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Gene Comprehensive Nutrigenomic Report

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Male

Do not make any decisions about your health solely based on the information contained in this report. Always consult with a licensed and experienced health practitioner when you receive this report.

GX Sciences | 844-258-5564 | www.GXSciences.com
Lab | 4150 Freidrich Lane, Ste H | Austin, TX 78744
Laboratory Director: James W. Jacobson, Ph.D

– 34 – Male

(-/-) No clinical abnormality | (+/-) Heterozygous result | (+/+) Homozygous result

rsID	Gene	Genetic Result	Therapeutics Associated With Positive Result	Highly Recommended Therapeutics / Neurobiologix Formulas	Provider Discretion: As Needed Formula Recommendations	Lifestyle Recommendations	Laboratory Recommendations
Neurological / Psych							
Neurotransmitters							
rs4680	COMT V158M	+/+	Taurine, Choline, Trimethylglycine (TMG), Dimethylglycine (DMG), Methionine, SAMe, Inositol	**Full Focus+™**			Consider Neurotransmitter Metabolite Testing and PGx Testing
rs4633	COMT H62H	+/+					
rs769407	GAD1	+/-	Prescription Amantadine, Ketamine, Glycine, N-Acetyl-Cysteine (NAC), Beta Phenyl GABA, Zinc, Magnesium, Oxaloacetate, Elderberry, L-Theanine, Melatonin	**Pro GAD Enhancer™, Prescription Amantadine**	Pro GAD Enhancer™, Melatonin, Calming Cream™, Prescription Amantadine, Ketamine	Be cautious with MSG (monosodium glutamate) and glutamine supplementation	Consider Neurotransmitter Testing and PGx Testing
rs3828275	GAD1	+/-					
rs6323	MAO-A	+/NA	B2 (Riboflavin), Methyl Donors (Taurine, Choline, Trimethylglycine (TMG), Dimethylglycine (DMG), Inositol, Methionine				
rs1799836	MAO-B	-/NA					
rs6313	HTR2	+/-	5-HTP (Hydroxytryptophan)				
rs1042173	SLC6A4	-/-					

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Neurological / Psych							
Neuro-Inflammation							
rs10402876	C3	+/-	Anti-Inflammatory Therapy: Curcumin, Omega 3s, Resveratrol, Quercetin, Low Dose Naltrexone (LDN), CBD Oil	**CBD Oil, PEA Soothe Support™ , Prescription Low Dose Naltrexone (LDN)**		Consider Low Inflammatory Diet	Consider Pregnenolone, Cortisol, Progesterone, Testosterone, T cell profile, Sed Rate, ANA, C Reactive Protein, Routine Thyroid Panel, Candida Titer, EBV Titer, Food Allergy Panel, Environmental Allergy Testing
rs2569191	CD14	+/-					
rs1143634	IL1B	-/-					
rs1800795	IL6	+/+					
rs2069812	IL5	+/-					
rs1800925	IL13	-/-					
rs10181656	STAT4	+/+					
rs1800629	TNF	-/-					
rs361525	TNF	-/-					
rs231775	CTLA4	+/-					
rs1076560	DRD2	-/-	Increased Efficacy of Naltrexone				

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Neurological / Psych							
Autophagy Efficacy							
rs10210302	ATG16L1	+/-	Curcumin, Lithium Orotate, D-Chiro-Inositol, Catechins, Resveratrol, Caffeine, 12 Hour Fasting	**N.A.S. Enhancer™ (NRF2|Autophagy|SOD Support), Metabolic Stimulator™**		Calorie Restriction, 12-15 Hour Fasting	Routine Blood Sugar, Insulin and Hb A1c
rs26538	ATG12	+/+					
rs510432	ATG5	+/-					
rs1007008	SMURF1	-/-					
rs104893875	PARK1 (alpha synuclein)	-/-	Curcumin, Lithium Orotate, D-Chiro-Inositol, Catechins, Resveratrol, Caffeine, 12-15 Hour Fasting		N.A.S. Enhancer™ (NRF2|Autophagy|SOD Support), Metabolic Stimulator™, mTOR Inhibitors	Increased Risk of Parkinson's, Calorie Restriction, 12-15 Hour Fasting	
rs3798963	PARK2 (Parkin)	+/-					
rs45478900	PARK6 (PINK1)	-/-					
rs429358	APOE	-/-	Calorie Restriction, Routine 12-15 Hour Fasting, Increased Risk of Memory Disorders				
rs7412	APOE	-/-					
Detoxification							
rs1021737	CTH	-/-	N-Acetyl Cysteine (NAC), Glutathione				
rs819147	AHCY	-/-					
rs7483	GSTM3	+/-	Glutathione		Glutathione IV, Glutathione Suppositories, Glutathione Ultra™, Glutathione Plus Topical™	Consider IV Glutathione Treatment and Pre-Anesthesia Glutathione Treatment; Herbicide and Pesticide Avoidance	

Summary for Neurological / Psych

Highly Recommended Therapeutics / Neurobiologix Formulas

- **Full Focus+™**
- **Pro GAD Enhancer™, Prescription Amantadine**
- **CBD Oil, PEA Soothe Support™, Prescription Low Dose Naltrexone (LDN)**
- **N.A.S. Enhancer™ (NRF2|Autophagy|SOD Support), Metabolic Stimulator™**

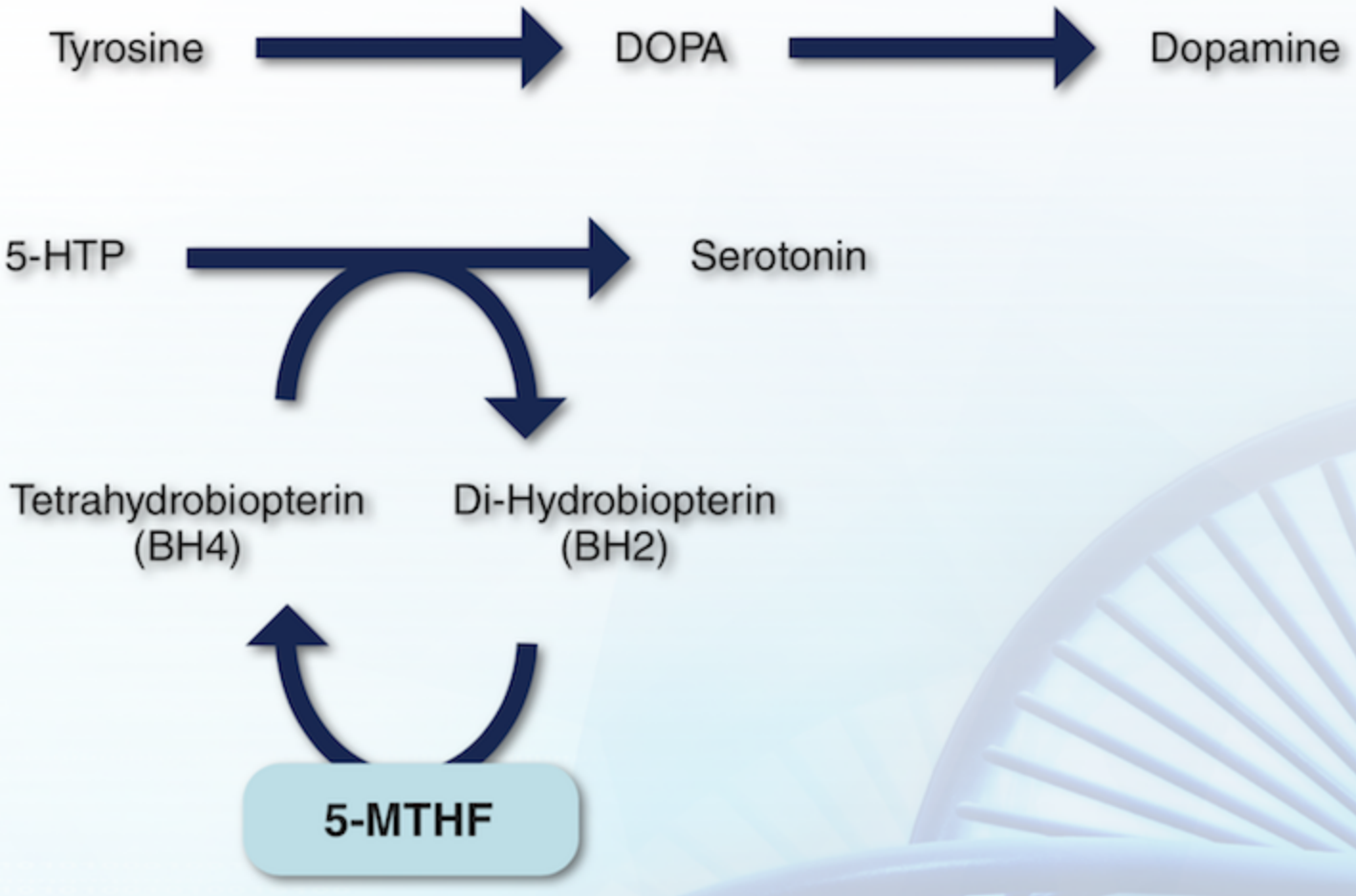
Lifestyle Recommendations

- Be cautious with MSG (monosodium glutamate) and glutamine supplementation
- Consider Low Inflammatory Diet
- Calorie Restriction, 12-15 Hour Fasting
- Increased Risk of Parkinson's, Calorie Restriction, 12-15 Hour Fasting
- Consider IV Glutathione Treatment and Pre-Anesthesia Glutathione Treatment; Herbicide and Pesticide Avoidance

Laboratory Recommendations

- Consider Neurotransmitter Metabolite Testing and PGx Testing
- Consider Neurotransmitter Testing and PGx Testing
- Consider Pregnenolone, Cortisol, Progesterone, Testosterone, T cell profile, Sed Rate, ANA, C Reactive Protein, Routine Thyroid Panel, Candida Titer, EBV Titer, Food Allergy Panel, Environmental Allergy Testing
- Routine Blood Sugar, Insulin and Hb A1c

5-MTHF & Neurotransmitter Production



Gene Information Key

rsID	Gene	"-" variant	"+" variant
rs819147	AHCY	T	C
rs7412	APOE	C	T
rs429358	APOE	T	C
rs26538	ATG12	T	C
rs10210302	ATG16L1	C	T
rs510432	ATG5	C	T
rs10402876	C3	G	C
rs2569191	CD14	T	C
rs4633	COMT H62H	C	T
rs4680	COMT V158M	G	A
rs1021737	CTH	G	T
rs231775	CTLA4	A	G
rs1076560	DRD2	C	A
rs3828275	GAD1	C	T
rs769407	GAD1	G	C
rs7483	GSTM3	C	T
rs6313	HTR2	G	A

rsID	Gene	"-" variant	"+" variant
rs1800925	IL13	C	T
rs1143634	IL1B	G	A
rs2069812	IL5	A	G
rs1800795	IL6	G	C
rs6323	MAO-A	T	G
rs1799836	MAO-B	T	C
rs104893875	PARK1 (alpha synuclein)	C	T
rs3798963	PARK2 (Parkin)	A	T
rs45478900	PARK6 (PINK1)	G	A
rs1042173	SLC6A4	A	C
rs1007008	SMURF1	C	T
rs10181656	STAT4	C	G
rs361525	TNF	G	A
rs1800629	TNF	G	A

Definitions

DETOXIFICATION	Detoxification enzymes are responsible for clearing environmental chemicals and metabolites from our body. Accumulation of these chemicals and by-products can damage intracellular biochemical functions. Alterations in these systems can have a significant negative effect on the nervous system and immune systems functions. These polymorphisms can result in decreased "quality of life" and even decreased "life-span".
AHCY	Adenosylhomocysteinase (AHCY) is an enzyme that breaks down S-adenosylhomocysteine (SAH) to homocysteine and adenosine. Polymorphisms in this gene will lead to lower levels of homocysteine and glutathione.
CTH	Glutathione production is dependent on the function of the enzyme cystathionine gamma-lyase (CTH). CTH converts cystathionine to cysteine. Individuals with mutations in the CTH gene are predicted to have decreased glutathione-mediated detoxification.
GSTM3	Glutathione S-transferase mu 3 is an enzyme that detoxifies drugs, environmental toxins, and carcinogens by conjugating toxins to glutathione and subsequent excretion by the kidneys. Mutations in GSTM3 are associated with decreased clearance of toxins, anesthetics and drugs from the nervous system.
DEVELOPMENTAL	
APOE: 130	Individuals homozygous for the C/C allele at rs429358 may harbor the APOE E4 allele. Consult with a provider to determine APOE risk allele status.
APOE: Arg176Cys	Individuals homozygous for T/T at rs7412 are assumed to have the E2 allele of the gene APOE. APOE encodes a protein involved in cholesterol and lipid transport and metabolism
ATG12	Autophagy-related 12 protein is part of the core autophagy machinery inside the cell. Autophagy, a form of cellular "recycling" is necessary for many cell functions. ATG12 is specifically involved in turning off the innate immune response. Mutations in the ATG12 gene are predicted to lead to increased activity of the innate immune response, and overall inflammation.
PARK1	PARK1, also known as alpha synuclein, is a highly expressed protein in neurons. Mutations in the PARK1 gene are associated with increased risk of neurodegenerative disorders such as parkinsonism.
PARK2	PARK2 is a protein involved in normal turnover of damaged or old proteins inside the cell. Mutations in the PARK2 gene are associated with heritable Parkinson's disease.
PARK6	The PARK6 protein, also known as PINK1, is a mitochondrial protein kinase. Mutations in PARK6 are associated with autosomal recessive Parkinson's disease.
SMURF-1	The SMURF1 protein is a negative regulator of pathways involved in cell polarity, growth, and differentiation. Normal function of the SMURF1 protein is required for normal development and innate immune function. Polymorphisms in this gene can significantly affect autophagy performance of the cell.
INFLAMMATORY	This enzyme category has significant effects on the inflammatory state of a person's body. Polymorphisms in these specific enzymes will significantly increase the levels of inflammation in the body. By supplementing these enzyme deficiencies, the patient will effectively reduce inflammatory damage to the body.
ATG16L1	The ATG16L1 gene encodes a protein that is a vital component of a protein complex necessary for the cellular phenomena known as autophagy. Autophagy is the process of degrading and cleaning of inert debris of the cell. Weakness in autophagy leads to abnormal accumulation of cellular “garbage” that will eventually affect the cellular function and lead to autophagy related disease states in including many neurological and immunological diseases, DM Type 2 and fatty liver disease.
ATG5	Autophagy-related 5 protein (ATG5) is an important intracellular mediator of the autophagy response. ATG5 is involved in a wide range of "quality control" features inside the cell: autophagy vesicle formation, innate immune system signaling, consumption of damaged mitochondria, and apoptosis. Mutations in the ATG5 gene are associated with numerous neurological, immunological and endocrine syndromes.
C3	Essential for the immune response, C3 is a protein involved in initiation of the complement system. C3 polymorphisms are associated with susceptibility to asthma and other inflammatory disorders.
CD14	The CD14 protein is a macrophage cell surface receptor that binds bacterial cell wall components. As one of the initiators of the innate immune response, fully functional CD14 is necessary for normal response to potential pathogens. Mutations in the CD14 gene are associated with susceptibility to asthma and other allergen-mediated inflammatory processes.
CTLA4	Cytotoxic T-lymphocyte Associated protein 4 (CTLA4) is an important inhibitor of T-cell activity: CTLA4 is part of the signaling cascade that turns off overactive T cells. Mutations in the gene that encodes CTLA4 are associated with a host of diseases characterized by a heightened immune state.
DRD2	Dopamine receptor D2 is an important component of the neuroinflammation process. Activation of DRD2 signaling is thought to decrease TNFalpha release from inflammatory mast cells. Polymorphisms associated with decreased DRD2 signaling activity are predicted to lead to pro-inflammatory phenotypes.
IL13	IL13 (Interleukin 13) is a member of the interleukin family of chemical messengers of the immune system. Polymorphisms in this gene are associated with changes in IL13 gene expression and increase the risk of more severe inflammatory responses to allergens.

IL5	The protein product of the Interleukin 5 gene (IL5) is important for normal development of B lymphocytes and eosinophils (a pro-inflammatory white blood cell). Inactivating mutations in the IL5 gene are associated with susceptibility to certain viral infections and increased aggression of inflammatory response. These polymorphisms are also associated with increased aggression of allergies, asthma and eosinophilia.
IL6	Interleukin 6, IL6, is an important pro-inflammatory cytokine. Polymorphisms in this gene leads to a more aggressive inflammatory response. Patients with IL-6 mutations require assistance with inflammatory control.
STAT4	The Signal Transducer and Activator of Transcription 4 (STAT4) gene encodes a transcription factor that responds to extracellular growth factors and cytokines. Mutations in the STAT4 gene are associated with inflammatory disorders like lupus and rheumatoid arthritis.
TNF	Tumor necrosis factor, TNF, is an important pro-inflammatory signaling molecule. Polymorphisms in the protein coding part of this gene are associated with more severe pro-inflammatory responses and require supplementation for inflammatory control.
NEUROTRANSMITTER	Neurotransmitters are chemicals that are used to produce specific effects in the nervous system. These specific neurotransmitter genomics assess a person's risk for anxiety, depression and dysphoria.
COMT H62H	Catechol-O-methyltransferase (COMT) is one of several enzymes that degrade catecholamine neurotransmitters such as dopamine, epinephrine, and norepinephrine. COMT's main function is to inactivate neurotransmitters (dopamine, epinephrine, and norepinephrine) by the addition of a methyl group to the catecholamine. Normal COMT function allows people to rapidly reverse feelings of anxiety or depression. COMT (+/-) patients have sluggish ability to alter anxiety or depression episodes. COMT (+/+) patients are more prone to prolonged episodes of anxiety, depression and OCD.
COMT V158M	Catechol-O-methyltransferase (COMT) is one of several enzymes that degrade catecholamine neurotransmitters such as dopamine, epinephrine, and norepinephrine. COMT's main function is to inactivate neurotransmitters (dopamine, epinephrine, and norepinephrine) by the addition of a methyl group to the catecholamine. Normal COMT function allows people to rapidly reverse feelings of anxiety or depression. COMT (+/-) patients have sluggish ability to alter anxiety or depression episodes. COMT (+/+) patients are more prone to prolonged episodes of anxiety, depression and OCD.
GAD1	Glutamic Acid Decarboxylase (GAD 1) is the enzyme responsible for conversion of glutamic acid (a stimulant neurotransmitter) to GABA (a calming neurotransmitter). Deficiency of GABA from polymorphisms in this enzyme are associated with sleep disorders, "half glass empty" syndrome, dysphoria, and spasticity.
HTR2	5-hydroxytryptamine receptor 2 (HTR2) is one of the neuronal receptors for the neurotransmitter serotonin. Mutations in the HTR2 gene are associated with individual response to antidepressants, appetite, and mood.
IL1B	Interleukin 1B is the pro-inflammatory cytokine responsible for inducing cyclooxygenase-2 (COX2) expression in the central nervous system. COX2 enzymatic function leads to prostanoid signaling that increases pain sensation associated with inflammation. Mutations in the IL1B gene are associated with many chronic inflammation disorders.
MAO-A	Monoamine oxidase A (MAOA) is one of the classic neurotransmitter degradation enzymes. By degrading serotonin, dopamine, epinephrine, and norepinephrine, MAO-A ends neuronal signaling induced by those neurotransmitters. Mutations in the MAO-A gene leads to decreased degradation of these neurotransmitters and can be associated with increased aggression, mood disorders and drug addiction.
MAO B	Monoamine Oxidase B (MAO B) catalyzes the neuroactive amines, such as dopamine, epinephrine, norepinephrine, and plays a role in the stability of mood in the central nervous system,. MAO B's primary purpose is to degrade dopamine. Patients who possess polymorphisms of MAO B have a higher risk of clinical depression and mood disorders.
SLC6A4	The SLC6A4 gene encodes the serotonin transporter, also known as SERT. The serotonin transporter is responsible for clearing the serotonin neurotransmitter from the synaptic space. SERT is the target of many therapeutic drugs. Polymorphisms in the SLC6A4 gene are associated with increased risk of anxiety and depression and less effective response to SSRI medications.

Disclaimers

METHODOLOGY AND LIMITATIONS:

Testing for genetic variation/mutation on listed genes was performed using ProFlex PCR and Real-Time PCR with TaqMan® allele-specific probes on the QuantStudio 12K Flex. All genetic testing is performed by GX Sciences, 4150 Freidrich Lane, Ste H, Austin, TX. 78744. This test will not detect all the known alleles that result in altered or inactive tested genes. This test does not account for all individual variations in the individual tested. Test results do not rule out the possibility that this individual could be a carrier of other mutations/variations not detected by this gene mutation/variation panel. Rare mutations surrounding these alleles may also affect our detection of genetic variations. Thus, the interpretation is given as a probability. Therefore, this genetic information shall be interpreted in conjunction with other clinical findings and familial history for the administration of specific nutrients. Patients should receive appropriate genetic counseling to explain the implications of these test results. Details of assay performance and algorithms leading to clinical recommendations are available upon request. The analytical and performance characteristics of this laboratory developed test (LDT) were determined by GX Sciences' laboratory pursuant to Clinical Laboratory Improvement Amendments (CLIA) requirements.
CLIA #: 45D2144988

DISCLAIMER:

This test was developed and its performance characteristics determined by GX Sciences. It has not been cleared or approved by the FDA. The laboratory is regulated under CLIA and qualified to perform high-complexity testing. This test is used for clinical purposes. It should not be regarded as investigational or for research. rsIDs for the alleles being tested were obtained from the dbSNP database (Build 142).

DISCLAIMER:

UND Result: If you have received the result Variant undetermined (UND) this indicates that we were not able to determine your carrier status based on your raw data. Please refer to the GX Sciences genetic knowledge database for more information: https://www.gxsciences.com/kb_results.asp

DISCLAIMER:

Report contents and report recommendations are created and approved by GX Sciences. Sole responsibility for the proper use of the information on the GX Sciences report rests with the user, or those professionals with whom the user may consult. Nutrigenomic Testing and Neurobiologix Dietary Supplements are not "Designated Health Services" covered by Medicare or Medicaid and may not be reimbursed under any state or Federal health care program.

DISCLAIMER:

These products are not approved by the Food and Drug Administration and are not intended to diagnose, treat, cure or prevent a disease. These recommendations are for report purposes only and an individual is not required to use such products. These are recommendations only and do not replace the advisement of your own healthcare practitioner.

GX Sciences SNP References

DETOXIFICATION SNP References

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