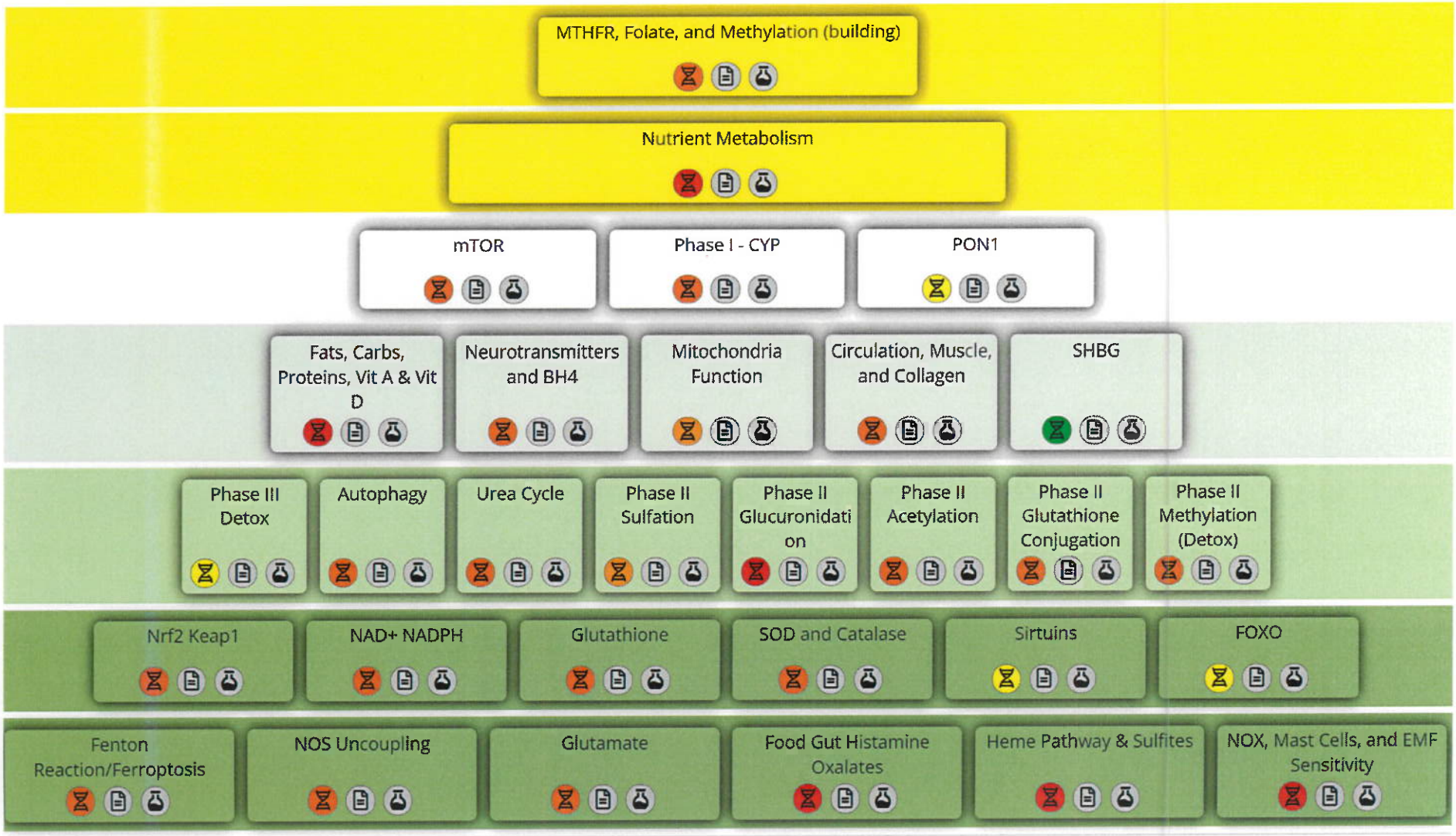
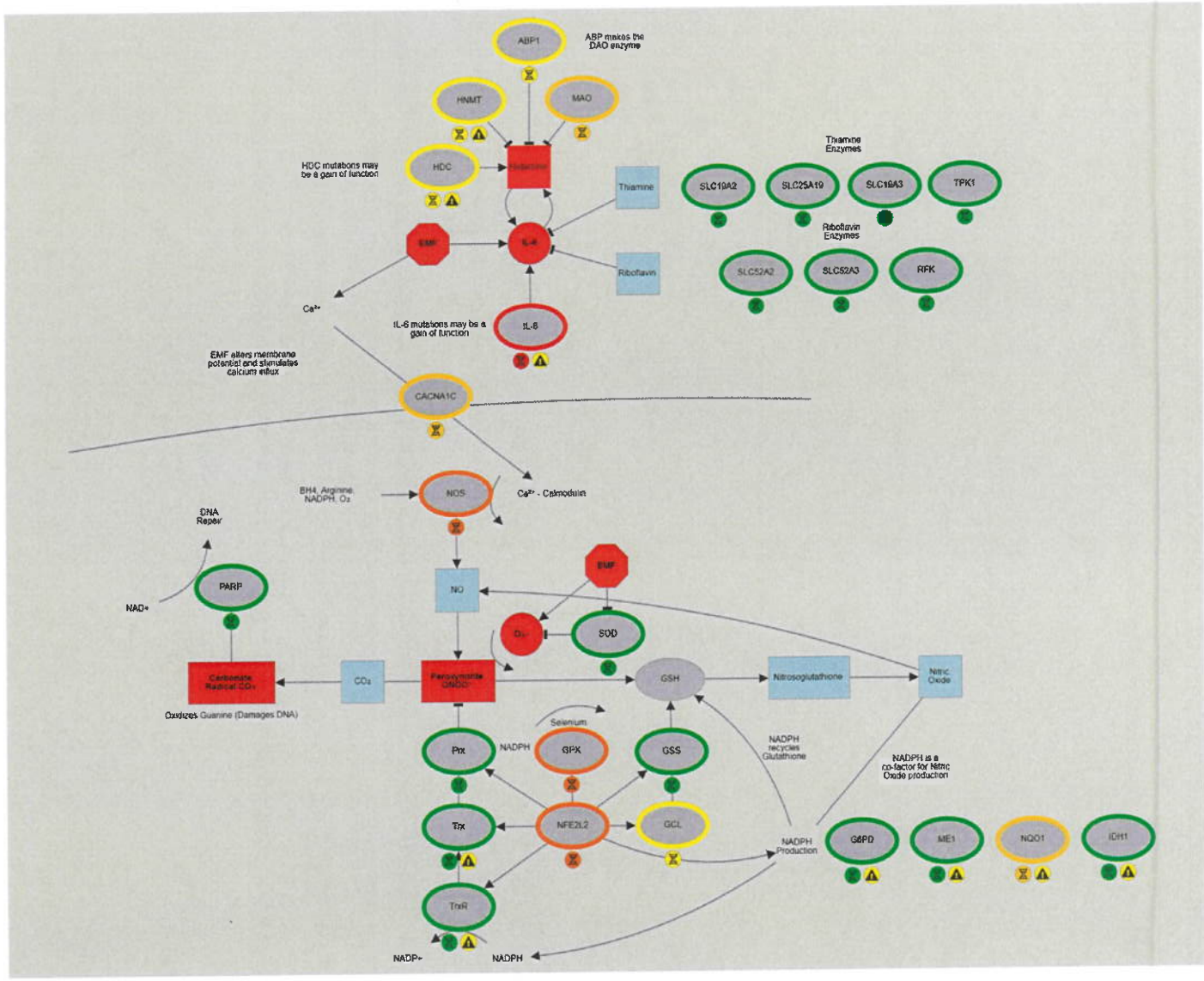
遺伝子検査　レポート

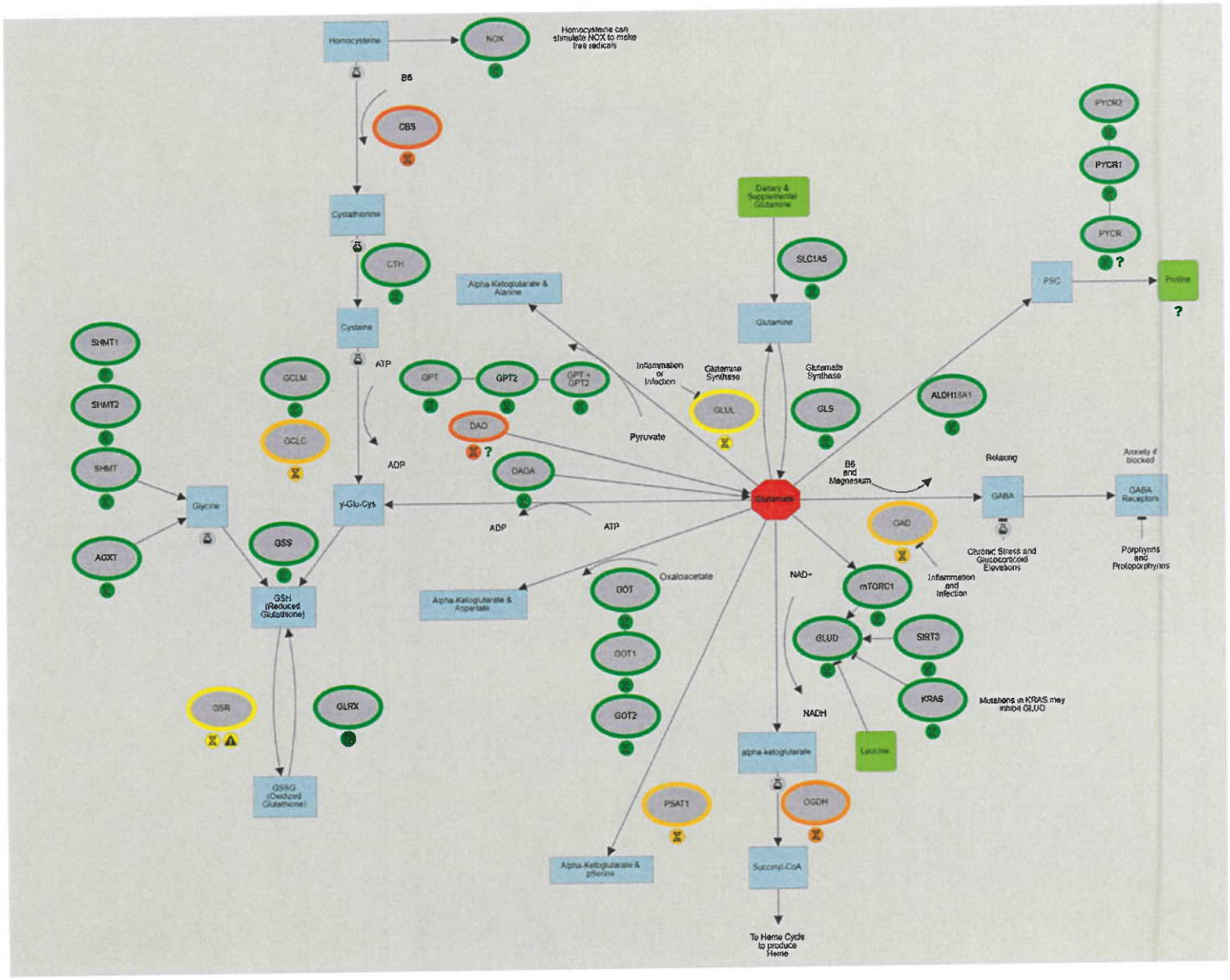
No.32148　　寺下　誠　　様

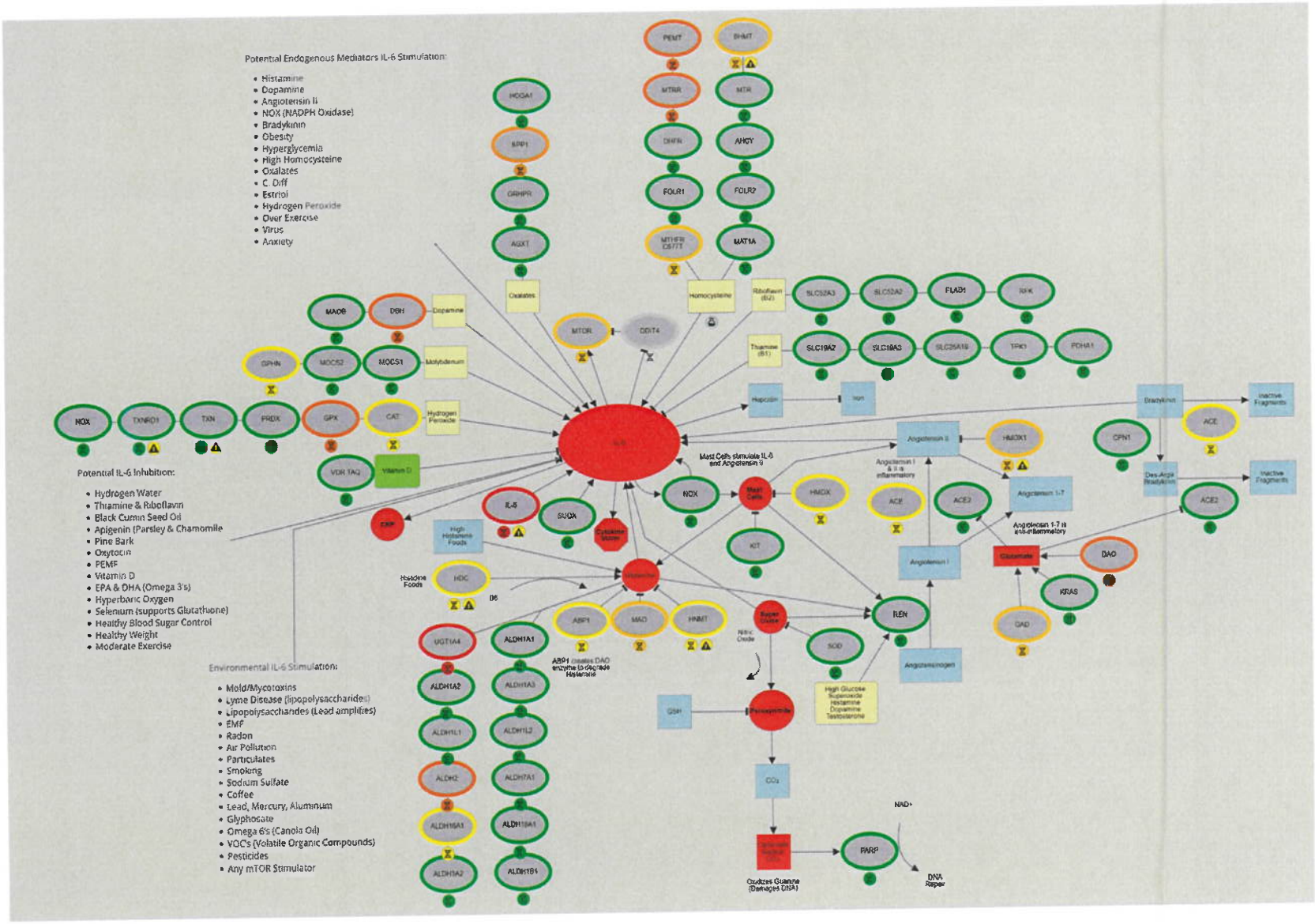
〒212-0013
神奈川県川崎市幸区堀川町580
ソリッドスクエア東館1F
医療法人社団あえん会
スクエアクリニック

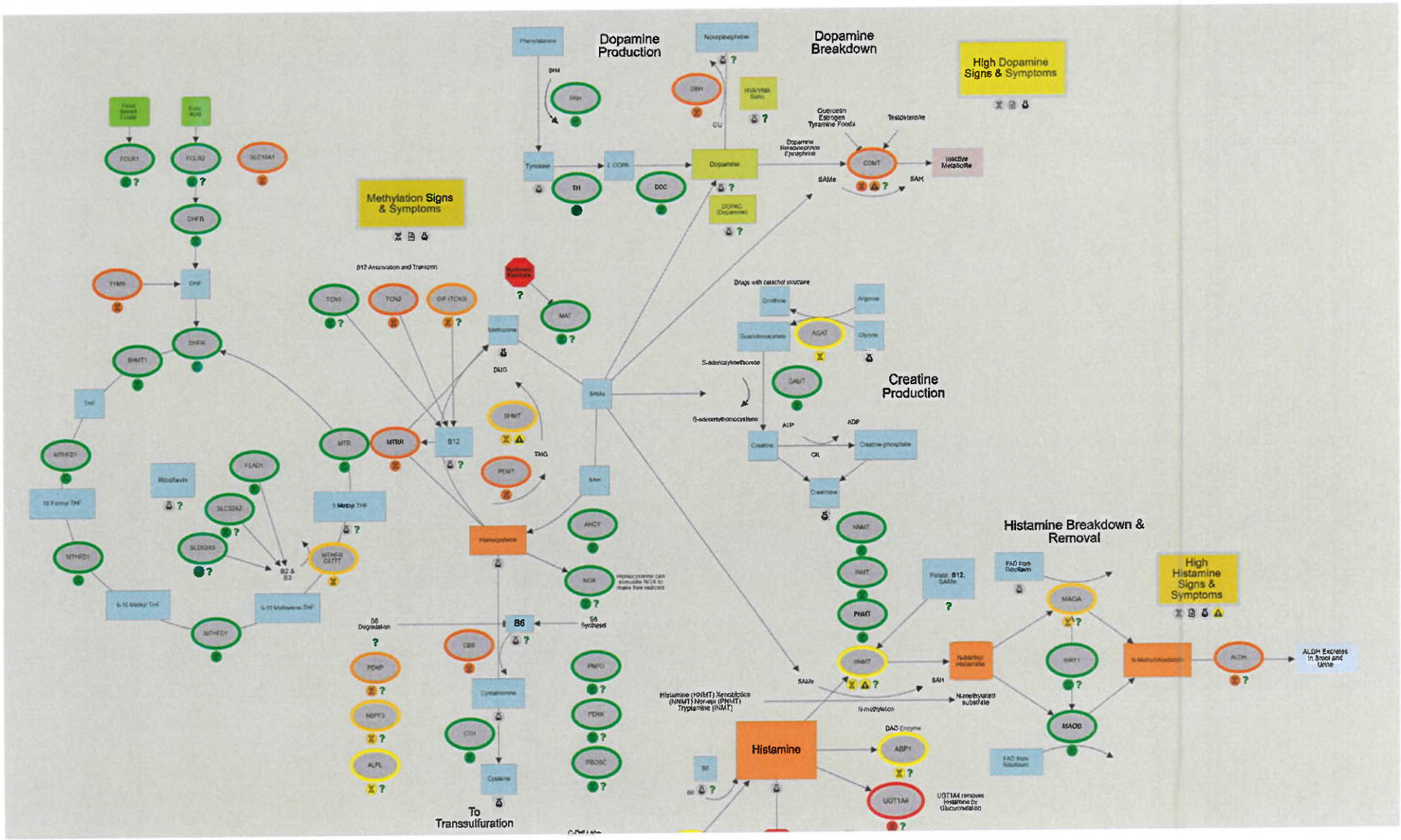
Functional Genomic Analysis Report　Makoto Terashita様




ABP1
ABP makes the DAO enzyme
HNMT
MAO
HDC mutations may be a gain of function
HDC
Histamine
Thiamine
Thiamine Enzymes
SLC19A2
SLC25A19
SLC19A3
TPK1
EMF
IL-6
Riboflavin
Riboflavin Enzymes
SLC52A2
SLC52A3
RFK
Ca2+
IL-6 mutations may be a gain of function
IL-6
EMF alters membrane potential and stimulates calcium efflux
CACNA1C
BH4, Arginine, NADPH, O2
NOS
Ca2+ - Calmodulin
DNA Repair
PARP
NAD+
EMF
NO
O2-
SOD
Carbonate Radical CO3-
CO2
Peroxynitrite ONOO-
GSH
Nitrosoglutathione
Nitric Oxide
Oxidizes Guanine (Damages DNA)
Selenium
Prx
NADPH
GPX
GSS
NADPH recycles Glutathione
NADPH is a co-factor for Nitric Oxide production
Trx
NFE2L2
GCL
NADPH Production
G6PD
ME1
NQO1
IDH1
TrxR
NADP+
NADPH


Homocysteine
NOX
Homocysteine can stimulate NOX to make free radicals
B6
CBS
Cystathionine
CTH
Cysteine
ATP
ADP
SHMT1
SHMT2
SHMT
Glycine
AGXT
GCLM
GCLC
γ-Glu-Cys
GSS
GSH (Reduced Glutathione)
GSR
GLRX
GSSG (Oxidized Glutathione)
Alpha-Ketoglutarate & Alanine
GPT
GPT2
GPT + GPT2
DAO
?
DAOA
Pyruvate
Inflammation or Infection
Glutamine Synthase
GLUL
Glutamate Synthase
GLS
Dietary & Supplemental Glutamine
SLC1A5
Glutamine
Glutamate
ADP
ATP
B6 and Magnesium
Alpha-Ketoglutarate & Aspartate
GOT
Oxaloacetate
GOT1
GOT2
PSAT1
Alpha-Ketoglutarate & pSerine
NAD+
NADH
mTORC1
GLUD
SIRT3
KRAS
Mutations in KRAS may inhibit GLUD
alpha-ketoglutarate
Leucine
OGDH
Succinyl-CoA
To Heme Cycle to produce Heme
GAD
Inflammation and Infection
Chronic Stress and Glucocorticoid Elevations
GABA
Relaxing
GABA Receptors
Anxiety if blocked
Porphyrins and Protoporphyrins
ALDH18A1
PSC
Proline
?
PYCR2
PYCR1
PYCR
?


Potential Endogenous Mediators IL-6 Stimulation:
• Histamine
• Dopamine
• Angiotensin II
• NOX (NADPH Oxidase)
• Bradykinin
• Obesity
• Hyperglycemia
• High Homocysteine
• Oxalates
• C. Diff
• Estriol
• Hydrogen Peroxide
• Over Exercise
• Virus
• Anxiety
Potential IL-6 Inhibition:
• Hydrogen Water
• Thiamine & Riboflavin
• Black Cumin Seed Oil
• Apigenin (Parsley & Chamomile
• Pine Bark
• Oxytocin
• PEMF
• Vitamin D
• EPA & DHA (Omega 3's)
• Hyperbaric Oxygen
• Selenium (supports Glutathione)
• Healthy Blood Sugar Control
• Healthy Weight
• Moderate Exercise
Environmental IL-6 Stimulation:
• Mold/Mycotoxins
• Lyme Disease (lipopolysaccharides)
• Lipopolysaccharides (Lead amplifies)
• EMF
• Radon
• Air Pollution
• Particulates
• Smoking
• Sodium Sulfate
• Coffee
• Lead, Mercury, Aluminum
• Glyphosate
• Omega 6's (Canola Oil)
• VOC's (Volatile Organic Compounds)
• Pesticides
• Any mTOR Stimulator
PEMT
BHMT
MTRR
MTR
DHFR
AHCY
FOLR1
FOLR2
MTHFR C677T
MAT1A
HOGA1
KHK1
GRHPR
AGXT
Oxalates
Homocysteine
MTOR
DDIT4
Riboflavin (B2)
SLC52A3
SLC52A2
FLAD1
RFK
Thiamine (B1)
SLC19A2
SLC19A3
SLC25A19
TPK1
PDHA1
Hepcidin
Iron
MAOB
DBH
Dopamine
GPHN
MOCS2
MOCS1
Molybdenum
NOX
TXNRD1
TXN
PRDX
GPX
CAT
Hydrogen Peroxide
VDR TAQ
Vitamin D
IL-6
Mast Cells stimulate IL-6 and Angiotensin II
IL-6
SUQX
Cytokine Storm
NOX
Mast Cells
HMOX
KIT
High Histamine Foods
Histidine Foods
HDC
B6
Histidine
ABP1
MAO
HNMT
Angiotensin II
HMOX1
Angiotensin I & II is inflammatory
ACE
ACE2
Angiotensin 1-7
Angiotensin 1-7 is anti-inflammatory
Angiotensin I
REN
Angiotensinogen
Bradykinin
Inactive Fragments
CPN1
ACE
Des-Arg Bradykinin
Inactive Fragments
ACE2
Glutamate
DAO
KRAS
DAD
UGT1A4
ALDH1A1
ALDH1A2
ALDH1A3
ALDH1L1
ALDH1L2
ALDH2
ALDH7A1
ALDH16A1
ALDH18A1
ALDH3A2
ALDH1B1
ABP1 causes DAO enzyme to degrade Histamine
Super Oxide
Nitric Oxide
SOD
High Glucose Superoxide Histamine Dopamine Testosterone
GSH
Peroxynitrite
CO2
Oxidizes Guanine (Damages DNA)
PARP
NAD+
DNA Repair


Dopamine Production
Dopamine Breakdown
High Dopamine Signs & Symptoms
Methylation Signs & Symptoms
Creatine Production
Histamine Breakdown & Removal
High Histamine Signs & Symptoms
Histamine
To Transsulfuration

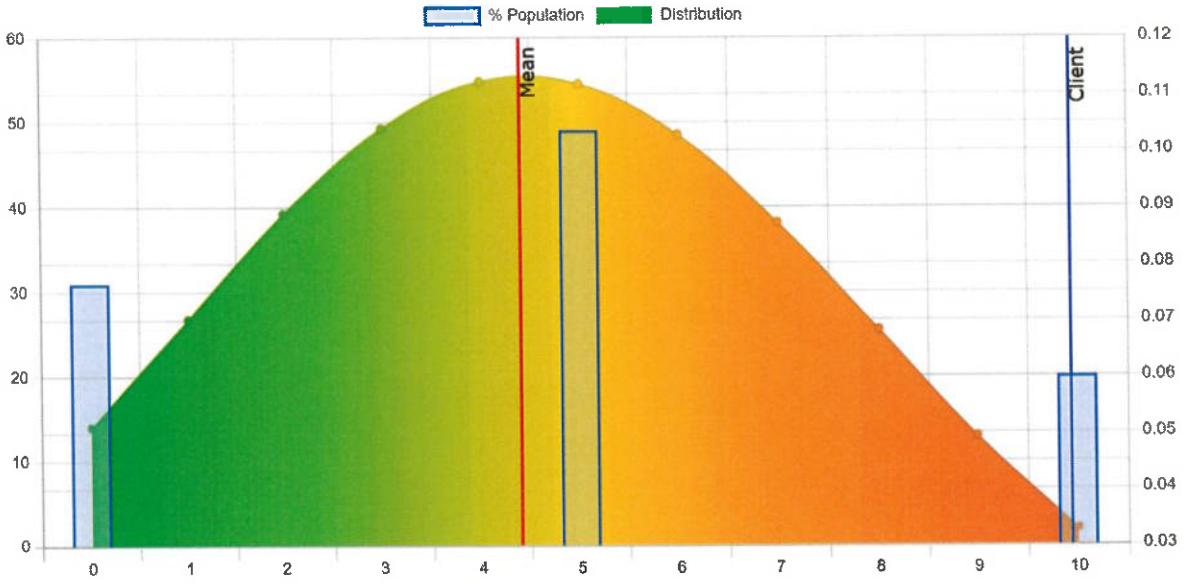
Functional Genomic Analysis Report

Makoto Terashita 様

GPX4 -2

The proteins encoded by GPX genes belong to the glutathione peroxidase family. Glutathione peroxidase functions in the detoxification of hydrogen peroxide, and is one of the most important antioxidant enzymes in humans.

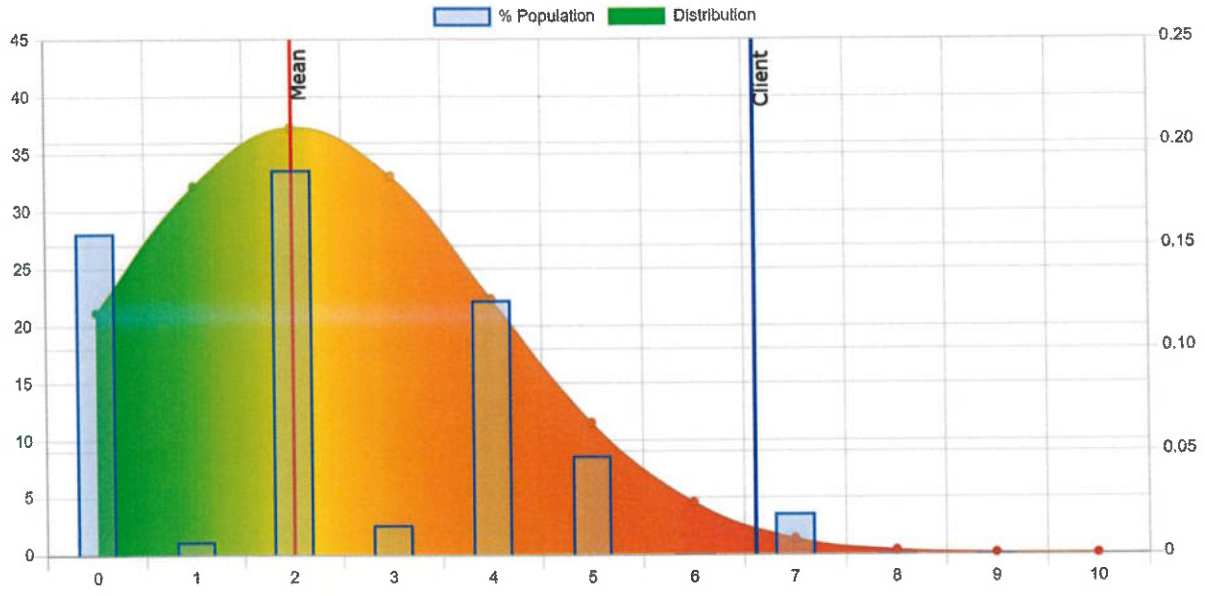
GPX4



SLC7A4 -3

Supports the transportation of Arginine.

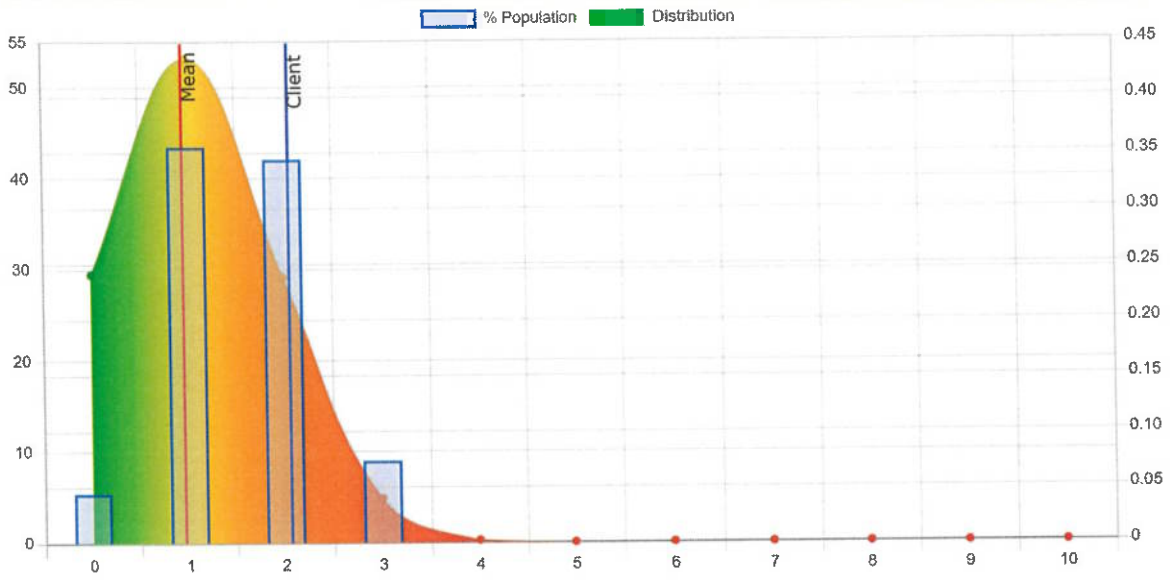
SLC7A4



GAD2 -2

The GAD enzyme converts glutamate to GABA. When someone has high glutamate and a lot of variants in GAD, it creates conditions that may have high glutamate and low GABA that could increase stress and conditions related to high glutamate. It has been observed, that Homozygous variants in GAD have more impact that many Heterozygous. SER-GAB Assist and GABA Assist may be helpful if there is low GABA.

GAD2

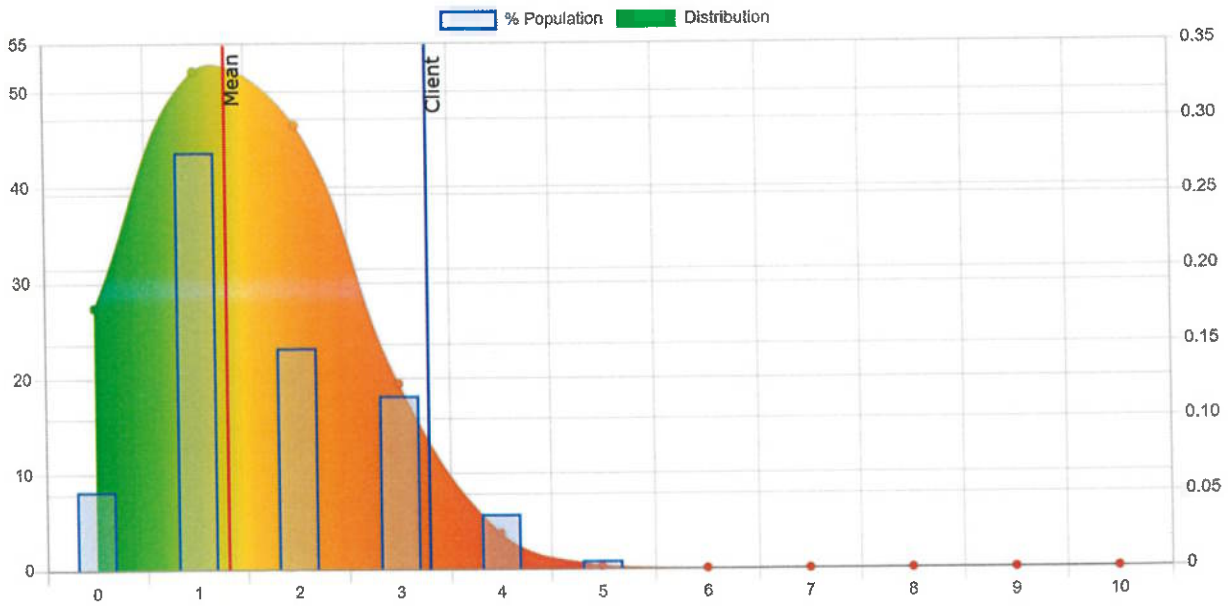


DAO ? -2

(Includes Informational SNPs)

The name of this gene is D-amino-acid oxidase and DAO is the gene's official symbol. Health conditions observed with this variant are: Schizophrenia, Bipolar Disorder, Primary Hyperoxaluria, ALS (Type 18), Autism and Crohn's Disease. Studies have found that the A allele at rs2391191 in DAOA is a possible genetic feature of certain health conditions such as Schizophrenia, and Bipolar Disorder.

DAO

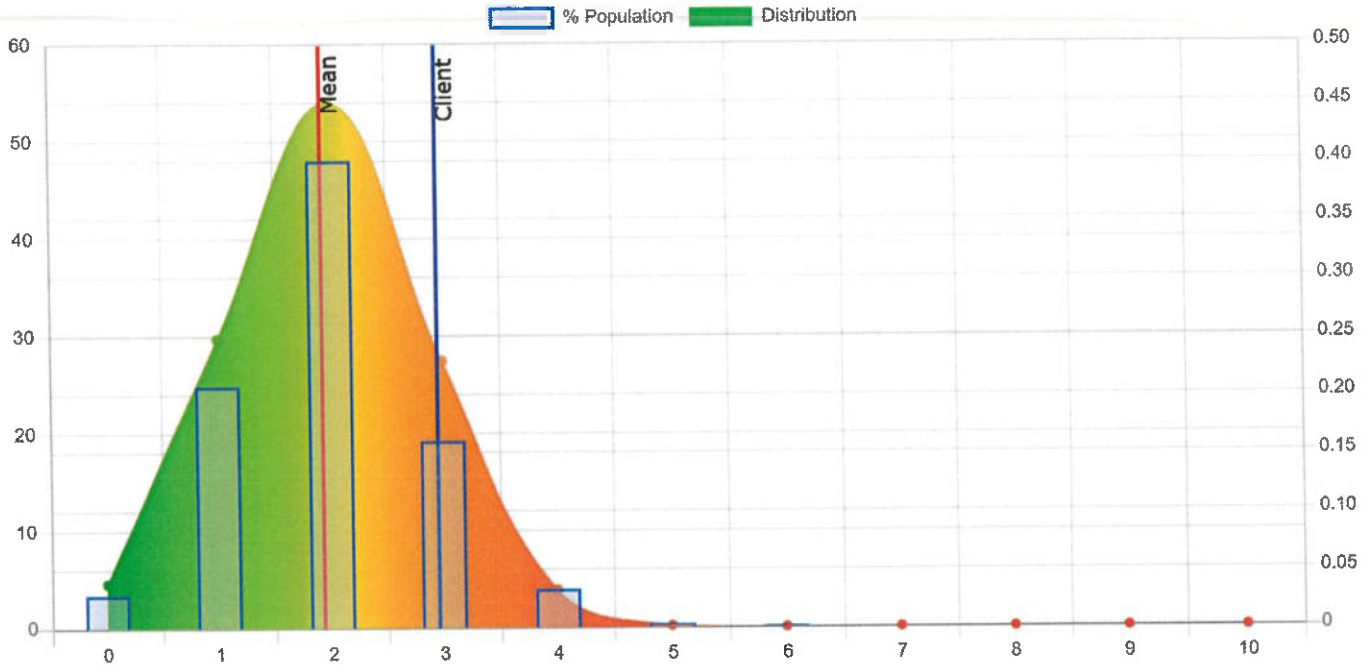


HLA ?

-2

Variants in these genes may increase the chances of Celiac Disease or gluten intolerance. Other factors that may impact gut health are FUT variants that impact probiotics, HNMT and ABP1 variants that lessen histamine degradation and consequently cause zonulin production, low folate or high peroxynitrite.

HLA

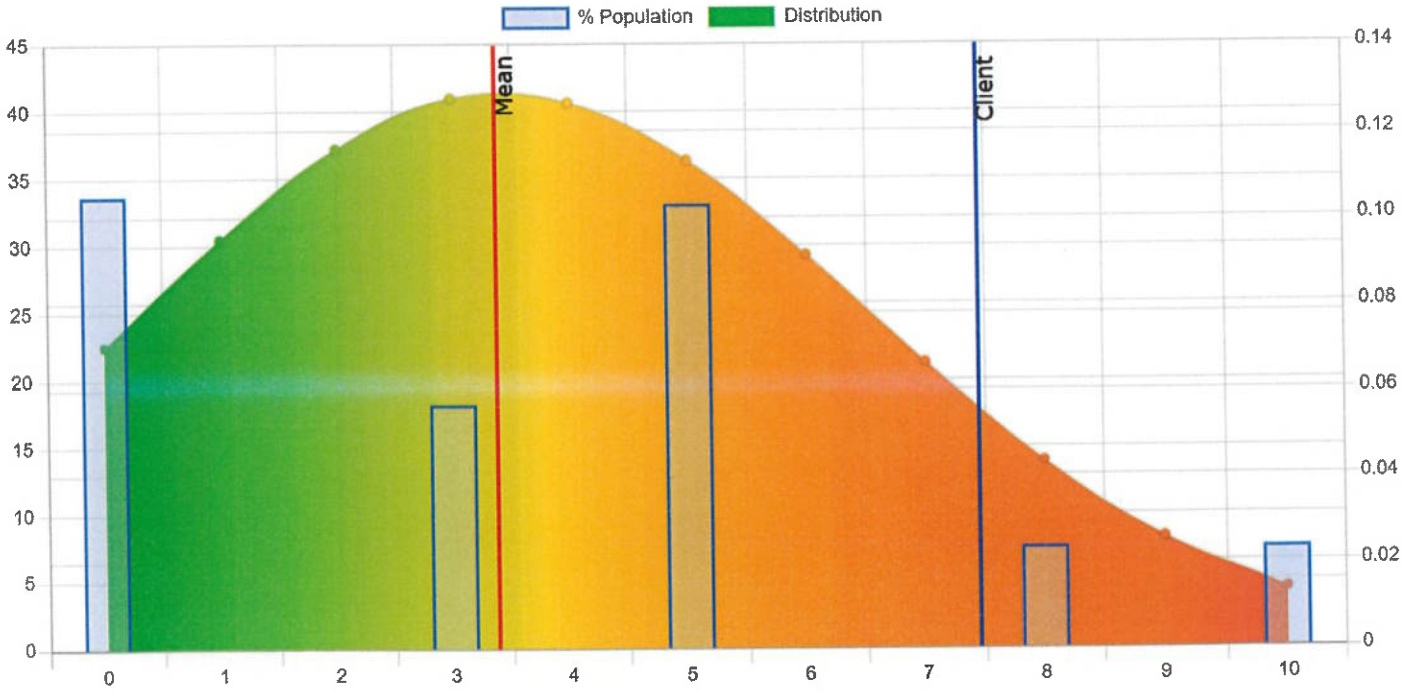


Peanut Allergy ?

-2

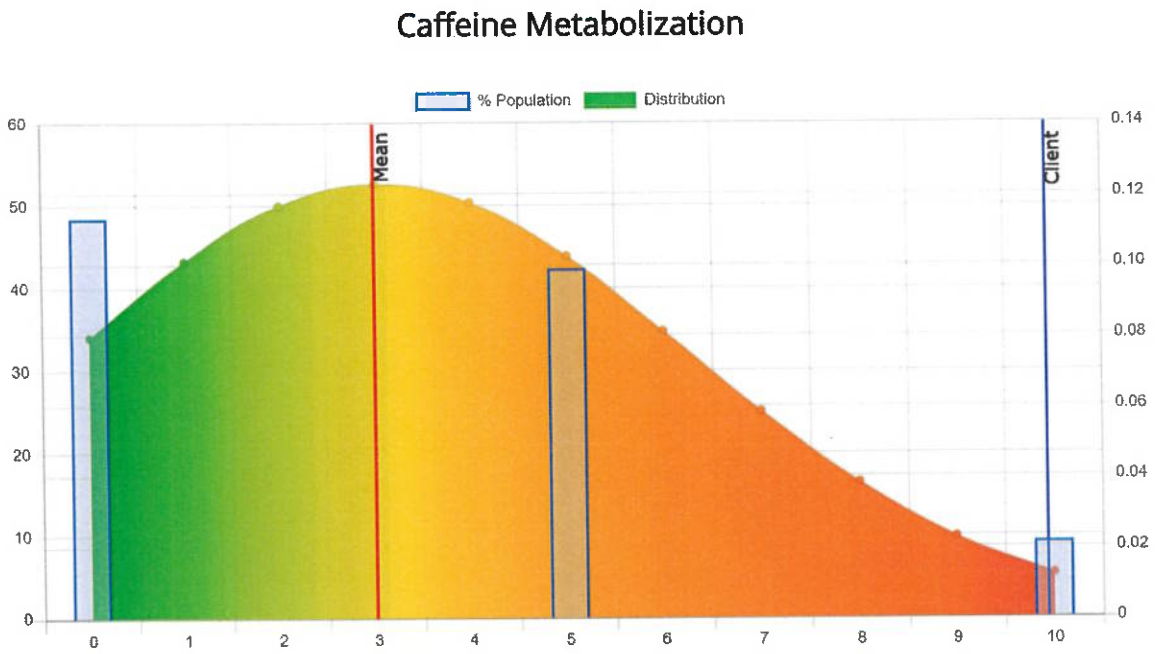
Variations in this gene may cause the potential for peanut sensitivity.

Peanut Allergy



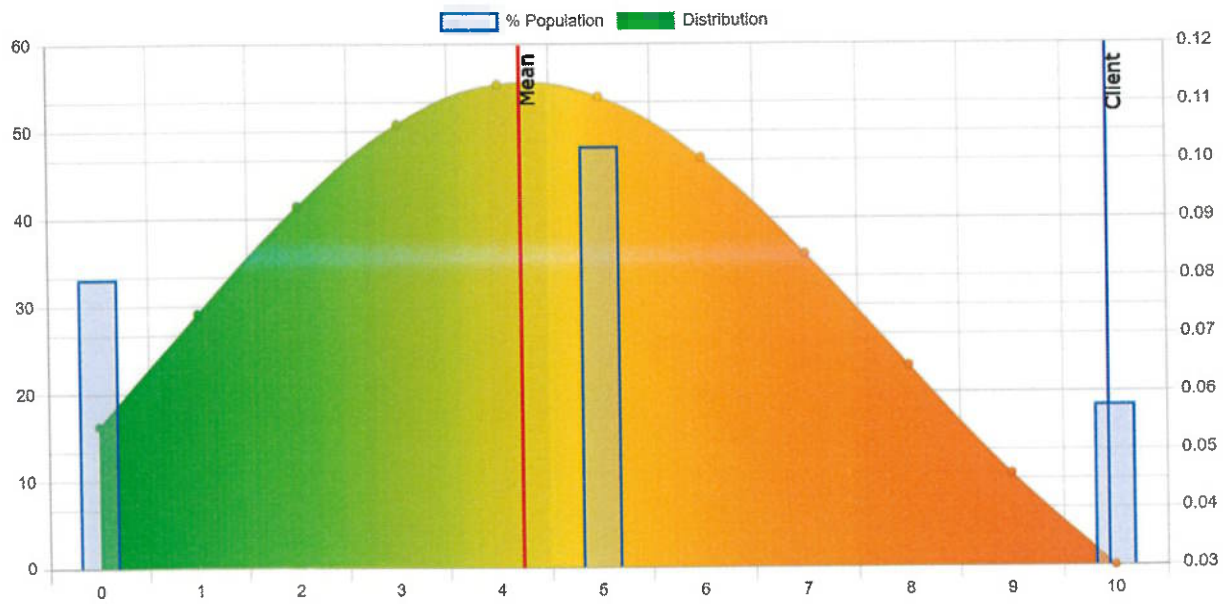
Caffeine Metabolization -3

The CYP1A2 gene encodes a member of the cytochrome p450 family of proteins. These proteins metabolize nutrients and drugs. One well known substrate of CYP1A2 is caffeine.Caffeine is a bitter substance that can be found in coffee, tea, soft drinks, chocolate, kola nuts, and certain medicines. It has many effects on the body's metabolism, including stimulating the central nervous system.Studies have shown that individuals with the A allele in this gene are faster metabolizers of caffeine and therefore will feel less of a stimulating effect from caffeine.



BDKRB2 ? -2

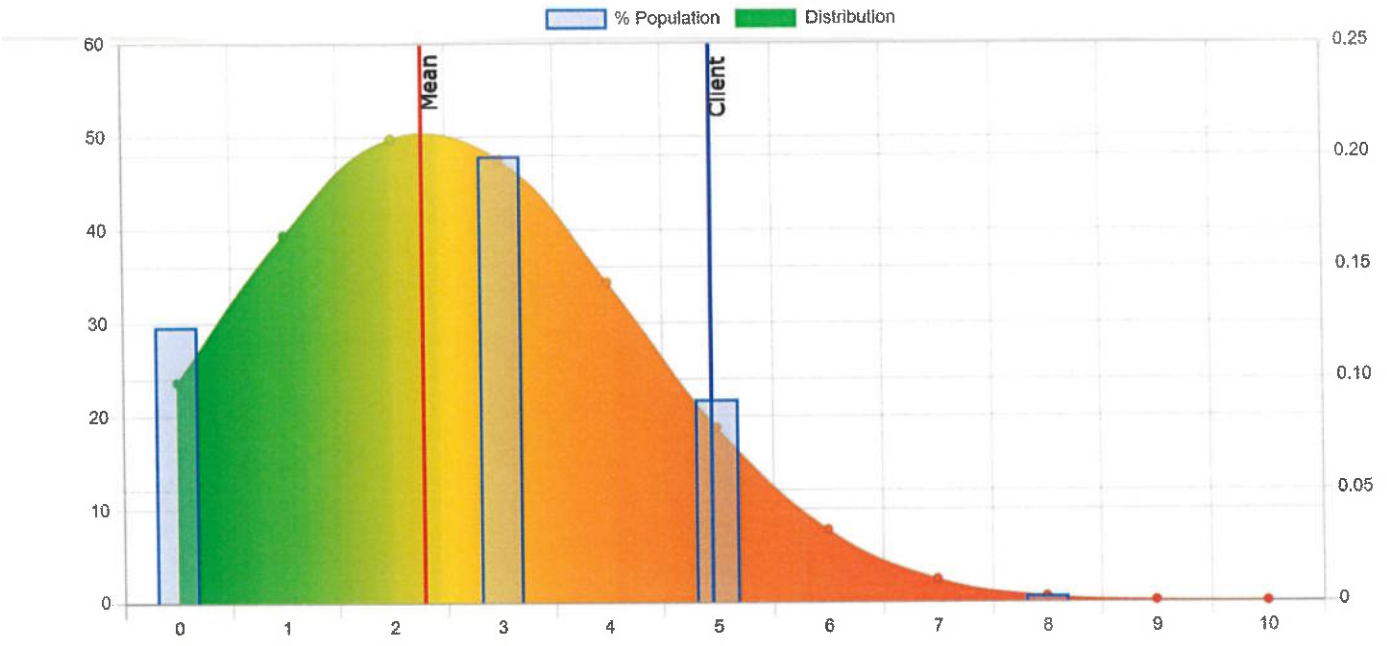
Encoded by BDKRB2, bradykinin receptor B2 (B2R) is a G-protein coupled receptor that appears to be involved in the inflammatory responses. Research suggests B2R forms an inhibitory complex with NOS, which is released following receptor activation. Angiotensin 1-7 appears to potentiate bradykinin-induced B2R responses.



KEAP1 -2

Under normal conditions, Nrf2 is repressed by a negative regulator KEAP1. When cells are exposed to oxidative stress, or electrophiles, Nrf2 escapes KEAP1 and activates the ARE to maintain cellular redox homeostasis.

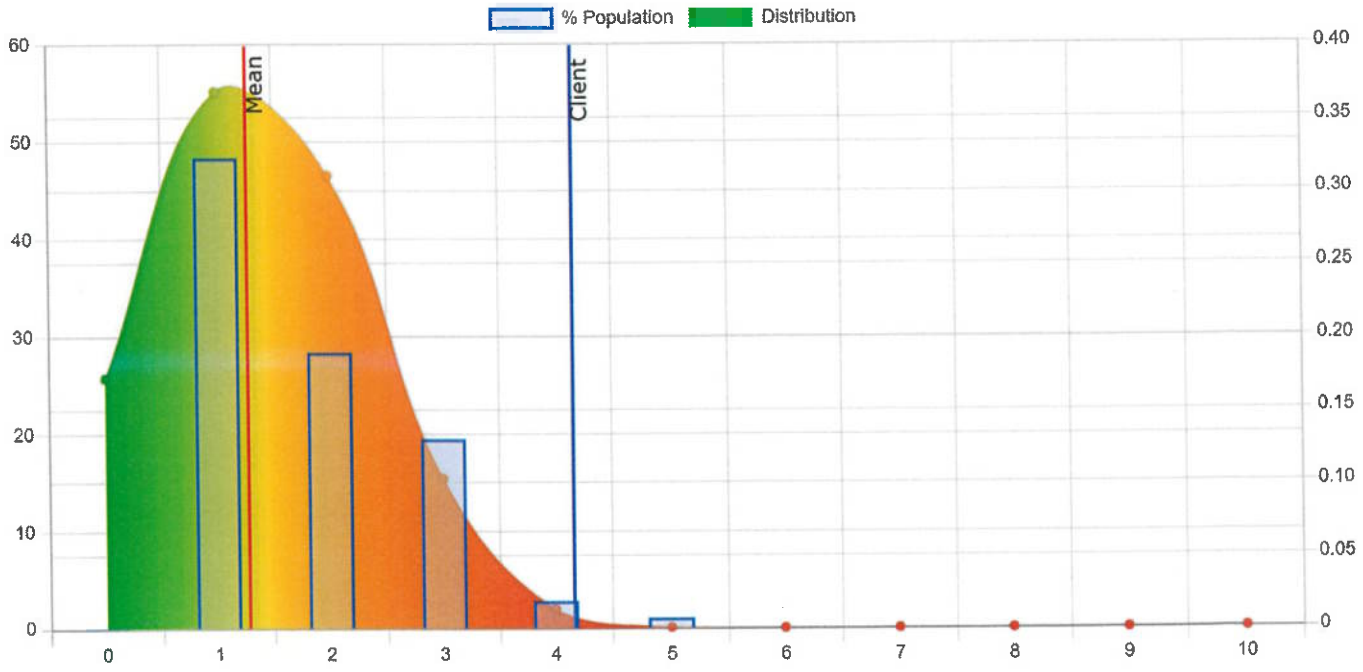
KEAP1



NDST3 -3

Heparan sulfate biosynthetic enzymes are key components in generating a myriad of distinct heparan sulfate fine structures that carry out multiple biologic activities.

NDST3

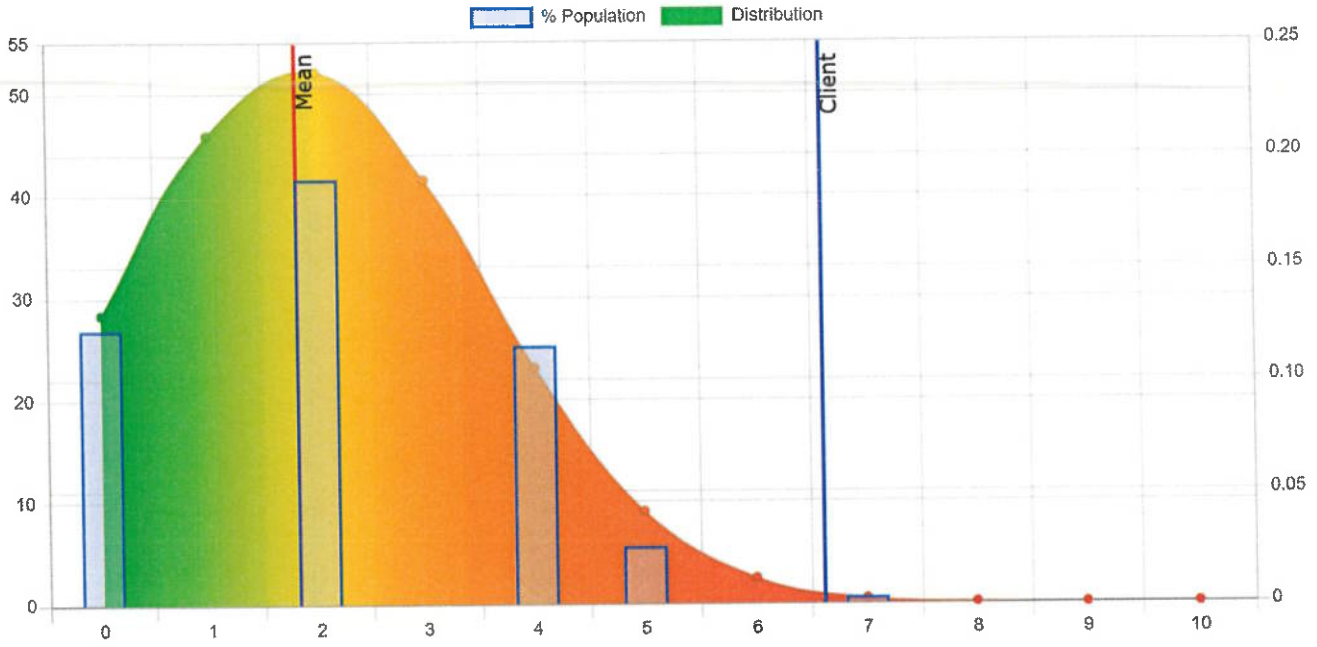


UGT1A4 ?

-3

UGT1A4 has some glucuronidase activity towards bilirubin, although it is more active on amines, steroids, and sapogenins.

UGT1A4

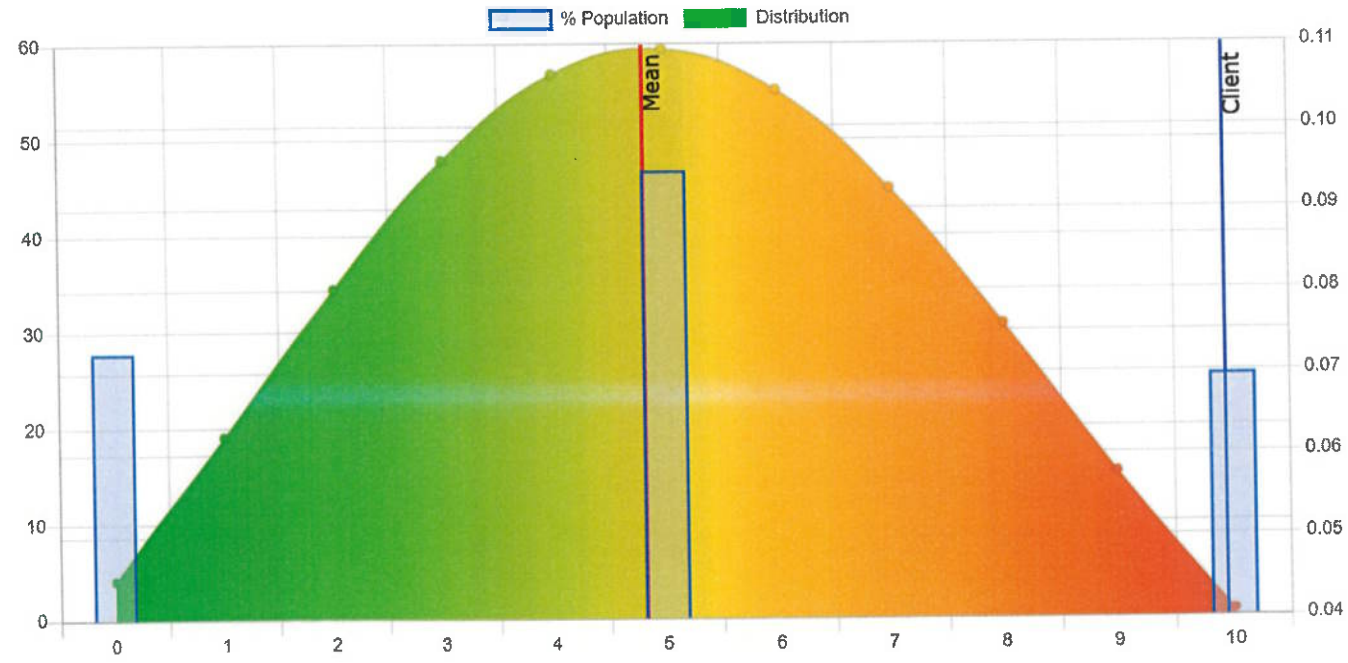


ELOVL2

-2

ELOVL2 encodes one of the main enzymes in the in vivo synthesis of long-chain polyunsaturated fatty acids. The G allele of rs953413 has been associated with increased expression of ELOVL2 which may result in an increase in the amount of long-chain polyunsaturated fatty acids synthesized

ELOVL2



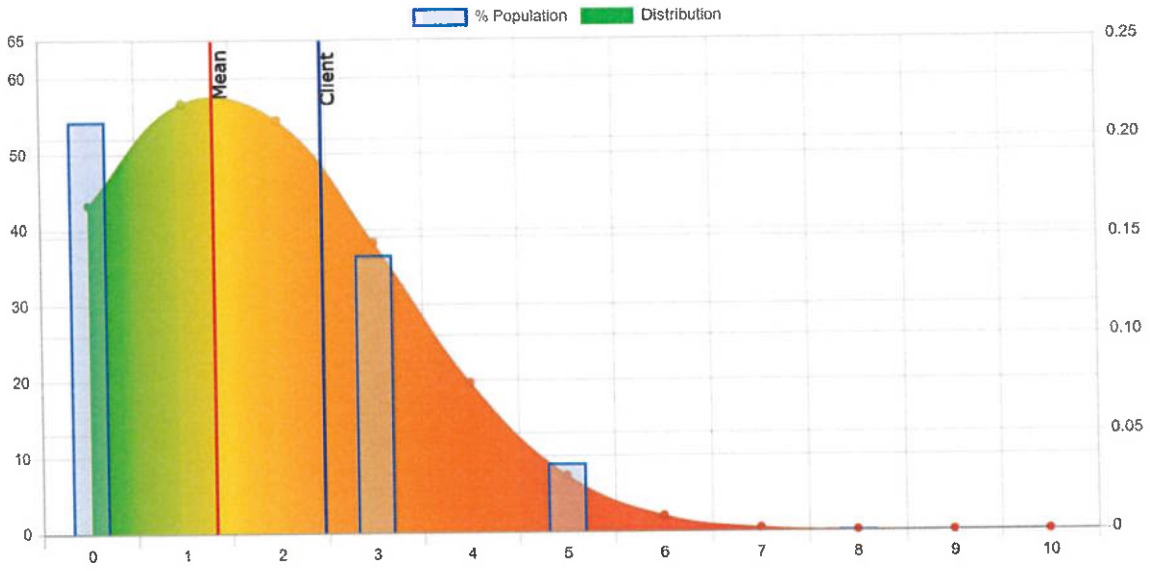
APOE -1

Gene Name	Variants	Metrics
APOE (rs429358)	1	TC 26.3%
APOE (rs7412)		CC 85%

TC CC E3/E4

Studies have shown that of all six genotypes, E4/E4 is associated with the greatest risk for high cholesterol.The APO E3/E3 genotype is considered normal. E2 is associated with lower levels of cholesterol. E4 is associated with higher levels of cholesterol.

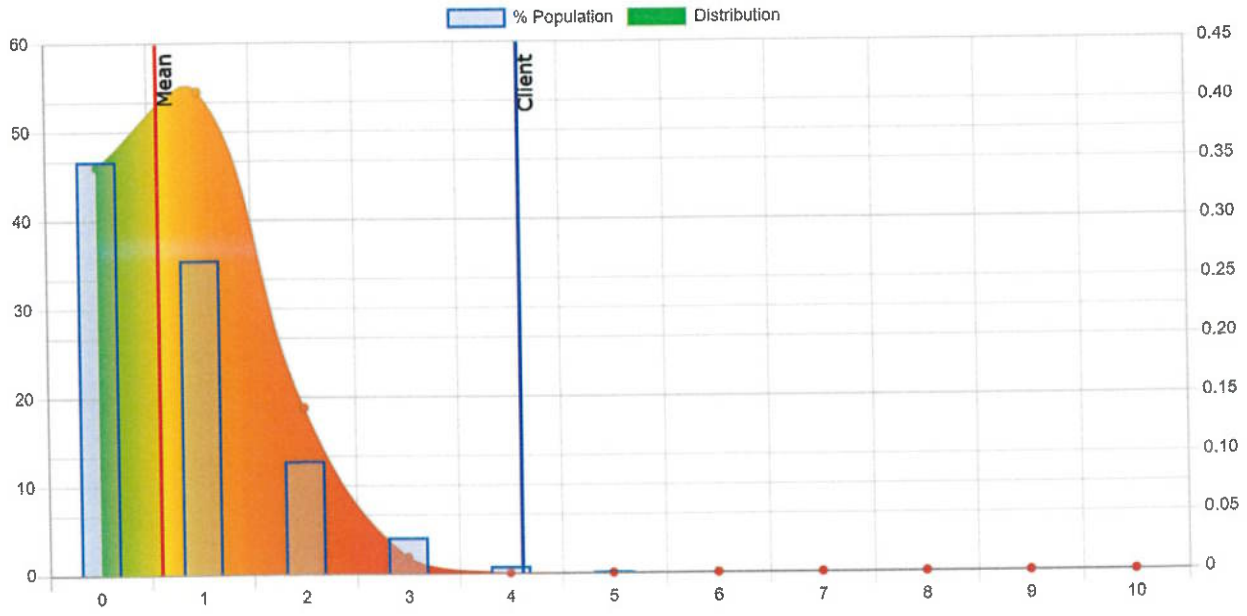
APOE



ABCC4 ? -3

MRP4 is an inducible cotransporter of taurine and glycine conjugates of cholic acid with glutathione, and sulfated bile salts out of cells.

ABCC4

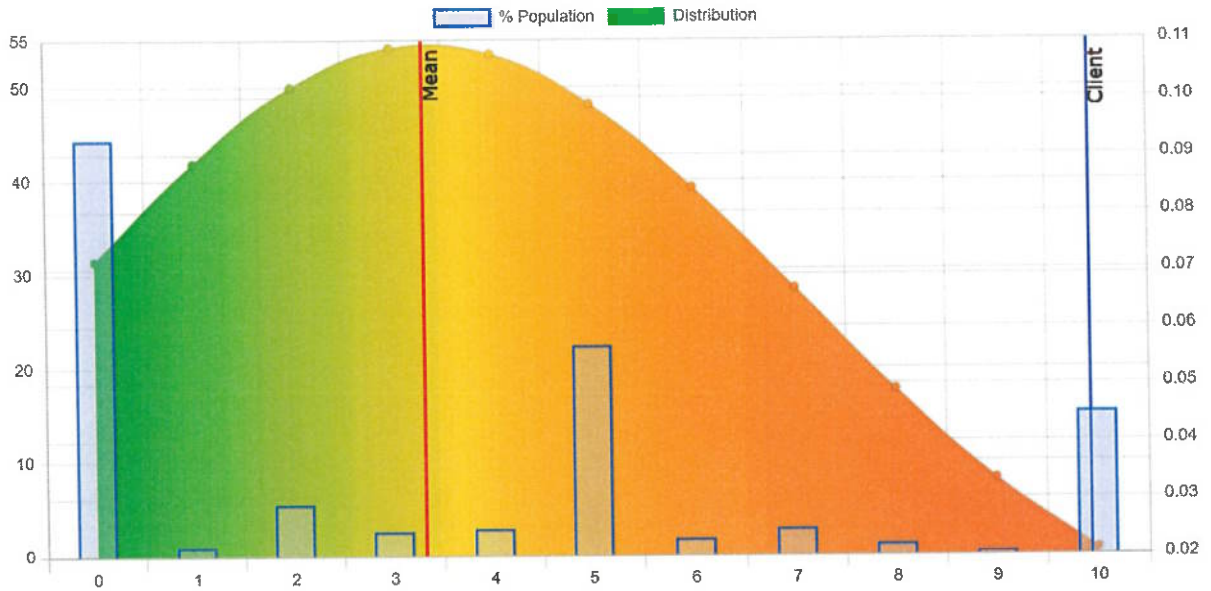


MAOA ?

-2

MAOA is one of two neighboring gene family members that encode mitochondrial enzymes which catalyze the oxidative deamination of amines, such as dopamine, norepinephrine, and serotonin.Variants in this gene will actually preserve serotonin. This can be helpful when there is low BH4 and poor availability of amino acids that are the precursors to neurotransmitters. Variations in this gene have also been associated with antisocial behavior

MAOA



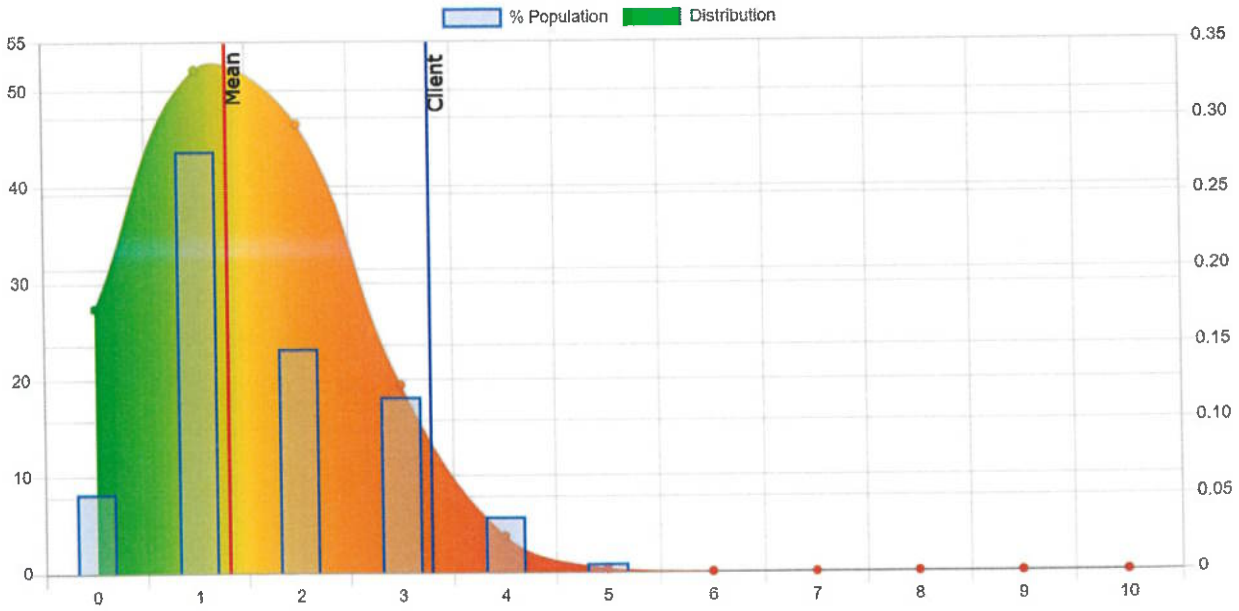
DAO ?

(Includes Informational SNPs)

-2

The name of this gene is D-amino-acid oxidase and DAO is the gene's official symbol. Health conditions observed with this variant are: Schizophrenia, Bipolar Disorder, Primary Hyperoxaluria, ALS (Type 18), Autism and Crohn's Disease. Studies have found that the A allele at rs2391191 in DAOA is a possible genetic feature of certain health conditions such as Schizophrenia, and Bipolar Disorder.

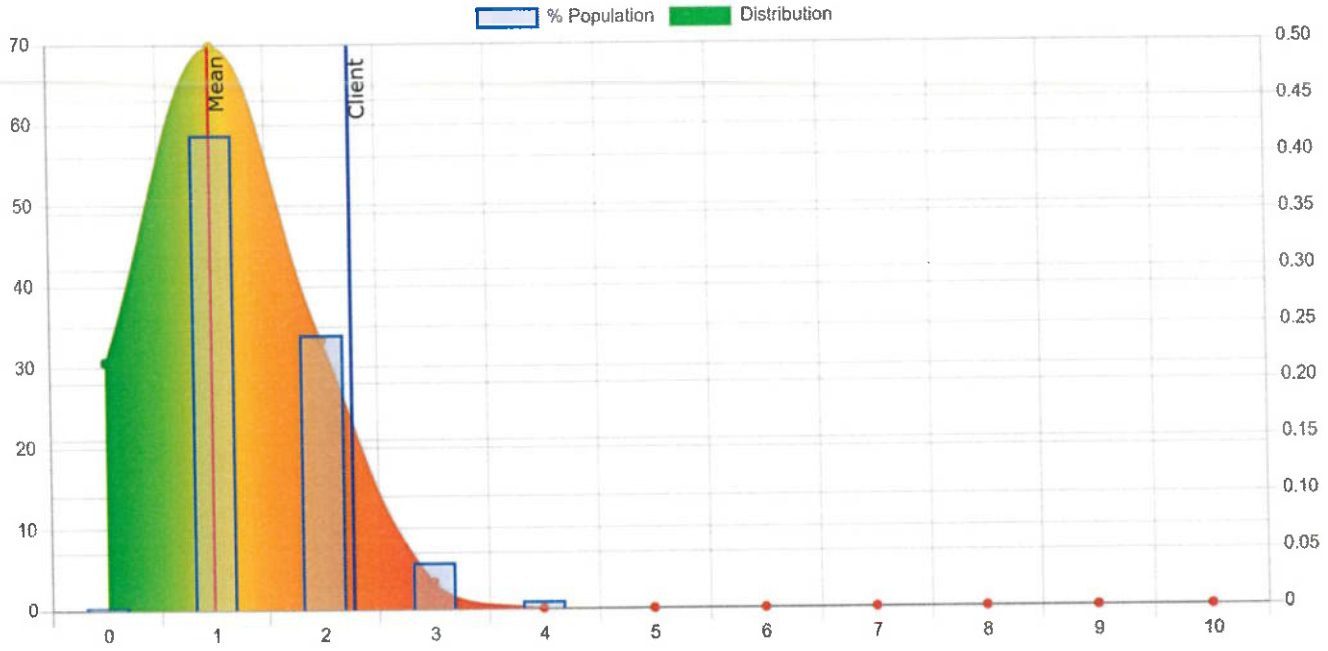
DAO



OGDH ? -2

Variants in OGDH may lead to hypotonia, metabolic acidosis, hyperlactatemi, and Alpha-ketoglutarate dehydrogenase deficiency.

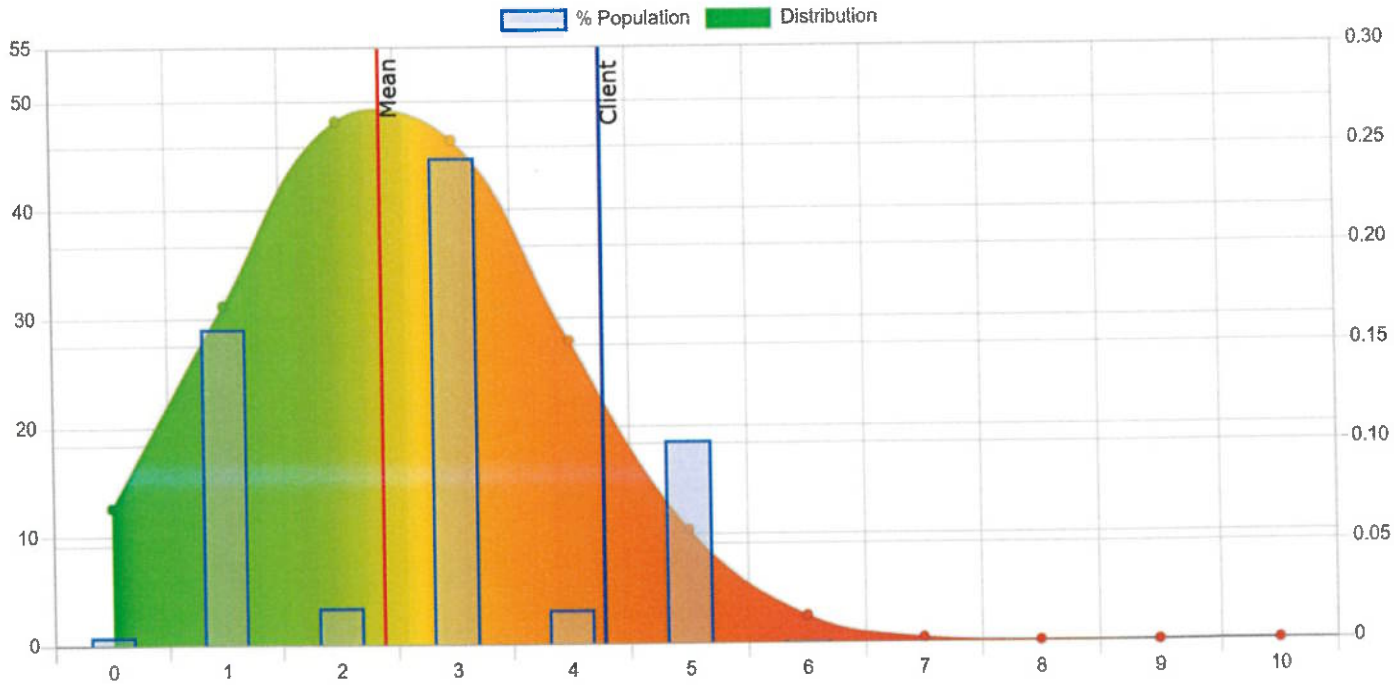
OGDH



NDUFA8 ? -2

Variations in these genes may cause Complex I to be deficient.

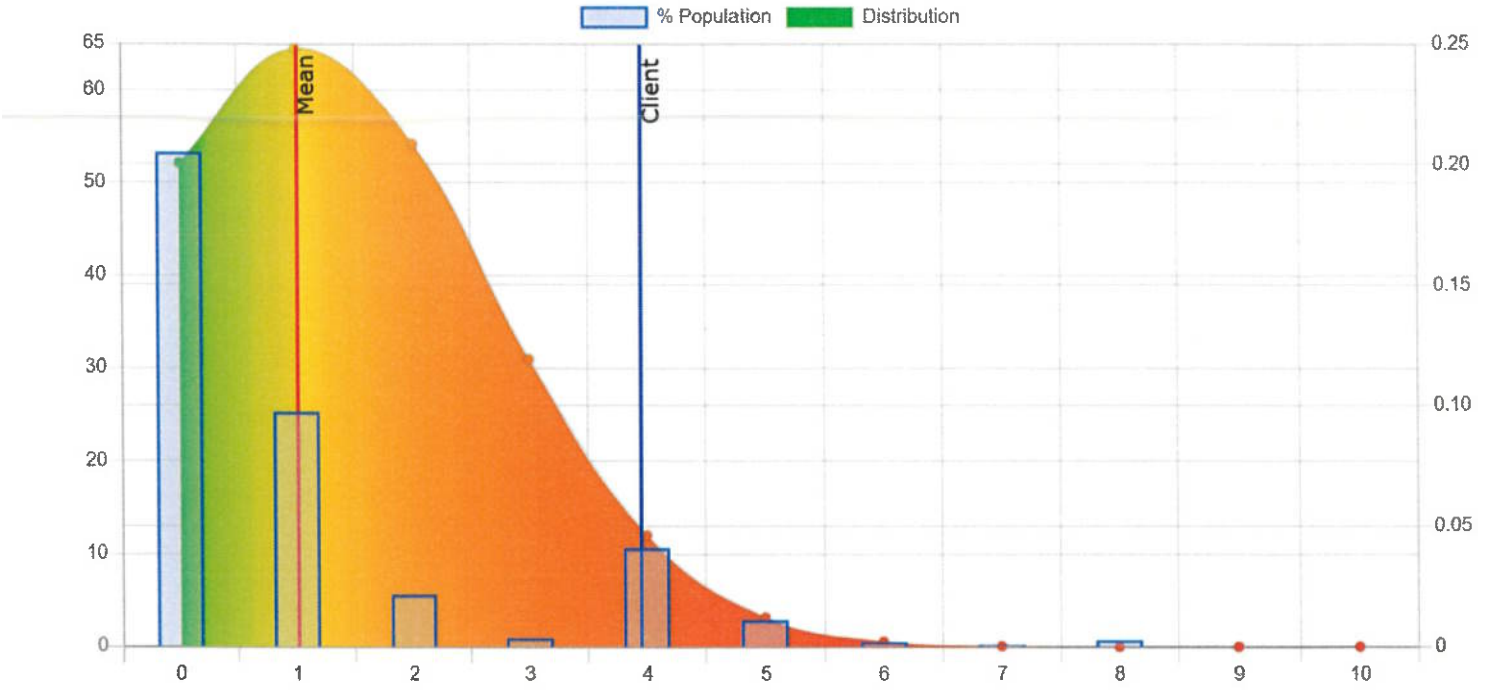
NDUFA8



NDUFAB1 ? -2

Variations in these genes may cause Complex I to be deficient.

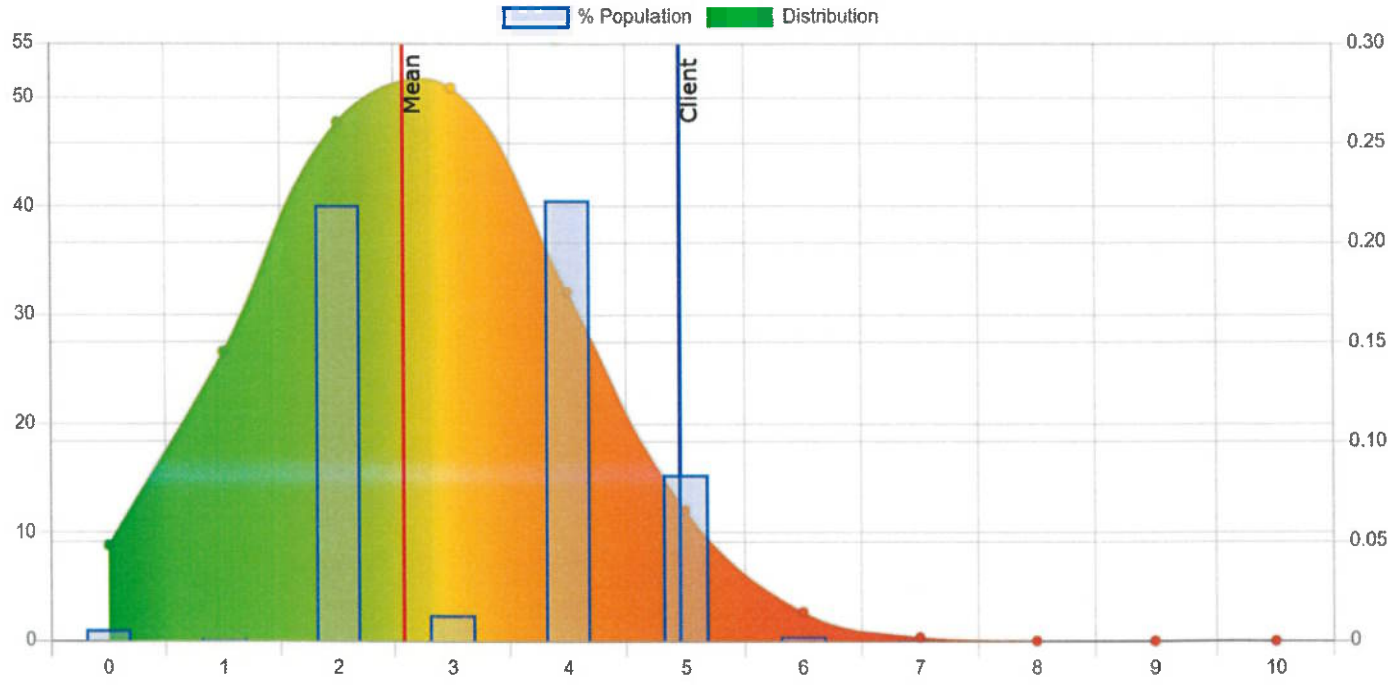
NDUFAB1



NDUFB1 ? -2

Variations in these genes may cause Complex I to be deficient.

NDUFB1

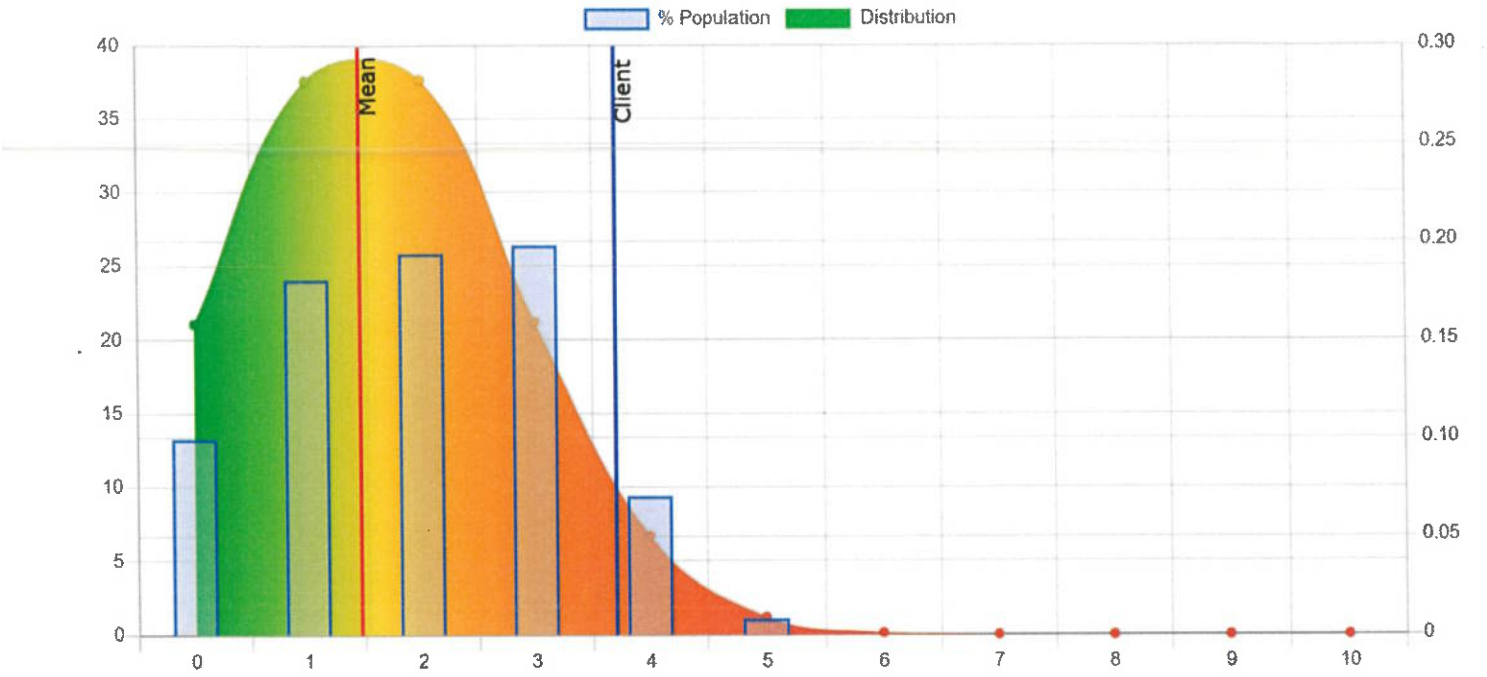


NDUFS6 ?
(Includes Informational SNPs)

-2

Variations in these genes may cause Complex I to be deficient.

NDUFS6

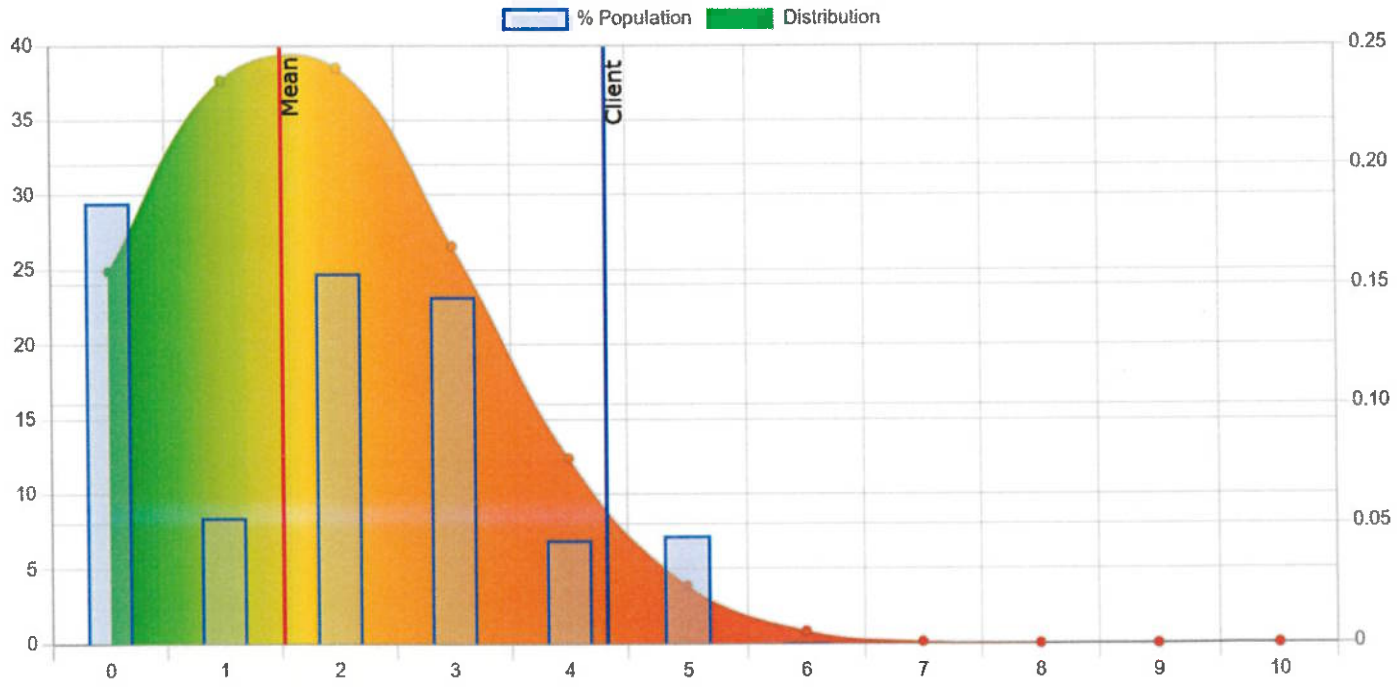


NDUFV2 ?
(Includes Informational SNPs)

-2

Variations in these genes may cause Complex I to be deficient.

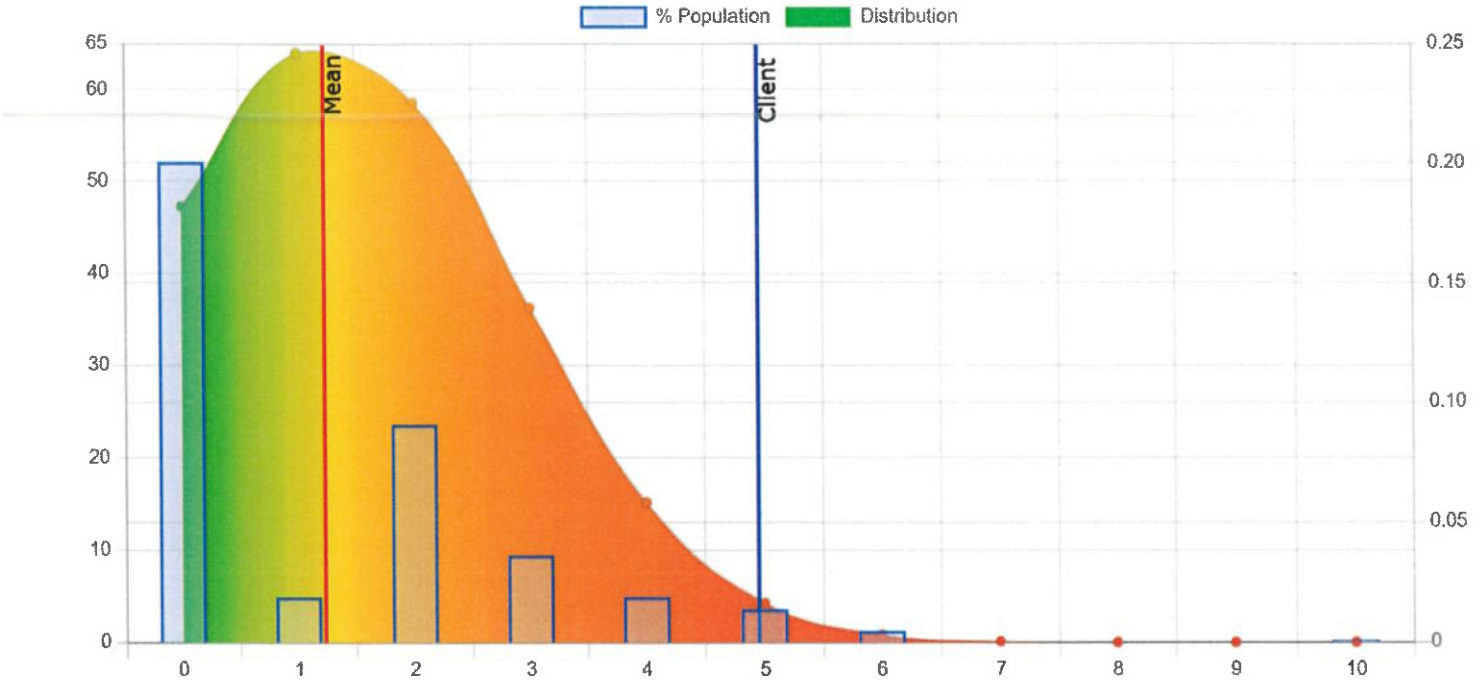
NDUFV2



COX4I1 ? -3

Variations in these genes may cause Complex IV to be deficient.

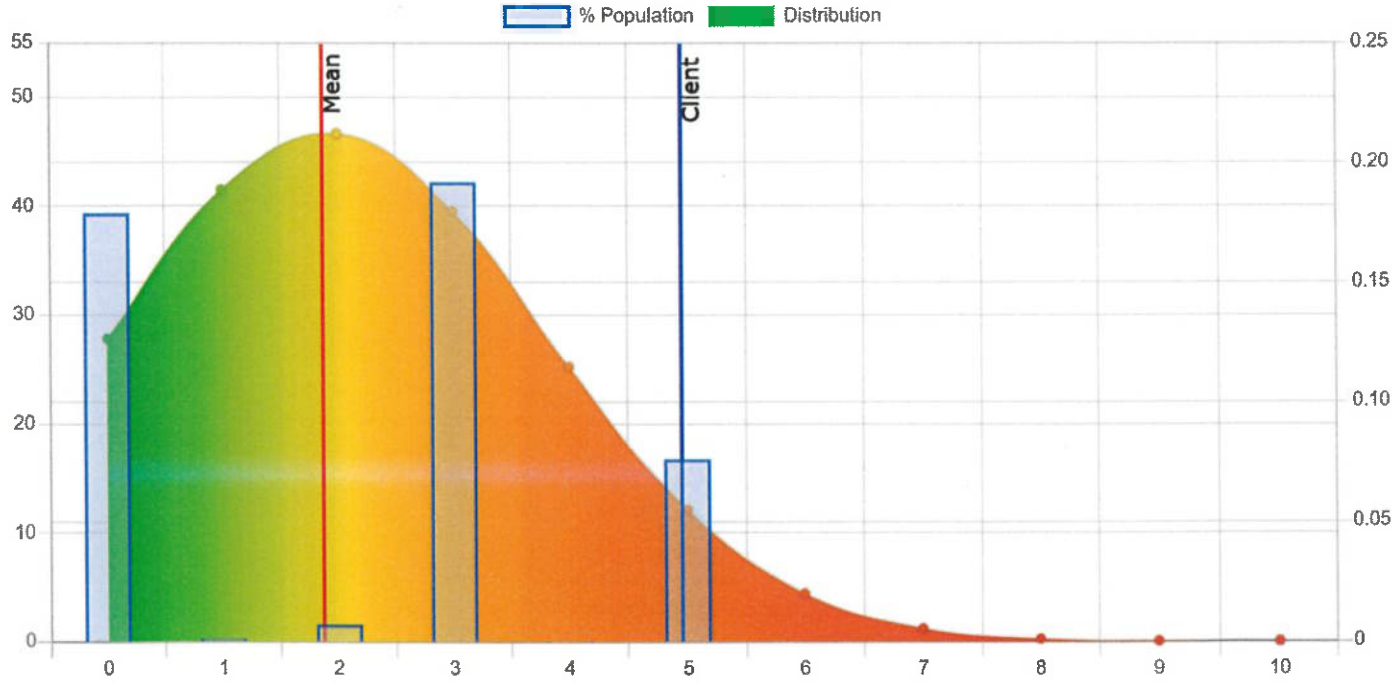
COX4I1



ATPAF2 ? -2

Variations in these genes may cause Complex V to be deficient.

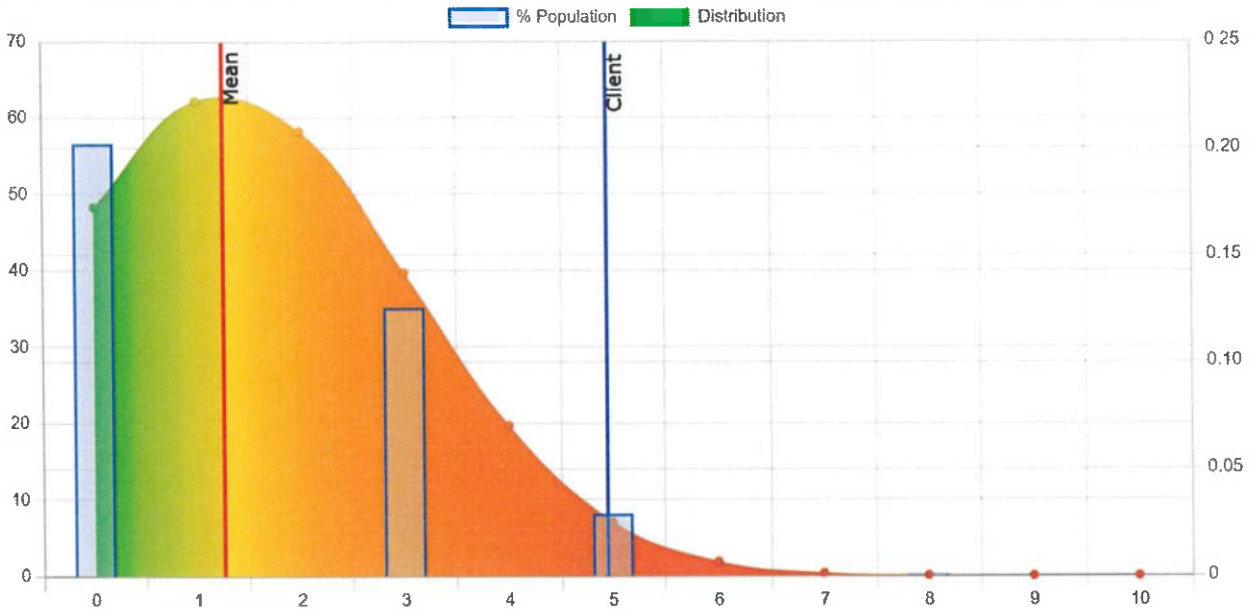
ATPAF2



CYP1A2 ? -3

The CYP1A2 gene encodes a member of the cytochrome P450 superfamily of enzymes. CYP1A2 metabolizes polyunsaturated fatty acids into signaling molecules that have physiological as well as pathological activities. Vegetables such as cabbages, cauliflower and broccoli are known to increase levels of CYP1A2.

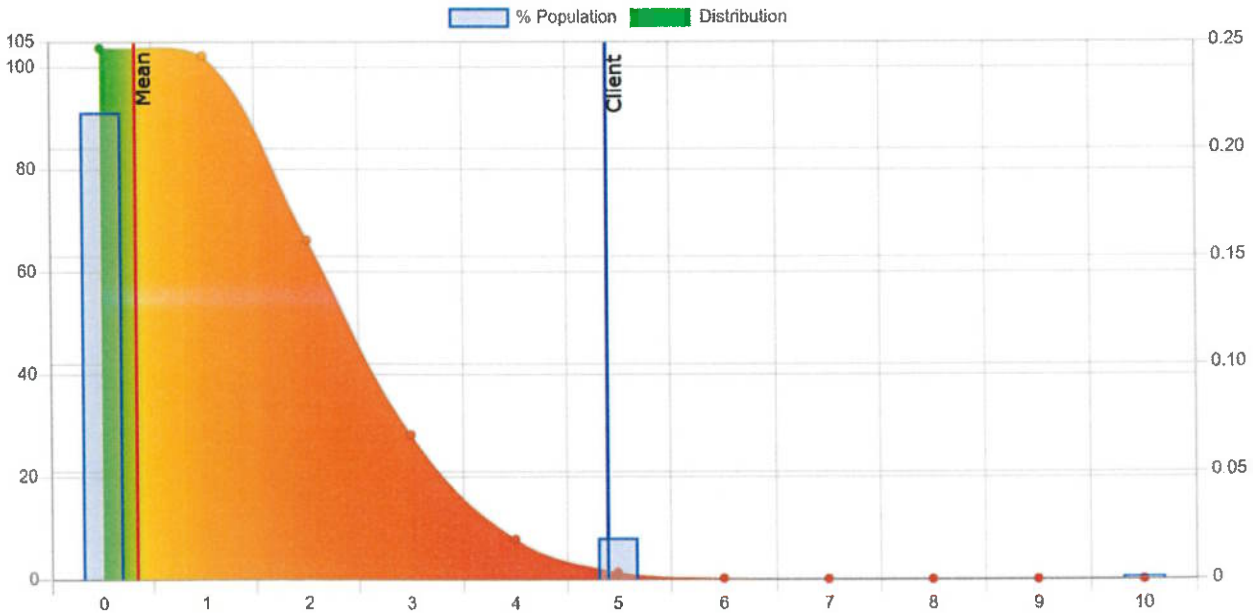
CYP1A2



CYP2E1 ? -3

The CYP2E1 gene encodes a member of the cytochrome P450 superfamily of enzymes. CYP2E1 metabolizes both endogenous substrates, such as ethanol, acetone, and acetal, as well as exogenous substrates including benzene, carbon tetrachloride, ethylene glycol, and nitrosamines which are premutagens found in cigarette smoke.

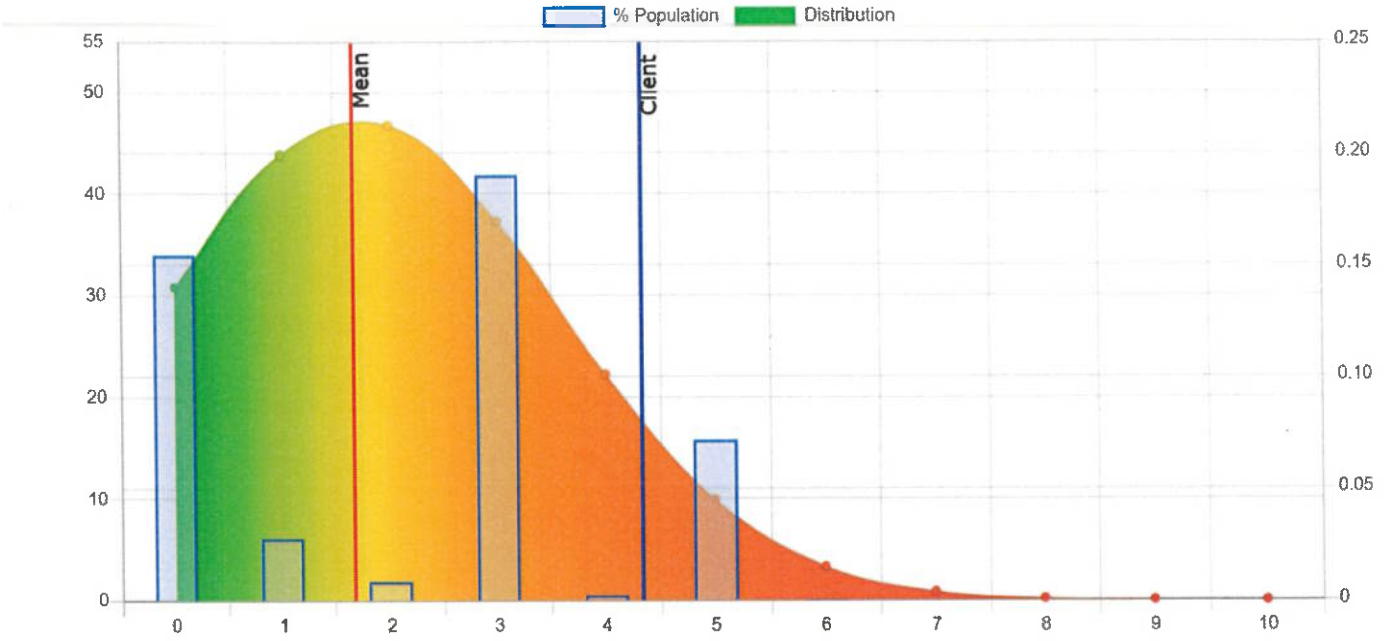
CYP2E1



CYP4X1 ? -2

The CYP4X1 gene encodes a member of the cytochrome P450 superfamily of enzymes. The expression pattern of a similar rat protein suggests that CYP4X1 may be involved in neurovascular function in the brain.

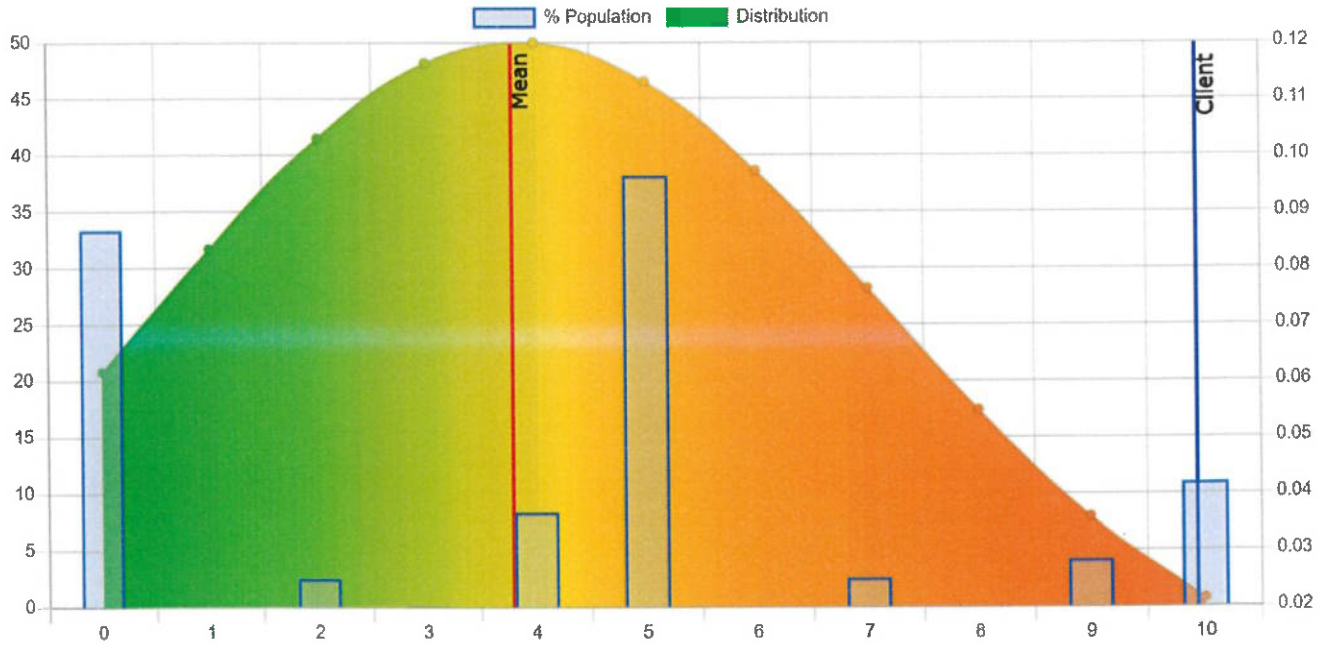
CYP4X1



CYP7A1 ? -2

Cholesterol 7 alpha-hydroxylase, encoded by the CYP7A1 gene, catalyzes the first and rate-limiting step of bile acid synthesis from cholesterol. Cholesterol 7 alpha-hydroxylase converts cholesterol to 7α-hydroxycholesterol, a precursor to bile acids.

CYP7A1



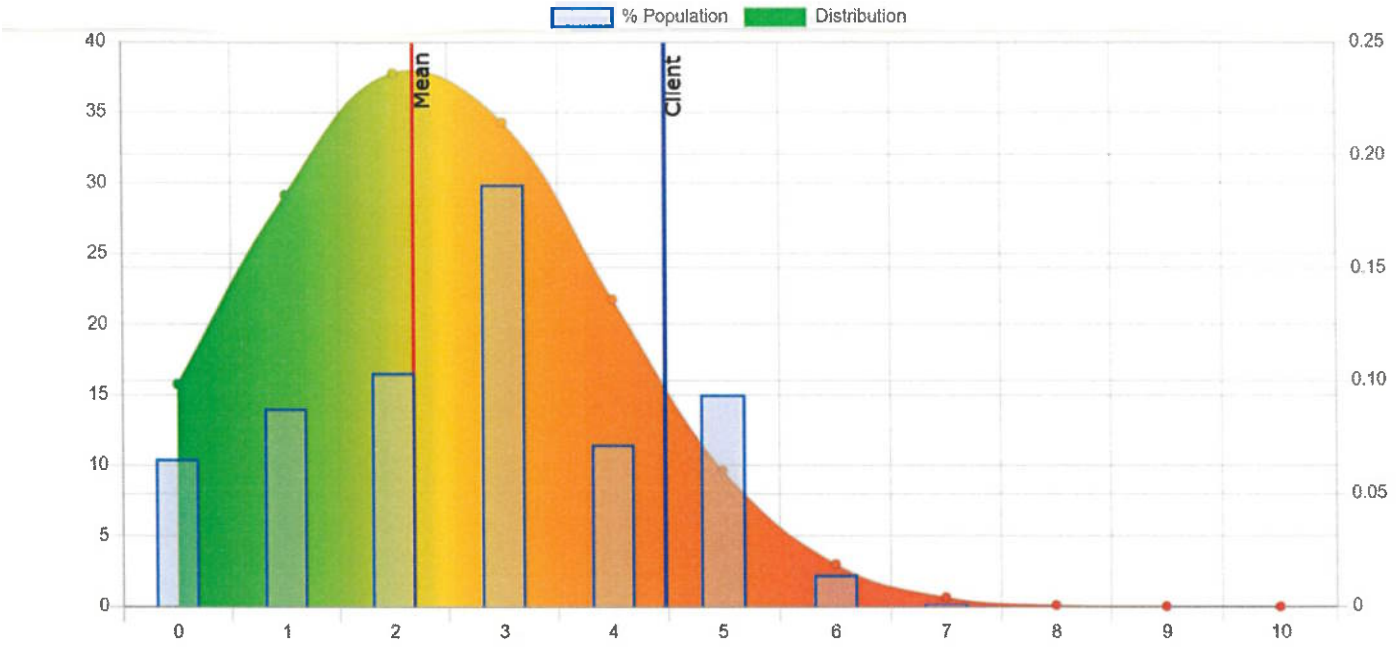
SLC39A14

(Includes Informational SNPs)

-2

SLC39A14 is involved in the cellular uptake of manganese (Mn) in various cell types, yet has been further demonstrated to have a role in the transportation of Mn from the blood to the liver, for excretion via bile: thus, this enzyme may work synergistically with SLC30A10 for the elimination of manganese.

SLC39A14

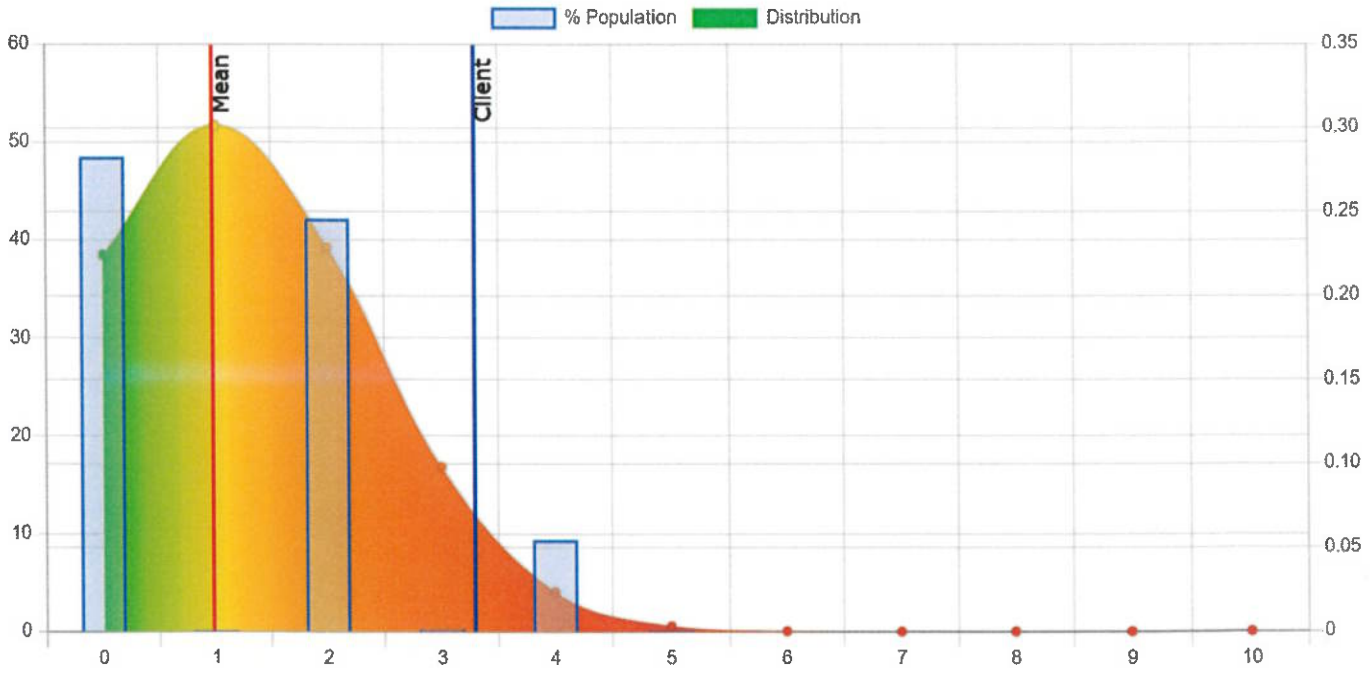


SLC30A8 ?

-2

Encoded by SLC30A8, zinc transporter 8 (ZNT8) is a zinc transporter involved in the storage of zinc from the cytoplasm into intracellular vesicles. Research suggests ZNT8 may be related to insulin resistance.

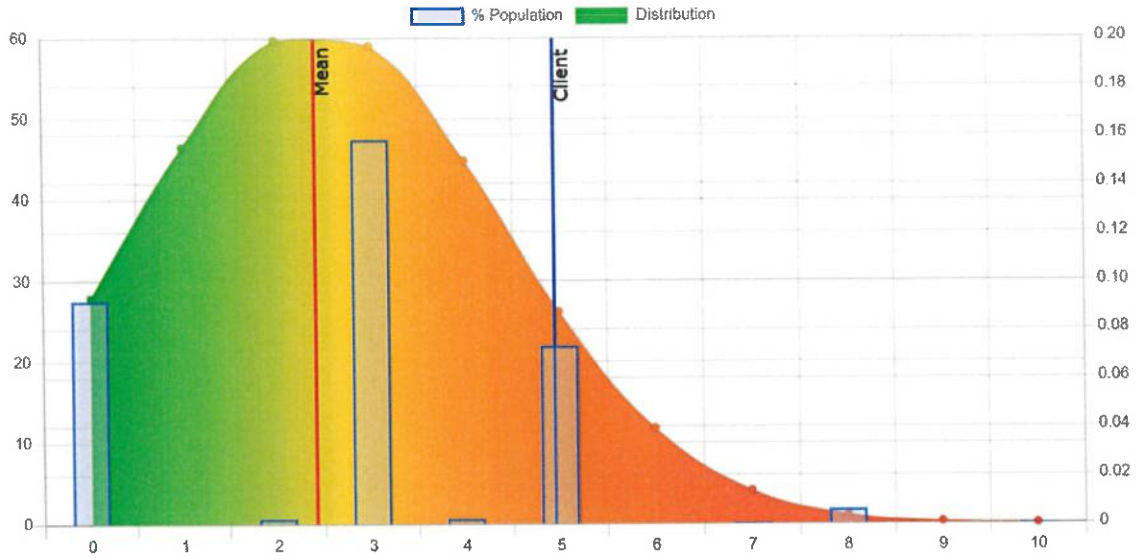
SLC30A8



Folate Assimilation ? -2

The FOLR1 gene provides instructions for making a protein called folate receptor alpha. This protein helps regulate transport of the B-vitamin folate into cells. Folate (also called vitamin B9) is needed for many processes, including the production and repair of DNA, regulation of gene activity (expression), and protein production.Folate from food is absorbed in the intestines and then released in a form called 5-methyl-tetrahydrofolate (5-MTHF) into the bloodstream, where it can be taken in by cells in various tissues.

Folate Assimilation



GIF (TCN3) ? -2

(Includes Informational SNPs)

GIF (gastric intrinsic factor) reduces the absorption of B12, while TCN1 and TCN2 limit the transport of B12. Any combination of higher demand, less absorption and transport will impair the functions dependent upon B12.

GIF (TCN3)