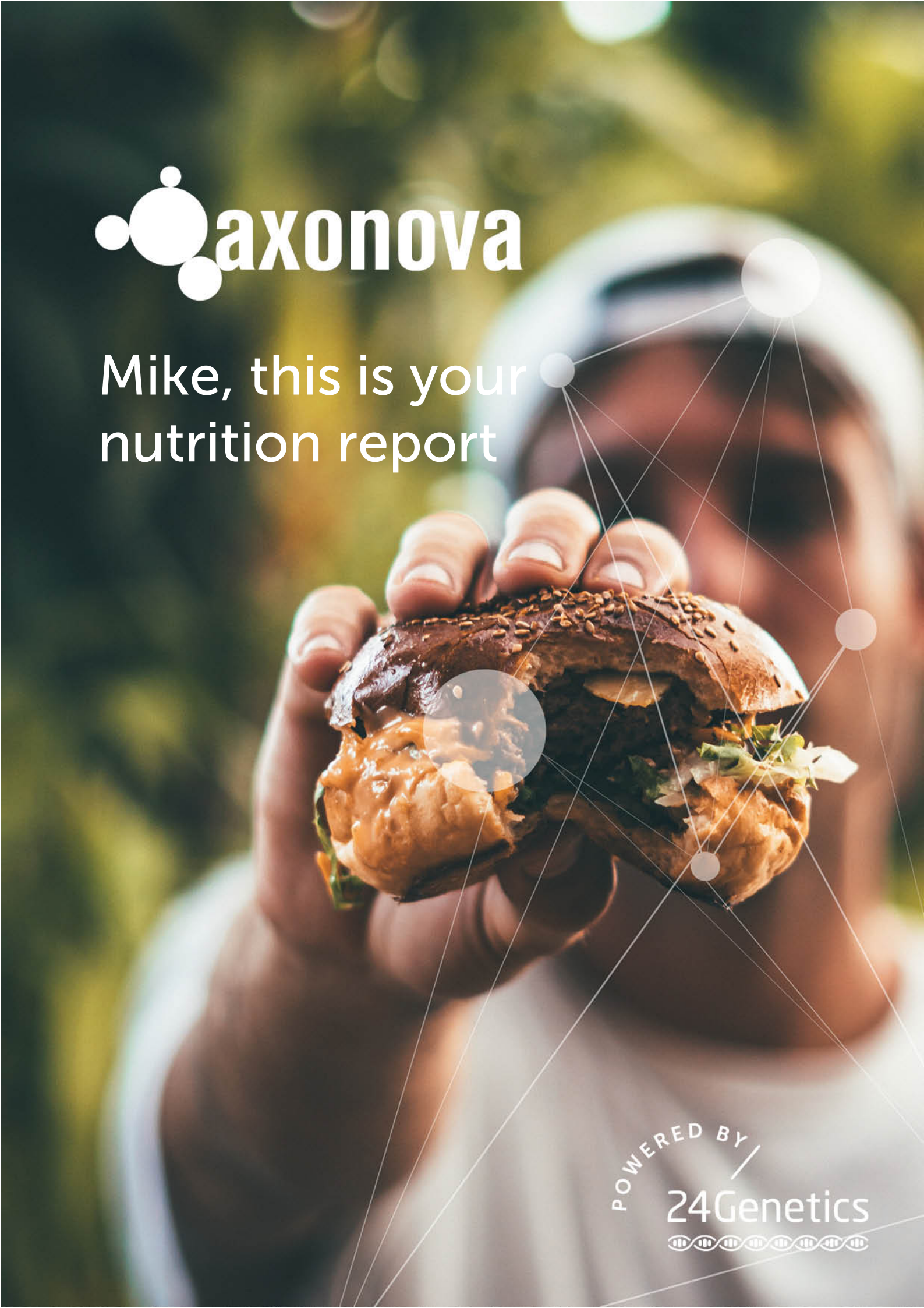
axonova
Mike, this is your nutrition report
POWERED BY
24Genetics

Table of Contents

1. Introduction

In the following pages you will find your nutrigenetics report, created based on an analysis of your DNA. You will receive detailed information about the relationship between your genes and your nutritional responses.

Thanks to the sequencing of your DNA and its subsequent analysis, you will understand your body's propensities in terms of its response to fats, carbohydrates, vitamins, minerals, and other nutrients - which is very useful to adapt your diet accordingly.

Nutrigenetics is just one aspect of the elements that influence your response to nutrition. Other factors, such as allergies, intolerances, and lifestyle habits, also influence your responses to food, and these are not reflected in this report.

To facilitate your understanding of the report, the first pages present a summary, with icons, illustrating your overall results, followed by a customised analysis.

We remind you that any changes you make to your diet should be made after consultation with health professionals, such as nutritionists, geneticists or doctors.

If you have any questions about your genetic test, see a genetic diagnosis professional or specialised nutritionist.

The information provided in this report is valid only for research, information and educational uses. In no case is it valid for clinical or diagnostic use.

Thank your for placing your trust in 24Genetics.

1.1. Frequently Asked Questions

Is this test the same as the one for food intolerances?

No, a genetic test has nothing to do with a test for food intolerances or allergies. They are different tests, featuring totally different information. Genetic testing is infinitely more complex and expensive than the tests described above, and the genetic information one obtains cannot be acquired in any other way.

Should I make drastic changes in light of these test results?

No. Any changes you decide to make in terms of your health and nutrition management should be guided by health professionals, such as nutritionists, geneticists or doctors. Any questions you have about any genetic test should be posed to experts in genetic diagnosis, or specialised nutritionists.

Does it all depend on my genes?

No, the body responds to many factors. Our genes are certainly an important parameter. Lifestyle, exercise, diet, and many other circumstances also affect the body. Knowing yourself well will help you to treat your body in the most appropriate way. And this is what these tests are all about: more knowledge.

Are all the genes analysed listed in the sections?

We include only a sample of the genes we analyse. Some of the sections are defined by the analysis of genes that we do not show in the report. Our algorithms combine all your genotypes from the markers analysed.

What is this report based on?

This test is based on different genetic studies that have been internationally verified and accepted by the scientific community. There are some scientific databases where studies, with a certain level of consensus, are published. Our genetic tests are carried out by applying these studies to your genotype. In each section you will see some of the studies on which it is based. There are sections where more studies are used than those listed.

The information provided in this report is valid only for research, information and educational uses. It is not valid for clinical or diagnostic use.

2. Summary

A healthier nutrition


Omega 6 and Omega 3 Levels


Increased Benefits of the Mediterranean Diet


Excessive fat consumption

Caption:


Your analyzed genotype is favorable.
Your analyzed genotype is a little favorable.
Your analyzed genotype doesn't particularly affect you.
Your analyzed genotype is a little unfavorable.
Your analyzed genotype is unfavorable.

Vitamins and minerals


Iron


Vitamin B9


Vitamin D


Vitamin B2


Vitamin B6


Vitamin B12


Vitamin C


Vitamin E


Vitamin K

Caption:


Your analyzed genotype is favorable.
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Metabolic


Cholesterol LDL


HDL cholesterol


Triglycerides

Caption:


Your analyzed genotype is favorable.
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Your senses


Bitter taste


Pecking


Sweet


Caffeine

Caption:


Your analyzed genotype is favorable.
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Your weight and you


Effectiveness of the Mediterranean Diet


Predisposition to overweight


Feeling of Satiety


Eating desire


Effectiveness of the Low Fat Diet


Difficulty losing weight


Emotional eating


Effectiveness of the Low Carbohydrate Diet

Caption:


Your analyzed genotype is favorable.


Your analyzed genotype is a little favorable.

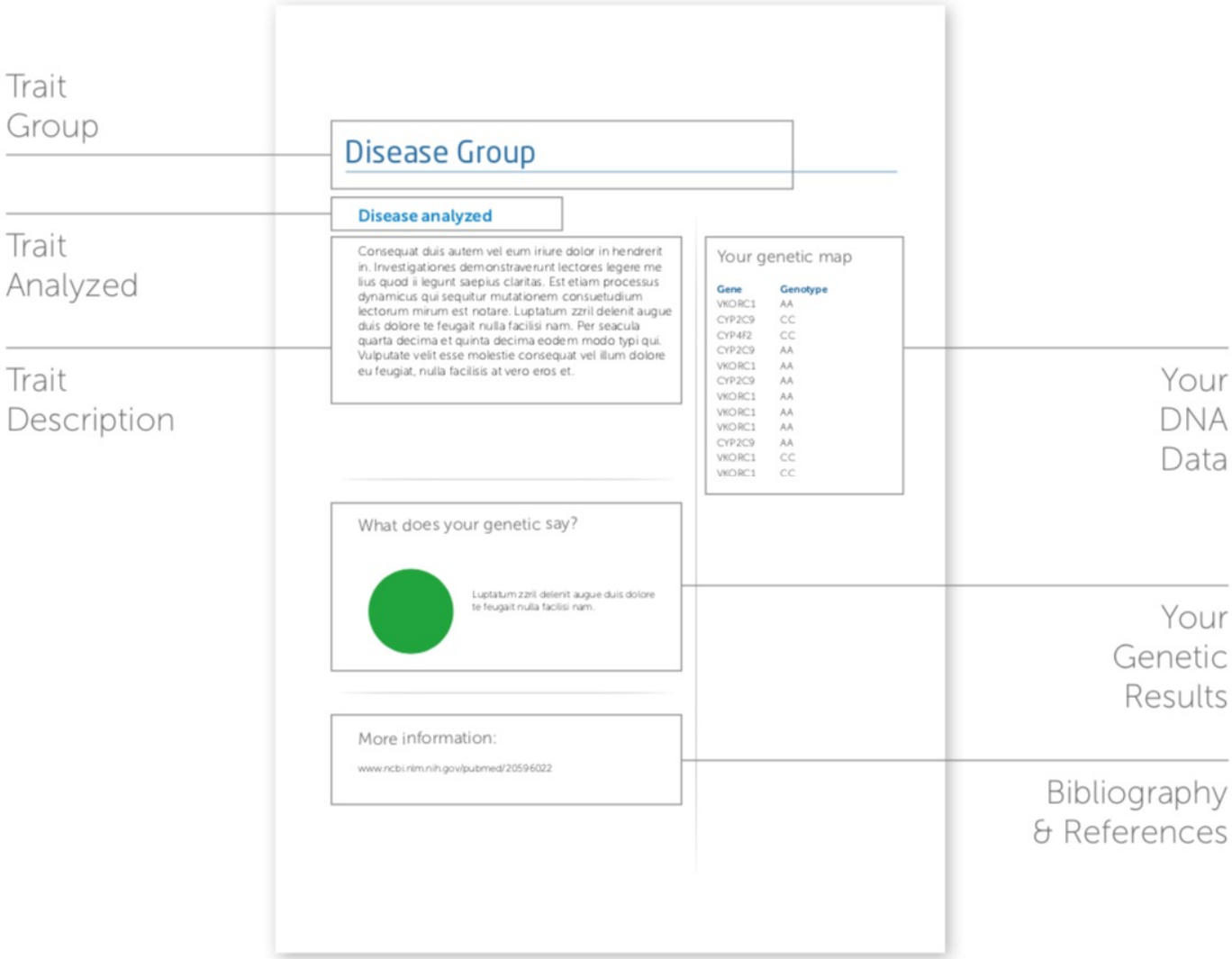

Your analyzed genotype doesn't particularly affect you.


Your analyzed genotype is a little unfavorable.


Your analyzed genotype is unfavorable.

3. Genetic Results

3.1. How to understand your report?



3.2. Your genetic results

A healthier nutrition

Omega 6 and Omega 3 Levels

Polyunsaturated fats (healthy fats) are mainly omega-3 and omega-6 fatty acids. Omega-3s are a key family of polyunsaturated fats (EPA / DHA / ALA) beneficial to brain and cardiovascular health: they lower blood pressure and heart rates, improve blood vessel function, reduce triglycerides and inflammation, and are good for eyesight and skin. Along with omega-3 fats, omega-6 fatty acids play a crucial role in brain function and normal growth and development. Omega-6s help stimulate hair and skin growth, maintain bone health, regulate metabolism, and support the reproductive system.
A healthy diet should provide the same ratio of omega-6 to omega-3, but current diets are richer in omega-6 fatty acids.

In large-scale studies it has been observed that certain variants of the FADS gene cause carriers to have decreased omega-6 and omega-3 levels.

Your genetic map

Gene	Genotype
FADS1	CC

What do your genetics tell us?

You present a genotype associated with a diminished processing of essential fatty acids, omega-6 (ARA) and omega-3 (EPA) which, therefore, will present decreased levels in your blood. You are advised to control your omega-6 intake and increase your consumption of omega-3-rich foods.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4123862/

A healthier nutrition

Increased Benefits of the Mediterranean Diet

The health benefits of the Mediterranean diet are widely known. This diet is rich in monounsaturated fats, important for reducing the risk of cardiovascular disease, and high in HDL (good) cholesterol, which delays cognitive impairment. It is also associated with increased longevity and lower levels of LDL cholesterol, which accumulates in the arteries. Following a Mediterranean diet is associated with reducing cardiovascular mortality, as well as overall mortality. It is also associated with a reduced incidence of cancer, Parkinson's disease and Alzheimer's.Women who supplement their Mediterranean diet with virgin olive oil and walnuts may reduce their risk of breast cancer (according to the Mayo Clinic).

Certain genetic variations have been associated with an increased benefit when following a Mediterranean diet.

Your genetic map

Gene	Genotype
PPARG	CC

What do your genetics tell us?

The Mediterranean diet affects you in a normal way.

More information:

http://circgenetics.ahajournals.org/content/8/1/91.long

A healthier nutrition

Excessive fat consumption

Fat is a great source of energy and essential fatty acids, and also facilitates the absorption of fat-soluble vitamins.

However, excessive consumption can lead to cardiovascular disease, excess weight, and obesity.

Several recent studies in the US and Europe indicate that the percentage of calories derived from saturated fat exceeds acceptable limits, whereas the opposite is true with regards to monounsaturated and polyunsaturated fats.

Certain genetic variations predispose carriers to ingest more fats by increasing their appetite for foods rich in them.

Your genetic map

Gene	Genotype
SLC46A3	CC

What do your genetics tell us?

You do not have a greater appetite for foods rich in fat. This genotype does not affect you negatively.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3522587/

Vitamins and minerals

Iron

Iron is an essential mineral for many bodily functions. It is part of many proteins, including oxygen carriers, haemoglobin (in red blood cells) and myoglobin (in muscle cells). It is also an essential component of antioxidant enzymes. The absorption, transport and storage of iron is closely regulated, because it is an essential and potentially toxic element.
A lack of iron is the most common nutritional deficiency in the world. Symptoms include fatigue, rapid heartbeat, and palpitations. Children and women of childbearing age, and vegetarians and vegans, are people at high risk of iron deficiency. Although it is an essential mineral, too much iron can also be harmful to the body.
Some genetic variations increase the absorption of iron, giving rise to an excess of this mineral, even when one ingests normal amounts. At 1 one in 10 people has a genetic variation of this type. Excess iron can lead to fatigue, anorexia, dizziness, nausea, vomiting, headaches, weight loss and shortness of breath.

Your genetic map

Gene	Genotype
TMPRSS6	AA
TMPRSS6	AG
TF	AG
ABO	TC

What do your genetics tell us?

You have a propensity towards low levels of iron, due to deficiencies in its transport, storage and release, so you must monitor your levels and adjust your intake (food or supplementation) to reach the appropriate levels.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4003547/

Vitamins and minerals

Vitamin B9

Vitamin B9 (folic acid) is essential for vital processes like DNA synthesis, cell maintenance and repair, protein metabolism and normal brain development and functioning. It can lower levels of homocysteine in the blood, a substance related to cardiovascular disease if its levels are high. It is very important in pregnant women and those who are trying to conceive, because it prevents defects in the neural tube and cardiovascular malformations in the foetus. Vitamin B9 is found in many foods like leafy green vegetables, peas, lentils, fruit and cereals. Vitamin B9 deficiencies are associated with anemia, elevated levels of homocysteine, complications during pregnancy, increased risk of cardiovascular disease and cancer, and cognitive dysfunction in old age.

Certain genotypes may predispose one to low levels of Vitamin B9.

Your genetic map

Gene	Genotype
MTRR	AG
MTHFR	TG
MTHFR	GG

What do your genetics tell us?

You are at a high risk of high levels of homocysteine and low levels of vitamin B9, so you should monitor folic acid levels by increasing your consumption of foods rich in it, or by taking supplements to lower your homocysteine levels.

More information:

http://www.atherosclerosis-journal.com/article/S0021-9150(00)00739-5/fulltext

Vitamins and minerals

Vitamin D

Vitamin D is a fat-soluble vitamin important for the absorption and utilisation of calcium, to maintain good bone and muscle health, and for the normal functioning of the immune, endocrine and cardiovascular system. It is synthesised on the skin after exposure to sunlight: it is metabolised to its active form, which regulates hundreds of genes, as it binds to the Vitamin D receptor. There is an increase in cases of Vitamin D deficiency in developed countries due mainly to photo-protection measures, as well as environmental conditions (contamination, geographical location), dark skin colour, being over age 50, a family history of osteoporosis, excess weight, and personal genetics. Exposure to sunlight is a decisive factor in a person's Vitamin D levels, because there are few dietary sources of vitamin D, which include fatty fish, fish liver oil and milk or fortified cereals.

Numerous studies have identified genetic variations in many genes that contribute to Vitamin D deficiency.

Your genetic map

Gene	Genotype
GC	AA
CYP2R1	AG
VDR	CC
VDR	AC
VDR	AA

What do your genetics tell us?

You are prone to low levels of Vitamin D, but the binding and transport of this vitamin are normal, so we recommend that you increase your consumption of foods rich in Vitamin D to achieve optimal levels.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3939005/

Vitamins and minerals

Vitamin B2

Vitamin B2 (riboflavin) is a central component of two molecules that serve as a cofactor of various enzymes involved in energy production; carbohydrate, fat and protein metabolism; iron absorption and normal cellular functioning.

Recent research shows that riboflavin plays an important role in cancer prevention and relieves migraines. Deficiencies of this vitamin may cause weakness, sore throat, swelling of the tongue, cracking of the skin, hair loss, dermatitis and anemia. It can also affect vision (including blurred vision), burning, itching, eye pain, optical sensitivity to light, and fatigue. Excess riboflavin is excreted in the urine, so there is no risk of overdose.

Certain genetic variants in the MTHFR gene predispose one to high levels of homocysteine, a substance related to cardiovascular disease if it is at high levels, which can be corrected with vitamin B2.

Your genetic map

Gene	Genotype
MTHFR	GG

What do your genetics tell us?

You are prone to normal levels of Vitamin B2 and homocysteine.

More information:

http://circ.ahajournals.org/content/113/1/74.long

Vitamins and minerals

Vitamin B6

Vitamin B6 (pyridoxine) is involved in numerous essential processes, such as protein metabolism, proper functioning of the neurological system, the production of haemoglobin, and the maintenance of normal levels of homocysteine. Even slight imbalances in Vitamin B6 levels can induce various symptoms: nerve inflammation, irritability, depression, dermatitis, cracked and sore lips, swollen mouth and tongue, and confusion. Vitamin B6 is found naturally in many foods, like peas, whole grains, meat, eggs and fish. Most people get enough vitamin B6 when following a balanced diet, such that a lack of this vitamin is uncommon.

The genetic marker rs4654748 of the NBPF3 gene has been associated in numerous studies with reduced levels of vitamin B6, possibly due to a greater degradation of the vitamin in the blood. Studies show an association between vitamin levels and different genotypes. This does not mean, however, that your levels are not adequate.

Your genetic map

Gene	Genotype
NBPF3	TC

What do your genetics tell us?

You have the variant of the NBPF3 gene associated with lower levels of B6, so you are more likely to have decreased levels of it in your blood. We recommend that you increase the consumption of foods rich in this vitamin.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2667971/

Vitamins and minerals

Vitamin B12

Vitamin B12 (cobalamin) plays an important role in the functioning of the brain, nervous system, and digestive system, and is an essential component for the synthesis and regulation of DNA and for the metabolism of fatty acids and amino acids. It is produced by bacteria and is found naturally in foods of animal origin: meat, fish, eggs and dairy. A healthy diet provides enough Vitamin B12, although vegetarians, vegans, the elderly, or those with vitamin B12 absorption difficulties, may suffer deficiencies. Symptoms of Vitamin B12 deficiency include fatigue, weakness, swelling or numbness and tingling in the hands and feet, inflammation of the stomach, and nervous system problems.

Numerous genetic studies have identified a marker in the FUT2 gene that is associated with low levels of Vitamin B12 in blood. This does not mean, however, that your levels are not adequate. This effect could be due to a reduced absorption of the vitamin in the intestine.

Your genetic map

Gene	Genotype
FUT2	AG

What do your genetics tell us?

You are prone to low levels of Vitamin B12. It is important that you take foods rich in Vitamin B12, especially if you are older than 50.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2773275/

Vitamins and minerals

Vitamin C

Vitamin C (ascorbic acid) is a water-soluble compound, critical for many vital processes: the functioning of the immune system, the production of red blood cells, the maintenance of connective tissue and blood vessels, bones, teeth and gums. It is also a potent antioxidant and supports the absorption of iron. Some foods rich in vitamin C are lemons, oranges, red pepper, watermelon, strawberries and citrus juices. While a severe deficiency causes scurvy, variations in vitamin C levels have been associated with a wide variety of complex chronic diseases, such as arteriosclerosis, type-2 diabetes, and cancer. High levels of vitamin C have been associated with increased vitality, longevity, and reduced risk of death from cardiovascular disease or cancer.

Vitamin C is transported across the cell membrane via transport proteins, one of which is SLC23A1. A recent study of about 15,000 people found that the T allele variant in SLC23A1 is associated with low circulating Vitamin C levels.

Your genetic map

Gene	Genotype
SLC23A1	CC

What do your genetics tell us?

Your genotype is associated with normal levels of Vitamin C.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3605792/

Vitamins and minerals

Vitamin E

Vitamin E is a fat-soluble micro-nutrient formed by a group of eight molecules, with α-tocopherol being the most abundant. It acts as an antioxidant, helping cells to protect themselves from damage caused by free radicals. It is essential for the functioning of the immune system, beneficial for cardiovascular health; and prevents cataracts, age-related macular degeneration and fatty liver. It is also essential for the skin because of its anti-inflammatory and photo-protective properties. Imbalances in Vitamin E levels are relatively common and are caused by diets that do not include enough healthy fats, malabsorption disorders, and/or genetic variations. The synthetic varieties of Vitamin E found in fortified foods and supplements are biologically less active.

A study of 3,891 individuals has found an intergenic marker, rs12272004, near the APOA5 gene, associated with increased levels of Vitamin E, which benefit the bearer.

Your genetic map

Gene	Genotype
near APOA5	CC

What do your genetics tell us?

Your genotype is not associated with increased levels of α-tocopherol. Therefore, you should optimise your intake of Vitamin E by increasing your consumption of foods rich in it. Keep in mind that many adults do not eat adequate amounts of Vitamin E daily.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2668002/

Vitamins and minerals

Vitamin K

Vitamin K is a group of fat-soluble vitamins essential for promoting proper blood clotting and bone health. Numerous studies indicate that an optimal intake of vitamin K contributes to greater longevity. Vitamin K plays a protective role against various modern diseases such as arteriosclerosis, osteoporosis, diabetes and some types of cancer. Low levels of vitamin K increase the risk of bleeding, the calcification of blood vessels, and bone fractures. Vitamin K is often used to treat varicose veins, bruises, scars, and burns, as it accelerates healing. Dietary sources richest in Vitamin K include vegetable oils and leafy green vegetables.

Genetic variations have been reported that contribute to imbalances in Vitamin K levels; in fact, some variants have been associated with increased levels, while others have contributed to lower levels.

Your genetic map

Gene	Genotype
VKORC1	GG
VKORC1	CC

What do your genetics tell us?

Your genotype is associated with normal levels of Vitamin K.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2761647/

Metabolic

Cholesterol LDL

Low-density Lipoprotein (LDL) is the type of cholesterol that can be dangerous in cases of high levels. LDL cholesterol can form plaques and build up in the walls of the arteries, which can narrow and make them less flexible, increasing the risk of cardiovascular disease (heart attack, atherosclerosis, angina). Optimal levels of LDL cholesterol are less than 100 mg / dL. Near-optimum levels are in the 100-129 mg/dL range, and medium-high levels are from 130 to 159 mg/dL. Levels above 160 mg/dL are high, and above 190 mg/dL are very high.

Genetic results indicate one's likelihood of having high LDL levels. If your risk is low, you are less likely than the average person to suffer high levels. However, you may still have problems with LDL levels as a result of your diet and other factors. Processed foods rich in trans fats contribute to increased LDL levels. Genetic variants in various genes have been linked to LDL cholesterol levels.

Your genetic map

Gene	Genotype
ABCG8	TT
APOB	CC
CELSR2	GG
HMGCR	CC
HNF1A-AS1	CC
TIMD4	CG
LDLR	TG
LOC10272496	TC
SUGP1	TC
PCSK9	TT

What do your genetics tell us?

Your genetic profile indicates that you share a genotype with people whose LDL levels are close to optimal.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2881676/#SM

Metabolic

HDL cholesterol

High-density Lipoprotein (HDL) is also known as "good cholesterol", because high levels of HDL cholesterol appear to protect against heart disease, while low levels (below 40 mg/dL) increase the risk of coronary heart disease.

The main mechanism by which this occurs is through HDL transporting excess cholesterol from the arteries to the liver. In men, typical levels of HDL are 40-50 mg/dL.

In women, the female hormones cause HDL levels of 50-60 mg/dL. However, after menopause there is a tendency for these levels to decrease. Foods that contain trans fats can lower HDL levels, which is not healthy.

Variants in various genes have been associated with blood levels of HDL, which contribute cumulatively.

Your genetic map

Gene	Genotype
ABCA1	TT
RAB11B	TC
CETP	CC
FADS1	CC
GALNT2	AG
HNF4A	CC
KCTD10	CC
NUTF2	GG
LIPC	TT
LIPG	TT
LPL	AA
TTC39B	TT
ZPR1	CC
CETP	CC

What do your genetics tell us?

You have a greater propensity towards low HDL levels (less than 40 mg/dL). You should watch your blood's HDL levels.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2881676/

Metabolic

Triglycerides

Triglycerides are chemical fats that build up in your body.

People with elevated triglycerides are at increased risk of cardiovascular disease and type-2 diabetes.

Having high triglyceride levels is often associated with behaviour such as a lack of exercise, excessive alcohol consumption, smoking, the excessive consumption of refined carbohydrates, and being overweight. Normal levels are below 150 mg/dL, the mid-high range is between 150 and 199 mg/dL, above 200 mg/dL is considered high levels, and more than 500 mg/dL is very high.

Scientific studies have shown that variants in various genes affecting lipoprotein metabolism are associated with triglyceride levels.

Your genetic map

Gene	Genotype
DOCK7	AA
APOB	AG
FADS1	CC
LPL	AA
BAZ1B	AA
CILP2	TC
TRIB1	AA
XKR6	AA
ZPR1	CC

What do your genetics tell us?

You are more likely to have elevated triglyceride levels (above 150 mg/dL). You should monitor your blood triglyceride levels.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2881676/

Your senses

Bitter taste

Our taste perception plays a fundamental role in our eating preferences and habits, creating aversion or attraction to certain foods and drinks. An adverse response to that which is bitter is instinctive, and prompts us to reject it. Perceptions of bitterness are due to genetic variations in various receptors: when we ingest food, molecules such as phenylthiocarbamide interact with saliva and bind to taste receptors in the mouth, producing the sensation of bitterness.
People with certain genetic variants are sensitive to the bitter taste of beneficial vegetables (such as broccoli, Brussel sprouts, and cabbage) or drinks (such as coffee and black beer). There is evidence that genes responsible for taste play an important role in human health. A new study has found that people who are naturally more sensitive to bitter tastes are also more likely to add salt to food, often exceeding the amount recommended. These people are also more likely to avoid healthy foods, like leafy green vegetables and broccoli.

Your genetic map

Gene	Genotype
TAS2R38	CG
TAS2R38	AG
TAS2R38	TC
TAS2R16	TC

What do your genetics tell us?

Your genotype is not associated with a greater sensitivity to bitter food, so you should not have problems eating vegetables and other foods with this flavour.

More information:

http://ajcn.nutrition.org/content/81/5/1005.long

Your senses

Pecking

Snacking can be a healthy or unhealthy behaviour. Small portions of balanced foods containing unsaturated fats, proteins, fibre, and low-glycaemic carbohydrates can help quench hunger and reduce total calorie intake, while junk food can have negative effects on health.

Genetic markers associated with pecking include leptin receptor variants, an essential hormone in the regulation of food intake. Some people feel hungry more often than others, which leads them to eat impulsively, and renders them more likely to be overweight.

Variations in the LEPR (leptin receptor) and FTO gene have been associated with a greater tendency to eat between meals.

This association has not been studied in men. This section is only valid for women.

Your genetic map

Gene	Genotype
LEPR	AG
FTO	TT

What do your genetics tell us?

You do not have a special predisposition to eating between meals.

More information:

https://www.ncbi.nlm.nih.gov/pubmed/17192493

Your senses

Sweet

The detection of sweetness is mediated by receptors for this taste.

Culinary culture, habits and your age influence your food preferences, and your genetics also play an important role in this regard.

Genetic variants in various genes predispose one to a greater preference for sweet foods.

The consumption of healthy foods that are naturally sweet can help satisfy this desire without necessarily increasing daily calorie intake. Excessive cravings for processed sweets can harm your health and increase your daily calorie intake.

Your genetic map

Gene	Genotype
TAS2R38	CG
TAS2R38	AG
TAS2R38	TC
FGF21	AG

What do your genetics tell us?

You have a preference for carbohydrates, but not an extreme one. Avoid processed sweet, to control your weight and protect your health.

More information:

http://ajcn.nutrition.org/content/81/5/1005.long

Your senses

Caffeine

The cytochrome P4501A2 is primarily responsible for metabolising caffeine. People, depending on their genotype, may be faster metabolisers, or they may metabolise caffeine more slowly.

People with normal metabolisms take about 45 minutes to absorb 99% of caffeine. In humans, the half-life of caffeine is between 4 and 6 hours, which explains why the effects of drinking coffee lasts that long.

However, genetic variations that modify the metabolism of caffeine may create hypersensitivity to this substance. These people react to very small amounts of caffeine, even at amounts below 100 mg, and may experience symptoms of overdose, such as insomnia, nervousness and increased heart rates. These people may take more than twice as long to metabolise caffeine.

Your genetic map

Gene	Genotype
CYP1A2	CC

What do your genetics tell us?

Your genotype is associated with a slow metabolism of caffeine, so you may experience overdose symptoms. Limit your consumption of soft drinks with caffeine, coffee, black tea, etc. and choose drinks that are low in caffeine.

More information:

http://www.geneticsmr.com/articles/6221

Your weight and you

Effectiveness of the Mediterranean Diet

The benefits of the Mediterranean diet for health are well known. Numerous studies have associated a Mediterranean diet with a low risk of obesity. In a study of more than 11,000 participants, it has been observed that people who best followed this diet lost more weight and reduced their waistlines more than the rest. The Mediterranean diet is rich in vegetables, fish, fruit, legumes, nuts and olive oil, while meat and dairy products are minor components. Taking into account the interaction between diet and personal genetic predisposition to obesity, we can determine how effective this diet is for each person.

Genetic variations in various genes have been associated with greater weight loss by following a Mediterranean diet; i. e., for people with certain genetic variations in genes, like PPARG, among others, the Mediterranean diet helps them to lose fat.

Your genetic map

Gene	Genotype
PPARG	CC
TCF7L2	CC

What do your genetics tell us?

Based on your genotype, you are not prone to easily lose weight on this type of diet.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3951915/

Your weight and you

Effectiveness of the Low Fat Diet

According to the World Health Organization, to eat a balanced and healthy diet it is recommended to reduce total fat consumption to less than 30% of daily calorie intake. In addition, it is advisable to reduce the consumption of saturated fats to less than 10% of daily caloric intake, and replace those fats with unsaturated ones (mono and polyunsaturated).

A low-fat diet restricts fat intake to 20% while increasing protein intake from 20-25% to 40%, and decreases the proportion of carbohydrates (the general recommendation being 55-60%).

Numerous large-scale studies on weight loss have found that people with variations in genes associated with fat sensitivity (such as FTO, PPARG, and PPM1K) respond best to a low-fat diet.

Your genetic map

Gene	Genotype
FTO	TT
FTO	CC
PPM1K	TT
NEAR IRS1	TC
QPCTL	TC

What do your genetics tell us?

Your genotype indicates that you have a greater genetic propensity to lose weight and maintain a healthy weight if you follow a low-fat diet. Thus, we recommend reducing your fat intake to 20%, and increasing your diet's proportion of proteins and carbohydrates. It is important to include healthy fats (mono and polyunsaturated).

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4959911/

Your weight and you

Predisposition to overweight

Obesity is caused by environmental and genetic factors. Approximately 40 to 70% of one's predisposition to obesity is inherited. When someone has a Body Mass Index (BMI) of 30 to 35 (obesity) or above 40 (morbid obesity), genetic factors with strong effects are most likely involved. Your genetic predisposition to obesity is determined by your genotype in variants of the FTO and MC4R genes, which are associated with higher BMIs. The MC4R gene is expressed at the centre of brain starvation and is involved in the regulation of energy balance. The FTO gene is important in controlling eating habits and energy balance.
Adiponectin, meanwhile, is a hormone produced by adipose cells. In the body it causes the liver and muscles to consume energy from fat. High levels of adiponectin are beneficial for weight loss. If you have low levels, losing weight can be a good way to increase your adiponectin levels. A variant of the adiponectin gene (ADIPOQ) is associated with its levels.

Your genetic map

Gene	Genotype
FTO	TT
MC4R	TC
ADIPOQ	GG
ADRB2	GC
FTO	TT

What do your genetics tell us?

You are more likely than the average person to have a high BMI (Body Mass Index), which does not mean that you are obese. However, because lifestyle has a considerable impact on weight, you can reduce your risk by eating a proper diet, exercising, and reducing your stress.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2695662/

Your weight and you

Difficulty losing weight

Not all people lose weight at the same rate. Some lose weight soon after starting a low-calorie diet, while others try to follow all types of diets without getting results.

There are studies that indicate that genetics are, in part, responsible for one's ability to lose weight. Some studies have found that carriers of certain genetic variations struggle to lose weight and improve their metabolic status. People with genetic variants associated with obesity, sensitivity to fat, type-2 diabetes, and emotional intake do not lose weight as easily as other people, despite following the same diet and getting the same levels of exercise. It is important to remember that genetics play a role in weight loss and maintenance. Some diseases and medication can also hamper weight loss. The most common are hypothyroidism, hormonal changes in women, chronic stress, and depression.

Your genetic map

Gene	Genotype
TCF7L2	CC
PPARG	CC
PPM1K	TT
MTNR1B	CG
CLOCK	AA

What do your genetics tell us?

Your propensity to lose weight is average. Eat a diet that is right for you, and exercise to reduce your weight.

More information:

http://ajcn.nutrition.org/content/91/2/472

Your weight and you

Feeling of Satiety

Satiety refers to the physical sensation of feeling full after eating. When satiety is normal, the brain receives a signal that the body has eaten enough, and hunger subsides.

People with genetic variations in some genes, like FTO, are more likely to eat more without feeling full and satisfied.

The FTO gene is an important factor that predisposes one to having a healthy vs. an unhealthy weight. There is also a correlation between low satiety and weight gain. People with low levels of satiety tend to eat more and consume foods rich in sugar and fat. To improve satiety, you can increase your intake of dietary fibre and eat balanced and healthy foods throughout the day. Examples of high-fibre foods include whole wheat bread, oats, barley, lentils, black beans, artichokes, raspberries and peas.

Your genetic map

Gene	Genotype
FTO	TT

What do your genetics tell us?

Your genotype indicates that your propensity to feel satiated is normal.

More information:

http://ajcn.nutrition.org/content/90/5/1426.long

Your weight and you

Emotional eating

Emotional eating or loss of control over eating, refers to the tendency to eat more than normal in response to stimuli, such as the taste of food, or situations that trigger overeating, such as stress, negative emotional states (anger, anxiety) or certain social situations.

Some studies indicate that certain genetic variations in the TAS2R36 gene, responsible for the detection of bitterness, make some people more likely to eat compulsively when in certain moods.

It seems that this mechanism is mediated by the body's endocannabinoid system, which regulates the energy metabolism, influencing appetite.

Your genetic map

Gene	Genotype
TAS2R38	AG

What do your genetics tell us?

Your genotype is not associated with increased eating for emotional reasons.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4179166/

Your weight and you

Eating desire

Although there is no objective method to quantify the desire to eat, or preferences for a particular type of food, behavioural scientists have devised techniques to measure individual motivations to consume food, comparing this between different people. This measure, called the Reinforcement Value of Food (RVF), describes how much effort a person is willing to make to get a particular food. This value can be determined through a series of laboratory tests. In each, the individual who is being tested is asked to complete a task in exchange for a small portion of their favourite food. The task on the initial test is easy, so the food is not hard to get. As the test continues, the tasks become more challenging and, at a certain point, the participant feels that the effort to obtain the food is no longer worth it, and decides to quit.

Using these techniques, a study has identified a genetic component associated with the desire to eat.

Your genetic map

Gene	Genotype
ANKK1/DRD2	GG

What do your genetics tell us?

Your genotype is associated with normal food reinforcement values.

More information:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2213752/

Your weight and you

Effectiveness of the Low Carbohydrate Diet

Carbohydrates are the main source of energy in a diet, accounting for between 45% and 55% of the daily intake. They are the macronutrients from which we obtain the energy our body needs. Simple carbohydrates give us immediate energy, while complex ones ensure an energy supply throughout the day. Simple carbohydrates are found mostly in fruits; while complex carbohydrates are found in vegetables, cereals and legumes. Don't forget that they are a source of fibre, an essential component of diets and very important for intestinal health. Slimming diets typically call for reductions in carbohydrate intake, and an increase in protein, but not all people respond the same way to this reduction.

It has been observed that a polymorphism in the FTO gene, linked to obesity, is related to a better response to low-carbohydrate diets.

Your genetic map

Gene	Genotype
FTO	TT

What do your genetics tell us?

Your genotype is associated with greater weight loss if you follow a low carbohydrate diet.

More information:

http://ajcn.nutrition.org/content/90/5/1418.long

Axonova
Le Vallon
Vieux Grand Port
51405 Mauritius

Contact details:
Website: www.axonova-pharma.com
Email: contact@axonova-pharma.com
Tel: (230) 5500 4670