Casual Friday Series

Familial Hypercholesterolemia

A Biogenetix Clinical Presentation

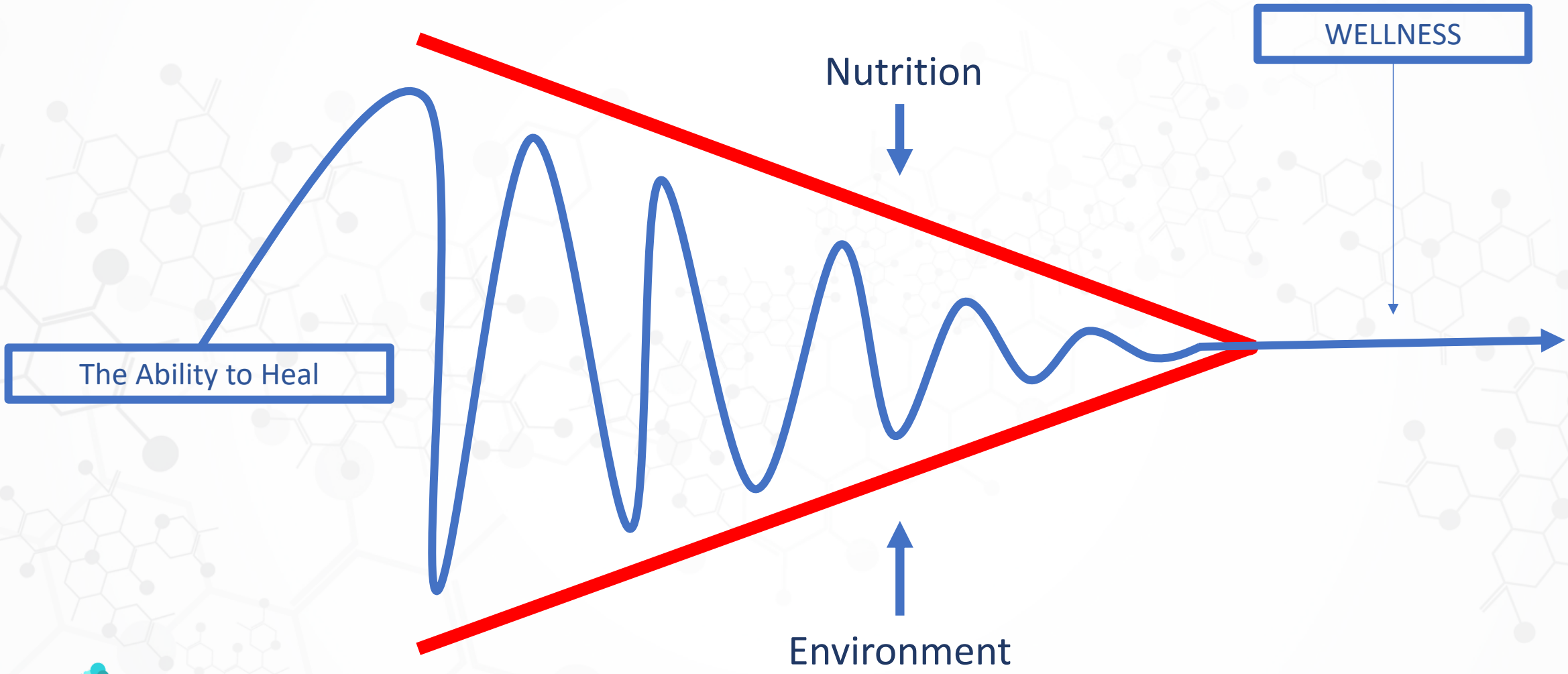
BIOGENETIX.COM

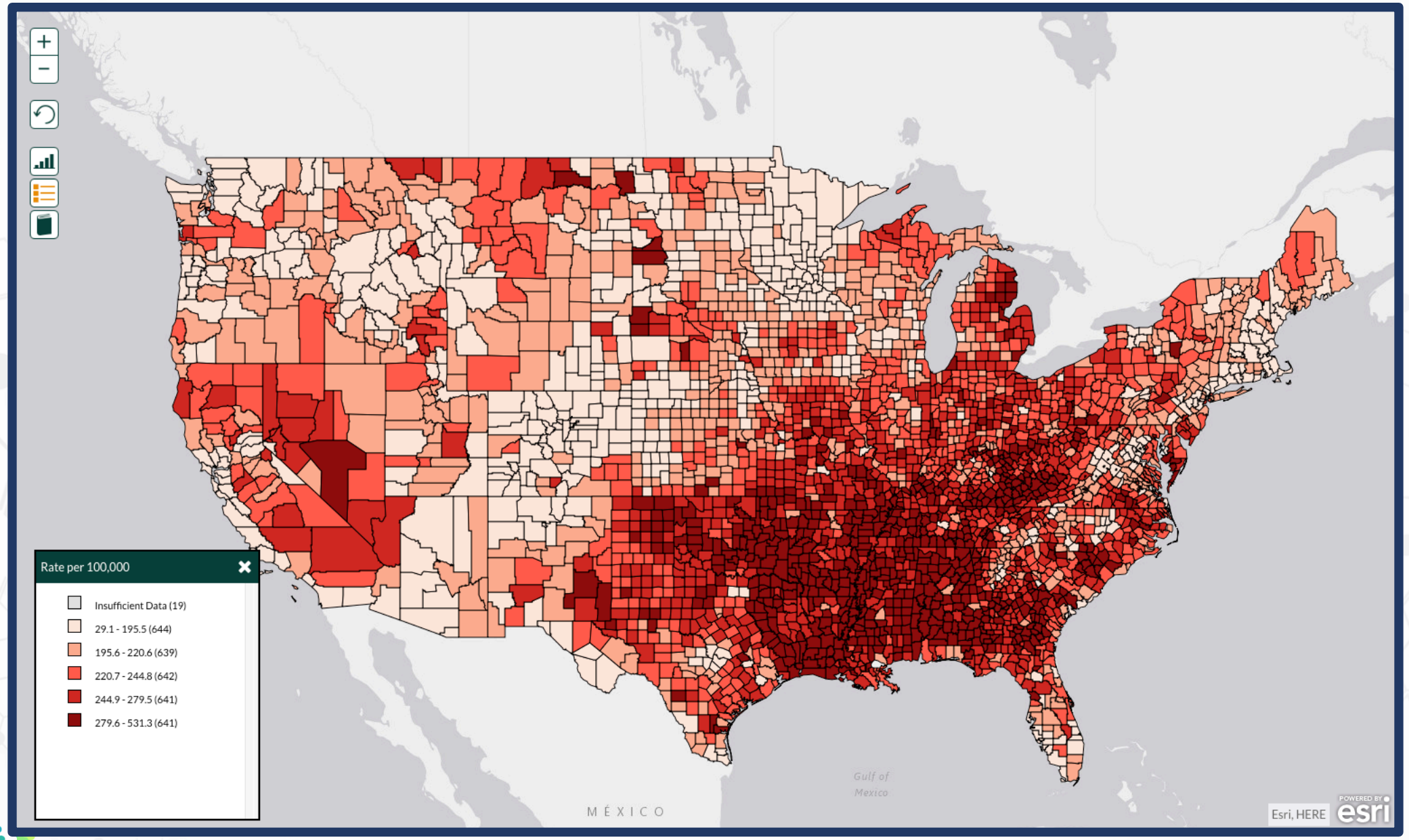
Disclaimer

- *Information in this presentation is not intended, in itself, to diagnose, treat, reverse, cure, or prevent any disease. While this presentation is based on medical literature, findings, and text, The following statements have not been evaluated by the FDA.*
- *The information provided in this presentation is for your consideration only as a practicing health care provider. Ultimately you are responsible for exercising professional judgment in the care of your own patients.*

Lifestyle + Genetics = Chronic Health IMPROVEMENT

Protocols





https://nccd.cdc.gov/DHDSPAtlas/?state=State

NMR Lipoprofile

Clinical Significance: The Lipoprotein Fractionation NMR test is used to help assess the risk for cardiovascular disease (CVD) in patients with intermediate or high risk based on traditional or emerging risk factors, and to assess therapeutic response in patients undergoing lipid-lowering therapy, by quantification of the number and size of lipoprotein particles. The lipid panel is used, along with other test, during routine assessment to determine an individual's risk of cardiovascular disease. A lipid panel can also be used to monitor the efficacy of lifestyle interventions or medications.

https://www.clevelandheartlab.com/tests/lipoprotein-fractionation-nmr-with-lipids/

Diabetes Metab J. 2013 Jun; 37(3): 207–211.
Published online 2013 Jun 14. doi: 10.4093/dmj.2013.37.3.207
PMCID: PMC3689018
PMID: 23807924

Beneficial Effects of Omega-3 Fatty Acids on Low Density Lipoprotein Particle Size in Patients with Type 2 Diabetes Already under Statin Therapy

Myun[illegible]n,[4]
Youn[illegible]

Beyond statin therapy for reducing low density lipoprotein cholesterol (LDL-C), additional therapeutic strategies are required to achieve more optimal reduction in cardiovascular risk among diabetic patients with dyslipidemia. To evaluate the effects and the safety of combined treatment with omega-3 fatty acids

There were no significant difference in the initial (week 0) lipid profiles among the three groups. After 8 weeks of treatment, as shown in Table 1 and Fig. 1, mean LDL particle size increased in all groups, and the percentage change was significantly greater in patients taking 4 g of omega-3 fatty acid with statin than in patients receiving statin monotherapy (2.8%±3.1% vs. 2.3% ±3.6%, *P*=0.024). Significant reduction in TG level was shown after 8-week treatment in all groups. The percentage change from baseline TG level was significantly greater in O3FA4S group than in the control group (-41.0%±24.1% vs. -24.2%±31.9%, *P*=0.049). TC level was significantly reduced at 8 weeks from baseline only in O3FA4S group (-0.44% ±0.66 mg/dL, *P*=0.018), but the percentage change was not significantly different compared to the control group. In all groups, neither HDL-C nor LDL-C level showed any significant change during the study period. There were no significant differences between O3FA2S group and the control group after 8 weeks of respective treatment.

Omega-3

Supplement Facts

Serving Size: 1 Softgel
Servings Per Container: 60

	Amount Per Serving	%Daily Value
Calories	10	
Total Fat	1 g	1%†
MaxSimil® Fish Oil Concentrate	1.3 g	**
Total Omega-3 Fatty Acids	860 mg	**
EPA (eicosapentaenoic acid)	600 mg	**
DHA (docosahexaenoic acid)	260 mg	**

† Percent Daily Values are based on a 2,000 calorie diet.
** Daily Value not established.

Other Ingredients: Softgel (fish gelatin, vegetable glycerin, and purified water), GRAS enteric coating (ethylcellulose, sodium alginate, purified water, medium-chain triglycerides, oleic acid, vegetable stearic acid, and ammonium hydroxide), and mixed natural tocopherols.

Contains: Fish (anchovy and/or sardine [sources of fish oil], tilapia and/or pangasius [sources of fish gelatin]).

Manufactured using MaxSimil® fish oil. MaxSimil® is a registered trademark of Ingenutra Inc. Protected under US patents 8,119,690 and 8,198,324; Canadian patents 2672513 and 2677670.

1. Promethease.com
2. Strategene.me
3. SNPedia.com

Familial Hypercholesterolemia

The *APOB* gene provides instructions for making two versions of the apolipoprotein B protein, a short version called apolipoprotein B-48 and a longer version known as apolipoprotein B-100. Both of these proteins are components of lipoproteins, which are particles that carry fats and fat-like substances (such as cholesterol) in the blood.

B-48 is gut based and associated with chylomicrons and dietary fat absorption.

B-100 is liver based and a building block to LDL *particles.*

https://medlineplus.gov/genetics/gene/apob/#conditions

Familial Hypercholesterolemia

Most people with familial hypercholesterolemia inherit one altered copy of the *APOB* gene from an affected parent and one normal copy of the gene from the other parent. These cases are associated with an increased risk of early heart disease, typically beginning in a person's forties or fifties. Rarely, a person with familial hypercholesterolemia is born with two mutated copies of the *APOB* gene. This situation occurs when the person has two affected parents, each of whom passes on one altered copy of the gene. The presence of two *APOB* gene mutations results in a more severe form of hypercholesterolemia that usually appears in childhood.

https://medlineplus.gov/genetics/gene/apob/#conditions

Familial Hypercholesterolemia

The APOB gene provides instructions for making a protein called apolipoprotein B. This protein helps LDL cholesterol bind to LDL receptors on the surface of cells, particularly in the liver. Certain variants in this gene reduce the ability of LDL cholesterol to bind to its receptor, causing fewer LDL cholesterol particles to be removed from the blood.

https://you.23andme.com/reports/ghr.fh/details/

Familial Hypercholesterolemia

B-48

Chylomicrons, gut level.

B-100

Repackaged in the liver with B-100 to form trig rich VLDL, and chol rich LDL.

Membrane health, sex hormones, steroids, etc.

Familial Hypercholesterolemia

B-48

Chylomicrons, gut level.

B-100

Repackaged in the liver with B-100 to form trig rich VLDL, and chol rich LDL.

Membrane health, sex hormones, steroids, etc.

Familial Hypercholesterolemia

B-48

Chylomicrons
gut level.

B-100

Repackaged in the liver with
B-100 to form trig rich VLDL,
and chol rich LDL.

Membrane health, sex
hormones, steroids, etc.

Familial Hypercholesterolemia

B-48

Chylomicrons, gut level.

B-100

Repackaged in the liver with B-100 to form trig rich VLDL, and chol rich LDL.

Membrane health, sex hormones, steroids, etc.

Familial Hypercholesterolemia

1. APOB *gene* codes for part of the particle.
2. Apolipoprotein B is a reflection of particle number.

MERCKMANUALS.COM

Familial Hypercholesterolemia

B-48

Chylomicrons, gut level.

B-100

ged in the liver with

B-100

ich VLDL,

and chol rich

Membrane health, sex hormones, steroids, etc

Report Time!

1. Promethease.com
2. Strategene.me
3. SNPedia.com

23andMe HOME ANCESTRY HEALTH & TRAITS RESEARCH FAMILY & FRIENDS 23andMe+ BW Brad

Browse Download

View Your Profile
Invite
Refer a Friend
Settings
Browse Raw Data
Resources
Help
Sign Out

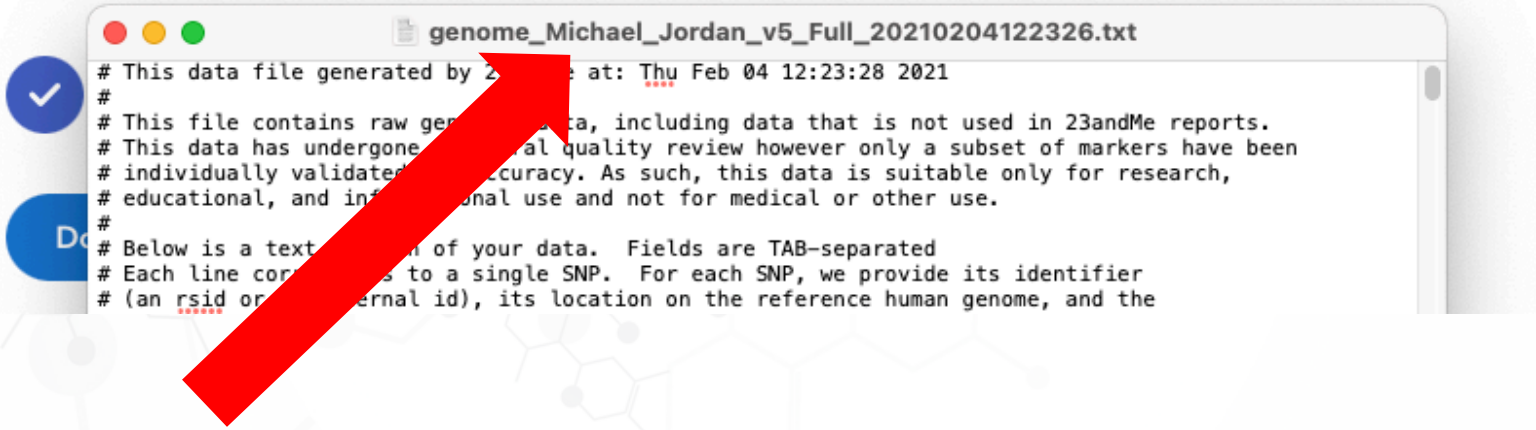
Download Raw Data

As part of your 23andMe service, we provide full access to your raw g[redacted]d and do with as you please. Before downloading, however, you shoul[redacted]ks that you should know about.

Your raw data download is ready!

Download raw data

Change the File Name…



Uploaded/Imported Files

genome_Michael_Jordan_v5_Full_20210204122326.txt

If you do not want to upload any more files for this report please **Purchase for $12**

or you can add additional data by

Importing from URL or **Uploading raw files**

Actions	Name	Status	Upload Date	Format
⋮	genome_Michael_Jordan_v5_Full…326.txt	Ready	February 04 2021	23andMe-strict-v5

- View report
- Download report
- Email report to me
- Rename report
- Delete DNA files

…Center to get instant answers for most frequently asked questions.

Problems with your email? Change your account email address

Promethease

Search

Main | Blood

rs35705950(G;T)

Possible miscall in Ancestry v2d data; otherwise, moderately (>5x) higher risk for lung issues (fibrosis or pneumonia) See discussion via main rs-page.

rs35705950 is a SNP located 3 kb upstream of the start of transcription from the mucin 5B MUC5B gene. Two independent research groups both published articles in April 2011 associating the minor (T) allele of rs35705950 with highly increased risk for interstitial pneumonia and/or pulmonary fibrosis. For interstitial pneumonia, the odds ratio for heterozygotes was 6.8 (CI: 3.9 - 12.0) and for homozygotes, 20.8 (CI: 3.8 - 113.7). For pulmonary fibrosis, the reported odds ratios for heterozygotes and homozygotes in one study were 9.0 (CI: 6.2 to 13.1) and 21.8 (CI: 5.1 to 93.5), respectively, and were 5.9 (CI: 4.4 - 7.8) and 9.7 (CI: 4.7 - 19.9) in the other.

more info

Bad	Repute
4.4	Magnitude
2019-01-02	Geno Modified
0.05234	GMAF
Other	ClinVar Significance
16	Publications
11	Chromosome
1219991	Position
5.8	Max Magnitude
2019-12-08	Rs Modified
plus	Stabilized
plus	Orientation

Medical Conditions Pulmonary fibrosis

ClinVar **Other** Idiopathic fibrosing alveolitis [[Pulmonary fibrosis]]

gs144

4	Magnitude
2015-01-07	Geno modified

Male Male.

Help | Reset | Table | Graph | Categories

All | ClinVar

Topics

Medical Conditions

ClinVar Diseases

Genes

Sort by Magnitude

CEU - Caucasians from Northern an...

Show: Genosets Homozyg Heterozyg

Repute: Good Not Set Bad

Magnitude: 0 — 4.4

Publications: 0 — 234

Frequency: 0 — 100

Require: Frequency

UI: Tooltips Editor Mode Font Size

Allow 10 2x more

Visible 10

Offscreen 23526

Good Not Set Bad

Vision: Normal

Promethease

Search

Main | Blood

rs35705950(G;T)

Possible miscall in Ancestry v2d data; otherwise, moderately (>5x) higher risk for lung issues (fibrosis or pneumonia) See discussion via main rs-page.

rs35705950 is a SNP located 3 kb upstream of the start of transcription from the mucin 5B MUC5B gene. Two independent research groups both published articles in April 2011 associating the minor (T) allele of rs35705950 with highly increased risk for interstitial pneumonia and/or pulmonary fibrosis. For interstitial pneumonia, the odds ratio for heterozygotes was 6.8 (CI: 3.9 - 12.0) and for homozygotes, 20.8 (CI: 3.8 - 113.7). For pulmonary fibrosis, the reported odds ratios for heterozygotes and homozygotes in one study were 9.0 (CI: 6.2 to 13.1) and 21.8 (CI: 5.1 to 93.5), respectively, and were 5.9 (CI: 4.4 - 7.8) and 9.7 (CI: 4.7 - 19.9) in the other.
more info

Bad	Repute
4.4	Magnitude
2019-01-02	Geno Modified
0.05234	GMAF
Other	ClinVar Significance
16	Publications
11	Chromosome
1219991	Position
5.8	Max Magnitude
2019-12-08	Rs Modified
plus	Stabilized
plus	Orientation

Medical Conditions Pulmonary fibrosis

ClinVar **Other** Idiopathic fibrosing alveolitis [[Pulmonary fibrosis]]

gs144

4	Magnitude
2015-01-07	Geno modified

Male Male.

Help | Reset | Table | Graph | Categories

All | ClinVar

Topics

Medical Conditions

ClinVar Diseases

Genes

Sort by Magnitude

CEU - Caucasians from Northern an...

Show: Genosets Homozyg Heterozyg

Repute: Good Not Set Bad

Magnitude: 0 — 4.4

Publications: 0 — 234

Frequency: 0 — 100

Require: Frequency

UI: Tooltips Editor Mode

Font Size

Allow 227 2x more

Visible 10

Offscreen 227

Good Not Set Bad

Vision: Normal

Promethease

Search

Main | Blood

rs35705950(G;T)

Possible miscall in Ancestry v2d data; otherwise, moderately (>5x) higher risk for lung issues (fibrosis or pneumonia) See discussion via main rs-page.

rs35705950 is a SNP located 3 kb upstream of the start of transcription from the mucin 5B MUC5B gene. Two independent research groups both published articles in April 2011 associating the minor (T) allele of rs35705950 with highly increased risk for interstitial pneumonia and/or pulmonary fibrosis. For interstitial pneumonia, the odds ratio for heterozygotes was 6.8 (CI: 3.9 - 12.0) and for homozygotes, 20.8 (CI: 3.8 - 113.7). For pulmonary fibrosis, the reported odds ratios for heterozygotes and homozygotes in one study were 9.0 (CI: 6.2 to 13.1) and 21.8 (CI: 5.1 to 93.5), respectively, and were 5.9 (CI: 4.4 - 7.8) and 9.7 (CI: 4.7 - 19.9) in the other.

more info

Bad	Repute
4.4	Magnitude
2019-01-02	Geno Modified
0.05234	GMAF
Other	ClinVar Significance
16	Publications
11	Chromosome
1219991	Position
5.8	Max Magnitude
2019-12-08	Rs Modified
plus	Stabilized
plus	Orientation

Medical Conditions Pulmonary fibrosis

ClinVar **Other** Idiopathic fibrosing alveolitis [[Pulmonary fibrosis]]

gs144

4	Magnitude
2015-01-07	Geno modified

Male Male.

Help | Reset | Table | Graph | Categories

All | ClinVar

Topics

Medical Conditions

Medical Conditions
3-Methylglutaconic aciduria type 2 (1)
ABO blood group (11)
AIDS (10)
Abdominal aortic aneurysm (7)
Achondroplasia (1)
Acute lymphoblastic leukemia (4)
Acute myeloid leukemia (1)
Addiction (3)
Age related macular degeneration

Publications: 0 234

Frequency: 0 100

Require: Frequency

UI: Tooltips Editor Mode
Font Size

Allow 227 2x more

Visible 227

Offscreen 10

Good Not Set
Bad

Vision: Normal

rs1333049(C;C)

1.9x increased risk for coronary artery disease

rs1333049 [illegible]en reported in a large study to be associated with heart disease, in particular, coronary arte[illegible]ase. The risk allele (oriented to the dbSNP entry) is most likely (C); the odds ratio associated wit[illegible]ozygotes is 1.47 (CI 1.27-1.70), and for homozygotes, 1.9 (CI 1.61-2.24). This SNP has also be[illegible]orted to have the highest association of any SNP studied in a subsequent experiment condu[illegible]ith the resources of the German MI [Myocardial Infarction] Family Study. [,] The initial studies w[illegible]nducted on Caucasian populations. A subsequent study of Japanese and Korean patients has [illegible]und rs1333049 to be associated with increased coronary artery disease risk, with roughly simil[illegible]s ratios. **Further reading (with comments)** - A long-term study of a cohort of 769 individuals finds [illegible]e

•Shared genetic susceptibi[illegible] ischemic stroke and coronary artery disease: a genome-wide analysis of common variants.

•Genome-wide association s[illegible]r coronary artery calcification with follow-up in myocardial infarction.

•Two-marker association tests yield new disease associations for coronary artery disease and hypertension.

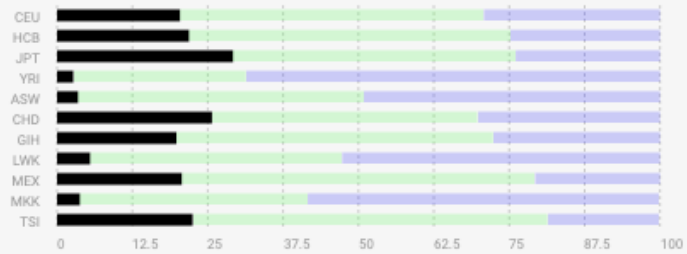
•A Genome-wide Association Study Identifies LIPA as a Susceptibility Gene for Coronary Artery Disease.

•Genomewide association analysis of coronary artery disease.

•Genome-wide association study of 14,000 cases of seven common diseases and 3,000 shared controls....

more info

Bad	Repute
4	Magnitude
20.4%	Frequency



2016-12-20	Geno Modified
0.4334	GMAF
101	Publications
9	Chromosome
22125504	Position
4	Max Magnitude
2019-12-15	Rs Modified
plus	Stabilized
plus	Orientation

Familial Hypercholesterolemia

B-48

Chylomicrons, gut level.

B-100

ged in the liver with

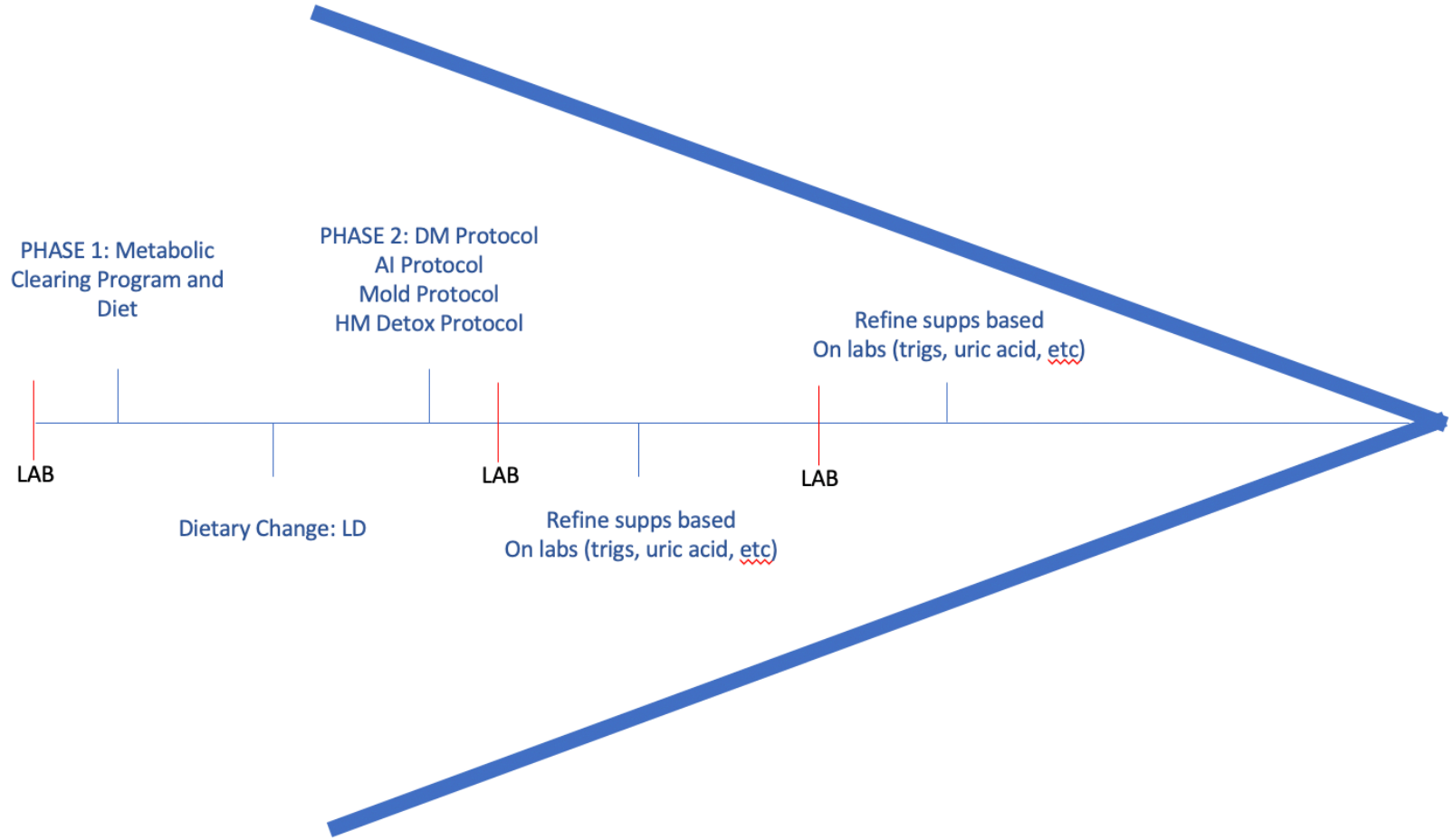
B-100

ich VLDL,

and chol rich

Membrane health, sex hormones, steroids, etc

Supplement and Diet Protocols



Retest a lab at least every 60 days.

85% of patients will improve with basic structures and healthy eating.

% of problem analysis: this is what the cleanse is for.

General → Fine Tune

Biogenetix: 833-525-0001

zeb@biogenetix.com

kim@biogenetix.com