is a protein that is associated with healthy aging. Lower klotho levels can mean accelerated aging. Klotho is also important in calcium regulation in the kidneys.	bit.ly/2Zvlj27
	KL	rs3752472	C	CC	CC only: Increased kidney stones, Decreased klotho		
	KL	rs650439	T	AA	Increased carotid atherosclerosis, lower klotho		

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NAD+, NR, NMN	NAMPT	rs61330082	A	GG	Decreased NAMPT	NAD+ is important for many functions in the body including mitochondrial energy production and healthy aging (through SIRT genes). Read through the article for lots more information on NAD+.	bit.ly/2m2H7l0
	NAMPT	rs9770242	C	AC	Lower heart disease, lower fasting glucose, insulin		
	SIRT1	rs3758391	T	CT	Lower risk of heart disease, better cognitive aging		
	SIRT1	rs12778366	C	TT	Increased risk of diabetes, Decreased longevity		
	SIRT3	rs511744	T	CC	TT only: Increased average lifespan (1.3 years)		
	BST1	rs4698412	A	AA	Slightly Increased risk of Parkinson's		
	SIRT6	rs352493	C	TT	Increased risk of more severe heart disease		
Advanced Glycation End Products	AGER	rs2070600	T	CC	Increased risk of Alzheimer's, diabetic retinopathy, insulin resistance, RA	The production of AGEs (advanced glycation end products) increases with age. Increased AGEs can increase inflammation and cross-linked proteins. Dietary choices and the way that you cook your food can impact exogenous AGEs intake.	bit.ly/2rW1W4k
	AGER	rs1800624	T	AT	Increased AGEs receptor, Increased risk of cardiovascular disease with diabetes,		
	AGER	rs184003	A	CC	Slightly Increased risk of diabetes, coronary artery disease		
	GLO1	rs1130534	A	TT	Increased risk of retinitis pigmentosa		
Heat Shock Proteins	HSPA1L	rs2227956	G	AG	Decreased HSP1; increase risk of male infertility	Heat shock proteins act as 'chaperones', which is a cell biology term meaning that they help to stabilize or ensure the correct folding of other proteins under stress conditions. Alterations to HSPs can lead to neurodegenerative diseases, cancer, mood disorders and more.	bit.ly/3AxbdxZ
	HSPA1L	rs2763979	T	CC	Increased risk of noise-induced hearing loss		
	HSPA1L	rs1043618	C	GG	Increased risk of heart disease		
	HSPA1L	rs2075800	T	CT	Increase risk of lupus		
	HSPA5	rs391957	T	CT	Increased risk certain cancers, peripheral neuropathy in diabetes		
	TRAP1	rs113476582	C	TT	Incr. risk of chronic pain, fatigue, gastro (important)		
SIRT3	SIRT3	rs11555236	A	CC	Increased SIRT3, Increased longevity	Sirtuins (SIRT3) are proteins that are important for DNA transcription and for mitochondrial function.	bit.ly/2Zrpzg1
	SIRT3	rs11246020	T	CC	Reduced SIRT3, Increased risk of metabolic syndrome		
	SIRT3	rs185277566	C	CC	Reduced SIRT3; Increased risk of heart attack.		

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Weight Related Articles							
Leptin	LEPR	rs1137101	G	AG	Increase risk for obesity, diabetes	Leptin is a satiety signal. Ashwagandha, decrease omega-6's, ginseng	bit.ly/2KRQmyn
	LEPR	rs1137100	G	AA	Increase risk for obesity, diabetes		
	LEPR	rs7799039	A	GG	Increase risk for obesity, diabetes		
	LEPR	rs3790433	T	CT	Decreased risk for metabolic syndrome		
MC4R, weight	MC4R	rs17782313	C	CT	Increased BMI, Increased risk of obesity.	This gene is a big influence on weight. In addition to regulating appetite, it is also involved in circadian rhythm of glucose.	bit.ly/2IeDkJz
	MC4R	rs17700633	A	AA			
	MC4R	rs12970134	A	AG			
	MC4R	rs571312	A	AC			
	MC4R	rs2229616	T	CC	Significantly **protective against obesity** - rare		
Brown Fat	UCP1	rs1800592	C	CT	Increased risk for abdominal fat	UCP1 is activated with cold.	bit.ly/2Xh4wzG
	UCP1	rs6536991	C	CT	Decreased risk of obesity		
	UCP1	rs3811787	G	GT	Increased risk of abdominal fat		
Adiponectin	ADIPOQ	rs17300539	A	GG	Lower BMI, benefits from MUFA	You usually want higher adiponectin levels since it lowers inflammation. Blueberry juice and mulberry juice increase adiponectin levels (in mice). Fish oil supplements may also help. Fiber sometimes helps as well for increasing adiponectin.	bit.ly/2wSci4p
	ADIPOQ	rs1501299	T	GT	Higher adiponectin levels when eating low fiber diet (opposite of usual response)		
	ADIPOQ	rs266729	G	CC	GG only: better blood glucose with either carb rich or MUFA rich diet		
	ADIPOQ	rs2241766	G	TT	Increased risk of T2D		
FTO	FTO	rs9939609	A	TT	Increased risk of obesity, higher BMI - well researched genetic variants that are associated with higher BMI.	Time restricted eating may work better for weight loss. Artificial sweeteners caused weight gain in FTO carriers	bit.ly/2MNsQ8E
	FTO	rs1558902	A	TT			
	FTO	rs3751812	T	GG			
DHEA	CYP2C9	rs2185570	C	TT	Lower DHEAS levels. Some studies have shown that DHEA reduces fat accumulation.	Yoga training or DHEA supplement. Caution though: too much DHEA can increase risk of PCOS.	bit.ly/2IByMMk
	TRIM4	rs17277546	A	AG			
	SULT2A1	rs182420	T	TT			
	SULT2A1	rs2637125	A	GG			
	SULT2A1	rs2910397	T	CC	Higher DHEAS levels		
UPC2	UCP2	rs659366	T	CC	Higher BMI, waist circumference	Possible weight solutions: cold thermogenesis; resveratrol; keto diet	bit.ly/31zBsD6
	UCP2	rs660339	A	GG			
GNB3	GNB3	rs5443	T	CC	Enhanced G-protein signaling, Increased risk of obesity, diabetes	See the article for a couple of possibilities for this variant.	bit.ly/2KPrOpP
Ghrelin	GHRL	rs4684677	A	TT	Increased ghrelin (hunger hormone) leading to increased BMI	Your appetite may be increased over what your body really needs.	bit.ly/2KiFQRn
	GHRL	rs35683	A	AC			
	GHSR	rs572169	T	CT			
	CLOCK	rs1801260	G	AG			
Adenovirus Weight Gain	PCSK1	rs4923461	C	GG	Increased risk of infection by Ad-36, which is linked to weight gain	Exericse alone may not be benefical for weight loss. See the article for dietary interventions.	bit.ly/3MpL7UW
	BDNF	rs4923461	G	GG	Slightly increased risk of infection by Ad-36		
	PPARG	rs1801282	G	CC	Increased risk of metabolic syndrome and insulin resistance, Ad-36 upregulates PPARG		
	CXADR	rs2824292	G	AG	Reduced adenovirus 5 receptors (CXADR)		
	IL-10	rs1800871	G	AG	Increase inflammation, higher BMI, and increased waist circumference		
Oxytocin and Weight Loss	OXTR	rs53576	A	GG	Higher fasting glucose and HOMA-IR; more at risk for obesity (adolescent study)	This variant ties increased sweet consumption to no increase in overall risk for diabetes, but use common sense when it comes to your dietary choices.	bit.ly/3BSnM9C

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FGF21	FGF21	rs838133	A	AA	Sweet preference, higher carb intake -- without increased weight	See ther article for behavior hacks, supplements, and medications.	bit.ly/3MCNyUq
Endocannabinoids and weight	MGLL	rs684358	G	TT	Linked with obesity (rare)	Take into account your genetics and be aware that CB1 antagonists may affect mood. If you are under the care of a doctor for a mood disorder, please talk with your doctor before making changes that could affect your endocannabinoid system.	bit.ly/3MuNF4i
	FAAH	rs324420	A	CC	Reduced FAAH production leading to increased anandamide; higher BMI and waist circumference		
	CNR1	rs806381	G	AA	Increased obesity, increased risk of PCOS, fatty liver disease		
	CNR1	rs12720071	C	TT	Increased abdominal fat, increased risk of PCOS		
	CNR1	rs10485170	C	TT			
	CNR1	rs1049353	T	CT	Risk of increased visceral fat		
GLP-1RA Weight Loss	GLP1R	rs6923761	A	GG	Better response to GLP1 receptor agonist for weight loss	The GLP-1 receptor agonists are prescription medications. This type of medication is FDA approved, but that doesn't mean it is totally benign. Consider a serious disscussion with a healthcare professional.	bit.ly/42bkxF6
	GLP1R	rs10305492	A	GG	Less response to GLP1 receptor agonist for weight loss		
	TCF7L2	rs7903146	T	CC			
	CNR1	rs1049353	T	CT	Improvement in insulin resistance along with weigh loss in GLP-1 receptor agonist		
Microbiome and Weight	APOA5	rs651821	C	CT	Reduced Bifidobacterium levels, higher triglycerides, and MetS risk	Eating prebiotic fiber, such as inulin or FOS, may increase your bifidobacteria	bit.ly/3MyItfJ
	MYD88	rs4988453	A	CC	Reduced MYD88		
	MYD88	i5000725	C	--	Rare mutation, listed as pathogenic for MYD88 deficiency		
	MYD88	rs137853065	C	TT			
	MYD88	i5000726	T	--			
	MYD88	rs137853064	T	CC			
	NOD1	rs2075822	G	AA	Increased risk of IBD		
	TLR4	rs10759932	C	TT	Decreased risk of H. pylori		
	TLR4	rs4986790	G	AA	Increased risk of gram-negative bacterial infection, septic shock, and metabolic syndrome		
	SLC39A8	rs13107325	T	CT	Changes in the gut microbiome, obesity, and Crohn's disease risk		
Diet Genes	HNF1A	rs7957197	T	TT	Greater weight loss with a high-fat diet	We are all different in our variants, and some people are likely to have variants that show benefits for both low-carb and low-fat diets. Go with the diet that fits your lifestyle, family, and tastes.	bit.ly/3Wu9qyc
	MTNR1B	rs10830963	G	CC	Greater improvements in fat distribution, and weight loss with low-fat diet		
	IL-6	rs1800795	C	CG	Greater weight loss on a Mediterranean diet with olive oil		
	DHCR7	rs12785878	T	GT	Greater decreases in insulin and HOMA-IR in response to high-protein diets		
	ADCY3	rs10182181	G	AG	Less decrease in fat mass, greater lean mass loss on high-protein diet		
	PPM1K	rs1440581	C	CT	Less weight loss with high-fat diet		
	IRS1	rs2943641	C	CC	C/C only: Most common genotype, more benefits in weight loss and improvement of insulin resistance on high-carbohydrate and low-fat diet		

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Traits: Taste Receptor, Odors, Hair Color, and More...							
Body Odor	ABCC11	rs17822931	T	CC	TT only: dry earwax, no body odor	No need for deodorant.	bit.ly/2XFohOx
Red Hair	MC1R	rs1805008	T	CC	TT: Red hair; CT: Increased risk for melanoma	You need two copies of the variant (or one copy of two variants) to have red hair. Anyone carrying a risk allele (one or two copies) is at an Increased risk of melanoma. There are other MC1R variants (less common) that aren't covered by 23andMe/ AncestryDNA	bit.ly/2IFvhVt
	MC1R	rs1805007	T	CT	TT: Red hair; CT: Increased risk for melanoma		
	MC1R	rs1805006	A	CC	AA only: red hair likely		
	MC1R	rs1805009	C	GG	CC only: red hair possible, inc risk melanoma		
	MC1R	rs2228479	A	GG	AA only: red or blond hair		
Odor Receptors	OR5A1	rs6591536	A	AA	AA only: less able to smell floral (beta-ionone)	Odor receptors are actually pretty interesting. They are located in other places than just your nose, and they can influence what you like to eat. Read through the article to learn more.	bit.ly/2ZppMks
	OR10A2	rs72921001	A	AC	Less likely to think cilantro tastes like soap		
	inter-gene	rs4481887	A	GG	More likely to be able to smell asparagus pee		
	OR7D4	rs2878329	T	CC	Better regulation of appetite		
	OR7D4	rs61729907	G	AG	G/G: androstenone smells foul and icky		
	OR7G3	rs10414255	C	CT	More hunger, disinhibition in eating, higher BMI		
Wrinkles and Skin Aging	IRF4	rs12203592	T	CC	Lighter hair, more photoaging of skin	Wrinkles, loss of elasticity, age spots, loss of tone all contribute to your skin looking older. A lot of this can be blamed on oxidative stress in the skin. Increased oxidative stress then increases MMP1, which degrades collagen.	bit.ly/2HuKc53
	MC1R	rs1805005	T	GG	More photoaging, facial aging - also, Increased risk of melanoma		
	MC1R	rs1805007	T	CT			
	MC1R	rs1805008	T	CC			
	MC1R	rs1805009	C	GG			
	MMP1	rs1799750	I	TT	More wrinkles		
	STXBP5L	rs322458	T	CT	TT only: Decreased photoaging and wrinkles		
	STXBP5L	rs470647	C	CT	CC only: Decreased photoaging and wrinkles		
	AIFM2	rs16927253	T	CC	Protective against sagging eyelids		
Spicy Food / Pain receptor	TRPV1	rs8065080	C	CT	CC only: less sensitive to spicy food, better pain tolerance to cold, worse asthma	Capsaicin is what causes hot chilis to burn your mouth -- and this burning sensation depends on the TRPV1 receptor. Repeated exposure to spicy foods will decrease your TRPV1 receptors, thus decreasing the pain.	bit.ly/2X6CzL9
	TRPV1	rs222741	G	AG	Increased risk of migraines, less pain tolerance		
	TRPV1	rs222747	C	GG	more TRPV1 protein, lower levels of inflammatory cytokines in multiple sclerosis		
	TRPV1	rs161364	T	CT	TT only: Decreased risk of diabetes, should be more tolerant to spicy food		
	TRPV1	rs224534	A	AG	AA only: less sensitive to spicy food		
Taste Receptors	TAS2R38	rs713598	G	CC	Can taste bitter	Taste receptors actually play a pretty big role in what you naturally want to eat. The variations in taste receptors throughout a population protect the community as a whole. For example, people who can taste bitter in fermented foods are likely to be able to tell when something is 'off' and warn others.	bit.ly/2wQPhPj
	TAS2R38	rs10246939	C	TT	Can taste bitter		
	TAS2R16	rs846672	C	AC	Can taste bitter in ethanol, fermented foods		
	TAS2R16	rs846664	A	AA	Can taste bitter in ethanol, fermented foods		
	TAS2R16	rs978739	T	CT	Can taste bitter in ethanol, fermented foods		
	TAS2R19	rs10772420	A	AG	Can taste bitter in quinine		
	TAS2R14	rs3741843	C	TT	Stevia tastes more bitter (if you can detect)		
	TAS1R3	rs35744813	T	CC	Decreased taste sensitivity for sucrose		
	TAS1R3	rs307355	T	CC			

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Baldness	inter-gene	rs1998076	A	AA	AA only: less than half the normal risk of baldness	About 80% of men and 50% of women will be affected by androgenic alopecia. These genetic variants cover the more commonly associated genes for pattern baldness. Having several of the 'less likely' genetic variants is protective against baldness and decreases your risk.	bit.ly/2SaCGAr
	inter-gene	rs2223841	C	TT	Less likely to go bald		
	inter-gene	rs925391	A	GG	Less likely to go bald		
	inter-gene	rs6945541	C	TT	Increased risk of balding		
	AR	rs10521339	A	TT	Less likely to go bald		
	AR	rs6625163	G	AA	Less likely to go bald		
	EDA2R	rs1385699	C	CC	Less likely to go bald		
	EDA2R	rs1511061	C	TT	Less likely to go bald		
	C1orf127	rs12565727	G	AA	Less likely to go bald		
	SLC14A2	rs10502861	T	CC	Less likely to go bald		
	MAPT-AS1	rs12373124	C	TT	Less likely to go bald		
	LINC01432	rs1160312	G	GG	Less likely to go bald		
	IRF4	rs12203592	T	CC	Increased risk early balding		
Wine Tasting	TAS2R16	rs846664	C	AA	Altered ability to taste beta-glucopyranoside	Taste receptors vary a lot. They can affect how a wine tastes to you, and they are also linked to being likely to drink more or less alcohol. Some people are also thermal sensitive for tastes, so chilling the wine can make it taste differently to some.	bit.ly/2XQuIha
	TAS2R38	rs1726866	A	AA	AA only: unable to taste bitter in wine (it tastes sweeter)		
	TAS2R16	rs6466849	T	CT	Wine tastes more sour, likely to drink less wine		
	TAS1R2	rs35874116	C	CC	Less likely to drink wine, but if you do drink wine, likely to consume larger amounts		
	TAS1R3	rs307355	C	CC	More likely to drink more sweet alcohols		
Acne	TYK2	rs33980500	T	CT	Decreased severe acne risk	For the inflammatory acne risk factors, curcumin or hops may help. For sebum production, CBD oil might help. For BCMO1, try adding in more of the retinol form of vitamin A (e.g. eat liver). Overall, light therapy shows some promise in clinical studies.	bit.ly/31hkwAi
	TNF	rs1800629	A	GG	3-fold Increased acne risk		
	TNF	rs1799724	T	CC	Decreased acne risk		
	CTLA4	rs3087243	G	GG	G/G: higher risk of acne		
	IL1A	rs1800587	A	AG	Increased acne risk (inflammation)		
	IL1A	rs17561	A	AC			
	IL6	rs1800796	C	GG			
	RETN	rs3745367	A	GG	Increased acne (sebum)		
	BCMO1	rs7501331	T	CT	Decreased beta-carotene conversion.		
	BCMO1	rs12934922	T	AA			
	CYP17A1	rs743572	G	AG	Increased risk of acne (hormones)		
	HSD11B1	rs846910	A	GG			
	TGFB1	rs1159268	A	AG	Slight increase in the risk of acne		
	TGFB1	rs38055	A	GG			
	WNT10A	rs121908120	A	TT	Protective against acne		
	LCT	rs4988235	G	AG	GG only: Increased acne risk with dairy		
Double Lashes	FOXC2	i5002816	T	--	Double lash mutation	In addition to double lashes, this mutation also Increased risk of lymphedema	bit.ly/36utI6O
	FOXC2	rs121909107	A	GG			

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Genetic Superpowers	CRHR1	rs242924	T	GG	T/T: Resiliency! Protective against the negative effects of childhood trauma.	From a genetic point of view, most variants have positive and negative consequences. In our modern world, a variant that may have helped your ancestor survive the black plague may give rise to chronic inflammation.	bit.ly/43xBp9z
	CRHR1	rs110402	A	GG	AA: Resiliency! Protective against the negative effects of childhood trauma. G/G: not protected against negative effects of childhood trauma.		
	IL17A	rs2275913	A	AG	A/A: ~ half the risk for H3N2 flu		
	IL1B	rs16944	G	GG	G/G: less than half the risk for H3N2 flu		
	IL28	rs8099917	G	TT	half the risk for H3N2 flu		
	PCSK9	rs11591147	T	GG	decreased LDL-cholesterol, 30% lower risk of heart disease		
	PCSK9	rs28362286	A	CC	decreased LDL-cholesterol, lower risk of heart disease		
	PCSK9	rs67608943	G	CC	decreased LDL-cholesterol, lower risk of heart disease		
	PCSK9	rs72646508	T	CC	decreased LDL-cholesterol, lower risk of heart disease		
	CCR5	i3003626	D	--	reduced likelihood of progressing to AIDS with HIV		
	FOXO3A	rs2802292	G	GT	increased odds of living longer		
	FOXO3A	rs1935949	A	AG	increased odds of living longer in women		
	FOXO3A	rs479744	T	GT	slightly increased odds of living longer		
	FUT2	rs601338	A	AA	A/A: non-secretor of blood type, resistance to norovirus		
	FUT2	rs1047781	T	AA	TT: non-secretor of blood type, resistance to norovirus (East Asian ancestry)		
	FOXC2	rs121909106	T	CC	double lash mutation, increased risk of lymphedema		
	FOXC2	rs121909107	A	GG	double lash mutation, increased risk of lymphedema		
	TAS2R38	rs713598	G	CC	Can taste bitter		
	TAS2R38	rs10246939	C	TT	Can taste bitter		
	TAS2R16	rs846672	C	AC	Can taste bitter in ethanol, fermented foods		
	TAS2R16	rs846664	A	AA	Can taste bitter in ethanol, fermented foods		
	TAS2R16	rs978739	T	CT	Can taste bitter in ethanol, fermented foods		
	DEC2	rs121912617	T	GG	natural short sleeper (less than 0.5% of population)		
	CCR5	rs333	D	GG	reduced likelihood of progressing to AIDS with HIV		
	FOXC2	i5002816	T	--	Double lash mutation, increased risk of lymphedema		
Modafinil	COMT	rs4680	A	AA	AA only: lower COMT, not much response to modafinil		bit.ly/2WDNpnq

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Fertility							
Twins	FSHB	rs11031006	A	AG	Lower odds of having twins	Applies only to women.	bit.ly/2F8GOvo
	SMAD3	rs17293443	C	CT	Increased possibility of fraternal twins		
Male Infertility	CFTR	rs113993960	D	CC	DI – one copy of the Delta F508 cystic fibrosis mutation	Many different genetic variants can increase the risk of infertility in men. These variants impact different aspects of sperm production – from hormones to oxidative stress to DNA damage repair. Targeting the right pathways may help.	bit.ly/39rd8vs
	PRM1	rs2301365	T	GT	Increased risk of male infertility - DNA damage-response gene		
	LIG4	rs1805388	A	AG	Increased risk of male infertility - DNA damage-response gene		
	TGFB3	rs2284792	G	AG	Increased risk of male infertility- chronic inflammation related		
	GSTM1	rs366631	A	AA	AA: Increased risk of male infertility- chronic inflammation		
	HSPA1L	rs2227956	G	AG	Increased risk of male infertility; heat shock protein		
	NOS3	rs2070744	C	TT	CC: Increased risk of male infertility - nitric oxide synthase		
	MTHFR	rs1801133	A	AA	Increased risk of male infertility-		
	MTHFR	rs1801131	G	TT	folate related		
	MTRR	rs1801394	G	GG	Increased risk of male infertility, B12 related (B-complex)		
	FSHR	rs6165	T	TT	Increased risk of male infertility, check hormone levels		
	FSHR	rs6166	T	TT	TT: Slightly higher risk of male infertility; FSH hormone		
	HLA-DRA	rs3129878	C	AA	Increased risk of male infertility; Immune system		
	HFE	rs1800562	A	GG	Increased risk of sperm damage; Iron overload related		
	HFE	rs1799945	G	CC	Increased risk of low sperm motility; Iron overload related		
Inflammation in Recurrent Miscarriage	IL17A	rs2275913	A	AG	Increased relative risk of recurrent miscarriage	There are many reasons for miscarriages, of course. Genetic studies point towards the importance of inflammation, clotting factors, hormonal regulation, immune response, and detoxification genes. This article focuses on the role of inflammation and how it impacts pregnancy.	bit.ly/3sEnfE4
	IL17A	rs763780	C	TT	Increased relative risk of recurrent miscarriage		
	IL1B	rs1143634	A	AG	AA: Decreased risk of recurrent miscarriage		
	IL1B	rs16944	G	GG	Increased relative risk of recurrent miscarriage		
	TNF	rs1800629	A	GG	higher TNF-alpha; increased risk of recurrent miscarriages		
	IL10	rs1800871	A	AG	AA: Increased risk of recurrent miscarriage in Caucasians		
	IL10	rs1800896	C	CT	CC: Increased risk of recurrent miscarriage in Caucasians		
Infertility (Female)	MTHFR	rs1801133	A	AA	MTHFR C677T; reduced folate enzyme efficiency	This article highlights some of the common genetic variants that may play a role in infertility. It is just a starting point for looking at lifestyle changes that may help to promote fertility. See the article for specific research and solutions for each gene.	bit.ly/3PqSSuE
	MTHFR	rs1801131	G	TT	MTHFR A1298C; reduced folate enzyme efficiency		
	F5	rs6025	T	CC	Factor V Leiden; increased clot risk and miscarriage risk		
	F2	rs1799963	A	AG	Prothrombin variant; increased risk of clots and miscarriage		
	LHCGR	rs13405728	G	AA	Luteinizing hormone and hCG receptor; increased risk of PCOS		
	LHCGR	rs2293275	T	CC	Luteinizing hormone and hCG receptor; increased risk of PCOS		
	DENND1A	rs10818854	A	GG	Increased androgen synthesis; increased risk of PCOS		
	FSHB	rs11031006	A	AG	Increased lutenizing hormone to FSH ratio		
	FSHR	rs6166	C	TT	Folicle-stimulating hormone receptor; increased PCOS risk		
	ADIPOQ	rs2241766	T	TT	TT: Increased risk of PCOS		
	ADIPOQ	rs1501299	T	GT	TT: Decreased risk of PCOS (good)		
	MTNR1B	rs10830963	G	CC	Melatonin receptor in pancreas; increased risk of PCOS and higher insulin levels		

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Exercise and Athletics							
Athletic Performance	AGTR2	rs11091046	C	CC	More slow-twitch muscle, endurance athlete	These variants affect muscle type and athletic performance at the elite levels. The effect size is small, though, and may not impact you if you aren't an Olympic athlete. Thus, do whatever sport you love no matter your genetic variants.	bit.ly/2XBAbIx
	AGT	rs699	G	AG	Increased angiotensin, more geared towards power athlete		
	IL6	rs1800795	C	CG	Decreased IL6, more often found in endurance athletes		
	MSTN	rs1805086	C	TT	Greater muscle mass		
	NOS3	rs2070744	C	TT	Decreased eNOS		
	AMPD1	rs17602729	A	GG	AMPD1 deficiency, more muscle soreness		
Exercise Intensity / Motivation	ANKK1	rs1800497	A	AG	Lower exercise reward, motivation	A study shows that genetic variants influence how much of a reinforcement or reward feeling (dopamine related) you get from exercise. Other variants influence your tolerance for higher intensity exercise.	bit.ly/2Nz8ZXP
	CNR1	rs6454672	T	TT	TT only: greater exercise tolerance		
	LEPR	rs12405556	T	GG	Greater tolerance for intense exercise		
	GABRA3	rs8036270	G	GG	Greater tolerance for intense exercise		
Fat Burning	PPARD	rs2267668	G	AA	Less benefit from aerobic exercise; lower skeletal muscle mitochondrial function	Essentially, PPARδ is a sensor for cellular metabolism, switching on the genes needed for burning fat instead of glucose. It is important for how your skeletal muscles use fat for energy.	bit.ly/3lcsnLw
	PPARD	rs1053049	C	TT	Not as great of response to exercise for weight loss		
	PPARD	rs2016520	C	TT	Lower fasting plasma glucose; decreased cardiovascular disease risk		
Muscles	ACTN3	rs1815739	T	CT	CC = functioning ACTN3, power athletes; TT = non-functioning ACTN3, more likely to be an endurance athlete than power athlete	This seems to only matter at the very elite level - practice and hard work are more important for most people.	bit.ly/2KhtLMv
AMPD	AMPD1	rs17602729	A	GG	AMP deaminase deficiency - more likely to be sore after workout	D-ribose supplement may help for exercise and for preventing sore muscles	bit.ly/2KOtYWN

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Carrier Status -- Rare Genetic Diseases (Mostly Autosomal Recessive)							
Carrier Status -- Rare Genetic Diseases (Mostly Autosomal Recessive)	SLC12A6	i5012573	D	CC	Agenesis of the Corpus Callosum with Peripheral Neuropathy	All of these are rare mutations linked to genetic diseases, and most inherited in an autosomal recessive manner, which means you would need **two** copies of the risk allele to have the disease. Sometimes carriers of one copy of a rare mutation will have some very mild symptoms from being a carrier. These mutations are something that you may want to mention to your kids and/or siblings so that they will know that it is possible for them be a carrier as well. **Keep in mind that the result could be an error in your genetic data (false positive), so always get a clinical test done before taking any actions based on these results.**	bit.ly/2XaGxlX
	SLC12A6	i5012575	A	GG	Agenesis of the Corpus Callosum with Peripheral Neuropathy		
	SERPINA1	rs17580	A	TT	Alpha-1 Antitrypsin Deficiency		
	SERPINA1	rs28929474	T	CC	Alpha-1 Antitrypsin Deficiency		
	ASL	rs28941472	G	AA	Arginosuccinate lyase deficiency		
	ASL	rs201523601	T	GG			
	SACS	i5012578	D	--	Autosomal recessive spastic ataxia of Charlevoix-Saguenay		
	PKHD1	i5000043	G	AA	Autosomal Recessive Polycystic Kidney Disease		
	PKHD1	i6016630	T	--			
	PKHD1	i5007345	G	--			
	PKHD1	i5000045	G	AA			
	PKHD1	i5000047	C	TT			
	PKHD1	i5012610	D	--			
	PKHD1	i5000042	G	--			
	PKHD1	i5012612	A	--			
	PKHD1	rs28939383	A	GG			
	HBB	rs11549407	A	GG			
	MKKS	rs28937875	T	CC	Bardet-Biedl Syndrome		
	BBS10	rs148374859	C	GG			
	BBS12	rs121918327	T	CC			
	BBS1	rs113624356	G	TT			
	BBS1	rs35520756	A	GG			
	HBB	i3003137	A	--	Beta Thalassemia / Sickle Cell Anemia		
	HBB	rs33915217	G	CC	Beta Thalassemia		
	HBB	rs33944208	T	GG			
	HBB	rs33960103	G	CC			
	HBB	rs33971440	T	CC			
	HBB	rs33985472	C	TT			
	HBB	rs33986703	G	TT			
	HBB	rs34451549	A	GG			
	HBB	rs34598529	C	TT			
	HBB	rs34690599	C	GG			
	HBB	rs35004220	T	CC			
	HBB	rs35724775	T	AA			
	HBB	rs63750783	T	CC			
	BLM	i4000396	I	AA	Bloom's Syndrome		
	ASPA	rs28940279	C	AA	Canavan Disease		
	ASPA	rs28940574	A	CC	Canavan Disease		
	PMM2	i5012679	A	--	Congenital Disorder of Glycosylation Type 1a		
	PMM2	rs28940588	T	CC	Congenital Disorder of Glycosylation Type 1d		
	PMM2	i5012680	A	--	Congenital Disorder of Glycosylation Type 1a		
	GJB2	i4000434	D	CC	Connexin 26-Related Nonsyndromic Sensorineural Hearing Loss		
	GJB2	rs72474224	T	CC	Connexin 26-Related Nonsyndromic Sensorineural Hearing Loss		
	GJB2	i4000435	D	--	Connexin 26-Related Nonsyndromic Sensorineural Hearing Loss		
	CFTR	i3000001	D	--	Cystic Fibrosis		
	CFTR	rs75961395	A	GG			
	CFTR	rs78655421	A	GG			
	CFTR	rs121909011	T	CC			
	CFTR	i4000297	A	GG			
	CFTR	i4000291	A	CC	Cystic Fibrosis		
	CFTR	i4000299	T	GG			
	CFTR	rs113993959	T	GG			
	CFTR	i4000301	A	--			
	CFTR	rs75527207	A	GG			
	CFTR	i4000306	T	--			
	CFTR	i4000307	C	--			
	CFTR	i4000308	T	--			
	CFTR	i4000309	A	--	Cystic Fibrosis		
	CFTR	i4000311	G	CC			
	CFTR	i4000313	D	TT			
	CFTR	i4000314	T	--			
	CFTR	rs77188391	T	GG			
	CFTR	i4000316	D	--			
	CFTR	rs76713772	A	GG			

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	CFTR	i4000318	A	--	Cystic Fibrosis		
	CFTR	rs80224560	A	GG			
	CFTR	rs75096551	A	GG			
	CFTR	i4000322	D	--			
	CFTR	i4000323	D	--			
	CFTR	i4000324	I	GG			
	CFTR	rs75039782	T	CC			
	HSD17B4	i5007145	A	--	D-Bifunctional Protein Deficiency		
	HSD17B4	i5007146	T	--	D-Bifunctional Protein Deficiency		
	NGLY1	rs201337954	A	TT	Deglycosylation Disorder		
	WT1	rs28941778	T	CC	Denys-Drash syndrome		
	DLD	i5003700	T	--	Dihydrolipoamide Dehydrogenase Deficiency		
	F8	rs28933681	T	CC	Factor VIII Deficiency - Hemophilia		
	F8	rs28933679	C	TT	Factor VIII Deficiency - Hemophilia		
	F9	i5007022	G	--	Factor IX - Hemophilia		
	F11	i4000397	A	GG	Factor XI Deficiency - Hemophilia		
	F11	rs121965063	T	GG	Factor XI Deficiency - Hemophilia		
	F11	rs121965064	C	TT	Factor XI Deficiency - Hemophilia		
	IKBKAP	rs111033171	G	AA	Familial Dysautonomia		
	IKBKAP	i4000400	G	CC	Familial Dysautonomia		
	APOB	rs144467873	A	GG	Familial Hypercholesterolemia Type B		
	APOB	rs12713559	A	GG	Familial Hypercholesterolemia Type B		
	APOB	rs5742904	T	CC	Familial Hypercholesterolemia Type B		
	FANCC	rs104886456	A	TT	Fanconi Anemia		
	FANCC	rs104886457	A	GG	Fanconi Anemia		
	FANCC	i4000413	D	CC	Fanconi Anemia		
	GBA	rs421016	G	AA	Gaucher Disease		
	GBA	rs80356773	T	CC			
	GBA	i4000415	C	--			
	GBA	i4000417	I	AA			
	GBA	i4000419	A	--			
	GCDH	rs121434369	T	CC	Glutaric Aciduria		
	G6PC	rs1801175	T	CC	Glycogen Storage Disease Type 1a		
	BCS1L	rs28937590	G	AA	Gracile Syndrome		
	HFE	rs1800562	A	GG	Hemochromatosis		
	HFE	rs1799945	G	CC	Hemochromatosis (mild)		
	HFE	rs1800730	T	AA	Hemochromatosis (mild)		
	ALDOB	i5012664	C	--	Hereditary Fructose Intolerance		
	ALDOB	i5012665	D	--			
	ALDOB	rs76917243	T	GG			
	ALDOB	rs1800546	G	CC			
	FERMT1	rs121918293	A	GG	Kindler Syndrome		
	LAMB3	i5012669	A	--	LAMB3-Related Junctional Epidermolysis Bullosa		
	LAMB3	i5012671	A	--			
	LAMB3	i5012672	A	--			
	SGCA	rs28933693	T	CC	Limb-girdle muscular dystrophy		
	SGCB	rs28936383	C	GG			
	FKRP	rs28937900	A	CC			
	BCDKDHB	i3002808	C	--	Maple Syrup Urine Disease Type 1B		
	BCDKDHB	i4000422	A	--	Maple Syrup Urine Disease Type 1B		
	ACADM	rs121434282	C	GG	Medium-Chain Acyl-CoA Dehydrogenase Deficiency		
	ACADM	rs121434281	T	CC			
	ACADM	i5012755	T	CC			
	ACADM	rs121434280	C	TT			
	ACADM	rs77931234	G	AA			
	ACADM	i5012760	T	--			
	ACADM	rs121434274	A	GG			
	MCOLN1	rs104886461	G	AA	Mucolipidosis IV		
	GNPTAB	rs34159654	C	TT	Mucolipidosis IIIa		
	CLN5	i5012678	D	AA	Neuronal Ceroid Lipofuscinosis		
	PPT1	i5012622	G	--			
	PPT1	rs137852695	A	TT			
	PPT1	i5012624	A	--			
		i4000381	C	--	Niemann-Pick Disease Type A		
		i4000383	D	CC	Niemann-Pick Disease Type A		
		rs120074117	T	GG	Niemann-Pick Disease Type A		
	NBN	i5012770	D	TT	Nijmegen Breakage Syndrome		
	SLC26A4	rs121908362	G	AA	Pendred Syndrome		
	SLC26A4	rs111033244	G	AA			
	SLC26A4	rs111033199	T	GG			
	SLC26A4	i5000696	G	--			

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	SLC26A4	i5012616	C	--			
	SLC26A4	i5012618	C	--			
	PAH	rs5030843	A	--	Phenylketonuria		
	PAH	rs5030846	T	GG			
	PAH	i3003399	A	GG			
	PAH	rs5030847	A	--			
	PAH	i3003400	A	--			
	PAH	rs5030850	A	GG			
	PAH	i3003401	A	--			
	PAH	rs5030851	A	GG			
	PAH	i3003403	C	--			
	PAH	rs5030856	C	TT			
	PAH	i3003404	T	--			
	PAH	rs5030859	T	CC			
	PAH	i3003405	C	--			
	PAH	rs5030860	C	TT			
	PAH	i4000467	A	--			
	PAH	i4000470	C	--			
	PAH	rs75193786	G	--			
	PAH	rs76296470	A	GG			
	PAH	rs62642932	T	CC			
	PAH	rs62642933	C	AA	Phenylketonuria		
	PAH	i4000476	C	--			
	PAH	rs62516092	C	GG			
	PAH	rs62514953	A	GG			
	PAH	i4000478	T	CC			
	PAH	i4000479	C	--			
	PAH	rs62508588	T	--			
	PAH	rs28934899	G	CC			
	PAH	rs5030841	G	AA			
	PAH	rs5030849	T	CC			
	PAH	rs5030852	T	CC			
	PAH	rs5030853	A	CC			
	PAH	rs5030855	T	CC			
	PAH	rs5030857	A	GG			
	PAH	rs5030858	A	GG			
	PAH	rs5030861	T	CC			
	GRHPR	i5012628	D	GG	Primary Hyperoxaluria Type 2		
	GRHPR	i5012629	D	AA			
	PEX7	rs61753238	G	CC	Rhizomelic Chondrodysplasia Punctata		
	PEX7	rs1805137	A	TT	Rhizomelic Chondrodysplasia Punctata		
	SLC17A5	i5012634	A	--	Salla Disease		
	ALDH3A2	rs72547571	T	CC	Sjogren-Larsson Syndrome		
	HEXA	i4000391	I	GG	Tay-Sachs Disease		
	HEXA	i4000393	G	--			
	HEXA	i4000436	T	--			
	HEXA	i4000438	T	--			
	TOR1A	i4000446	D	CC	Torsion Dystonia		
	TTR	rs76992529	A	GG	TTR-Related Cardiac Amyloidosis		
	TTR	i3002758	A	--	TTR-Related Familial Amyloid Polyneuropathy		
	TTR	rs121918070	G	AA	TTR-Related Familial Amyloid Polyneuropathy		
	FAH	rs80338899	A	GG	Tyrosinemia Type I		
	FAH	rs80338898	T	CC	Tyrosinemia Type I		
	FAH	i5012865	A	--	Tyrosinemia Type I		
	FAH	i5012867	T	--	Tyrosinemia Type I		
	FAH	rs121965075	T	GG	Tyrosinemia Type I		
	WRN	rs17847577	T	CC	Werner Syndrome		
	PEX5	rs61752137	T	CC	Zellweger Syndrome		
	PEX1	i5012688	T	--	Zellweger Syndrome		
	PSEN1	rs63751320	G	AA	Early-onset Alzheimer's		
	PSEN1	rs63750900	A	GG	Early-onset Alzheimer's		
	F5	rs6025	T	CC	Factor V Leiden		
	HBB	i3003137	A	--	Sickle Cell Anemia		

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Genetic Mutations that are more common in Ashkenazi population	APC	rs1801155	A	TT	Familial adenomatous polyposis 1, 10% lifetime risk of colon cancer.	Similar to above, these genetic mutations generally require **two copies** to have the listed disease. Please read through the article for more information on why these mutations are linked to being more common in people with Ashkenazi heritage.	bit.ly/2JKmJxO
	LPL	rs268	G	AA	Hyperapobetalipoproteinemia (high lipid levels)		
	ASPA	rs28940574	A	CC	Canavan disease		
	ASPA	rs28940279	C	AA	Canavan disease		
	SCN5A	rs137854603	T	CC	Brugada syndrome 1		
	CYP21A2	rs6476	A	TT	21-hydroxylase deficiency		
	GJB2	rs72474224	T	CC	Deafness		
	GJB2	rs35887622	C	AA	Deafness		
	GJB2	i6011365	T	--	Deafness		
	GJB2	i5001992	T	--	Deafness		
	LOXHD1	rs75949023	T	GG	Deafness		
	DPYD	rs3918290	T	CC	Dihydropyrimidine dehydrogenase deficiency		
	WRAP53	rs281865548	T	CC	Dyskeratosis congenita		
	NR2E3	rs28937873	A	GG	Enhanced S-cone syndrome		
	F11	rs121965064	C	TT	Factor XI deficiency (PTA)		
	F11	rs121965063	T	GG	Factor XI deficiency (PTA)		
	IKBKAP	i4000334	G	--	P Familial dysautonomia		
	ABCC8	rs151344623	T	CC	Familial hyperinsulinism		
	ALDOB	rs1800546	G	CC	Fructose intolerance		
	GALT	rs111033773	T	GG	Galactosemia		
	G6PC	rs1801175	T	CC	Glycogen storage disease Ia		
	CBS	rs5742905	G	--	Homocystinuria, pyridoxine responsive		
	MTTP	rs146064714	T	GG			
	ACADS	rs61732144	T	CC	Deficiency of butyryl-CoA dehydrogenase		
	PDE11A	rs76308115	A	GG	Nodular adrenocortical disease, posible to be benign		
	FANCC	i4000336	A	--	Fanconi anemia		
	HPS3	rs201227603	A	GG	Hermansky-Pudlak		
	HOGA1	rs138207257	T	GG	Primary hyperoxaluria		
	DARS2	rs142433332	C	TT	Gait ataxia		
	MCOLN1	rs104886461	G	AA	Mucolipidosis type IV		
	LCA5	rs121918165	A	GG	Leber congenital amaurosis		
	DHDDS	rs147394623	G	AA	Retinitis pigmentosa		

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Ehlers-Danlos Syndrome Mutations	COL5A1	rs863223483	G	TT	Rare mutations that could cause classical EDS. Always double check the 23andMe data with a clinical grade test. 23andMe data is not guaranteed to be clinically accurate.		bit.ly/30mayTy
	COL5A1	rs863223478	T	CC			
	COL5A1	rs863223475	I	GG			
	COL5A1	rs863223466	A	GG			
	COL5A1	rs863223469	I	AA			
	COL5A1	rs863223470	I	AA			
	COL5A1	rs863223471	I	AA			
	COL5A1	rs863223472	D	GG			
	COL5A1	rs863223473	I	AA			
	COL5A1	rs863223474	D	AA			
	COL5A1	rs794727114	C	GG			
	COL5A1	rs794727760	D	CC			
	COL5A1	rs80338764	C	GG			
	COL5A1	rs863223444	A	TT			
	COL5A1	rs863223445	A	GG			
	COL5A1	rs863223448	C	GG			
	COL5A1	rs863223452	A	GG			
	COL5A1	rs863223453	C	GG			
	COL5A1	rs863223454	T	CC			
	COL5A2	rs863223501	T	CC			
	COL5A2	rs863223495	T	CC			
	COL5A2	rs863223491	T	CC			
	COL3A1	rs397509369	A	GG	Rare mutations that could cause vascular EDS. Always double check with a clinically validated test.		
	COL3A1	rs553203474	A	GG			
	COL3A1	rs397509377	I	GG			
	COL3A1	rs587779417	A	GG			
	COL3A1	rs587779418	A	GG			
	COL3A1	rs587779419	A	GG			
	COL3A1	rs587779421	A	GG			
	COL3A1	rs587779424	A	GG			
	COL3A1	rs587779427	T	GG			
	COL3A1	rs587779428	T	GG			
	COL3A1	rs587779429	C	TT			
	COL3A1	rs587779432	A	GG			
	COL3A1	rs587779434	A	GG			
	COL5A1	rs13946	T	TT	decreased risk of tendon or ligament injury, reduced relative risk of carpal tunnel syndrome (good! does not cause EDS)		
	COL5A1	rs61735045	A	GG	possible for EDS w/another		
	TNXB	rs368512272	A	GG	Classic-like EDS possible		

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Von Willebrand Disease	VWF	i3002455	C	--	Von Willebrand Factor deficiency possible. Rare mutations linked to von Willebrand disease.	Talk with your doctor if you have symptoms related to bleeding more easily than normal.	bit.ly/3HXgbbd
	VWF	i3002797	T	CC			
	VWF	i5004518	G	AA			
	VWF	i5049115	A	--			
	VWF	i5039483	I	--			
	VWF	i5049338	A	--			
	VWF	rs1800386	C	TT			
	VWF	rs61750591	D	AA			
	VWF	rs61748477	A	GG			
	VWF	rs61750584	G	AA			
	VWF	rs61750579	T	AA			
	VWF	rs121964894	A	GG			
	VWF	rs62643630	A	CC			
	VWF	rs267607353	C	AA			
	VWF	rs121964894	T	GG			
	VWF	rs267607353	G	AA			
	VWF	rs41276738	T	CC			
	VWF	rs61748478	G	TT			
	VWF	rs61748497	C	AA			
	VWF	rs61750612	T	GG			
	VWF	rs61750630	T	CC			
	VWF	rs61754002	T	GG			
	VWF	rs61748495	T	CC			
	VWF	rs61749372	G	AA			
	VWF	rs61749380	A	GG			
	VWF	rs61749384	A	GG			
	VWF	rs61749392	G	CC			
	VWF	rs121964895	T	--			
	VWF	rs61748511	G	--			
	VWF	i5039483	I	--			

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Phenylketonuria	PAH	rs5030861	T	CC	Phenylketonuria	Phenylketonuria, also called PKU, is a genetic metabolic disorder in which the amino acid phenylalanine is not metabolized correctly. PKU can cause intellectual disabilities, seizures, behavioral issues, and psychiatric illnesses if left untreated. It is one of the genetic diseases that infants are tested for when they are born.	
	PAH	rs5030858	A	GG	Phenylketonuria		
	PAH	rs5030857	A	GG	Phenylketonuria		
	PAH	rs5030855	T	CC	Phenylketonuria		
	PAH	rs5030853	A	CC	Phenylketonuria		
	PAH	rs5030852	A	CC	Phenylketonuria *mutation may be either A or T		
	PAH	rs5030849	T	CC	Phenylketonuria		
	PAH	rs5030841	G	AA	Phenylketonuria		
	PAH	rs28934899	G	CC	Phenylketonuria		
	PAH	rs62508588	T	--	Phenylketonuria		
	PAH	i4000479	C	--	Phenylketonuria		
	PAH	i4000478	T	CC	Phenylketonuria		
	PAH	rs62514953	A	GG	Phenylketonuria		
	PAH	rs62516092	C	GG	Phenylketonuria		
	PAH	rs62642933	C	AA	Phenylketonuria		
	PAH	rs62642932	T	CC	Phenylketonuria		
	PAH	rs76296470	A	GG	Phenylketonuria		
	PAH	rs75193786	G	--	Phenylketonuria		
	PAH	i4000470	C	--	Phenylketonuria		
	PAH	i4000467	A	--	Phenylketonuria		
	PAH	rs5030860	C	TT	Phenylketonuria		
	PAH	rs5030856	C	TT	Phenylketonuria		
	PAH	i3003401	A	--	Phenylketonuria		
	PAH	i4000472	G	AA	Phenylketonuria		
	PAH	i4000473	A	--	Phenylketonuria		
	PAH	i3003397	T	CC	Phenylketonuria		
	PAH	i4000481	T	CC	Phenylketonuria		
	PAH	i3003398	A	--	Phenylketonuria		
	PAH	i3003399	A	GG	Phenylketonuria		
	PAH	i3003400	A	--	Phenylketonuria		
	PAH	i4000476	C	--	Phenylketonuria		
hTTR	TTR	i3002758	A	--	TTR-Related Familial Amyloid Polyneuropathy	Once thought to be a rare genetic disease, new research shows that hereditary transthyretin amyloidosis (hATTR) may be more common, especially in people of African ancestry. The good news is that several new drugs are in clinical trials for hATTR. Understanding your genetic risk can help you seek treatment earlier before the damage is irreversible.	
	TTR	i5004213	G	--	TTR Mutation (found in up to 3% of African population groups)		
	TTR	rs76992529	A	GG	TTR mutation, often cardiac related		
	TTR	rs267607161	T	GG	TTR mutation		
	TTR	rs28933979	A	GG	TTR-Related Familial Amyloid Polyneuropathy		
	TTR	rs121918070	G	AA	TTR Mutation (found in up to 3% of African population groups)		
	TTR	i3002759	A	--	TTR mutation, often cardiac related		