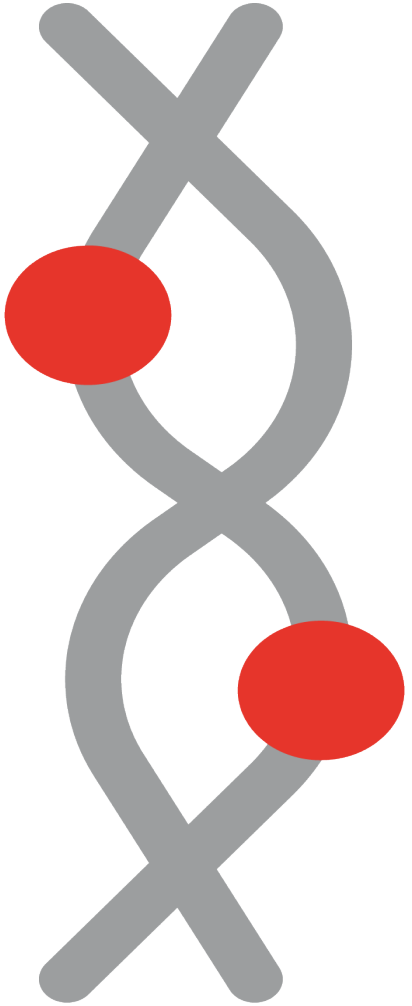
Fagron genomics



Gene Comprehensive Nutrigenomic Report

Accession Number: ##########
Specimen Collected: ##/##/####
Specimen Received: ##/##/####
Report Generated: November 17, 2022
Specimen Type: Buccal Swab
Provider: ######## ########
Patient Name: ###### ######
Patient DOB: ##/##/####
Patient Gender: 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

– 36 – Male

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

rsID	Gene	Genetic Result	Therapeutics Associated With Positive Result	Highly Recommended Therapeutics	Provider Discretion: As Needed Formula Recommendations	Lifestyle Recommendations	Laboratory Recommendations
Gastrointestinal							
Inflammation Environmental							
rs10156191	AOC1	+/-	Poor Ability To Break Down External Histamine		GI Hist Support™	Avoid Foods Containing Histamine	
rs11558538	HNMT	-/-					
rs12995000	HNMT	-/-					
rs492602	FUT2	-/-	Probiotics Needed				
rs2248814	NOS2	-/-	Anti-Infectives, Beta Glucans				
rs2187668	HLA DQA1	-/-	High Risk of Gluten Based Issues				
rs2858331	HLA DQA2	+/-					
Lactose Intolerance							
rs4988235	MCM6	+/-	High incidence of lactose Intolerance			Avoid Lactose (milk products)	

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rsID	Gene	Genetic Result	Therapeutics Associated With Positive Result	Highly Recommended Therapeutics	Provider Discretion: As Needed Formula Recommendations	Lifestyle Recommendations	Laboratory Recommendations
Autophagy Consideration							
rs510432	ATG5	+/+	Increase susceptibility to bacterial GI infections and Crohn's Disease	**Neuro-immune Infection Control™** twice daily		12-15 Hour Fasting	Routine Blood Sugar, Insulin and Hb A1c
rs10210302	ATG16L1	+/-					
rs2241880	ATG16L1	+/-					

Summary for Gastrointestinal

Highly Recommended Therapeutics

- Neuro-immune Infection Control™ twice daily

Provider Discretion: As Needed Formula Recommendations

- GI Hist Support™

Lifestyle Recommendations

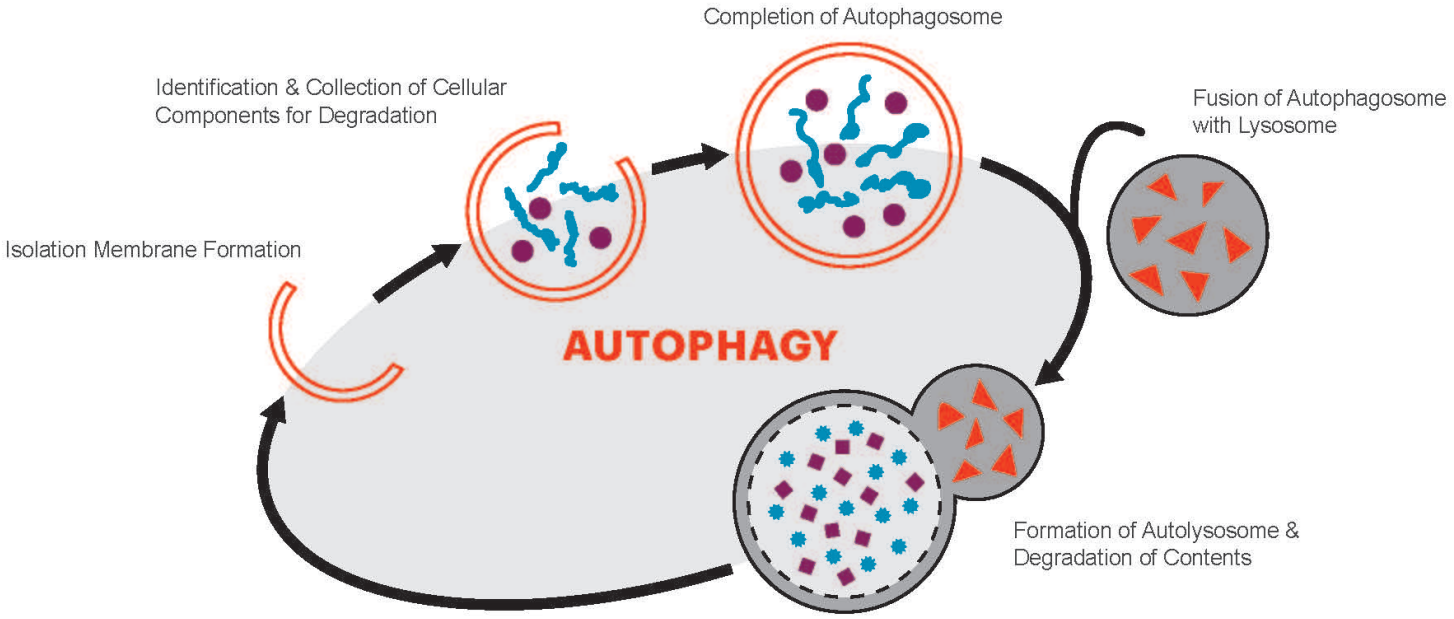
- Avoid Foods Containing Histamine
- Avoid Lactose (milk products)
- 12-15 Hour Fasting

Laboratory Recommendations

- Routine Blood Sugar
- Insulin and Hb A1c

AUTOPHAGY

VARIANTS IN THE ATG GENES HAVE BEEN ASSOCIATED WITH CELLULAR BLOCKAGE



DEFECTS LEAD TO:

- Neurodegenerative Diseases
- Aging
- Heart Disease
- Developmental Disorders
- Type II Diabetes
- Insulin Resistance
- Fatty Liver
- Cancers

WAYS TO INCREASE

- Intermittent fasting or low-calorie diet
- Routine Exercise
- Ketogenic diets (high fat, low carbs)
- Medications & Supplements
  D-Chiro Inositol (B8)
  Metformin

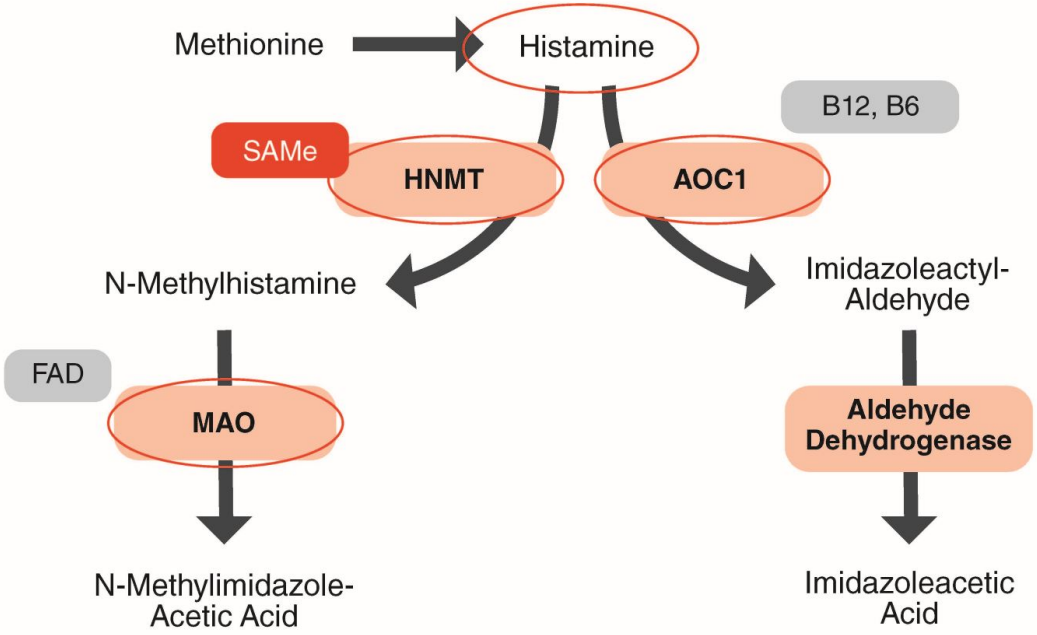
HISTAMINE

HISTAMINE

- Natural substance found in various foods

IMPLICATIONS

- Metabolic Enzymes: amine oxidases (ex. AOC1, MAO, DAO) & HNMT
- High histamine & low amine oxidase activity is associated with:
  - Diarrhea
  - Headaches
  - Nose congestion
  - Asthma
  - Hypotension
  - Arrhythmia
  - Flushing
  - Urticaria (hives)
  - Pruritus (itchy skin)
- Dietary histamine can be rapidly detoxified by amine oxidases, whereas persons with low amine oxidase activity are at risk of histamine toxicity



AOCI & HNMT POLYMORPHISM HISTAMINE

LOW HISTAMINE LEVEL FOODS

Meats & Fish
fresh meat (ex. chicken, turkey,pork and red meat),fresh fish (ex. hake, trout, plaice)

Egg yolk

Fresh fruits
(with the exception of strawberries)

Fresh vegetables

Grains

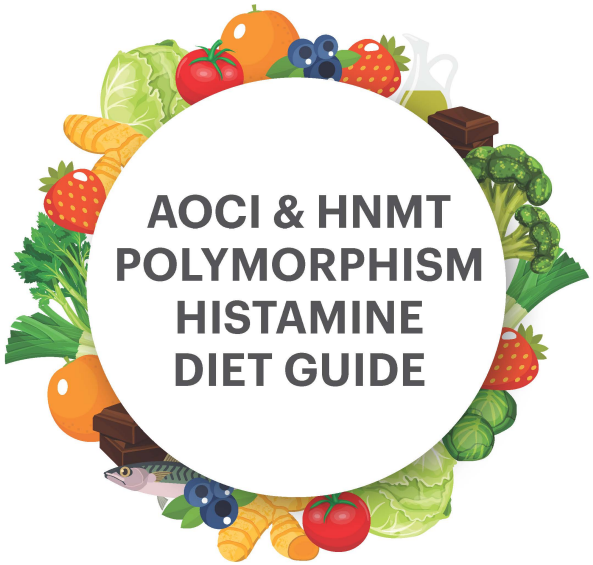
Milk substitutes
(Coconut milk, rice milk)

Cream cheese, butter

Most cooking oils

Most leafy herbs

Beverages
(non-citric fruit juices, herbal teas)



HIGH HISTAMINE LEVEL FOODS

Egg whites

Processed, cured, smoked and fermented meats/fish (lunch meat, bacon, sausage, pepperoni, canned tuna)

Leftover meat
(After meat is cooked, the histamine levels increase due to microbial action as the meat sits)

Dairy products: All fermented milk products (ex. aged cheeses, yogurt, buttermilk, kefir)

Beverages (Black Tea, alcohol)

Chocolate, cocoa

Fruits (oranges, grapefruit, lemons, lime, berries, dried fruit)

Vegetables (spinach, tomatoes, eggplant)

Artificial food colors and preservatives

Fermented & vinegar-containing foods
(sauerkraut, kombucha, pickles, relishes, ketchup, prepared mustard)

Spices (cinnamon, chili powder, cloves, nutmeg, curry powder, cayenne)

LACTOSE INTOLERANCE

VARIANTS IN THE MCM6 GENE HAS BEEN ASSOCIATED WITH LACTOSE INTOLERANCE

SYMPTOMS AFTER EATING DAIRY PRODUCTS


Diarrhea


Bloating


Occasional vomiting


Gas


Nausea


Stomach cramps

DEFINITION & CAUSES

Lactose:
the sugar found in dairy products,
is not broken down properly

Lactase:
the enzyme that breaks down lactose,
is produced in small amounts

OTHER SOURCES OF CALCIUM


Green leafy vegetables


Milk alternatives
(almond, soy)


Fish
(sardines and canned salmon)


Figs

Whey protein


Calcium
(fortified foods - breakfast
cereals, orange juice)


Seeds
(chia, poppy, sesame, celery)


Beans and lentils


Almonds


Soybean products
(edamame, tofu)

Gene Information Key

rsID	Gene	"-" variant	"+" variant
rs10156191	AOC1	C	T
rs10210302	ATG16L1	C	T
rs2241880	ATG16L1	A	G
rs510432	ATG5	C	T
rs492602	FUT2	A	G
rs2187668	HLA-DQA1	C	T
rs2858331	HLA-DQA2	A	G
rs11558538	HNMT	C	T
rs12995000	HNMT	C	T
rs4988235	MCM6	A	G
rs2248814	NOS2	G	A

Definitions

GASTROINTESTINAL	
MCM6	A mutation in a DNA control region located in the MCM6 gene is associated with expression of the lactase gene. Individuals homozygous for this polymorphism are more likely to have hypolactasia, or lactose intolerance.
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.
AOC1	The SNP rs10156191 encodes a weaker form of the histamine degradation enzyme Amine Oxidase, Copper Containing 1 (AOC1). This mutation, Thr16Met, is predicted to produce an enzyme with less catalytic activity and associated higher levels of pro-inflammatory amines like histamine and putrescine.
ATG16L1 rs10210302	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.
FUT2	Fucosyltransferase 2 (FUT2) is responsible for producing specific sugar groups that are secreted by the intestinal cells into the bowel to attract "good bacteria" . Polymorphisms in this gene produce "poor secreter" status. Lack of these sugars allows for gut dysbiosis and a higher risk of inflammatory bowel disease.
HLA-DQA1	Major histocompatibility complex, DQ alpha 1 (HLA-DQA1) is a human gene responsible for a cell surface receptor essential to the function of the immune system. Patients with a polymorphism in this gene are at higher risk for auto-immune based inflammatory disease including Celiac disease, Crohn's, Ulcerative Colitis, and gluten sensitivity.
HLA-DQA2	Major histocompatibility complex, DQ alpha 2 (HLA-DQA2) is a human gene responsible for a cell surface receptor essential to the function of the immune system. Patients with a polymorphism in this gene are at higher risk for auto-immune based inflammatory disease including Celiac disease, Crohn's, Ulcerative Colitis, and gluten sensitivity.
HNMT rs12995000	The HNMT gene encodes the histamine degradative enzyme, histamine N-methyltransferase. HNMT, in contrast to AOC1, requires the methyl donor S-adenosylmethionine and a complete methylation pathway for normal function. Polymorphisms in HNMT gene expression or protein-coding are predicted to prolong the pro-inflammatory effects of histamine signaling.
HNMT Thr105Ile	The HNMT gene encodes the histamine degradative enzyme, histamine N-methyltransferase. HNMT, in contrast to AOC1, requires the methyl donor S-adenosylmethionine and a complete methylation pathway for normal function. Polymorphisms in HNMT gene expression or protein coding are predicted to prolong the pro-inflammatory effects of histamine signaling.
NOS2	Nitric Oxide Synthanse 2 (NOS2) is responsible for producing nitric oxide, a biologic mediator used by the nervous system, immune system and in blood vessel function. Polymorphisms in this enzyme can cause reduced immune system function, exercise intolerance and fatigue.

Disclaimers

TESTING:

Testing Performed By: TY

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 Laboratory Director: James Jacobson, PhD

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 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 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.

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GASTROINTESTINAL SNP References

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