

CONFIDENTIAL
CLINICIAN'S OVERVIEW

Mood and Behavior

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Addictive Tendencies Genes involved: COMT, DRD2, MAO	Your patient carries the normal or optimal profile.	No Recommendation	No Recommendation

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Anxiety Genes involved: COMT, MAO, ADRA2B, 5HTTLPR	This patient carries the normal or optimal profile	No Recommendation	No Recommendation

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Burnout Genes involved: COMT, MAO, ADRA2B, 5HTTLPR	This patient carries the normal or optimal profile.	No Recommendation	No Recommendation



HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
ADHD Tendencies Genes involved: COMT, DRD2, MAO, 5HTTLPR	This patient carries the normal or optimal profile	No Recommendation	No Recommendation

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Using Food as a Coping Mechanisms Genes involved: COMT, MAO, 5HTTLPR, ADRA2B	This patient carries the normal or optimal profile.	No Recommendation	No Recommendation

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Recommendations Response Genes involved: COMT, DRD2, ADRA2B, 5HTTLPR	This patient carries the normal or optimal profile.	No Recommendation	No Recommendation


HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Reduced Compliance to Recommended Protocols Genes involved: COMT, DRD2	This patient carries the normal or optimal profile.	No Recommendation	No Recommendation

GENE	GENOTYPE + DESCRIPTION	
COMT Rs4680	AA	Associated with lowest COMT activity and longest dopamine half-life
	AG	Associated with moderate COMT activity and medial dopamine half-life
	GG	Associated with highest COMT activity and shortest dopamine half-life
MAO Rs6323	TT	Associated with lowest MAO activity and longest dopamine half-life
	GT	Associated with moderate MAO activity and medial dopamine half-life
	GG	Associated with highest MAO activity and shortest dopamine half-life

GENE	GENOTYPE + DESCRIPTION	
DRD2 Rs1800497	AA	Associated with lowest expression of post-synaptic DRD2 receptors with lowest dopamine binding, post-synaptic activation and pleasure response
	AG	Associated with moderate expression of post-synaptic neuronal DRD2 receptors with moderate dopamine binding, post-synaptic activation and pleasure response
	 GG	Associated with highest expression of post-synaptic neuronal DRD2 receptors with moderate dopamine binding, post-synaptic activation and pleasure response
ADRA2B INDEL	 II	Associated with normal desensitization of noradrenergic receptors, resulting in reduced/balanced memory of negative emotional events
	ID	Associated with decreased desensitization of noradrenergic receptors, resulting in enhanced memory of negative emotional events (potentially poor responder to SNRIs)
	DD	Associated with decreased desensitization of noradrenergic receptors, resulting in enhanced memory of negative emotional events (potentially poor responder to SNRIs)

GENE	GENOTYPE + DESCRIPTION	
5HTTLPR INDEL	LL	Associated with optimal expression of the serotonin transporter with optimal serotonin secretion and re-uptake
	LS	Associated with decreased expression of the serotonin transporter with dysregulated serotonin secretion and re-uptake (potentially poor responder to SSRIs)
	SS	Associated with decreased expression of the serotonin transporter with dysregulated serotonin secretion and re-uptake (potentially poor responder to SSRIs)
TPH2 rs4570625	TT	Reduced serotonin production and poor inhibition of negative emotional stimuli
	GT	Reduced serotonin production and poor inhibition of negative emotional stimuli
	GG	Normal serotonin production and regular inhibition of negative emotional stimuli*

*Please note: Epistatic studies have demonstrated that a unique risk haplotype results from carrying the G/G version of both the BDNF and TPH2 gene. Individuals with this unique combination may display symptoms of depressive tendencies, experience difficulty in managing negative emotions, and struggle with wider mood swings and disturbed eating and sleeping patterns.

GENE	GENOTYPE + DESCRIPTION	
BDNF Rs6265	AA	Associated with suboptimal production and levels of brain-derived neurotrophic factor
	AG	Associated with suboptimal production and levels of brain-derived neurotrophic factor
	 GG	Associated with optimal production and levels of brain-derived neurotrophic factor*

*Please note: Epistatic studies have demonstrated that a unique risk haplotype results from carrying the G/G version of both the BDNF and TPH2 gene. Individuals with this unique combination may display symptoms of depressive tendencies, experience difficulty in managing negative emotions, and struggle with wider mood swings and disturbed eating and sleeping patterns.

CONFIDENTIAL
CLINICIAN'S OVERVIEW

Immunity

THE **DNA** COMPANY

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Vitamin D Genes involved: CYP2R1, GC, VDR	<p>This patient is more likely to have a risk of Vitamin D deficiency. The issue of suboptimality depends on which genes have suboptimal variations. Poor CYP2R1 function means reduced conversion of Vitamin D from D2 to D3 (activated form). Poor GC/VDBP function means reduced transport of Vitamin D from site of activation to site of function. Poor VDR function means reduced ability of Vitamin D to bind to its receptor and activate its functions in the body.</p>	<p><u>Vitamin D3 & K2</u> (dose is based on serum levels)</p> <ul style="list-style-type: none"> Vitamin D supplementation should be offered during the day, ideally in the morning. Serum D levels should be assessed before instituting therapy and afterwards to assess/monitor progress. For those with suboptimal GC, daily divided dosing is recommended. For patients who do not consume animal products, an algae-based, or culture-based form of Vitamin D3 is suitable. Vitamin K2 is essential for bone health as well as buffers against cardiovascular consequences of excessive vitamin D3. <p><u>Magnesium Bisglycinate</u> (offered concurrently to support vitamin D absorption and utilization)</p>	<p>Get Outside Often – Even if you do not convert Vitamin D effectively due to suboptimal genetics, simply exposing your skin to the sun can activate several important processes in your body that contribute to improved mood and cellular function associated with increased Vitamin D levels.</p> <p><u>Further Lab Testing to Consider:</u></p> <ul style="list-style-type: none"> Vitamin D (serum) Magnesium (serum, urine)

Report: **Immunity**

Patient ID: **VB9AJTF**

Patient: **LindseyParsons**

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Methylation Genes involved: MTHFR, SHMT1, MTR, MTRR, FUT2	This patient is more likely to have a poor inflammatory response. In the case of viral or bacterial infections, you may be more likely to exhibit more severe symptoms. You may be more likely to exhibit "cytokine storms" or another form of a severe immune reaction.	<u>Methylation Optimizer</u> Vitamin B12 (methylated cobalamin if MTR genotype is AA, adenosylcobalamin if otherwise). Your Vitamin B12 dosage should be determined by your need; speak with your practitioner about B12 testing. Vitamin B9 (methylated folate if SHMT1 genotype is GG, non-methylated folate such as folinic acid or folic acid if otherwise). Your Vitamin B9 dosage should be determined by your need; speak with your practitioner about appropriateness. Vitamin B6	Prioritize vitamin B rich foods (mainly B12, B6, B2, and B9) found in sustainable fish, organic eggs, organic spinach, and fortified nutritional yeast. Additional anti-inflammatory and methylation support should be considered if you are plant-based. It is important you consult a health care practitioner for a plan. <u>Further Lab Testing to Consider:</u> <ul style="list-style-type: none">• Vitamin B12 (serum)• Vitamin B9 (serum)• Homocysteine (serum)

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Detoxification Genes involved: GSTT1, GSTM1, GSTP1	<p>This patient is more likely to have suboptimal glutathionization function. Their ability to effectively render toxins harmless and remove them from the body is considered suboptimal.</p> <p>If they have 0 copies of GSTT1 and/or GSTM1: They are more likely to struggle with lack of energy and tiredness, particularly when exposed to chemicals or after periods of sustained exercise or physical activity.</p> <p>If their GSTP1 is AG or GG: They are more likely to struggle with strong smells, chemicals, parfums, and other odorizers and environmental toxins such as cigarette smoke, mold, or pollution.</p>	<p><u>Detox Optimizer</u></p> <p>N-acetyl Cysteine (NAC)</p> <p>Milk Thistle</p> <p>Selenium</p> <p>Manganese</p> <p>Alpha Lipoic Acid (ALA)</p> <p>Vitamin C</p> <p><u>Magnesium Bisglycinate</u></p> <p>Sulforaphane</p> <p>Glutathione (Liposomal) - start with a low dose and slowly work up to therapeutic dose.</p>	<p>Avoid spending excessive time in toxic environments such as designated smoking areas, high pollution areas, moldy environments, and areas with high pesticide use.</p> <p>Focus on getting enough deep, rested sleep at night.</p> <p>Eat organic bitter vegetables to support liver function.</p> <p><u>Further Lab Testing to Consider:</u></p> <ul style="list-style-type: none">• Comprehensive Micronutrients Evaluation (serum, urine)• RBC Glutathione (serum)• Heavy Metals (urine, serum)• Environmental Toxicants (urine)• Mold Toxins (urine)

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Anti-Oxidation Genes involved: SOD2, GPX	<p>This patient is more likely to have suboptimal anti-oxidation function. As a result, you are more susceptible to the harms of oxidative stress.</p> <p>This patient can present in many ways including poor recovery and/or fatigue after physical and mental exertion.</p> <p>This patient may display signs of increased aging such as wrinkles or graying hair.</p>	<p><u>Mitochondrial Optimizer</u></p> <p>Vitamin C</p> <p>Tocotrienols</p> <p>Acetyl L-Carnitine</p> <p>Ubiquinol</p>	<p>Consider incorporation of dark berries in your diet - they are (relatively) low in sugar and an incredible source of antioxidants.</p> <p>Increase intake of fresh vegetables and citrus fruit with vitamin C.</p> <p>Adopt a personal (or household) policy of not eating processed foods.</p>


GENE	GENOTYPE + DESCRIPTION
GSTT1 CNV (# of copies)	<div><div>2</div><div>Associated with increased enzyme function and clearance of substrates with increased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>1</div><div>Associated with average enzyme function and clearance of substrates with average ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>0</div><div>Associated with no enzyme production and poorer clearance of substrates with decreased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div>
GSTM1 CNV (# of copies)	<div><div>2</div><div>Associated with increased enzyme function and clearance of substrates with increased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>1</div><div>Associated with average/ideal enzyme function and clearance of substrates with average ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>0</div><div>Associated with no enzyme production and poorer clearance of substrates with decreased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div>

GENE	GENOTYPE + DESCRIPTION	
GSTP1 rs1695	AA	Associated with optimal enzyme function and optimal clearance of substrates and reactive oxygen species
	AG	Associated with sub-optimal enzyme function and suboptimal clearance of substrates and reactive oxygen species
	GG	Associated with sub-optimal enzyme function and suboptimal clearance of substrates and reactive oxygen species
SLC23A1 Rs33972313	GG	Associated with optimal levels of circulating vitamin C
	AG	Associated with suboptimal levels of circulating vitamin C
	AA	Associated with suboptimal levels of circulating vitamin C

GENE	GENOTYPE + DESCRIPTION	
SOD2 rs4880	CC	Associated with optimal catalytic activity and optimal clearance of free radicals within the mitochondria
	CT	Associated with 30 to 40 percent reduction in catalytic activity, with increased susceptibility to oxidative stress within the mitochondria
	TT	Associated with suboptimal catalytic activity (70 percent reduction) with increased susceptibility to oxidative stress within the mitochondria
GPX rs1050450	CC	Associated with faster conversion of hydrogen peroxide created from oxidant metabolism via SOD2 into water and diatomic oxygen
	CT	Associated with medium conversion of hydrogen peroxide created from oxidant metabolism via SOD2 into water and diatomic oxygen
	TT	Associated with slower conversion of hydrogen peroxide created from oxidant metabolism via SOD2 into water and diatomic oxygen

Report: **Immunity**

Patient ID: **VB9AJTF** Patient: **LindseyParsons**

GENE	GENOTYPE + DESCRIPTION	
CYP2R1 Rs10741657	AA	Associated with optimal activation of vitamin D and optimal levels of circulating vitamin D
	AG	Associated with suboptimal activation of vitamin D and suboptimal levels of circulating vitamin D
		Associated with suboptimal activation of vitamin D and suboptimal levels of circulating vitamin D

GENE	GENOTYPE + DESCRIPTION	
GC/VDBP Rs4588	CC	Associated with optimal transport of vitamin D
	AC	Associated with suboptimal transport of vitamin D
	AA	Associated with suboptimal transport of vitamin D
VDR rs1544410	CC	Associated with optimal vitamin D receptor activation and binding
	CT	Associated with suboptimal vitamin D receptor activation and binding
	TT	Associated with suboptimal vitamin D receptor activation and binding

GENE	GENOTYPE + DESCRIPTION	
MTHFR rs1801133	CC	Associated with optimal enzyme function and 5MTHF production
	CT	Associated with moderate (30 to 35 percent reduction of) enzyme activity with intermediate 5-MTHF production
	TT	Associated with suboptimal (~70 percent reduction of) enzymatic activity with low 5-MTHF production
SHMT1 rs1979277	GG	Associated with optimal bioavailability of cytosolic 5-MTHF and efficient homocysteine to methionine conversion (please note connectivity to MTHFR)
	AG	Associated with reduced bioavailability of cytosolic 5-MTHF and efficient/moderately reduced homocysteine to methionine conversion
	AA	Associated with suboptimal bioavailability of cytosolic 5-MTHF and efficient/moderately reduced homocysteine to methionine conversion with increased risk of cardiovascular disease when paired with MTHFR C/T and T/T (rs1801133)

GENE	GENOTYPE + DESCRIPTION
MTR rs1805087	<div>AA</div> Associated with optimal enzyme activity and conversion of homocysteine to methionine
	AG Associated with moderate enzyme activity with intermediate conversion of homocysteine to methionine
	GG Associated with suboptimal enzyme activity with suboptimal conversion of homocysteine to methionine (potentially resulting in elevated plasma homocysteine and DNA hypomethylation)
MTRR rs1801394	AA Associated with optimal enzyme activity and re-methylation of cobalamin to methylcobalamin (optimal bioavailability of methyl B12)
	<div>AG</div> Associated with reduced enzyme activity and moderate remethylation of cobalamin to methylcobalamin (potentially reduced bioavailability of methyl B12)
	GG Associated with suboptimal enzyme activity and suboptimal/poor re-methylation of cobalamin to methylcobalamin (potentially reduced bioavailability of methyl B12)

GENE	GENOTYPE + DESCRIPTION	
FUT2 rs601338	AA	Associated with optimal enzyme function and plasma cobalamin levels
	AG	Associated with moderate/possibly suboptimal enzyme function and plasma cobalamin levels
	GG	Associated with low/suboptimal enzyme function and plasma cobalamin levels (particularly in the context of a vegetarian diet)

Cardiovascular

Report: **Cardiovascular**

Patient ID: **VB9AJTF**

Patient: **LindseyParsons**

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Vascular Inflammation Genes involved: 9P21	This patient carries an increased risk of vascular inflammation. Vascular inflammation is a contributing factor to several cardiovascular health concerns, including more serious ones when it goes unchecked.	<u>Omega-3</u> (Fish Oil with a total Omega-3 2g daily) <u>Mitochondrial Optimizer</u> Tocotrienols Acetyl L-Carnitine Ubiquinol	Prioritize your sleep. Sleep is demonstrated as vital to cardiovascular health and reduction of negative health outcomes like heart attack and stroke. See your patient's sleep report for more specific recommendations. Extensive and intensive periods of physical activity and/or stress should be managed with increased care and rest. <u>Further Lab Testing to Consider:</u> <ul style="list-style-type: none">• Cholesterol and Lipids Profile(serum)• HemoglobinA1C/HbA1c (serum)• Fasting Glucose (serum)• Fasting Insulin (serum)• Homocysteine• hs-CRP

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
<p>Body Environment</p> <p>Genes involved: GSTT1, GSTM1, GSTP1, MTHFR, SHMT1, MTR, MTRR, FUT2, SOD2, GPX</p>	<p>This patient carries a poor environmental response. They are likely to respond poorly to the presence of toxins in the environment as well as those produced internally by the body. Glutathionization, methylation, and antioxidation all contribute to the metabolization and removal of toxins. Toxins can include oxidants, pollution, smog, mold, cigarette smoke, estrogen metabolites, and byproducts of viral and bacterial infections. When these processes don't work efficiently, toxins can impact an otherwise healthy cardiovascular system by initiating inflammation.</p>	<p><u>Detox Optimizer</u> NAC Milk Thistle Selenium Manganese Alpha Lipoic Acid (ALA) Vitamin C <u>Magnesium Bisglycinate</u> Sulforaphane <u>Methylation Optimizer</u> Vitamin B12 (methylated cobalamin if MTR genotype is AA, adenosylcobalamin if otherwise) - evaluate dosage based on serum B12 levels Vitamin B9 (methylated folate if SHMT1 genotype is GG, non-methylated folate such as folinic acid or folic acid if otherwise) Vitamin B6</p>	<p>Prioritize sleep. Sleep is vital to cardiovascular health and reduction of negative health outcomes like heart attack and stroke. Refer to the patient's sleep report for more specific recommendations.</p> <p>Prioritize foods rich in B vitamins (fish, eggs, spinach, yeasts), anthocyanins (plums, cherries, red cabbage, eggplant), and reduce/avoid fried and sugary foods.</p> <p>Become aware of environmental toxin exposure. In today's world, it is largely impossible to avoid all sources of environmental exposures so do not expect complete elimination. Eliminate sources you have control of and support your detoxification processes to support unavoidable exposures.</p> <p><u>Further Lab Testing to Consider:</u></p> <ul style="list-style-type: none">• Comprehensive Micronutrients Evaluation (serum, urine)• RBC Glutathione (serum)• Heavy Metals (urine, serum)

- Environmental Toxicants (urine)
- Mold Toxins (urine)
- Vitamin B12 (serum)
- Vitamin B9 (serum)
- Homocysteine (serum)

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Patient: **LindseyParsons**

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Hypercholesterolemia Genes involved: APOE	This patient carries an increased predisposition towards higher levels of cholesterol. Even with healthy lifestyle and dietary choices, it's still possible that they may present with higher than normal cholesterol levels.	Fiber (be it increased plants in diet or as a supplement) <u>Omega-3</u> Cold pressed, extra-virgin olive oil	Should there be a concerning elevation of cholesterol levels, a whole foods diet and balancing of omega 3 to omega 6 intake should be part of the dietary plan. Include 2 tbsp of a quality, raw extra-virgin olive oil into diet <u>Further Lab Testing to Consider:</u> <ul style="list-style-type: none">• Cholesterol and Lipids Profile (serum)

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
<p>Hypertension</p> <p>Genes involved: ACE, NOS3</p>	<p>This patient carries the normal or optimal profile. Other than direct factors like ACE or NOS activity, cursory factors like anxiety and insulin resistance can also initiate periods of increased blood pressure readings.</p> <p>Note: for individuals of East or South Asian descent, this is considered the suboptimal profile due to a genetic phenomenon known as epistasis, where genes influence the outcomes of other genes depending on your geographical and anthropological ancestry.</p>	<p>No Recommendation (for non-south or east Asians)</p> <p><u>Magnesium Bisglycinate</u> (for south or east Asians)</p>	<p>Ensure they have physical activity every day. Beyond fitness, think about adding movement throughout the day to get more time outside and increase baseline activity levels.</p> <p>Find a mindfulness or meditation technique they enjoy. Do not over complicate this or expect a long and extensive practice - just 5 minutes a day is shown to benefit people.</p> <p>Identify sodium sources and reduce all packaged, processed, and restaurant foods.</p>



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HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Poor Statin Response Genes involved: SLC01B1	This patient carries the normal or optimal profile	No Recommendation	No Recommendation

GENE	GENOTYPE + DESCRIPTION
GSTT1 CNVs (# of copies)	<div><div>2</div><div>Associated with increased enzyme function and clearance of substrates with increased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>1</div><div>Associated with average enzyme function and clearance of substrates with average ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>0</div><div>Associated with no enzyme production and poorer clearance of substrates with decreased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div>
GSTM1 CNV (# of copies)	<div><div>2</div><div>Associated with increased enzyme function and clearance of substrates with increased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>1</div><div>Associated with average enzyme function and clearance of substrates with average ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>0</div><div>Associated with no enzyme production and poorer clearance of substrates with decreased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div>

GENE	GENOTYPE + DESCRIPTION	
GSTP1 rs1695	AA	Associated with optimal enzyme function and optimal clearance of substrates and reactive oxygen species
	AG	Associated with sub-optimal enzyme function and suboptimal clearance of substrates and reactive oxygen species
	GG	Associated with sub-optimal enzyme function and suboptimal clearance of substrates and reactive oxygen species
SOD2 rs4880	CC	Associated with optimal catalytic activity and optimal clearance of free radicals within the mitochondria
	CT	Associated with 30 to 40 percent reduction in catalytic activity, with increased susceptibility to oxidative stress within the mitochondria
	TT	Associated with suboptimal catalytic activity (70 percent reduction) with increased susceptibility to oxidative stress within the mitochondria

GENE	GENOTYPE + DESCRIPTION	
GPX rs1050450		Associated with faster conversion of hydrogen peroxide created from oxidant metabolism via SOD2 into water and diatomic oxygen
	CT	Associated with medium conversion of hydrogen peroxide created from oxidant metabolism via SOD2 into water and diatomic oxygen
	TT	Associated with slower conversion of hydrogen peroxide created from oxidant metabolism via SOD2 into water and diatomic oxygen
MTHFR rs1801133	CC	Associated with optimal enzyme function and 5-MTHF production
		Associated with moderate (30 to 35 percent reduction of) enzyme activity with intermediate 5-MTHF production
	TT	Associated with suboptimal (~70 percent reduction of) enzymatic activity with low 5-MTHF production

GENE	GENOTYPE + DESCRIPTION
SHMT1 rs1979277	<div><div>GG</div><div>Associated with optimal bioavailability of cytosolic 5-MTHF and efficient homocysteine to methionine conversion (please note connectivity to MTHFR)</div></div>
	<div><div>AG</div><div>Associated with reduced bioavailability of cytosolic 5-MTHF and efficient/moderately reduced homocysteine to methionine conversion</div></div>
	<div><div>AA</div><div>Associated with suboptimal bioavailability of cytosolic 5-MTHF and efficient/moderately reduced homocysteine to methionine conversion with increased risk of cardiovascular disease when paired with MTHFR C/T and T/T (rs1801133)</div></div>
MTR rs1805087	<div><div>AA</div><div>Associated with optimal enzyme activity and conversion of homocysteine to methionine</div></div>
	<div><div>AG</div><div>Associated with moderate enzyme activity with intermediate conversion of homocysteine to methionine</div></div>
	<div><div>GG</div><div>Associated with suboptimal enzyme activity with suboptimal conversion of homocysteine to methionine (potentially resulting in elevated plasma homocysteine and DNA hypomethylation)</div></div>

GENE	GENOTYPE + DESCRIPTION	
MTRR rs1801394	AA	Associated with optimal enzyme activity and re-methylation of cobalamin to methylcobalamin (optimal bioavailability of methyl B12)
	AG	Associated with reduced enzyme activity and moderate remethylation of cobalamin to methylcobalamin (potentially reduced bioavailability of methyl B12)
	GG	Associated with suboptimal enzyme activity and suboptimal/poor re-methylation of cobalamin to methylcobalamin (potentially reduced bioavailability of methyl B12)
FUT2 rs601338	AA	Associated with optimal enzyme function and plasma cobalamin levels
	AG	Associated with moderate/possibly suboptimal enzyme function and plasma cobalamin levels
	GG	Associated with low/suboptimal enzyme function and plasma cobalamin levels (particularly in the context of a vegetarian diet)

GENE	GENOTYPE + DESCRIPTION	
9P21 rs10757278 rs10757274 rs4977574	0-2G	Associated with lowest risk of coronary artery disease and ischemic stroke
	3G	Associated with moderately increased risk of coronary artery disease and ischemic stroke
	4-6G	Associated with increased risk of coronary artery disease and ischemic stroke
1P21 rs599839	AA	Common genotype. Offers no additional protection against cardiovascular disease
	AG	Rare Genotype. Carrying at least one G allele significantly reduces your risk of cardiovascular disease as well as levels of LDL cholesterol
	GG	Rare Genotype. Carrying at least one G allele significantly reduces your risk of cardiovascular disease as well as levels of LDL cholesterol

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GENE	GENOTYPE + DESCRIPTION
PCSK9 rs11591147	<div><div>GG</div><div>Common genotype. Offers no additional protection against cardiovascular disease</div></div>
	<div><div>GT</div><div>Rare genotype. Offers significant protection against cardiovascular disease and is associated with lower triglyceride and LDL cholesterol levels</div></div>
	<div><div>TT</div><div>Rare genotype. Offers significant protection against cardiovascular disease and is associated with lower triglyceride and LDL cholesterol levels</div></div>
ACE** Rs4343	<div><div>AA</div><div>Associated with low acting RAAS system, with low ACE plasma levels and activity</div></div>
	<div><div>AG</div><div>Associated with moderate acting RAAS system, with moderate ACE plasma levels and activity</div></div>
	<div><div>GG</div><div>Associated with highest acting RAAS system, with increased ACE plasma levels and activity</div></div>


****Please note:** Due to a phenomenon known as epistasis, results for the ACE and its associated outcomes differ based on population genetics. The results for east and south east asian individuals are exactly the opposite of those from caucasian or european backgrounds. For example, in an individual of European

descent the G/G version would be considered the suboptimal result, it is actually the optimal version for those of East Asian or South East Asian descent.

GENE	GENOTYPE + DESCRIPTION	
APOE rs7412 rs429358	2/2	Associated with increased risk of Type III hyperlipoproteinemia (HLP)
	3/2	This genotype is associated with optimal lipid metabolism and optimal total and LDL-cholesterol levels
	3/3	This genotype is the most common with no increased risk of coronary artery disease and ischemic stroke
	2/4	This genotype is very rare. However, of the few studies that have evaluated this genotype, it appears that the 2 allele mitigates any risk associated with the 4 allele. Therefore, this genotype is generally considered safe/protective.
	3/4	Associated with moderately increased risk of coronary artery disease and ischemic stroke
	4/4	Associated with increased risk of coronary artery disease and ischemic stroke

GENE	GENOTYPE + DESCRIPTION	
NOS3 rs1799983	GG	Optimal NOS response to vascular/blood flow-shear force with appropriate nitric oxide bioavailability
	GT	Intermediate NOS response vascular/blood flow-shear force with moderate nitric oxide bioavailability
	TT	Reduced NOS response to vascular/blood flow-shear force with decreased nitric oxide bioavailability
SLCO1B1 rs4149056	TT	Normal statin metabolizer
	CT	Decreased statin metabolizer. Increased risk of myopathy
	CC	Significantly decreased statin metabolizer. Significantly increased risk of myopathy

GENE	GENOTYPE + DESCRIPTION	
APOA2 rs5082	AA	No association to weight gain in response to fat consumption
	AG	Reduced association to weight gain in response to fat consumption
	GG	Associated with weight gain and altered ghrelin production in response to saturated fat consumption
TCF7L2 rs12255372	GG	Associated with optimal insulin response and reduced risk of Type II diabetes
	GT	Associated with suboptimal insulin response and increased risk of Type II diabetes
	TT	Associated with suboptimal insulin response and increased risk of Type II diabetes

GENE	GENOTYPE + DESCRIPTION	
AMY1 rs4244372	TT	Good starch metabolism. Reduced association between starch consumption and weight gain
	AT	Moderate starch metabolism. Increased association between starch consumption and weight gain
	 AA	Poor starch metabolism. Increased association between starch consumption and weight gain

Diet and Nutrition

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Dietary Fats Profile Genes involved: APOA2, FTO, TCF7L2	This patient is a candidate for a reduced saturated fats diet.	No Recommendation	Reduce consumption of saturated fats such as fatty cuts of animal meats, butter, ghee, and cheese under the watchful eye of a trained health care provider. No more than 20% of daily intake should be fats. Optimal fat sources: olive oil, avocadoes, nuts, and seeds.

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Fat Metabolism Genes involved: APOA2	This patient's profile does not have an increased association between fat consumption and weight gain.	No Recommendation	No Recommendation

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Carbohydrates Profile Genes involved: AMY1, TCF7L2	This patient is a candidate for a reduced carbohydrates diet.	No Recommendation	Ensure high amounts of fiber. No more than 25% of carb intake from starch sources. No less than 75% of carb intake from fruits, vegetables, and other fiber sources.

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Carb Metabolism Genes involved: AMY1	<p>This patient is likely to have an increased association between starch consumption and weight gain. They are likely to gain weight on a diet with medium to high carb consumption.</p> <p>Diets such as the paleolithic or adjusted versions of the Mediterranean diet that involve lower carbohydrate consumption should be considered.</p>	<p><u>Blood Sugar Optimizer</u></p> <p>Consider a digestive enzyme for special occasions/carb heavy meals.</p>	<p>Teach moderation; you do not need to banish carbs from the diet but instead teach to cherish and enjoy them in moderation.</p> <p>Find smaller plates or bowls you like that can both help visualize and measure proper portions.</p> <p>When selecting carb-rich foods, ensure they are high in fiber and other micronutrients (usually this means selecting a colorful plant food) versus simple carbs (like breads, pastas, pastries, rice).</p>

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Insulin Resistance Genes involved: TCF7L2, APOA2, CLOCK, ACE	This patient carries the normal or optimal profile.	No Recommendation	No Recommendation

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
<p>Gut Microbiome Health</p> <p>Genes involved: GSTT1, GSTM1, GSTP1, FUT2, CYP2R1, GC, VDR</p>	<p>This patient does not carry genomic factors that favor a healthy microbiome. As a result, genetics may be playing a role in their poor gut health and immunity. If they present with gut or immunity health concerns, consider gut and biome-specific testing to identify the root cause. Factors that can influence this health concern include poor diet, stress, and poor anti-inflammatory and detoxification processes.</p>	<p><u>Vitamin D3 & K2</u> <u>Detox Optimizer</u> L-glutamine Collagen (avoid excessive use as it can be serotonin depleting) Zinc carnosine</p>	<p>Clear your pantry and medicine cabinet of any toiletries or foods with preservatives, food colorings, and artificial sweeteners. Reduce any exposure to chemicals and pesticide ranging from non-organic foods, cleaning products and toiletries.</p> <p>Eat an array of fresh foods that have been minimally processed Incorporate intake of fermented and prebiotic foods into your diet. Purchase and taste-test fermented foods you don't regularly buy including kefir, krauts, kombucha, kimchi, mushrooms, potato starch, etc.</p> <p><u>Further Lab Testing to Consider:</u></p> <ul style="list-style-type: none">• Comprehensive Stool Analysis• Comprehensive Micronutrients Evaluation (serum, urine)• RBC Glutathione (serum)• Heavy Metals (urine, serum)• Environmental Toxicants (urine)• Mold Toxins (urine)

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Lactose Tolerance Genes involved: MCM6	This patient carries a reduced tolerance to lactose and is likely to experience bloating, gas, or other digestive upset when eating these dairy sugars (especially following a period of abstinence or eating a large quantity in one sitting). This gene does not offer insight into the other elements of dairy like its proteins casein and whey.	Lactase digestive enzyme (if you do not wholly cut out dairy).	Eliminate or minimize consumptions of all foods containing lactose. Find dairy/lactose-free replacements that work well for them.

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
<p>Gluten Sensitivity</p> <p>Genes involved: HLA GENES</p>	<p>This patient carries variations associated with non-Celiac gluten sensitivity.</p>	<p><u>Vitamin D3 & K2</u> <u>Detox Optimizer</u> L-glutamine Collagen (avoid excessive use as it can be serotonin depleting) Zinc carnosine</p>	<p>Eliminate (if not, minimize) consumption of gluten containing grains and food products. There are many online resources to kick off this journey.</p> <p>The biggest learning task here is to understand where gluten is 'hidden' in food, namely processed or bread-product foods.</p> <p>Learn about alternative ways to prepare your favorite meals that omit gluten.</p> <p><u>Further Lab Testing to Consider:</u></p> <ul style="list-style-type: none">• For Celiac diagnosis - Serum tests, tissue transglutaminase (tTG) IgA antibody, and deamidated gliadin IgG antibody. These tests may also be used for monitoring treatment effectiveness in patients with a confirmed celiac disease diagnosis.• Food Sensitivity/Intolerance (serum)• Glyphosate and Environmental Toxicants (urine)

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Obesity Risk Genes involved: FTO, MC4R, COMT, MAO, 5-HTTLPR, BDNF, TCF7L2, AMY1	<p>This patient carries an increased risk of obesity due to reduced satiety mechanisms, food related coping mechanisms, and/or poor blood sugar regulation.</p> <p>They are more likely to engage in overeating behaviors, particularly in settings where food is amply available.</p>	<u>Blood Sugar Optimizer</u> Alpha-Lipoic Acid (ALA) Chromium Berberine L-Carnitine	<p>Consider 3 meals daily vs. grazing.</p> <p>Be mindful and address any late night eating habits.</p> <p>Optimize sleep.</p> <p>Ensure fiber is present at every meal for optimal blood sugar regulation and increase satiety. Avoid buffets and All-You-Can-Eat restaurants.</p> <p>For fast eaters, practice mindful eating habits and slow down chewing between bites.</p> <p><u>Further Lab Testing to Consider:</u></p> <ul style="list-style-type: none">• Cholesterol and Lipids Profile (serum)• HemoglobinA1C/HbA1c (serum)• Fasting Glucose (serum)• Fasting Insulin (serum)• Omegas Index Profile (serum)• Comprehensive Neurotransmitters Evaluation (salivary, urine)

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Binge Eating Risk Genes involved: COMT, DRD2, MAO	This patient carries the normal or optimal profile	No Recommendation	No Recommendation

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Vitamin A Conversion Genes involved: BCMO1	<p>This patient carries a suboptimal Vitamin A profile.</p> <p>Their ability to convert beta-carotene into retinol is considered suboptimal. If they follow a vegan or plant-based diet, consider a retinol form of vitamin A supplementation.</p>	<p>Work with a health practitioner to determine if vitamin A supplementation is necessary.</p>	<p>Seek out animal based sources of Vitamin A such as eggs and red meat.</p> <p>If vegan or plant-based, provide algae-based or synthetic Vitamin A retinol options.</p> <p><u>Further Lab Testing to Consider:</u></p> <ul style="list-style-type: none">• Vitamin A (serum, urine)• Comprehensive Micronutrients Evaluation (serum, urine)

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Vitamin C Transport Genes involved: SLC23A1	This patient carries the normal or optimal profile.	No Recommendation	No Recommendation

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
<p>Vitamin D Conversion, Transport, and Binding</p> <p>Genes involved: CYP2R1, GC, VDR</p>	<p>This patient is more likely to have a risk of Vitamin D deficiency. The issue of suboptimality depends on which genes have suboptimal variations. Poor CYP2R1 function means reduced conversion of Vitamin D from D2 to D3 (activated form). Poor GC/VDBP function means reduced transport of Vitamin D from site of activation to site of function. Poor VDR function means reduced ability of Vitamin D to bind to its receptor and activate its functions in the body.</p>	<p><u>Vitamin D3 & K2</u> (dose is based on serum levels)</p> <ul style="list-style-type: none"> • Vitamin D supplementation should be offered during the day, ideally in the morning. • Serum D levels should be assessed before instituting therapy and afterwards to assess/monitor progress. • For those with suboptimal GC, daily divided dosing is recommended. • For patients who do not consume animal products, an algae-based, or culture-based form of Vitamin D3 is suitable. • Vitamin K2 is essential for bone health as well as buffers against cardiovascular consequences of excessive vitamin D3. <p><u>Magnesium Bisglycinate</u> (offered concurrently to support vitamin D absorption and utilization)</p>	<p>Get Outside Often – Even if the patient does not convert Vitamin D effectively due to suboptimal genetics, simply exposing their skin to the sun can activate several important processes in the body that contribute to improved mood and cellular function associated with increased Vitamin D levels.</p> <p><u>Further Lab Testing to Consider:</u></p> <ul style="list-style-type: none"> • Vitamin D (serum) • Magnesium (serum, urine)



HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Zinc Transport Genes involved: SLC30A8	<p>This patient does not optimally transport zinc.</p> <p>Zinc is required to complete several important processes in your body, including (but not limited to) gene expression, optimal immune function, sugar management, and healing of wounds.</p>	<p>Zinc</p>	<p>Consume foods that will provide optimal levels of zinc, such as meat, shellfish, seafood, and eggs.</p> <p>If this patient is vegan, consider eating more pumpkin seeds, legumes, nuts, and dark chocolate.</p> <p><u>Further Lab Testing to Consider:</u></p> <ul style="list-style-type: none">• Zinc (serum)• Comprehensive Mineral Evaluation (serum, urine)

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
<p>Pesticides, Mold, and Toxins in Food</p> <p>Genes involved: GSTT1, GSTM1, GSTP1</p>	<p>This patient is more likely to have a negative response to increased presence of pesticides, mold, and other toxins in food. Their ability to effectively render toxins harmless and remove them from the body is considered suboptimal.</p> <p>If they have 0 copies of GSTT1 and/or GSTM1: They are more likely to struggle with fatigue, lack of energy and tiredness, particularly when exposed to chemicals or after periods of sustained exercise or physical activity.</p> <p>If their GSTP1 is AG or GG: They are more likely to struggle with strong smells, chemicals (like preservatives, food colourings, pesticides, herbicides), perfums, and other odorizers.</p>	<p><u>Detox Optimizer</u></p> <p>NAC</p> <p>Milk Thistle</p> <p>Selenium</p> <p>Manganese</p> <p>Alpha Lipoic Acid</p> <p>Vitamin C</p> <p><u>Magnesium Bisglycinate</u></p> <p>Sulforaphane</p> <p>Glutathione (Liposomal) - start with a low dose and slowly work up to therapeutic dose.</p>	<p>Eat an array of fresh foods that have been minimally processed.</p> <p>Eat organic bitter vegetables to support liver function.</p> <p>Reduce any exposure to chemicals and pesticides in non-organic foods.</p> <p>Choose mold and mycotoxin free coffee.</p> <p><u>Further Lab Testing to Consider:</u></p> <ul style="list-style-type: none"> • Comprehensive Micronutrients Evaluation (serum, urine) • RBC Glutathione (serum) • Heavy Metals (urine, serum) • Environmental Toxicants (urine) • Mold Toxins (urine)



HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Dysregulated Hunger Patterns Genes involved: MC4R, COMT, MAO	This patient carries the normal or optimal profile	No Recommendation	No Recommendation

GENE	GENOTYPE + DESCRIPTION
GSTT1 CNV (# of copies)	<div><div>2</div><div>Associated with increased enzyme function and clearance of substrates with increased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>1</div><div>Associated with average enzyme function and clearance of substrates with average ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>0</div><div>Associated with no enzyme production and poorer clearance of substrates with decreased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div>
GSTM1 CNV (# of copies)	<div><div>2</div><div>Associated with increased enzyme function and clearance of substrates with increased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>1</div><div>Associated with average enzyme function and clearance of substrates with average ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>0</div><div>Associated with no enzyme production and poorer clearance of substrates with decreased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div>

GENE	GENOTYPE + DESCRIPTION	
GSTP1 rs1695	AA	Associated with optimal enzyme function and optimal clearance of substrates and reactive oxygen species
	AG	Associated with sub-optimal enzyme function and suboptimal clearance of substrates and reactive oxygen species
	GG	Associated with sub-optimal enzyme function and suboptimal clearance of substrates and reactive oxygen species
APOA2 rs5082	AA	No association to weight gain in response to fat consumption
	AG	Reduced association to weight gain in response to fat consumption
	GG	Associated with weight gain and altered ghrelin production in response to saturated fat consumption

GENE	GENOTYPE + DESCRIPTION
TCF7L2 rs12255372	 Associated with optimal insulin response and reduced risk of Type II diabetes
	GT Associated with suboptimal insulin response and increased risk of Type II diabetes
	TT Associated with suboptimal insulin response and increased risk of Type II diabetes
AMY1 rs4244372	TT Good starch metabolism. Reduced association between starch consumption and weight gain
	AT Moderate starch metabolism. Increased association between starch consumption and weight gain
	 Poor starch metabolism. Increased association between starch consumption and weight gain

GENE	GENOTYPE + DESCRIPTION	
SLC30A8 rs11558471	AA	Associated with increased fasting glucose levels. Significantly associated with reduced fasting glucose levels in response to total zinc intake (a reduction in fasting glucose levels by 0.048 mmol/L (0.86mg/dL) with an average daily total zinc intake of 14mg)
	AG	Associated with increased fasting glucose levels. Significantly associated with reduced fasting glucose levels in response to total zinc intake (a reduction in fasting glucose levels by 0.024 mmol/L (0.43mg/dL) with an average daily total zinc intake of 14mg)
	GG	No independent association with increased fasting glucose levels. No significant association between total zinc intake and reduction in fasting glucose levels
BCMO1 rs11645428	AA	Associated with optimal activation of beta-carotene into retinol
	AG	Associated with moderate activation of beta-carotene into retinol
	GG	Associated with suboptimal activation of beta-carotene into retinol

GENE	GENOTYPE + DESCRIPTION
SLC23A1 rs33972313	 Associated with optimal levels of circulating vitamin C
	AG Associated with suboptimal levels of circulating vitamin C
	AA Associated with suboptimal levels of circulating vitamin C
CYP2R1 Rs10741657	AA Associated with optimal activation of vitamin D and optimal levels of circulating vitamin D
	AG Associated with suboptimal activation of vitamin D and suboptimal levels of circulating vitamin D
	 Associated with suboptimal activation of vitamin D and suboptimal levels of circulating vitamin D

GENE	GENOTYPE + DESCRIPTION	
GC/VDBP Rs4588	CC	Associated with optimal levels of vitamin D
	AC	Associated with suboptimal levels of vitamin D
	AA	Associated with suboptimal levels of vitamin D
VDR rs1544410	CC	Associated with optimal vitamin D receptor activation and binding
	CT	Associated with suboptimal vitamin D receptor activation and binding
	TT	Associated with suboptimal vitamin D receptor activation and binding

GENE	GENOTYPE + DESCRIPTION	
MCM6 rs4988235	AA	Associated with lactase persistence and lactose tolerance
	AG	Associated with reduced lactase persistence and potential lactose intolerance (strongly dependent on post-weaning diet)
	GG	Associated with lactase non-persistence and lactose intolerance
FTO rs9939609	TT	Associated with normal postprandial satiety with reduced risk of obesity in healthy individuals
	AT	Associated with moderate postprandial satiety with moderate risk of obesity
	AA	Associated with low postprandial satiety with increased risk of obesity

GENE	GENOTYPE + DESCRIPTION	
MC4R rs17782313	TT	Associated with normative hunger cues and reduced snacking behaviour
	CT	Associated with dysregulated hunger cues and increased snacking behaviour
	CC	Associated with dysregulated hunger cues and increased snacking behaviour
UCP1 rs1800592	AA	Associated with normal thermoregulatory control and resting metabolic rate with reduced resistance to weight loss
	AG	Associated with suboptimal thermoregulatory control and resting metabolic rate with increased resistance to weight loss
	GG	Associated with suboptimal thermoregulatory control and resting metabolic rate with increased resistance to weight loss

GENE	GENOTYPE + DESCRIPTION
MAO Rs6323	<div><div>TT</div>Associated with lowest MAO activity and longest dopamine half-life</div>
	<div><div>GT</div>Associated with moderate MAO activity and medial dopamine half-life</div>
	<div><div>GG</div>Associated with highest MAO activity and shortest dopamine half-life</div>

Sleep

Report: **Sleep**

Patient ID: **VB9AJTF**

Patient: **LindseyParsons**

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Circadian Rhythms Genes involved: BDNF, CLOCK, CYP2R1, GC, VDR	This patient is at an increased risk of disruptions to circadian rhythms. Factors such as sensitivity to blue light from digital screens, frequent time-zone travel, or reduced exposure to sunlight are more likely to disrupt their sleep patterns	<u>Vitamin D3 & K2</u> <u>BDNF Optimizer</u> <u>Sleep Optimizer</u> (caution with patients taking SSRIs, SNRIs, etc.) Whole Coffee Fruit Extract Melatonin 5-HTP (caution with patients taking SSRIs, SNRIs, etc.)	Encourage consistent sleep onset and waking times. Discontinue use of all screens 1-2 hours before bed. Maximize safe exposure to sunlight. For those with lighter coloured eyes, be mindful of your eyes and wear sunglasses during longer periods of exposure. <u>Further Lab Testing to Consider:</u> <ul style="list-style-type: none">• Vitamin D (serum)• Magnesium (serum, urine)• Adrenal Cortisol Rhythm (salivary or urine)• Melatonin (urine)

Report: **Sleep**

Patient ID: **VB9AJTF** Patient: **LindseyParsons**

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Stress Response Genes involved: COMT, DRD2, 5HTTLPR, TPH2, ADRA2B, BDNF	This patient carries the normal or optimal profile	No Recommendation	No Recommendation

Report: **Sleep**

Patient ID: **VB9AJTF** Patient: **LindseyParsons**

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Pleasure Response Genes involved: COMT, MAO, DRD2	This patient carries the normal or optimal profile	No Recommendation	No Recommendation

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Food Response Genes involved: FTO, MC4R, COMT, DRD2, MAO	This patient is at an increased risk of disrupted sleep patterns due to a heightened food response. They are more likely to engage in irregular snacking behaviors, particularly in the evening. This may disrupt their ability to fall asleep or stay asleep.	<u>Blood Sugar Optimizer</u> Alpha Lipoic Acid (ALA) Chromium Berberine	Ensure your last meal of the day has lots of fiber and plant fats to reduce your risk of late night snacking. Stop eating 2-3 hours before bed. When snacking, prepare snack foods that offer a combination of beneficial nutrients. Have a warm cup of tea instead of food as a "snack" before bed.

Report: **Sleep**

Patient ID: **VB9AJTF**

Patient: **LindseyParsons**

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Environmental Response Genes involved: GSTT1, GSTM1, GSTP1, SOD2, GPX	This patient is at an increased risk of chronic poor sleep due to a suboptimal environmental response. External toxins like mold, pollution, smoking, and other environmental agents are more likely to linger in this patient. Similarly, internal toxins like oxidants are more likely to cause cellular oxidative stress. These factors can contribute to increased symptomatology related to fatigue, tiredness and lack of energy.	<u>Detox Optimizer</u> NAC Milk Thistle Selenium Manganese Alpha Lipoic Acid Vitamin C <u>Magnesium Bisglycinate</u> Sulforaphane <u>Mitochondrial Optimizer</u> Glutathione (Liposomal) - start with a low dose and slowly work up to therapeutic dose.	Use an air filter in the bedroom. Vacuum and clean dust regularly in the home. Minimize the use of chemicals at home by purchasing green or environmentally friendly household cleaning products. <u>Further Lab Testing to Consider:</u> <ul style="list-style-type: none">• Comprehensive Micronutrients Evaluation (serum, urine)• RBC Glutathione (serum)• Heavy Metals (urine, serum)• Environmental Toxicants (urine)• Mold Toxins (urine)

Report: **Sleep**

Patient ID: **VB9AJTF** Patient: **LindseyParsons**

GENE	GENOTYPE + DESCRIPTION
GSTT1 CNV (# of copies)	<div><div>2</div><div>Associated with increased enzyme function and clearance of substrates with increased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>1</div><div>Associated with average enzyme function and clearance of substrates with average ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>0</div><div>Associated with no enzyme production and poorer clearance of substrates with decreased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div>
GSTM1 CNV (# of copies)	<div><div>2</div><div>Associated with increased enzyme function and clearance of substrates with increased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>1</div><div>Associated with average enzyme function and clearance of substrates with average ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>0</div><div>Associated with no enzyme production and poorer clearance of substrates with decreased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div>



Report: **Sleep**

Patient ID: **VB9AJTF** Patient: **LindseyParsons**

GENE	GENOTYPE + DESCRIPTION	
GSTP1 rs1695	AA	Associated with optimal enzyme function and optimal clearance of substrates and reactive oxygen species
	AG	Associated with sub-optimal enzyme function and suboptimal clearance of substrates and reactive oxygen species
	GG	Associated with sub-optimal enzyme function and suboptimal clearance of substrates and reactive oxygen species
SOD2 rs4880	CC	Associated with optimal catalytic activity and optimal clearance of free radicals within the mitochondria
	CT	Associated with 30 to 40 percent reduction in catalytic activity, with increased susceptibility to oxidative stress within the mitochondria
	TT	Associated with suboptimal catalytic activity (70 percent reduction) with increased susceptibility to oxidative stress within the mitochondria

Report: **Sleep**

Patient ID: **VB9AJTF** Patient: **LindseyParsons**

GENE	GENOTYPE + DESCRIPTION	
GPX rs1050450		Associated with faster conversion of hydrogen peroxide created from oxidant metabolism via SOD2 into water and diatomic oxygen
	CT	Associated with medium conversion of hydrogen peroxide created from oxidant metabolism via SOD2 into water and diatomic oxygen
	TT	Associated with slower conversion of hydrogen peroxide created from oxidant metabolism via SOD2 into water and diatomic oxygen
CYP2R1 Rs10741657	AA	Associated with optimal activation of vitamin D and optimal levels of circulating vitamin D
	AG	Associated with suboptimal activation of vitamin D and suboptimal levels of circulating vitamin D
		Associated with suboptimal activation of vitamin D and suboptimal levels of circulating vitamin D



Report: **Sleep**

Patient ID: **VB9AJTF** Patient: **LindseyParsons**

GENE	GENOTYPE + DESCRIPTION	
GC/VDBP Rs4588	CC	Associated with optimal levels of vitamin D
	AC	Associated with suboptimal levels of vitamin D
	AA	Associated with suboptimal levels of vitamin D
VDR rs1544410	CC	Associated with optimal vitamin D receptor activation and binding
	CT	Associated with suboptimal vitamin D receptor activation and binding
	TT	Associated with suboptimal vitamin D receptor activation and binding

Report: **Sleep**

Patient ID: **VB9AJTF** Patient: **LindseyParsons**

GENE	GENOTYPE + DESCRIPTION	
BDNF rs6265	AA	Associated with suboptimal production and levels of brain-derived neurotrophic factor
	AG	Associated with suboptimal production and levels of brain-derived neurotrophic factor
	 GG	Associated with optimal production and levels of brain-derived neurotrophic factor*
CLOCK rs1801260	TT	Associated with normal sleep and waking patterns
	 CT	Associated with delayed or reduced sleep and waking patterns
	CC	Associated with delayed or reduced sleep and waking patterns



Report: **Sleep**

Patient ID: **VB9AJTF** Patient: **LindseyParsons**

GENE	GENOTYPE + DESCRIPTION	
COMT Rs4680	AA	Associated with lowest COMT activity and longest dopamine half-life
	AG	Associated with moderate COMT activity and medial dopamine half-life
	GG	Associated with highest COMT activity and shortest dopamine half-life
MAO Rs6323	TT	Associated with lowest MAO activity and longest dopamine half-life
	GT	Associated with moderate MAO activity and medial dopamine half-life
	GG	Associated with highest MAO activity and shortest dopamine half-life

Report: **Sleep**

Patient ID: **VB9AJTF** Patient: **LindseyParsons**

GENE	GENOTYPE + DESCRIPTION	
DRD2 Rs1800497	AA	Associated with lowest expression of post-synaptic DRD2 receptors with lowest dopamine binding, post-synaptic activation and pleasure response
	AG	Associated with moderate expression of post-synaptic neuronal DRD2 receptors with moderate dopamine binding, post-synaptic activation and pleasure response
	 GG	Associated with highest expression of post-synaptic neuronal DRD2 receptors with moderate dopamine binding, post-synaptic activation and pleasure response
ADRA2B INDEL	 II	Associated with normal desensitization of noradrenergic receptors, resulting in reduced/balanced memory of negative emotional events
	ID	Associated with decreased desensitization of noradrenergic receptors, resulting in enhanced memory of negative emotional events (potentially poor responder to SNRIs)
	DD	Associated with decreased desensitization of noradrenergic receptors, resulting in enhanced memory of negative emotional events (potentially poor responder to SNRIs)

Report: **Sleep**

Patient ID: **VB9AJTF** Patient: **LindseyParsons**

GENE	GENOTYPE + DESCRIPTION	
5HTTLPR INDEL	LL	Associated with optimal expression of the serotonin transporter with optimal serotonin secretion and re-uptake
	LS	Associated with decreased expression of the serotonin transporter with dysregulated serotonin secretion and re-uptake (potentially poor responder to SSRIs)
	SS	Associated with decreased expression of the serotonin transporter with dysregulated serotonin secretion and re-uptake (potentially poor responder to SSRIs)
FTO rs9939609	TT	Associated with normal postprandial satiety with reduced risk of obesity in healthy individuals
	AT	Associated with moderate postprandial satiety with moderate risk of obesity
	AA	Associated with low postprandial satiety with increased risk of obesity

Report: **Sleep**

Patient ID: **VB9AJTF** Patient: **LindseyParsons**

GENE	GENOTYPE + DESCRIPTION	
MC4R rs17782313	TT	Associated with normative hunger cues and reduced snacking behavior
	CT	Associated with dysregulated hunger cues and increased snacking behavior
	CC	Associated with dysregulated hunger cues and increased snacking behavior

Hormones, Fitness, and Body Type

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Hormone Profile Genes involved: CYP17A1, SRD5A2, CYP19A1, AR, UGT2B17, UGT2B15, CYP3A4	<p>This patient is more likely to display a balanced hormone profile.</p> <p>Depending on lifestyle, diet, or environmental factors, you may lean towards either androgen or estrogen balance, or show a combination of both.</p> <p>If they are more androgenized, they are likely to carry a leaner or more muscular body type.</p> <p>Females tend to have smaller breasts and narrower hips.</p> <p>If they are more estrogenized, they are likely to store more fat, particularly around the midsection. You will struggle to maintain a muscular or lean physique. Females tend to have larger breasts and wider hips.</p>	Assess for symptoms and treat as indicated - be it an estrogen or androgen imbalance.	Refer to the patient's Diet & Nutrition report to optimize their diet.

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Workout Profile Genes involved: 9P21, NOS3	<p>This patient is associated with a workout profile that favors weight-bearing exercises over cardiovascular exercises.</p> <p>They carry potential concerns for increased inflammation and oxidative stress associated with significantly intense or elongated periods of cardiovascular exercise.</p> <p>They should be monitored more closely while performing workouts, particularly those that involve an increased amount of cardiovascular exercise.</p>	<p><u>Detox Optimizer</u> <u>Omega-3</u></p> <p>For NOS GT or TT genotypes:</p> <ul style="list-style-type: none">• Beet root powder• L-arginine• L-citrulline• L-Carnitine	<p>Males should aim to perform weightlifting exercises between the hours of 6-8am and 5-7pm to make use of naturally increased testosterone levels at these times for improved muscle building and maintenance.</p> <p>Females should perform their heaviest lifting exercises and regimens during the follicular phase (Day 5-10) of their menstrual cycle. In the second half of your cycle, consider more restorative and gentle exercises.</p>

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Rest and Recovery Profile Genes involved: GSTT1, GSTP1, GSTM1, SOD2, GPX	<p>This patient is more likely to require increased periods of rest and recovery following strenuous physical activity.</p> <p>Their ability to detoxify themselves of toxins such as oxidant or pollutants is decreased.</p> <p>As a result they are more susceptible to side effects such as lack of energy, tiredness, fatigue, increased lactic acid build up, and poorer recovery following periods of exercise.</p> <p>They should ideally increase the number of rest days between workouts as well as appropriate amounts of sleep to ensure they provide enough recovery time for the body prior to the next workout period.</p>	<p><u>Detox Optimizer</u></p> <p><u>Mitochondrial Optimizer</u></p> <p>N-Acetyl Cysteine</p> <p>Selenium</p> <p>Milk thistle</p> <p>BCAA (branched chain amino acids)</p> <p>Tocotrienols</p> <p>Coenzyme Q10</p> <p>Alpha Lipoic Acid (ALA)</p> <p>Acetyl L-Carnitine</p> <p>L-Carnitine</p>	<p>Ensure the patient is taking sufficient rest days in between workouts.</p> <p>Ensure their sleep is of optimal duration and quality for recovery.</p>

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Cystic Acne Genes involved: CYP17A1, SRD5A2, CYP19A1, AR, UGT2B17, UGT2B15, CYP3A4	This patient carries a normal cystic acne profile. Any occurrence of cystic acne is likely attributed to dietary, lifestyle, or environmental factors.	No recommendations	Refer to your Diet & Nutrition report to optimize your diet.

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Cellulite Genes involved: CYP17A1, SRD5A2, CYP19A1, AR, UGT2B17, UGT2B15, CYP3A4	If female, this patient carries a normal cellulite profile. Any occurrence of cellulite is more likely to be attributed to dietary, lifestyle, or environmental factors.	No recommendations	Refer to your Diet & Nutrition report to optimize your diet.

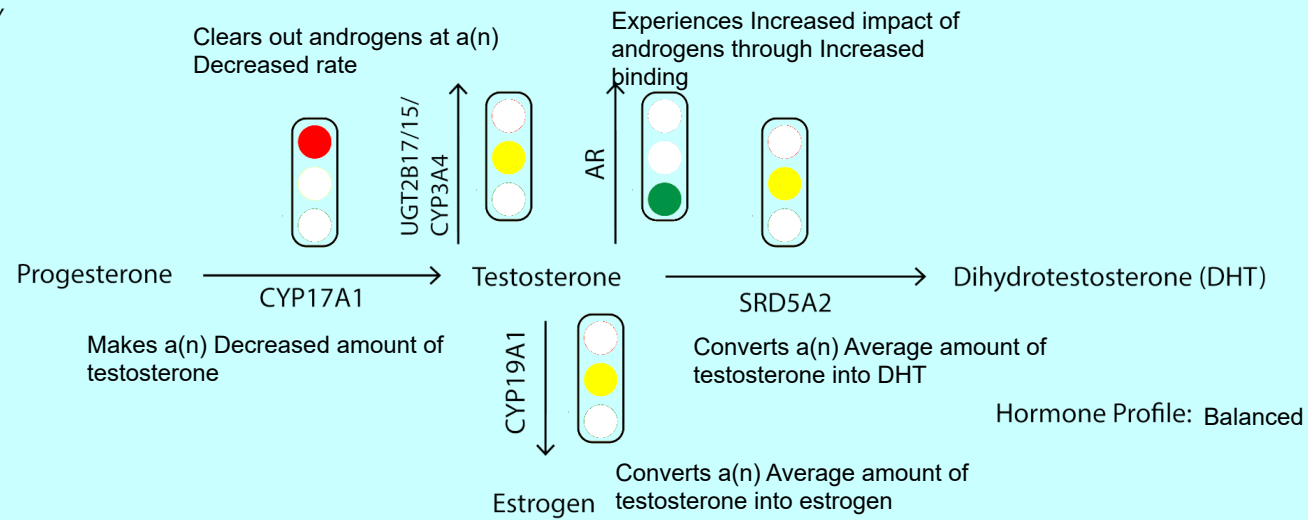
HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
Balding/Hair Thinning Genes involved: CYP17A1, SRD5A2, CYP19A1, AR, UGT2B17, UGT2B15, CYP3A4	This patient carries a normal hair thinning/balding profile. Any occurrence of thinning or balding is more likely to be attributed to dietary, lifestyle, or environmental factors.	No recommendations	Refer to your Diet & Nutrition report to optimize your diet.

HEALTH CONCERN	RESULT + SUMMARY	SUPPLEMENT RECOMMENDATIONS	DIET, LIFESTYLE, AND ENVIRONMENT RECOMMENDATIONS
<p>Estrogen Toxicity</p> <p>Genes involved: CYP1B1, CYP1A1, CYP3A4</p>	<p>This patient is at an increased risk of estrogen toxicity. They are more likely to be predisposed to health concerns such as endometriosis, PMS, heavy bleeding, infertility, PCOS, and severe menopausal symptoms</p>	<p><u>Female Hormone E or Male Hormone E</u> <u>Detox Optimizer</u> DIM I3C Sulforaphane Curcumin</p>	<p>Approach hormone therapy (oral contraceptive pills, progesterone-IUD, HRT, BHRT, etc) with caution as they may exaggerate symptoms.</p> <p>Vegetables like broccoli, kale, cauliflower, and Brussels sprouts are chalked full of estrogen modulating compounds like Diindolylmethane (DIM), Indole-3-Carbinol (I3C), and Sulforaphane. They sadly can also be chalked full of hormone disruptors like herbicides and pesticides. To support better estrogen balance in your body, consume organic cruciferous vegetables. To make compounds like sulforaphane more bioavailable, ideally the vegetable is consumed raw (or lightly steamed) and eaten with mustard or a sprinkle of mustard seed powder.</p> <p>Eliminate the use of plastics - bottles, containers, plastic wrap, candles, and perfume.</p> <p>Refine the products in your skincare toolkit and opt for green and chemical free products.</p> <p><u>Further Lab Testing to Consider:</u></p>

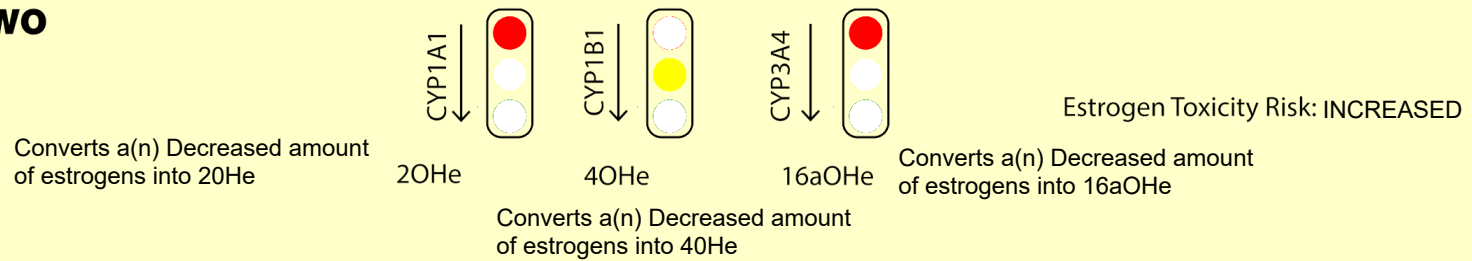
- Hormones (serum, salivary, urine) - Progesterone, Estrogen (Estradiol, Estrone), Testosterone (total, free), DHT, SHBG
- Hormone Metabolites (2-OHE, 4-OHE, 16-OHE)

SEX HORMONE PATHWAY

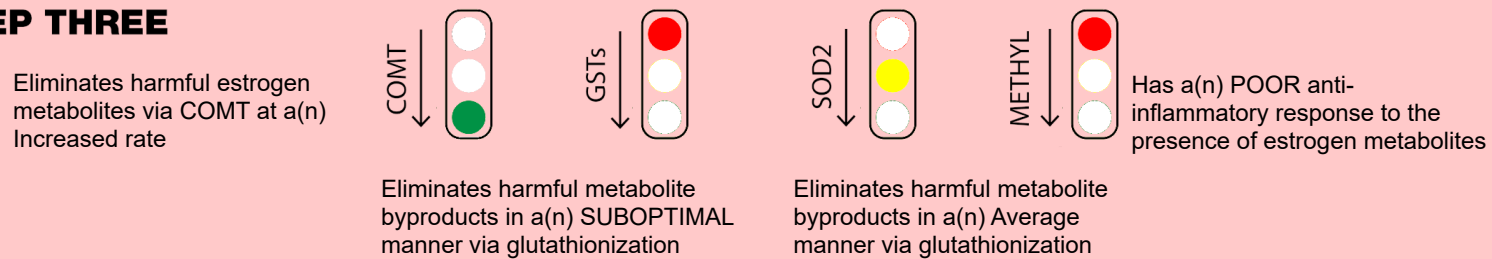
STEP ONE



STEP TWO







STEP THREE



GENE	GENOTYPE + DESCRIPTION
GSTT1 CNV (# of copies)	<div><div>2</div><div>Associated with increased enzyme function and clearance of substrates with increased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>1</div><div>Associated with average enzyme function and clearance of substrates with average ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>0</div><div>Associated with no enzyme production and poorer clearance of substrates with decreased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div>
GSTM1 CNV (# of copies)	<div><div>2</div><div>Associated with increased enzyme function and clearance of substrates with increased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>1</div><div>Associated with average enzyme function and clearance of substrates with average ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div> <div><div>0</div><div>Associated with no enzyme production and poorer clearance of substrates with decreased ability to detoxify environmental xenobiotics, pharmaceuticals and ROS</div></div>

GENE	GENOTYPE + DESCRIPTION	
GSTP1 rs1695	AA	Associated with optimal enzyme function and optimal clearance of substrates and reactive oxygen species
	AG	Associated with sub-optimal enzyme function and suboptimal clearance of substrates and reactive oxygen species
	GG	Associated with sub-optimal enzyme function and suboptimal clearance of substrates and reactive oxygen species
SOD2 rs4880	CC	Associated with optimal catalytic activity and optimal clearance of free radicals within the mitochondria
	CT	Associated with 30 to 40 percent reduction in catalytic activity, with increased susceptibility to oxidative stress within the mitochondria
	TT	Associated with suboptimal catalytic activity (70 percent reduction) with increased susceptibility to oxidative stress within the mitochondria



GENE	GENOTYPE + DESCRIPTION	
GPX rs1050450		Associated with faster conversion of hydrogen peroxide created from oxidant metabolism via SOD2 into water and diatomic oxygen
	CT	Associated with medium conversion of hydrogen peroxide created from oxidant metabolism via SOD2 into water and diatomic oxygen
	TT	Associated with slower conversion of hydrogen peroxide created from oxidant metabolism via SOD2 into water and diatomic oxygen
9P21 rs10757278 rs10757274 rs4977574	0-1G	Associated with lowest risk of coronary artery disease and ischemic stroke
	2-3G	Associated with moderately increased risk of coronary artery disease and ischemic stroke
		Associated with increased risk of coronary artery disease and ischemic stroke

GENE	GENOTYPE + DESCRIPTION	
NOS3 rs1799983	GG	Optimal NOS response to vascular/blood flow-shear force with appropriate nitric oxide bioavailability
	GT	Intermediate NOS response vascular/blood flow-shear force with moderate nitric oxide bioavailability
	 TT	Reduced NOS response to vascular/blood flow-shear force with decreased nitric oxide bioavailability
CYP17A1 rs743572	 AA	Associated with low CYP17A1 expression and a balanced hormone profile. No association to increased risk of hormone-related health concerns
	AG	Associated with increased CYP17A1 expression and hormone dominance. Potentially associated with an increased risk of hormone-related health concerns.
	GG	Associated with increased CYP17A1 expression and hormone dominance. Potentially associated with an increased risk of hormone-related health concerns.

GENE	GENOTYPE + DESCRIPTION	
SRD5A2 rs523349	CC	Associated with reduced enzyme activity and reduced conversion of testosterone to DHT, minimizing risk associated with high DHT levels
	CG	Associated with moderate enzyme activity and moderate conversion of testosterone to DHT, with potential risk associated with high DHT levels
	GG	Associated with moderate enzyme activity and moderate conversion of testosterone to DHT, with potential risk associated with high DHT levels
UGT2B17 CNV	2	Associated with increased enzyme activity and decreased concentrations of circulating testosterone and estradiol levels. Associated with low BMD and increased risk for osteoporosis
	1	Associated with moderate enzyme activity and moderate concentrations of circulating testosterone and estradiol levels
	0	Associated with absent enzyme activity and increased concentrations of circulating testosterone and estradiol levels

GENE	GENOTYPE + DESCRIPTION	
UGT2B15 rs1902023	TT	Associated with increased glucuronidation of androgens and androgen metabolites, including DHT
	GT	Associated with moderate glucuronidation of androgens and androgen metabolites, including DHT
	GG	Associated with reduced glucuronidation of androgens and androgen metabolites, including DHT
CYP3A4 rs2740574	AA	Associated with decreased enzyme activity, decreased production of 16 α -OH-estrogen metabolites, and decreased catabolism of testosterone.
	AG	Associated with increased enzyme activity, increased production of 16 α -OH-estrogen metabolites, and increased catabolism of testosterone.
	GG	Associated with increased enzyme activity, increased production of 16 α -OH-estrogen metabolites, and increased catabolism of testosterone.

GENE	GENOTYPE + DESCRIPTION	
CYP19A1 rs10046	CC	Associated with reduced CYP19A1 expression and enzyme activity with reduced levels of estrogens and estrogen to androgen ratios, especially in postmenopausal women
	CT	Associated with moderate CYP19A1 expression and enzyme activity with moderately reduced levels of estrogens and estrogen to androgen ratios, especially in postmenopausal women
	TT	Associated with increased CYP19A1 expression and enzyme activity with increased levels of estrogens and estrogen to androgen ratios, especially in postmenopausal women
AR rs6152	TT	Associated with reduced binding of androgens to the androgen receptor and reduced androgenization
	CT	Associated with optimal binding of androgens to the androgen receptor and increased androgenization
	CC	Associated with optimal binding of androgens to the androgen receptor and increased androgenization

GENE	GENOTYPE + DESCRIPTION	
CYP1A1 Rs1048943		Associated with decreased enzyme activity and decreased production of 2-OH-estrogen metabolites. Also associated with low enzyme inducibility upon exposure to toxins with reduced risk of toxic intermediate and ROS accumulation
	AG	Associated with increased enzyme activity and increased production of 2-OH-estrogen metabolites. However, also associated with increased enzyme inducibility upon exposure to toxins with increased risk of toxic intermediate and ROS accumulation
	GG	Associated with increased enzyme activity and increased production of 2-OH-estrogen metabolites. However, also associated with increased enzyme inducibility upon exposure to toxins with increased risk of toxic intermediate and ROS accumulation
CYP1B1 Rs1056836	CC	Associated with decreased enzyme activity, decreased production of 4-OH-estrogen metabolites, and potentially decreased DNA damaging events (with inducing environmental factors).
		Associated with increased enzyme activity, increased production of 4-OH-estrogen metabolites, and potentially increased DNA damaging events (with inducing environmental factors).
	GG	Associated with increased enzyme activity, increased production of 4-OH-estrogen metabolites, and potentially increased DNA damaging events (with inducing environmental factors).

