yourEPI®

MyGenes 360

Your analysis and results

Jane Doe — ID: 00001

Dear Jane

We are delighted to present you with the results of your personalized DNA analysis report. Our analysis provides you with valuable insights into your genetic predispositions in relation to dietary behavior, intolerances, sleep habits, metabolism, hormone system, detox, and physical activity.

We have also developed personalized lifestyle recommendations based on your individual genetic blueprint to help you optimize your health and well-being.

At our company, we understand that everyone's genetic makeup is unique. In addition, the science of epigenetics tells us that our genes are not our destiny and that we can change gene expression through lifestyle choices. Meaning genetic risks may not even be expressed when choosing the right lifestyle. That's why it's so important to know about your genetic makeup, being able to avoid certain lifestyle choices or to underline others to express your full potential.

By understanding your genetic predispositions, you can develop a personalized lifestyle that suits your unique needs and helps you achieve optimal health. Our team of experts has carefully selected genes from scientific literature that have a proven impact and for which there are sufficient reliable and high-quality scientifc studies.

We maintain the highest quality standards to ensure that you receive the best possible analysis of your genes. Our laboratory complies with the ISO 17025:2005 standards and utilizes state-of-the art technology to analyze your DNA with the utmost accuracy and reliability. Our experts have developed specific recommendations and epigenetic strategies regarding your nutrition and lifestyle based on your genetic makeup.

Our comprehensive report contains detailed information on your genetic predispositions and matching lifestyle recommendations. We understand that interpreting genetic data can be overwhelming, which is why we created algorithms showing our findings in an easy-to-understand manner.

We provide you with a detailed explanation of each tested section and how it may impact your health. We also provide you with recommendations that are tailored to your genetic makeup, taking into consideration your individual needs and preferences.

We believe that by providing you with personalized recommendations for your nutrition and lifestyle, we can help you achieve your health goals and improve your overall well-being. Our goal is to empower you to take control of your health by providing you with the information and tools you need to make informed decisions.

If you have any questions or concerns about your report, our team of experts is here to assist you. We are committed to providing you with the highest quality analysis of your genes and personalized recommendations for your lifestyle. Thank you for choosing our company for your DNA analysis needs. We appreciate your trust in our services and look forward to assisting you in achieving your health goals.

Epic regards,

YourEpi-Team

How to use your DNA report

To better understand your DNA analysis, we kindly ask you to read to following.

STEP BY STEP APPROACH

1. First get a brief overview and understand how the report is structured (table of content).
2. Check out our ‚spotlight pages', where you can get a glimpse of your results on one page.
3. Chose a chapter you are most interested in depending on your individual goals. We recommend to start with nutrition and/or sleep (lifestyle chapter).
4. Once chosen your chapter you want to start with finding out your individual make up in this area.
5. Particularly pay attention to your GPS (see below further explanations to GPS) and our specific recommendations and select which you want to work with.
6. Try to set specific goals and a time frame you want to implement your new lifestyle choices. Also try to collect measurable data (e.g. weight when working on nutrition, a sleep tracker when you want to work on sleep quality or just simply your overall wellbeing on a scale of 1-10). Tracking makes it possible for you to evaluate your lifestyle changes even better.
7. Then start your new lifestyle and maybe even choose your next goal and chapter you want to work on.
8. If you would like to dive even deeper into your genetic data or you would like an epigenetic coach to support your new lifestyle journey, please find our blog on www.epi-genes.com or email us: support@epi-genes.com.

SPOTLIGHT PAGE

On these pages you get a rough overview about your genetic make up from each chapter.

CHAPTERS

We chose five lifestyle chapters in which we analyzed your genetic make up. Every chapter is comprised of several sub sections. Dive in to find out more.

GPS AND GENOTYPE TABLE

Very often it's not a single gene variant that defines you and your traits. Whereas in some cases one single gene variant may have a strong impact on your health, usually it's a set of genes that define the different lifestyle areas we are looking at in your report. That's why we created vgenetic variants and shows your individual probability in one specific area. For example, if your GPS for metabolism (in the lifestyle section) is low that is we analyzed a set of genes that indicate the possibility

Chapter 1	Nutrition
Chapter 2	Lifestyle
Chapter 3	Hormones
Chapter 4	Detox
Chapter 5	Athletic Performance

of having a slower metabolism. Based on our findings we then provide you recommendations to support your genetic make up.

The genotype table shows the wild type, the variant and your individual genotype of this single gene you are looking at.

The wild type indicates the most common gene variant in the population. Since you inherited two gene sets, one from your mother and one from your father, only one gene set can have a variant what would be called heterozygous in genetics. If you have a genetic variation in both gene sets that is homozygous.

Even though your genotype is not a wild type it doesn't necessarily mean there is a risk. Specific gene variants can be advantageous in one area but disadvantageous in another area. To get an even better understanding of your report we highly recommend working with an epigenetic coach that is trained in genetics and epigenetics.

ANALYSED GENES

A list of genes is added to each of our analysis, and each gene has a determined genotype. A genotype or the combination of genotypes within an analysis determines your GPS and your result.

RECOMMENDATIONS BASED ON YOUR GENETIC MAKE UP

We have prepared recommendations based on your genetic makeup that reveal your daily nutrient needs and suggest a lifestyle suited to you. It is advisable to follow them, as they take into account the needs of your body that are determined by your genes. Your genes have a significant impact on your current state and overall well-being.

POLICY

Your personal DNA analysis is primarily for educational purposes and is not intended to provide medical advice for the diagnosis, treatment, relief, or prevention of illnesses. If you have any significant medical issues, we advise you to consult your physician before making any dietary changes. It is important to obtain permission from your doctor before making any alterations to your medication or other medical care. For any inquiries regarding your personal DNA analysis, please contact us via email at info@yourepi.de.

Table of Contents

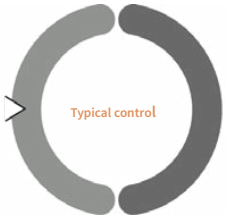
Nutrition

Good nutrition encompasses a balanced diet that includes a variety of foods from different food groups, ensuring an adequate intake of macronutrients (carbohydrates, proteins, and fats), micronutrients (vitamins and minerals), and other essential components for optimal well-being. Due to the differences in our genetic make up, the nutritional needs of every individual are very specific. What is good is that nutrition is one of the factors that we can use to influence our body and at the same time a factor that can most easily be influenced.

Overview of you

NUTRITIONAL BEHAVIOUR

PERCEPTION OF SATIETY AND HUNGER



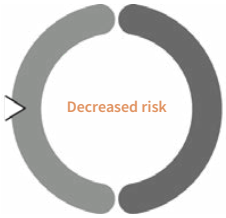
Your combination of genes indicates that your perception of satiety and hunger is typical.

FOOD SENSITIVITYS

DAIRY

Your GPS indicates a low risk for lactose intolerance. You most likely do not have problems with lactose breakdown, as you are the carrier of favourable variants of the MCM6 gene, which indicates a normal level of the lactase enzyme.

GLUTEN SENSITIVITY

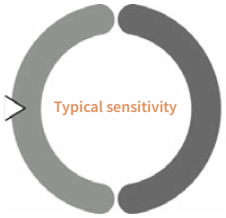


Your GPS indicates a lower likelihood of gluten sensitivity.

GRAIN SENSITIVITY

Your GPS indicates a decreased risk for grains sensitivity.

HISTAMINE



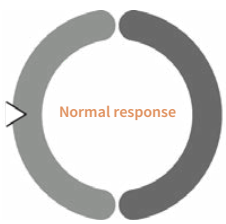
Your GPS indicates that you are most likely histamine tolerant.

MAKRONUTRIENTS

APOE STATUS

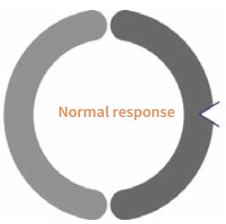
Your GPS indicates a typical risk concerning APOE and Alzheimer's. The analysis has revealed you are the carrier of the Apo-ε3/ε3 type.

SATURATED FATS



Your GPS indicates a typical response from saturated fats.

MONOUNSATURATED FATTY ACIDS (MUFAS)

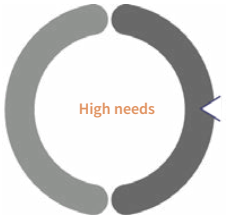


Your GPS indicates a normal benefit of monounsaturated fats for your body.

POLYUNSATURATED FATTY ACIDS (PUFA)

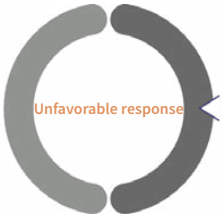
Your GPS indicates lower risk for inflammation.

OMEGA-3



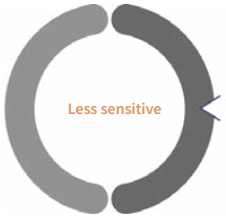
Your GPS indicates less efficient omega-3 fatty acid metabolism and thus higher needs.

CARBS



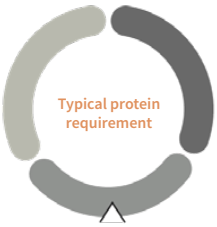
Your GPS indicates higher likelihood of unfavorable response to carbohydrates.

INSULIN



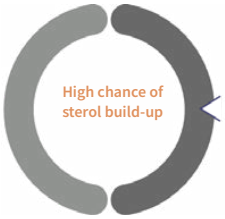
Your GPS indicates lower insulin sensitivity, which is unfavorable.

PROTEIN INTAKE



Your GPS indicates typical protein requirement.

PLANT STEROLS



Your GPS indicates a higher chance of sterol build-up from plants.

MIKRONUTRIENTS

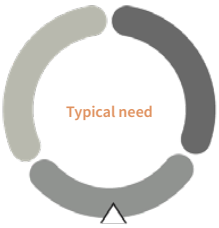
VITAMIN B1

Your GPS indicates a typical need for vitamin B1.

VITAMIN B4

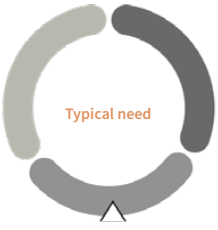
Your GPS is associated with an increased need for vitamin B4.

VITAMIN B6



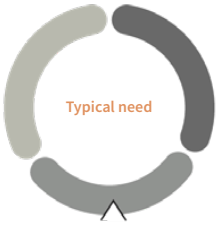
Your GPS indicates typical need of vitamin B6.

VITAMIN B9



Your GPS is associated with typical needs of vitamin B9.

VITAMIN B12

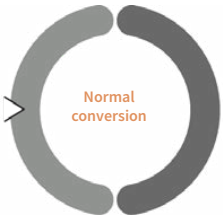


Your GPS is associated with a typical need of vitamin B12.

VITAMIN C

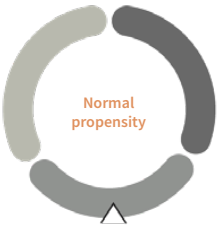
Your GPS is associated with an increased need for vitamin C.

VITAMIN A



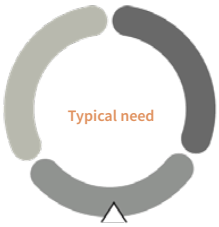
Your GPS is associated with normal conversion of precursor molecules into vitamin A.

GLAUKOMA



Your GPS is associated with an average propensity for the development of glaucoma.

VITAMIN E

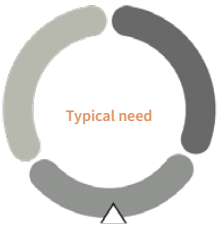


Your GPS is associated with typical need for vitamin E.

VITAMIN D

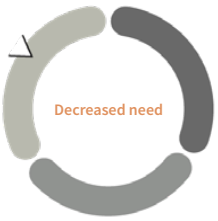
Your GPS is associated with a typical need for vitamin D.

VITAMIN K



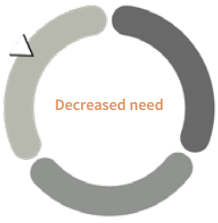
Your GPS is associated with a typical need for vitamin K.

SELENIUM



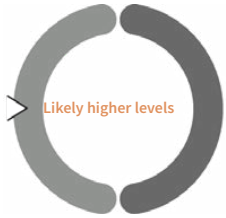
Your GPS indicates a decreased need for selenium.

MAGNESIUM



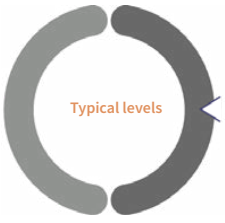
Your GPS indicates a decreased need of magnesium.

COPPER



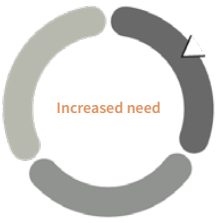
Your GPS is associated with likely higher levels of copper.

ZINC



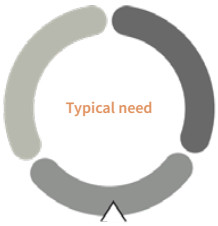
Your GPS is associated with typical levels of zinc.

IRON



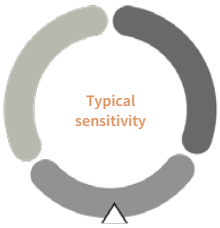
Your GPS is associated with increased need of iron.

NITRIC OXIDE.



Your GPS is associated with a typical need for nitric oxide.

SODIUM



Your GPS is associated with average salt sensitivity. This result indicates an average chance of having increased blood pressure due to salt intake.

Perception of satiety and hunger

Satiety and hunger are two fundamental physiological processes that regulate our food intake. Hunger refers to the sensation of discomfort or emptiness in the stomach that signals a need to eat. In contrast, satiety is the feeling of fullness or satisfaction after eating that suppresses the desire to eat further. These processes are regulated by a complex interplay of hormones and neural signals that respond to various factors, such as the volume and nutrient content of food, stress, and sleep. Disruptions in these processes can lead to overeating or undereating, which can contribute to weight gain or malnutrition. Understanding the mechanisms of satiety and hunger is crucial for maintaining a healthy diet and preventing obesity and other related health conditions.

Genomic Potential Score

Typical control

Result

Your combination of genes indicates that your perception of satiety and hunger is typical.

Recommendations

Diversify protein intake. Consume a variety of lean meats, fish, legumes, nuts, and low-fat dairy products for fullness and muscle support.
Prioritize nutrient-dense foods. Choose whole foods like fruits, vegetables, and whole grains, while limiting processed options.
Stay hydrated: Drink at least 8-10 cups of water daily and consume water-rich foods to avoid mistaking thirst for hunger.
Listen to body's cues. Eat slowly and mindfully, tuning into your body's hunger and fullness cues for optimal weight management.Be sure that you get enough sleep because a reduced amount of sleep increases the feeling of hunger and decreases satiety.You can effectively reduce your appetite with a cup of coffee or any other preparations that contain caffeine. In doing so, consider your daily recommended dosage based on your GPS.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
NMB	rs1051168	G	T	GG
LEPR	rs1137100	A	G	GG
LEPR	rs1137101	A	G	GG
SLC2A2	rs1499821	C	T	CC
TAS2R38	rs1726866	G	A	AG
ADIPOQ	rs17300539	G	A	GG
ADIPOQ	rs17366568	G	A	GG
MC4R	rs17782313	T	C	TT
ANKK1	rs1800497	G	A	AG
MTHFR	rs1801131	T	G	TT
TASR1R2	rs3935570	G	T	TG
COMT	rs4680	G	A	GG
GHSR	rs490683	G	C	GG
SLC2A2	rs5400	G	A	GA
GHSR	rs572169	C	T	CC
DRD2	rs6277	G	A	AG
FTO	rs9939609	T	A	TT

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Dairy

Lactose intolerance is related to the breakdown of lactose, a sugar found in milk. People with lactose intolerance do not produce enough of the enzyme lactase, which can lead to an accumulation of lactose in the colon. Undigested lactose can cause the rapid growth of gas-producing bacteria, resulting in symptoms like diarrhea, bloating, stomach cramps, nausea, or vomiting. These symptoms typically occur within 15 minutes to 2 hours of consuming milk or dairy products, depending on factors such as age, health, and the amount of lactose consumed.

Lactose is an important nutrient for infants and children and remains a vital part of the adult diet. However, lactose intolerance can be caused by genetic factors. Some people are born with a genetic variation that makes it difficult for their bodies to produce lactase, leading to lactose intolerance. This condition can run in families. In other cases, lactose intolerance may develop later in life due to damage to the small intestine caused by infection or surgery, which can also affect the body's ability to produce lactase. It's worth noting that the severity of symptoms can vary among individuals.

Further there seem to be issues with losing weight in some individuals especially when saturated fats from dairy products are consumed. When your goal is weight control your genetic make up about dairy should be taken into account.

Genomic Potential Score

Low risk

Result

Your GPS indicates a low risk for lactose intolerance. You most likely do not have problems with lactose breakdown, as you are the carrier of favourable variants of the MCM6 gene, which indicates a normal level of the lactase enzyme.

Recommendations

Dairy products are an excellent source of nutrients such as calcium, vitamin D, and protein, and can be an important part of a healthy diet.

Low-fat or fat-free dairy products are a great way to get the benefits of dairy without consuming too much saturated fat, which can be harmful to heart health.

Some dairy products, such as flavored yogurts and sweetened milk, can be high in added sugars. Choose plain or unsweetened versions of these products to avoid consuming too much added sugar.

If you are unable or prefer not to consume dairy products, consider incorporating plant-based alternatives such as soy milk, almond milk, or rice milk into your diet. These alternatives can provide many of the same nutrients as dairy products and may be easier to digest for some people.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
MCM6	rs182549	C	T	CT
MCM6	rs4988235	G	A	GA
APOA2	rs5082	G	A	AG

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Gluten sensitivity

Gluten sensitivity is a condition in which a person experiences symptoms like bloating, diarrhea, and abdominal pain after consuming foods that contain gluten, a protein found in wheat, barley, and rye. While some people with gluten sensitivity may also have celiac disease, a more severe autoimmune disorder, gluten sensitivity does not cause the same level of damage to the small intestine as celiac disease.

A person's genetic profile can affect their susceptibility to gluten sensitivity. Some genes have been linked to an increased risk of developing the condition, while others may provide protection against it. Additionally, people with certain genetic variations may be more likely to develop celiac disease or non-celiac gluten sensitivity.

However, having a genetic predisposition to gluten sensitivity does not necessarily mean that a person will develop the condition. Other factors, such as diet and environmental triggers, also play a role.

Genomic Potential Score

Decreased risk

Result

Your GPS indicates a lower likelihood of gluten sensitivity.

Recommendations

The symptoms associated with gluten sensitivity are digestive issues such as gas, bloating, diarrhea, constipation, and fatigue, "brain fog" or feeling tired after consuming gluten.

If you, despite your result, opt for gluten-free alternatives, have in mind that many of the gluten-free alternatives available on the market are highly processed and may be unhealthier than natural foods containing gluten. They are often high in fat and sugar, so read food labels carefully.

While people without a gluten sensitivity do not need to avoid gluten, it is important to be mindful of hidden sources of gluten in processed foods. Some products like salad dressings, sauces, and marinades may contain gluten as a thickener or flavoring. Reading labels and choosing gluten-free versions of these products, when possible, can help avoid unintentional exposure to gluten.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
HLA-DQA1	rs2187668	C	T	CC
HLA-DRA	rs2395182	G	T	TT
HLA-DQB3	rs2858331	A	G	GG
SH2B3	rs3184504	T	C	CT
HLA-DQB1	rs7775228	T	C	TT

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Grains sensitivity

Grain sensitivity, also known as a non-celiac gluten sensitivity, is a condition in which individuals experience symptoms similar to those of celiac disease after consuming gluten-containing grains such as wheat, barley, and rye.

Individuals with grain sensitivity may have lower levels of GABA in their brains, leading to increased neuronal excitability and symptoms such as anxiety, depression, and cognitive impairment. This may be due to lower levels of GAD enzyme, leading to decreased conversion of glutamate to GABA. This means lower levels of GABA and increased glutamate levels, which may contribute to symptoms of grain sensitivity.

Genomic Potential Score

Decreased risk

Result

Your GPS indicates a decreased risk for grains sensitivity.

Recommendations

Based on your genotype, you most likely don't experience typical symptoms of grain sensitivity after eating grains (abdominal pain, bloating, gas, diarrhea, nausea, vomiting, headaches, migraines, a racing mind and insomnia).

Whole grains are a good source of fibre, vitamins, and minerals and can be incorporated into your diet in various ways. Examples of gluten-free whole grains include brown rice, quinoa, millet, and amaranth.

Eating a variety of grains can provide different nutrients and flavors. Some examples of gluten-free grains include corn, oats (if labelled gluten-free), and buckwheat. Incorporating these grains into the diet can add variety and nutrients to meals.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
GAD1	rs12185692	C	A	CC
GAD1	rs3749034	G	A	GA
GAD1	rs3791878	G	T	TG
GAD1	rs3828275	C	T	CC
GAD1	rs769407	G	C	CG

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Histamine

Histamine is a chemical in the body that is involved in the immune response and can cause allergy symptoms. It also plays a role in digestion, muscle function, and communication between cells in the brain. Some people have a condition called histamine intolerance, which occurs when they have trouble breaking down histamine. This can lead to symptoms such as bloating, abdominal pain, diarrhea, headaches, skin rashes, and asthma attacks. Certain foods, such as shellfish and spinach, can also contain histamine and trigger these symptoms.

Genomic Potential Score

Typical sensitivity

Result

Your GPS indicates that you are most likely histamine tolerant.

Recommendations

Add fermented foods to your diet: Fermented foods like kefir, yoghurt, kimchi, and miso can be a great addition to a healthy diet. These foods contain probiotics, which can help support gut health and promote overall wellness. While some people with histamine intolerance may need to avoid fermented foods, those who are histamine tolerant can enjoy them in moderation.

Choose foods high in antioxidants: Antioxidants can help protect the body against damage from free radicals, which can trigger histamine intolerance symptoms. Foods high in antioxidants include berries, dark leafy greens, sweet potatoes, and nuts like almonds and pecans.

Stay hydrated: Staying hydrated can help flush histamine from the body and prevent dehydration, which can exacerbate histamine intolerance symptoms. Drinking plenty of water throughout the day and consuming hydrating foods like cucumber, watermelon, and celery can help keep the body hydrated and reduce the risk of symptoms.

Your Genotype

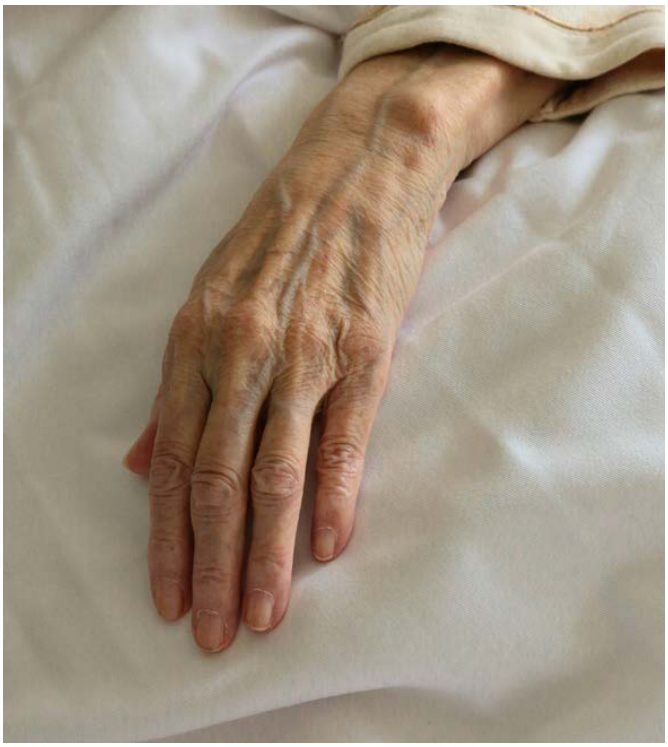
Gene	SNP	Wildtype	Variant	Genotype
AOC1	rs10156191	C	T	TT
AOC1	rs1049742	C	T	CC
AOC1	rs1049793	C	G	CC
HNMT	rs1050891	A	G	AG
MAO-B	rs10521432	G	A	AG
MAO-B	rs1799836	T	C	CT
MTHFR	rs1801131	T	G	TT
MTHFR	rs1801133	G	A	AA
AOC1	rs2052129	G	T	TT

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

APOE Status

Apolipoprotein E (ApoE) is an important protein in our body that helps manage cholesterol levels. It is mainly produced in the liver and is responsible for moving cholesterol and other fats in the blood to different body parts. This ensures that our cells, including brain cells, function well and stay healthy.

Our genes play a role in how our body handles cholesterol, and there are different forms of the ApoE protein. The three major types are ApoE2, ApoE3, and ApoE4. ApoE3 is the most common and does a good job of managing cholesterol. People with ApoE2 usually have lower cholesterol levels, while those with ApoE4 may have higher cholesterol levels and a greater risk of heart disease and Alzheimer's disease. Knowing your ApoE type can help you take steps to maintain healthy cholesterol levels and protect your overall health.:



Genomic Potential Score

Apo-ε3/ε3 type

Result

Your GPS indicates a typical risk concerning APOE and Alzheimer's. The analysis has revealed you are the carrier of the Apo-ε3/ε3 type.

Recommendations

Having a ε3-allele in the APOE genotype puts you in average risk for Alzheimers.

Even though people with an APOE3 genotype are not in higher risk it is important to live a healthy lifestyle that supports a healthy brain function.

Living accordingly to your genetics, eating healthy, having a good sleep quality and staying physically and mentally active while avoiding smoking, too much alcohol and environmental toxins puts you in a solid protective state to avoid any brain related chronic issues.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
APOE	rs429358	T	C	TT
APOE	rs7412	C	T	CC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Saturated fats

Our body uses saturated fats as a source of energy. But if their intake is too high, they can negatively influence blood lipid levels (HDL, LDL, triglycerides, total cholesterol). Saturated fats are found mostly in foods of animal origin, such as meat, lard, butter, milk, and dairy products, as well as palm and coconut oil. In addition to various lifestyle factors, an individual's genetic makeup plays an important role in our response to saturated fats. This is particularly true for carriers of certain genetic variants which result in higher sensitivity to saturated fats.

Genomic Potential Score

Normal response

Result

Your GPS indicates a typical response from saturated fats.

Recommendations

Your daily intake of saturated fats can be slightly higher than that of people with an unfavorable result. While saturated fats are not inherently harmful, too much can increase the risk of heart disease.

Unsaturated fats, such as those found in nuts, seeds, and fatty fish, are important for heart health and should be included in the diet in moderation.

Good sources for saturated fats are found in coconut Oil, MCT or ghee (Ayurvedic butter). While saturated fats have a higher smoke point ghee even has the highest and therefore is a very good option for frying. Some people even add saturated fats like butter, MCT or coconut-oil in their morning coffee (bullet-proof coffee). Your genotype seems optimal if you wish to do so without having too many concerns about cholesterol levels.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
LPA	rs10455872	A	G	AA
APOB	rs1367117	G	A	AG
LPL	rs13702	T	C	CT
ADIPOQ	rs17366568	G	A	GG
PPARG	rs1801282	C	G	CC
LPA	rs3798220	T	C	TT
APOE	rs429358	T	C	TT
APOA2	rs5082	G	A	AG
APOA5	rs662799	G	A	AA
APOE	rs7412	C	T	CC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Monounsaturated fatty acids (MUFAs)

MUFAs, or monounsaturated fatty acids, are a type of healthy fat found in many foods. MUFAs have been shown to have a number of health benefits. Some of the best dietary sources of MUFAs include olive oil, avocado, nuts, and seeds. Research has shown that diets high in MUFAs may help reduce the risk of heart disease by lowering LDL, or “bad” cholesterol levels, while maintaining levels of HDL, or “good” cholesterol. Additionally, MUFAs have been shown to help regulate blood sugar levels, making them a good choice for individuals with diabetes or those looking to manage their blood sugar levels. While MUFAs are generally considered a healthy choice, our needs may vary due to our genetic makeup.

Genomic Potential Score

Normal response

Result

Your GPS indicates a normal benefit of monounsaturated fats for your body.

Recommendations

Monounsaturated fats reduce the levels of LDL cholesterol and triglycerides and increase the level of HDL cholesterol. Therefore, foods with more monounsaturated fats are generally considered healthy. Great sources of monounsaturated fats are plant oils, olives, avocado, hazelnuts, macadamia, Brazil, and cashew nuts which can be added to many dishes or used for making delicious spreads.

Nuts, including pistachios, almonds, and macadamia nuts, have a good nutritional profile, rich in monounsaturated and polyunsaturated fats, protein, fibre, vitamins, and minerals. You can combine your meals with nuts, but portion size should then be reduced.

Heating oils at high temperatures is highly discouraged because they can lose a large number of their beneficial qualities or transform into trans fats, which are damaging to our health. Trans fats increase the levels of triglycerides and LDL (bad) cholesterol while reducing HDL (good) cholesterol levels.

Prepare food with virgin olive oil or avocado oil because they contain a lot of monounsaturated fats. When using olive oil for frying please use low temperatures since the smoke point is slightly lower. Olive oil is especially beneficial because of its high antioxidant levels. Research has shown that higher intakes of olive oil are associated with a reduced risk of all-cause mortality, cardiovascular events, and stroke.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
LPL	rs13702	T	C	CT
ADIPOQ	rs17300539	G	A	AG
FAAH	rs324420	C	A	CC
BDNF	rs6265	C	T	TC
APOA5	rs662799	G	A	AA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the ‘Genotype’ column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Polyunsaturated fatty acids (PUFA)

Polyunsaturated fatty acids (or PUFAs) are important to our health as they are crucial in maintaining cell membrane structure and function. They are involved in various physiological processes such as blood clotting, inflammation, and immune function. Even though some are essential fatty acids that our body needs to survive some of them are highly inflammatory a correlate with various diseases like heart disease, stroke, and some types of cancer. Genetic variations can affect how our body processes and metabolizes polyunsaturated fats. Understanding how genetic profile affects our response to polyunsaturated fats can help us to optimize our health.

Genomic Potential Score

Lower risk for inflammation

Result

Your GPS indicates lower risk for inflammation.

Recommendations

Incorporate a variety of sources of polyunsaturated fats. Eating a variety of polyunsaturated fats, including omega-3 and omega-6 fatty acids, can help provide a range of health benefits.

Choose whole foods. Eating a diet rich in whole foods, such as fruits, vegetables, whole grains, and lean proteins, can help provide important nutrients and reduce the overall intake of unhealthy fats.

Be mindful of portion sizes. Even healthy foods can contribute to weight gain if consumed excessively. Paying attention to portion sizes can help ensure that calorie intake stays within a healthy range.

Limit intake of unhealthy fats. While polyunsaturated fats are healthy, it is still important to limit the intake of unhealthy fats, such as trans fats and saturated fats. These fats can contribute to inflammation and an increased risk of chronic disease.

Monitor overall calorie intake. While polyunsaturated fats are an important part of a healthy diet, they are still a source of calories. People with a normal response to polyunsaturated fats should be mindful of their overall calorie intake to avoid consuming too many calories and potentially gaining weight.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
LPL	rs13702	T	C	CT
IL1B	rs16944	A	G	GG
TNF	rs1800629	G	A	GG
COX2	rs4648310	T	C	TT
PTGS2	rs5275	A	G	GG
BDNF	rs6265	C	T	TC
APOA5	rs662799	G	A	AA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Omega-3

Omega-3 fatty acids, which are polyunsaturated fats, play a vital role in maintaining heart health, brain function, and reducing inflammation. These essential fats are particularly beneficial for cardiovascular health, as they have been shown to lower the risk of heart disease, reduce triglycerides, and lower blood pressure. They also contribute to brain development and function, and have been linked to improved cognitive function, memory, and mood.

It's worth noting that genetic variations can affect how the body processes and metabolizes omega-3 fatty acids. People with specific genetic variations may have lower levels of beneficial omega-3 fatty acid metabolites, which could increase their risk of chronic diseases like heart disease and inflammation. Understanding a person's genetic profile can help tailor dietary recommendations to optimize their overall health.

Genomic Potential Score

High needs

Result

Your GPS indicates less efficient omega-3 fatty acid metabolism and thus higher needs.

Recommendations

Eat fatty fish. Fatty fish, such as salmon, mackerel, and sardines, are excellent sources of EPA and DHA omega-3 fatty acids.

Choose fish oil or krill oil supplements. Fish oil supplements can be a convenient and effective way to increase EPA and DHA omega-3 intake, particularly for people who do not eat fish.

Limit intake of unhealthy fats. While increasing the intake of healthy fats is important, it is still important to limit the intake of unhealthy fats, such as trans fats and inflammatory vegetable oils, which can contribute to inflammation and an increased risk of chronic disease. Limiting processed foods and high-fat meats intake can help reduce the overall intake of unhealthy fats and promote a healthy balance of fats in the diet.

Incorporate algae-based supplements. Vegetarians who do not consume fish can incorporate algae-based supplements into their diet to boost the intake of EPA and DHA omega-3 fatty acids. Algae-based supplements are derived from micro-algae and provide a sustainable and effective source of these beneficial fats.

Lifestyle habits can affect our body's ability to convert omega-3 into beneficial forms. For example, high levels of alcohol consumption, smoking, and a sedentary lifestyle have been linked to lower levels of omega-3 fatty acids in the body and reduced conversion of these fats into beneficial forms. On the other hand, regular exercise and a diet rich in fruits, vegetables, and fibre have been shown to improve the conversion of omega-3 fatty acids into beneficial forms.

Additionally, consuming a diet high in omega-6 fatty acids can interfere with the conversion of omega-3s, so maintaining a healthy balance of omega-3 and omega-6 fatty acids in the diet is important for optimal health.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
IL1B	rs16944	A	G	GG
FADS1	rs174537	G	T	GG
TNF	rs1800629	G	A	GG
COX2	rs4648310	T	C	TT
PTGS2	rs5275	A	G	GG
ELOVL2	rs953413	G	A	AA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Carbs

Carbohydrates are the primary energy source for our body. They differ in composition, and some are more beneficial (complex carbohydrates and fibres) than others (simple sugars). You can find complex carbohydrates in cereals (wheat, spelt, maize, rye, barley, oat, millet, rice, buckwheat, quinoa, amaranth), potatoes, fruits, and vegetables.

Studies have found genetic variants related to our response to carbs, which may affect various traits. Within this analysis, we look at genes that influence the relationship between the intake of carbohydrates and an individual's blood levels of HDL (good) cholesterol, especially in people on a carbohydrate-rich diet.

Genomic Potential Score

Unfavorable response

Result

Your GPS indicates higher likelihood of unfavorable response to carbohydrates.

Recommendations

Limit refined carbohydrates. Reduce the consumption of refined carbohydrates like white bread, white rice, and sugary snacks, as they can lead to blood sugar spikes and may lower HDL cholesterol levels. Opt for whole, unprocessed carbohydrate sources whenever possible.

Choose low-glycemic carbohydrates. Select carbohydrate sources with a low glycemic index, such as whole grains, legumes, and non-starchy vegetables, to minimize blood sugar fluctuations and support healthy HDL levels.

Increase healthy fats. Incorporate healthy fats from sources like avocados, nuts, seeds, and fatty fish (e.g., salmon, mackerel, and sardines) into your diet. Monounsaturated and omega-3 fats have been shown to help raise HDL cholesterol levels.

Focus on fibre. Prioritize fiber-rich foods, particularly those high in soluble fibre, such as oats, barley, apples, and legumes. Soluble fibre can help lower LDL cholesterol levels and support healthy HDL levels.

Maintain a balanced diet. Ensure your diet is balanced and includes a variety of nutrient-dense foods, such as lean proteins, fruits, vegetables, and whole grains. A balanced diet helps support overall health, including maintaining healthy cholesterol levels.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
KCTD10	rs10850219	G	C	GC
TCF7L2	rs12255372	G	T	GG
UCP1	rs1800592	T	C	TT
AGER	rs184003	C	A	CC
MMAB	rs2241201	C	G	CC
VLDLR	rs2242104	A	G	GG
GIPR	rs2287019	C	T	CT
TCF7L2	rs290487	C	T	CC
ABCG4	rs3802885	A	C	AA
LPIN2	rs607549	A	T	TT
IGF1R	rs7166565	A	G	GG
TCF7L2	rs7903146	C	T	CC
PLIN1	rs894160	C	T	CC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Insulin

Insulin is a hormone that helps lower our blood sugar levels after each meal. Insulin sensitivity refers to how well our cells respond to insulin. If we have high insulin sensitivity, our cells can use glucose more efficiently, which helps reduce blood sugar after eating. But if we have low insulin sensitivity (insulin resistance), our body needs more insulin to lower blood sugar, which can lead to high insulin production, to keep blood sugar concentrations stable. High insulin production is not favourable and is associated with various health complications, such as damage to blood vessels, type 2 diabetes, high blood pressure, and heart disease.

Genetics can play a significant role in determining an individual's insulin sensitivity. Certain genes, such as those related to glucose transporters, insulin receptors, and insulin signalling pathways, can influence how efficiently the body responds to insulin. Inherited genetic variations can enhance or impair insulin sensitivity, predisposing individuals to a higher or lower risk for insulin resistance and associated metabolic disorders. It is essential to recognize that genetics is only one factor contributing to insulin sensitivity, with lifestyle choices, such as diet, exercise, and stress management, also playing a crucial role in shaping an individual's overall metabolic health.

Genomic Potential Score

Less sensitive

Result

Your GPS indicates lower insulin sensitivity, which is unfavorable.

Recommendations

Focus on low-glycemic foods. Choose carbohydrate sources with a low glycemic index, such as whole grains, legumes, and non-starchy vegetables, which can help stabilize blood sugar levels and minimize insulin spikes.

Include healthy fats. Incorporate sources of monounsaturated and omega-3 fats, such as avocados, nuts, seeds, and fatty fish, which can help improve insulin sensitivity.

Engage in regular exercise, including a combination of aerobic activities (e.g., walking, swimming, cycling) and strength training, to help increase insulin sensitivity and regulate blood sugar levels. Aim for at least 150 minutes of moderate-intensity aerobic exercise or 75 minutes of vigorous-intensity aerobic exercise per week, along with strength training activities two or more days per week.

Achieving and maintaining a healthy body weight can significantly improve insulin sensitivity. Even a modest weight loss of 5-10% of your initial body weight can positively impact insulin resistance and overall metabolic health.

Chronic stress and inadequate sleep can negatively impact insulin sensitivity. Practice stress reduction techniques, such as mindfulness meditation, deep breathing, or yoga, and aim for 7-9 hours of quality sleep each night to support metabolic health.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
AGER	rs184003	C	A	CC
VLDLR	rs2242104	A	G	GG
TCF7L2	rs290481	C	T	CC
ABCG4	rs3802885	A	C	AA
LPIN2	rs607549	A	T	TT
IGF1R	rs7166565	A	G	GG
FTO	rs8050136	C	A	AA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Protein intake

Protein is an essential nutrient that plays a critical role in our body's overall health. It is necessary to build and repair tissues, maintain muscle mass, and support the immune system. Protein is also important for producing hormones and enzymes that regulate various bodily functions. The amount of protein a person needs varies based on age, sex, body weight, physical activity level, and health status. Adequate protein intake is especially crucial for athletes, older adults, and pregnant or breastfeeding women. It also plays an important role in weight gain.

A person's genetics can also influence their protein needs. Variations in certain genes can affect protein intake requirements by influencing appetite regulation, energy expenditure, lipid metabolism, and energy homeostasis. These differences in genetic makeup can impact an individual's susceptibility to weight gain and obesity, underscoring the importance of personalized nutrition in optimizing health outcomes. However, it's important to note that protein should always be consumed in the context of a balanced diet, and individual needs should be assessed by a qualified healthcare professional.

Genomic Potential Score

Typical protein requirement

Result

Your GPS indicates typical protein requirement.

Recommendations

Diversify protein sources. Include a variety of protein sources in your diet to ensure you're getting a broad range of essential amino acids. Incorporate both animal-based proteins, such as lean meats, fish, poultry, eggs, and dairy products, and plant-based proteins, like legumes, nuts, seeds, and whole grains.

Choose lean protein options. Opt for lean protein sources to help control saturated fat intake and maintain a healthy weight. Examples include skinless chicken or turkey, lean cuts of beef or pork, fish, low-fat dairy products, and plant-based protein sources like beans, lentils, and tofu.

Balance macronutrients. Ensure that your diet includes a balance of carbohydrates, fats, and protein. Carbohydrates provide energy and can be found in whole grains, fruits, and vegetables. Healthy fats are essential for overall health and can be sourced from nuts, seeds, avocados, and oily fish.

Pay attention to protein timing. Spread your protein intake evenly throughout the day, aiming to include some protein in each meal and snack. This approach can help optimize muscle protein synthesis and support overall health.

Stay hydrated. Protein metabolism generates nitrogen waste, which is excreted through urine. Staying well-hydrated helps support kidney function and the elimination of these waste products. Aim to drink plenty of water throughout the day, in addition to consuming water-rich foods like fruits and vegetables.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
FTO	rs1558902	T	A	AA
LPIN1	rs4315495	G	A	GG
BDNF	rs4923461	A	G	GA
TFAP2B	rs987237	A	G	AG
FTO	rs9939609	T	A	AA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Plant sterols

Plant sterols, also known as phytosterols, lower LDL (low-density lipoprotein) cholesterol levels, which can help reduce the risk of coronary artery disease (CAD). Structurally similar to cholesterol, plant sterols interfere with cholesterol absorption in the intestine, reducing the amount absorbed into the bloodstream by competing for incorporation into micelles. However, the effectiveness of plant sterols can be influenced by genetic variations affecting cholesterol absorption or metabolism. Some individuals may not experience a significant reduction in cholesterol levels, so it's crucial to consider your genetic profile when evaluating the potential benefits of plant sterols in your diet.

Genomic Potential Score

High chance of sterol build-up

Result

Your GPS indicates a higher chance of sterol build-up from plants.

Recommendations

Be mindful of your diet composition. Plant sterols are predominantly found in foods like nuts, seeds, vegetable oils, and whole grains. To reduce your intake, consider adjusting your diet to include fewer of these foods or consume them in smaller quantities. Focus on other nutrient-rich options instead.

Limit nuts and seeds. Nuts and seeds are healthy and nutritious, but they also contain relatively high amounts of plant sterols. If you need to decrease your intake, consider consuming smaller portions of nuts and seeds or choosing varieties with lower sterol content. For example, almonds and flax seeds have lower sterol content compared to pistachios and sesame seeds.

Read food labels. Many processed and packaged foods may contain added plant sterols for their cholesterol-lowering benefits. Check the labels of products such as margarine, spreads, and fortified foods for the presence of plant sterols. By being aware of the sterol content in these items, you can make informed choices and opt for alternatives without added sterols.

Avoid plant sterol-enriched foods, such as certain kinds of margarine, spreads, and yoghurts.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
ABCG8	rs4245791	C	T	CC
ABCG8	rs4299376	G	T	GG
CETP	rs5882	G	A	AA
ABDG8	rs6544713	T	C	TT

Vitamin B1

Vitamin B1, also known as thiamine, is an essential nutrient that plays a crucial role in maintaining the proper functioning of our body. It is a water-soluble vitamin that helps convert carbohydrates into energy, which our body uses for various physical and mental activities. Thiamine also helps in the production of neurotransmitters, chemicals that are responsible for the communication between nerve cells. It is also involved in the synthesis of DNA and RNA, which are the building blocks of our genetic material. A thiamine deficiency can lead to various health problems, including nerve damage, muscle weakness, and heart disorders. Our genes play an important role in determining how our body metabolizes vitamin B1, which involves the conversion of thiamine into its active form, that is then used by the body. Therefore, understanding the genetic factors that influence vitamin B1 metabolism can help develop personalized nutrition plans tailored to an individual's genetic makeup.

Genomic Potential Score

Typical need

Result

Your GPS indicates a typical need for vitamin B1.

Recommendations

Eat a balanced diet. Maintain a balanced and varied diet that includes adequate amounts of vitamin B1-rich foods, such as whole grains, legumes, nuts, seeds, lean meats, and certain fruits and vegetables. This will help ensure you meet your daily vitamin B1 and other essential nutrients requirements.

Choose nutrient-dense foods. Opt for nutrient-dense foods that provide a good balance of vitamins and minerals, including vitamin B1. Examples include whole grains like quinoa and brown rice, legumes such as lentils and chickpeas, and green leafy vegetables like spinach and kale.

Be mindful of food processing. Be aware that some food processing methods, such as milling and refining grains, can lead to the loss of vitamin B1. Choose whole grain options and minimally processed foods whenever possible to retain the maximum nutritional value.

Regularly assess your diet. Periodically evaluate your diet to ensure you are meeting your vitamin B1 requirements, as well as other essential nutrients. If you suspect any deficiencies, consult a healthcare professional or a registered dietitian for guidance and personalized recommendations.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
SLC19A3	rs6713116	C	T	TC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Vitamin B4

Vitamin B4, also known as choline, is a water-soluble vitamin that plays an essential role in the body. It is required for the synthesis of the neurotransmitter acetylcholine, which is involved in memory, muscle control, and other cognitive functions. In addition to its role in brain function, choline also contributes to the structural integrity of cell membranes and aids in the transportation of fats from the liver.

Vitamin B4 is found in a variety of foods, including meat, fish, eggs, and whole grains. However, it is not typically considered a vitamin because the body can produce it on its own. Despite this, getting enough choline through a balanced diet is still important for overall health. Adequate choline intake is especially important during pregnancy, as it supports proper fetal brain development. Deficiencies in B vitamins, including vitamin B4, can lead to fatigue, weakness, and other health problems. Vitamin B4 works together with vitamins B2 and B3 to generate energy, making it an important part of the B vitamin complex.

Genomic Potential Score

Increased need

Result

Your GPS is associated with an increased need for vitamin B4.

Recommendations

Lean meats. Consume lean meats such as chicken, turkey, and lean cuts of beef or pork. These sources of protein are rich in choline.

Fish and seafood. Incorporate fish like salmon, tuna, and mackerel, as well as shellfish like shrimp and crab, into your diet. These foods are not only good sources of choline, but they also contain essential fatty acids and other nutrients.

Cruciferous vegetables like cauliflower, broccoli, and Brussels sprouts contain choline. One cup (160 grams) of cooked cauliflower packs 72 mg, or 13% of your daily choline needs, while the same amount of cooked Brussels sprouts and broccoli each provide about 30 mg, or 5% of your daily need. Serving cruciferous vegetables with other choline-rich foods like salmon, eggs, chicken, beef, or turkey is a delicious way to meet your daily requirements for this nutrient.

Eggs, specifically the yolks, are an excellent source of choline; just two eggs daily can meet over half of your recommended daily intake. The nutrient-rich yolk holds the bulk of an egg's choline, with virtually none in the egg white, underscoring the importance of consuming the whole egg. Interestingly, the choline in eggs, linked to phospholipids, is better absorbed by the digestive tract compared to supplements, indicating that naturally sourced choline could be the more beneficial option.

Organ meats, such as liver and kidneys, are abundant in choline, with a small serving of cooked beef liver covering nearly two-thirds of your recommended daily intake. These meats are also packed with other essential nutrients like iron, B12, folate, vitamin A, copper, and selenium. Thus, incorporating a modest amount of organic meat into your diet can help fulfill various nutritional needs.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
CHKA	rs10791957	C	A	AA
MTHFD1	rs2236225	G	A	AA
BHMT	rs3733890	G	A	GG
PEMT	rs7946	C	T	TC
CHDH	rs9001	T	G	TT

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Vitamin B6

Vitamin B6, also known as pyridoxine, is an essential nutrient that plays a crucial role in maintaining the proper functioning of our body. It is a water-soluble vitamin that is involved in a range of metabolic processes, including the conversion of food into energy, the synthesis of neurotransmitters, and the production of red blood cells. Vitamin B6 also helps regulate hormone levels and supports the immune system. A deficiency of this vitamin can lead to a range of health problems, including anemia, nerve damage, and skin disorders.

Our genes play an important role in the metabolism of vitamin B6. This process involves the conversion of pyridoxine into its active form, which is then used by the body. The conversion process is controlled by a group of genes known as the pyridoxal kinase genes. Variations in these genes can affect how our body absorbs and utilizes vitamin B6. Certain genetic variations may result in a reduced ability to absorb and utilize vitamin B6, leading to a deficiency of this vital nutrient.

Genomic Potential Score

Typical need

Result

Your GPS indicates typical need of vitamin B6.

Recommendations

Eat vitamin B6-rich foods. Foods high in vitamin B6 include poultry, fish, beef liver, bananas, potatoes, nuts, and seeds. Incorporating these foods into the diet can help maintain optimal vitamin B6 levels.

Avoid alcohol. Alcohol consumption can interfere with the absorption and utilization of vitamin B6, leading to a deficiency. Limiting or avoiding alcohol can help maintain optimal vitamin B6 levels.

Manage stress. Chronic stress can deplete vitamin B6 levels in the body. Practicing stress-reduction techniques such as meditation, yoga, or deep breathing exercises can help maintain optimal vitamin B6 levels and overall health.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
ALPL	rs1256335	G	A	GA
ALPL	rs1256341	T	C	TT
NBPF3	rs4654748	C	T	TT

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Vitamin B9

Vitamin B9, also known as folate, is an essential nutrient that plays a critical role in the growth and development of our body. It is a water-soluble vitamin involved in a range of metabolic processes, including the production of DNA and RNA, the synthesis of red and white blood cells, and the metabolism of certain amino acids. Folate is particularly important during periods of rapid cell growth and development, such as pregnancy and infancy. A folate deficiency can lead to various health problems, including anemia, congenital disabilities, and an increased risk of certain cancers.

An individual's genetic profile can affect their folate metabolism and subsequent health outcomes. The process of folate metabolism involves the conversion of dietary folate into its active form (methyl folate), which is then used by the body. This conversion process is controlled by a group of genes known as the folate pathway genes. Variations in these genes can affect how our body absorbs and utilizes folate. Certain genetic variations may result in a reduced ability to absorb and utilize folate, leading to a deficiency of this vital nutrient.

Genomic Potential Score

Typical need

Result

Your GPS is associated with typical needs of vitamin B9.

Recommendations

By choosing foods which contain slightly higher amounts of vitamin B9, you can significantly contribute to your vitamin B9 status.

Vitamin B9 can be found in some fruits (dried apricots, apples, oranges, papaya, avocado, melons, kiwi) and vegetables (spinach, asparagus, sprouts, carrots, sauerkraut, lettuce, leek, broccoli), liver, eggs, and legumes. For example, have some fresh orange juice in the morning, and include leek soup in your lunch.

Avoid excessive alcohol consumption: Excessive alcohol consumption can interfere with the absorption and utilization of folate, leading to a deficiency. Limiting or avoiding alcohol can help maintain optimal folate levels.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
SLC19A1	rs1051266	T	C	CC
DHFR	rs1643649	T	C	TT
MTHFR	rs1801131	T	G	TT
MTHFR	rs1801133	G	A	AA
FOLR1	rs2071010	G	A	GA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Vitamin B12

Vitamin B12, also known as cobalamin, plays a crucial role in the normal functioning of the human body. It is an essential nutrient involved in the production of red blood cells, maintaining the health of the nervous system, and aiding in DNA synthesis. Furthermore, B12 is vital for energy metabolism and proper neurological function. A deficiency in Vitamin B12 can lead to anaemia, fatigue, cognitive impairments, and even nerve damage, making it necessary for individuals to ensure they have adequate levels of this essential nutrient.

An individual's genetic profile can significantly impact the absorption and metabolism of Vitamin B12. Certain genetic variations can result in a decreased ability to absorb B12 from food or supplements, leading to an increased risk of deficiency. For example, polymorphisms in certain genes can impact the body's ability to produce intrinsic factor, a protein essential for B12 absorption, or transport B12 throughout the body.

Genomic Potential Score

Typical need

Result

Your GPS is associated with a typical need of vitamin B12.

Recommendations

Good sources of vitamin B12 are fish, poultry, red meat, and dairy products. For vegetarians and vegans, options like nutritional yeast, algae, and supplements can help meet daily B12 requirements.

Monitor B12 levels. Regularly check your Vitamin B12 levels through blood tests to ensure you maintain an adequate amount of the nutrient. This can help you identify any changes in your B12 status and make necessary adjustments to your diet or supplement regimen as needed.

Be mindful of medications. Some medications, like proton pump inhibitors and metformin, can interfere with Vitamin B12 absorption. If you are taking any medications that may impact your B12 levels, consult your healthcare provider to determine if any adjustments to your dosage or additional supplementation are necessary.

Manage stress and support mental health. Adequate Vitamin B12 levels are crucial for proper neurological function and mental well-being. Try stress management techniques such as exercise, meditation, or mindfulness practices to support your mental health and ensure optimal B12 metabolism.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
MTHFR	rs1801133	G	A	AA
MTRR	rs1801394	A	G	GA
MTR	rs1805087	A	G	AA
COMT	rs4680	G	A	GA
FUT2	rs492602	A	G	AA
TCN1	rs526934	G	A	AG
FUT2	rs601338	G	A	GG
FUT2	rs602662	G	A	GG

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Vitamin C

Vitamin C is an essential nutrient in maintaining good health and well-being. It is a potent antioxidant that helps protect cells from damage caused by free radicals, which can damage cells and contribute to the development of chronic diseases such as cancer, heart disease, and arthritis. Vitamin C is also necessary for the growth and repair of tissues in the body, including skin, bones, and cartilage. It helps the body absorb iron from plant-based foods and strengthens the immune system, enabling it to fight off infections and illnesses.

However, an individual's genetic predisposition can affect their metabolism of vitamin C. Some people have genetic variations that can impair the absorption and utilization of vitamin C in the body, leading to a higher risk of vitamin C deficiency. These individuals may require higher amounts of vitamin C from their diet or through supplements to maintain optimal levels in the body.

Genomic Potential Score

Increased need

Result

Your GPS is associated with an increased need for vitamin C.

Recommendations

Increase vitamin C intake. To compensate for less efficient absorption, consume more vitamin C-rich foods. Incorporate a variety of fruits and vegetables such as oranges, strawberries, kiwi, bell peppers, broccoli, and kale into your daily diet. Aim for multiple servings per day to ensure you meet your vitamin C requirements.

Opt for fresh, whole foods. Vitamin C is sensitive to heat and light, so consuming fresh, raw fruits and vegetables can help maximize the nutrient content. Avoid overcooking or prolonged storage of these foods to preserve their vitamin C levels.

Spread vitamin C intake throughout the day. Since the body can't store vitamin C for extended periods, consume small, frequent servings of vitamin C-rich foods throughout the day. This approach will help maintain a consistent supply of the nutrient and may improve absorption efficiency.

Consider supplementation. Consult with your healthcare provider about taking a vitamin C supplement to help ensure adequate levels. Choose a reputable brand and follow the recommended dosage guidelines to avoid potential side effects from excessive intake.

Limit exposure to factors that deplete vitamin C. Smoking, excessive alcohol consumption, and chronic stress can negatively impact vitamin C levels. Aim to quit smoking, consume alcohol only in moderation, and engage in stress management techniques such as exercise, meditation, or mindfulness practices to support your overall health.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
SLC23A1	rs10063949	T	C	TT
GSTT1	rs11550605	T	G	TT
SLC23A2	rs6133175	A	G	AA
SLC23A1	rs6596471	A	G	AA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Vitamin A

Vitamin A is a crucial nutrient for our overall health. It plays a vital role in various biological functions, including vision, immune system regulation, and skin health. It is an essential component of rhodopsin, a protein found in the retina of our eyes that is necessary for vision in low-light conditions. Moreover, vitamin A produces and maintains healthy skin and mucous membranes, helping prevent infections and promotes wound healing. Additionally, vitamin A is essential for regulating the immune system, promoting the production and differentiation of white blood cells, and supporting the body's defense against infections.

Our genetic profile can impact how our body uses vitamin A by affecting how our bodies absorb, transport, and store nutrients. Variations in genes involved in vitamin A metabolism and transport can influence how efficiently our bodies utilize vitamin A. For example, some genetic variations may affect the conversion of beta-carotene (a plant-based precursor to vitamin A) into the active form of retinol. Other genetic variations may affect retinol transport in the bloodstream or the storage of vitamin A in the liver.

Genomic Potential Score

Normal conversion

Result

Your GPS is associated with normal conversion of precursor molecules into vitamin A.

Recommendations

Maintain a balanced diet. Ensure your diet includes a variety of vitamin A-rich foods to support overall health. Include both preformed vitamin A sources (animal-based foods like fish, dairy products, and eggs) and provitamin A sources (plant-based foods rich in beta-carotene like carrots, sweet potatoes, and leafy greens). By consuming a diverse range of foods, you can help maintain adequate vitamin A levels.

Combine nutrients for better absorption. Pair vitamin A-rich foods with healthy fats such as avocados, nuts, seeds, and olive oil to enhance the absorption of this fat-soluble vitamin. Additionally, ensure you are getting enough zinc and iron, as these minerals play a crucial role in vitamin A metabolism and transport.

Be mindful of vitamin A interactions. Some medications, like oral contraceptives and certain cholesterol-lowering drugs, may impact vitamin A levels in the body. Consult with your healthcare provider if you are taking any medications that could affect your vitamin A status, and make necessary adjustments to your diet or supplement regimen as advised.

Regular check-ups and monitoring. Periodically check your vitamin A levels through blood tests to ensure you maintain optimal levels of this essential nutrient. Keeping track of your vitamin A status will help you make informed decisions about your dietary choices and supplement needs, if any, to support your overall health and well-being.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
BCMO1	rs11645428	G	A	AG
BCMO1	rs12934922	A	T	AT
BCMO1	rs6420424	G	A	GG
BCMO1	rs6564851	T	G	TG
BCMO1	rs7501331	C	T	CC
BCMO1	rs8044334	T	G	TT

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Glaucoma

Glaucoma is a group of eye diseases that can lead to vision loss and even blindness if left untreated. The condition is caused by damage to the optic nerve, which transmits visual information from the eye to the brain. This damage can occur due to increased pressure in the eye, called intraocular pressure (IOP), or other factors that affect the optic nerve. There are several types of glaucoma, but the most common is primary open-angle glaucoma (POAG), which develops gradually and often has no symptoms until significant vision loss has already happened. Treatment for glaucoma typically involves lowering IOP through medications, laser therapy, or surgery.

A genetic predisposition can influence the development of glaucoma. Inherited genetic variations can affect the structure and function of the eye, including the drainage system that regulates IOP. However, it's important to note that having a genetic predisposition doesn't guarantee that someone will develop glaucoma, and environmental factors such as age, race, and certain medical conditions can also play a role. Regular eye exams and early detection are key to managing and preventing vision loss from glaucoma, especially for those with a family history of the condition.

Genomic Potential Score

Normal propensity

Result

Your GPS is associated with an average propensity for the development of glaucoma.

Recommendations

Get regular eye exams. Even if you have an average genetic propensity for developing glaucoma, it's essential to get regular eye exams to detect any early signs of the condition. This is especially important if you are over 40 or have a family history of glaucoma.

Maintain a healthy lifestyle. A healthy lifestyle, including regular exercise, a balanced diet, and avoiding smoking, can help reduce the risk of developing glaucoma and other eye diseases.

Manage other health conditions. Certain conditions, such as diabetes and high blood pressure, can increase the risk of developing glaucoma. Managing these conditions through proper medical care can help reduce the risk.

Protect your eyes. Protecting your eyes from injury or trauma is important in reducing the risk of developing glaucoma. Wear protective eyewear when participating in activities that could cause eye injury.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
CAT	rs1001179	C	T	CT
SIX1	rs10483727	T	C	CC
LOXL1	rs1048661	G	T	GG
ARMS2	rs10490924	G	T	GG
GPX1	rs1050450	G	A	GA
CFH	rs1061170	C	T	TT
HTRA1	rs11200638	G	A	GG
CFH	rs1410996	G	A	AA
MTHFR	rs1801131	T	G	TT
MTHFR	rs1801133	G	A	AA
CDKN2BAS1	rs2157719	C	T	TC
LOXL1	rs2165241	T	C	TC
C3	rs2230199	G	C	GG
ABCA1	rs2472493	G	A	GA
LOXL1	rs3825942	G	A	GA
TMCO1	rs4656461	G	A	AA
COMT	rs4680	G	A	GA
SOD2	rs4880	A	G	AG
CDKN2BAS1	rs4977756	G	A	AG
MYOC	rs74315329	G	A	GG
TMCO1	rs7555523	C	A	AA
CFH	rs800292	G	A	AG

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Vitamin E

Inflammation is a natural process that occurs in response to injury or infection, but chronic inflammation can contribute to the development of many diseases, including heart disease, cancer, and Alzheimer's. Vitamin E's antioxidant properties help protect cells from oxidative stress, a key contributor to inflammation. Additionally, vitamin E has been shown to modulate the activity of inflammatory enzymes and cytokines, helping to reduce the severity of inflammation. Studies have suggested that vitamin E supplementation may help reduce inflammation in individuals with certain inflammatory conditions, such as rheumatoid arthritis.

Genetic variants that affect vitamin E metabolism can impact our inflammatory response. Research has suggested that these variations have been associated with higher levels of inflammation. Other genes involved in vitamin E metabolism have also been linked to inflammation and the risk of chronic diseases. Understanding the impact of genetic variation on vitamin E metabolism and inflammation can help identify individuals at higher risk of chronic disease and inform personalized approaches to prevention and treatment.

Genomic Potential Score

Typical need

Result

Your GPS is associated with typical need for vitamin E.

Recommendations

Ensure you consume a variety of foods, including fruits, vegetables, whole grains, lean proteins, and healthy fats. This will provide you with adequate nutrients, including vitamin E, and promote overall health.

Include vitamin E-rich foods. Although you may have normal circulating levels of vitamin E, it's still important to consume foods rich in this nutrient. Good sources include nuts (such as almonds and hazelnuts), seeds (such as sunflower seeds), green leafy vegetables (like spinach and kale), and vegetable oils (like sunflower and safflower oils).

Exercise regularly. Engaging in regular physical activity can help maintain overall health and support healthy nutrient levels, including vitamin E. Aim for at least 150 minutes of moderate-intensity aerobic exercise or 75 minutes of vigorous-intensity aerobic exercise per week, along with strength training activities on two or more days per week.

Avoid smoking and limit alcohol intake. Smoking and excessive alcohol consumption can negatively impact your overall health and nutrient levels. If you smoke, consider quitting or seeking support to help you quit. Limit alcohol intake to moderate levels, which is typically defined as one drink per day for women and two drinks per day for men.

Regular check-ups. Even if you have a genetic predisposition to normal vitamin E levels, it's important to have regular check-ups with your healthcare provider. This can help ensure you are maintaining good overall health and identify any potential issues related to nutrient deficiencies or imbalances.

Your Genotype

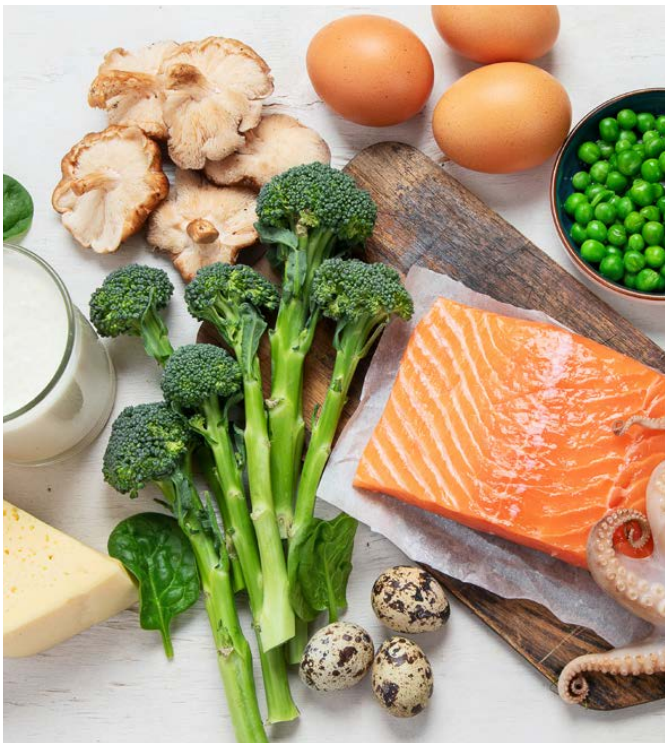
Gene	SNP	Wildtype	Variant	Genotype
SCARB1	rs11057830	G	A	GG
CD36	rs1527479	T	C	TC
GSTP1	rs1695	A	G	AG
IL10	rs1800896	T	C	TT
TNF	rs361525	G	A	GG
ZPR1	rs964184	G	C	CC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Vitamin D

Vitamin D is a fat-soluble vitamin that stimulates calcium and phosphate absorption, which are crucial for normal bone and tooth formation. Vitamin D is required for neuromuscular function, cell growth, cardiovascular health, reduced inflammation, and proper functioning of the immune system. Our body can produce vitamin D in the skin following exposure to UVB rays. Vitamin D can also be acquired from foods; it is naturally present in foods including oily fish, fish oil, seafood, meat, dairy, egg yolk, and liver. There are two forms of vitamin D (D2 and D3) – both must first be converted to the inactive form of Vitamin D (25-hydroxy vitamin D or calcifediol) in the liver and then to the active form (1,25-dihydroxyvitamin D or calcitriol) by the kidneys.

Genetic variants can impact our body's ability to produce enough vitamin D by affecting the function of enzymes involved in vitamin D metabolism. For example, certain variants in the genes that code for enzymes needed for the activation or degradation of vitamin D can lead to a reduced ability to produce or utilize vitamin D. This can result in lower levels of vitamin D in the body, which can cause a range of health issues, such as weakened bones and an increased risk of certain diseases.



Genomic Potential Score

Typical need

Result

Your GPS is associated with a typical need for vitamin D.

Recommendations

There is plenty of vitamin D in oily fish (especially sardines, salmon, cod, and mackerel) and fish oil, while small amounts can be found in meat (pork and poultry) and dairy products (Edam cheese, mozzarella).

Besides diet, exposure to sunlight also significantly influences your vitamin D level. But don't throw yourself into excessive sunbathing: 10 to 30 minutes daily with exposed limbs is enough. In winter, significantly less UVB reaches the Earth's surface in the early mornings and late afternoons, leading to minimal or non-existent vitamin D3 synthesis.

During the winter, getting enough vitamin D from food is important. People who do not eat enough vitamin D-rich food (like vegetarians and vegans) should consider supplementation in D3 form.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
CYP2R1	rs10741657	A	G	GG
DHCR7	rs12785878	G	T	TT
CYP2R1	rs12794714	G	A	GG
VDR	rs1544410	C	T	TC
CYP2R1	rs1993116	A	G	GG
VDR	rs2228570	A	G	GA
GC	rs2282679	T	G	TG
CYP24A1	rs2296241	G	A	GA
CYP27B1	rs4646536	A	G	AA
DHCR7	rs7041	A	C	CA
VDR	rs731236	A	G	GA
VDR	rs7975232	C	A	AC
KL	rs9536314	T	G	TT

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Vitamin K

Vitamin K is an essential nutrient that plays a vital role in blood clotting and bone metabolism. The body needs vitamin K to activate proteins involved in blood clotting, which helps prevent excessive bleeding after an injury. Additionally, vitamin K is required to produce osteocalcin, a protein crucial for bone health. Research also suggests that vitamin K may have anti-inflammatory properties and help prevent certain chronic diseases, such as cardiovascular disease and osteoporosis.

Genetics can play a significant role in how our bodies metabolize vitamin K. Some people may have genetic variations that affect how their bodies absorb and use vitamin K, which can lead to deficiencies. Therefore, understanding the role of genetics in vitamin K metabolism can help to personalize nutrition and supplementation recommendations.

Genomic Potential Score

Typical need

Result

Your GPS is associated with a typical need for vitamin K.

Recommendations

Consume a balanced diet: Ensure you eat a balanced diet that includes a variety of fruits, vegetables, whole grains, lean proteins, and healthy fats to meet your daily vitamin K needs, as well as other essential nutrients.

Incorporate vitamin K-rich foods: Regularly include foods rich in vitamin K, such as leafy green vegetables, cruciferous vegetables, certain fruits, and fermented foods, to support your body's normal need for vitamin K.

Opt for whole food sources: Focus on obtaining your vitamin K from natural, whole food sources rather than relying solely on supplements, as they provide additional nutrients and health benefits.

Stay consistent with vitamin K intake: Maintain a consistent intake of vitamin K through a well-balanced diet to support the proper functioning of blood clotting and bone health.

Stay informed about your individual needs: Regularly consult your healthcare provider or a registered dietitian to stay up-to-date on your personal nutritional needs and make adjustments to your diet as necessary to ensure optimal health.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
NQQ1	rs1800566	G	A	GG
APOE	rs429358	T	C	TT
APOE	rs7412	C	T	CC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Selenium

Selenium is an essential mineral that is crucial for several bodily processes. Adequate selenium intake is vital for sperm maturation, thyroid hormone synthesis, and normal immune function; it helps protect against oxidative damage and is involved in viral suppression. Blood selenium levels are influenced by exogenous factors such as diet, supplements, and smoking status, as well as endogenous factors such as genetics. Studies have shown that higher selenium levels have an anticarcinogenic and overall protective effect on our health.

Genomic Potential Score

Decreased need

Result

Your GPS indicates a decreased need for selenium.

Recommendations

Eat a balanced and varied diet: Including a variety of foods in your diet, such as fruits, vegetables, whole grains, lean protein sources, and healthy fats, can help ensure that you're getting adequate amounts of selenium, as well as other essential nutrients.

Avoid excessive supplementation: While selenium is important for good health, excessive supplementation can lead to toxicity. It's important to follow the recommended daily intake of selenium, to avoid taking high-dose supplements unless recommended by a healthcare professional.

Avoid excessive supplementation: While selenium is important for good health, excessive supplementation can lead to toxicity. It's important to follow the recommended daily intake of selenium, to avoid taking high-dose supplements unless recommended by a healthcare professional.

Practice good hygiene: Selenium is an essential mineral that is found in soil and can be present in foods grown in certain areas. To reduce your risk of exposure to contaminants, it's important to wash your hands and produce thoroughly and to choose foods that are grown in areas with lower levels of environmental contaminants.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
GPX1	rs1050450	G	A	GA
AGA	rs1395479	C	A	AC
SEPP1	rs7579	C	T	CC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Magnesium

Magnesium is a mineral that plays many important roles in the body, such as controlling blood sugar and blood pressure, enabling muscles to work properly, and helping with energy production. It's needed for making DNA, RNA, and proteins, as well as for proper nerve and muscle function. Magnesium also helps transport calcium and potassium ions across cell membranes, which is important for nerve impulses, muscle contractions, and heart rhythm.

Not having enough magnesium (hypomagnesaemia or magnesium deficiency) is more common than having too much, and can contribute to conditions like diabetes, hypertension, and osteoporosis. Although most people don't have enough magnesium in their body because of their diet or lifestyle, about 30% of how much magnesium you have in your blood is actually determined by your genes, which you inherit from your parents.

Genomic Potential Score

Decreased need

Result

Your GPS indicates a decreased need of magnesium.

Recommendations

Monitor magnesium levels: If you have a genetic predisposition for a decreased need for magnesium, it is essential to regularly monitor your magnesium levels through blood tests. This will help you maintain an optimal balance and avoid complications associated with too much magnesium. Speak with your healthcare provider about how often you should check your levels and what the optimal range is for you.

Stay informed about medication interactions: Some medications, such as diuretics, proton pump inhibitors, and certain antibiotics, can affect magnesium levels in the body. Discuss your medication list with your healthcare provider to ensure that you are not unintentionally increasing your magnesium levels or causing an imbalance in other essential nutrients.

Even though your genetic make up indicates a decreased need for magnesium, deficiencies can occur since many of our foods don't contain a lot of nutrients anymore. Be sure to maintain adequate levels anyway.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
SHROOM3	rs13146355	G	A	AA
TRPM6	rs2274924	T	C	TC
TRPM6	rs3750425	C	T	CT
DCDC5	rs3925584	T	C	TT
MUC1	rs4072037	C	T	TC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Copper

Copper is an essential mineral crucial to various aspects of human physiology. Found in tissues throughout the body, it is particularly abundant in the liver, brain, heart, kidneys, and skeletal muscles. Copper plays a vital role in the production of red blood cells, blood vessel formation, heart rate and blood pressure regulation, nerve cell and immune system maintenance, collagen formation, iron absorption, and energy production. The brain is sensitive to both copper deficiency and excess. While deficiency is rare, it can lead to cardiovascular disease, fatigue, weakness, frequent sickness, weak bones, memory and learning problems, difficulty walking, cold sensitivity, pale skin, premature grey hair, and vision loss. As our bodies cannot produce copper, we need to obtain it through our diet.

A person's genetic profile can impact their need for copper by influencing the way their body absorbs, transports, and utilizes the mineral. Certain genetic mutations or variations can lead to disorders affecting copper metabolism, which may cause either copper deficiency or copper accumulation in the body.

Genomic Potential Score

Likely higher levels

Result

Your GPS is associated with likely higher levels of copper.

Recommendations

Copper is naturally found in a variety of foods, including shellfish, nuts and seeds, organ meats, legumes, and dark chocolate. A balanced diet that includes these foods can help ensure adequate copper intake. The recommended daily intake of copper for adults is 900 micrograms (mcg), which can be easily met through diet.

Consult a healthcare provider before taking copper supplements. While copper supplements are available, it is important to consult with a healthcare provider before taking them. Taking too much copper can lead to copper toxicity, which can cause symptoms such as nausea, vomiting, and liver damage. Therefore, it is important to only take copper supplements under the guidance of a healthcare provider and to avoid taking more than the recommended daily dose.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
SELENBP1	rs2769264	T	G	GT

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Zinc

Zinc is an essential mineral crucial for numerous bodily functions, including fighting infections, wound healing, cell division, DNA synthesis, and supporting healthy growth during pregnancy, childhood, and adolescence. Required for sensing taste and smell, zinc is found in foods such as red meat, poultry, pumpkin seeds, wild rice, oysters, and wheat germ. Despite its importance, 5-10% of individuals in developed countries experience zinc deficiency. The body cannot produce zinc, so obtaining it through diet is essential.

The optimal amount of zinc needed varies depending on factors such as age, sex, and health status, with one's genetic profile influencing the ability to absorb, transport, and utilize zinc. Zinc deficiency can lead to symptoms like loss of appetite, dermatitis, a weakened immune system, and growth delay. To ensure adequate intake, consume zinc-rich foods like oysters, red meat, whole grains, legumes, milk, cheese, nuts, and seeds.

Genomic Potential Score

Typical levels

Result

Your GPS is associated with typical levels of zinc.

Recommendations

Whole grains and milk products are good sources of zinc. Many breakfast cereals are fortified with zinc. It's wise to be picky, however, as many of these products also have high amounts of added sugar.

Seafood, lean meat, poultry, eggs, legumes, nuts, and seeds are all good sources of zinc.

Zinc from animal products is absorbed more efficiently than from plant food. Plant food is rich in phytates, which inhibit the absorption of zinc and other minerals. Heating, sprouting, soaking, or fermenting plant sources of zinc can help improve zinc bioavailability.

A diverse and nutrient-rich diet is essential for our health and well-being. Meat and poultry, pumpkin seeds, cheese, and oatmeal are among the best sources of zinc.

Phytates can inhibit zinc absorption. Phytates are compounds found in certain plant foods, such as grains, legumes, and nuts, that can bind to zinc and inhibit its absorption. Phytates also have potential health benefits, such as reducing the risk of certain diseases. To balance the potential benefits and drawbacks, it's a good idea to consume foods high in phytates in moderation and to include sources of zinc that are more easily absorbed, such as animal products.

Excessive alcohol consumption can interfere with zinc absorption and increase the risk of zinc deficiency. Consume alcohol in moderation or avoid it altogether to maintain healthy zinc levels.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
CA1	rs1532423	A	G	GA
PPCDC	rs2120019	T	C	TC
PPCDC	rs4826508	C	T	CT

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

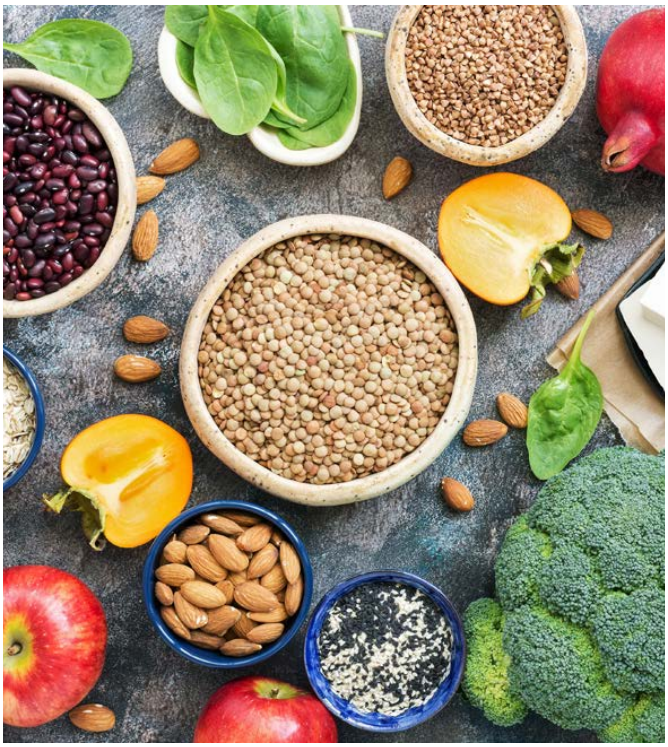
Iron

Iron is an essential micronutrient vital for various bodily functions, primarily the formation of hemoglobin, a protein in red blood cells responsible for oxygen transport throughout the circulatory system. Since the human body cannot produce iron, it must be obtained through dietary sources.

Iron deficiency, one of the most prevalent nutritional deficiencies globally, affects approximately 25% of the world's population. Women of childbearing age, adolescents, endurance athletes, regular blood donors, vegetarians, and vegans are among the most at-risk groups. Symptoms of iron deficiency anemia include fatigue, shortness of breath, pale skin, weakened immune system, and unusual headaches.

Conversely, iron overload is a condition where too much iron accumulates in the body, which can harm organs. Genetics play a role in this, with gene mutations like the HFE gene mutation affecting iron absorption. Environmental factors, such as diet and alcohol consumption, can also contribute to iron overload. Symptoms include fatigue, weight loss, weakness, and joint pain.

Understanding one's genetic predisposition can help determine the appropriate measures to prevent or manage these conditions, ensuring optimal health and wellbeing.



Genomic Potential Score

Increased need

Result

Your GPS is associated with increased need of iron.

Recommendations

Eat iron-rich foods. Include iron-rich foods, such as red meat, poultry, seafood, beans, lentils, tofu, and spinach. Iron from animal sources (heme iron) is absorbed more efficiently than iron from plant sources (non-heme iron), so consuming various iron-rich foods from both sources is important.

Enhance iron absorption. Pair iron-rich foods with vitamin C-rich foods such as citrus fruits, bell peppers, strawberries, or tomatoes to enhance iron absorption. Avoid consuming calcium-rich foods, such as dairy products, at the same time as iron-rich foods, as calcium can inhibit iron absorption.

Consider iron supplements. If your doctor has diagnosed you with iron deficiency, consider taking an iron supplement. Make sure to take the supplement as directed by your doctor and do not exceed the recommended dosage.

Limit consumption of tea and coffee. Tea and coffee contain compounds that can interfere with iron absorption. Try to limit the consumption of these beverages or consume them between meals rather than with meals.

Get enough protein. Protein is essential for building and repairing tissues, including the red blood cells that carry oxygen throughout the body. Make sure to include protein-rich foods, such as lean meats, poultry, fish, eggs, dairy, beans, and nuts, in your diet.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
HFE	rs1799945	C	G	CC
HFE	rs1800562	G	A	GG
HFE	rs1800730	A	T	AA
TMPRSS6	rs2235321	G	A	GG
TF	rs3811647	G	A	GG
TMPRSS6	rs4820268	G	A	GG
TFR2	rs7385804	C	A	AA
TMPRSS6	rs855791	A	G	AA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Nitric Oxide

Nitric oxide (NO) has various bodily functions, including regulating blood flow, immune response, and neuronal signalling. Genetic variations in the genes that code for the enzymes involved in the production and metabolism of NO can impact a person's health and well-being. For example, a deficiency in NO production or impaired NO signalling can lead to various health problems, including hypertension, cardiovascular disease, asthma, and Alzheimer's disease. Some individuals may require more or less NO than others due to their genetic makeup. However, the exact amount of NO needed by an individual may also depend on various other factors, including age, sex, health status, and lifestyle factors.

Genomic Potential Score

Typical need

Result

Your GPS is associated with a typical need for nitric oxide.

Recommendations

Eat a balanced diet: Consume a variety of fruits, vegetables, whole grains, lean proteins, and healthy fats to ensure an adequate intake of nutrients that support nitric oxide production, such as nitrates, antioxidants, and amino acids like arginine and citrulline.

Stay active: Engage in regular physical activity to naturally stimulate nitric oxide release and promote healthy blood flow. Aim for at least 150 minutes of moderate or 75 minutes of vigorous-intensity exercise per week.

Prioritize overall health: Focus on maintaining a healthy weight, managing stress, and avoiding tobacco products to optimize nitric oxide levels and support overall cardiovascular health.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
NOS3	rs1800779	G	A	GA
NOS3	rs2070744	C	T	CT
NOS2	rs2248814	A	G	GA
NOS1	rs2682826	G	A	AG
NOS1	rs3782218	C	T	CC
NOS3	rs7830	G	T	TG

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Sodium

Sodium, the main component of table salt, is essential for maintaining proper muscle and nerve function, as well as regulating the body's water balance. Found in various foods, particularly processed ones, sodium is vital for our health; however, excessive intake can lead to high blood pressure, a major risk factor for cardiovascular diseases.

The sensitivity to sodium, which is partially determined by an individual's genetic makeup, varies among people and can significantly influence hypertension. Research has demonstrated that reducing salt intake can help lower blood pressure and decrease the risk of stroke and heat-related illnesses. Consequently, it is advisable to limit salt consumption, especially for those with a genetic predisposition to heightened sensitivity to sodium or table salt.

Genomic Potential Score

Typical sensitivity

Result

Your GPS is associated with average salt sensitivity. This result indicates an average chance of having increased blood pressure due to salt intake.

Recommendations

It's important to note that salt sensitivity can vary from person to person, and many factors beyond genetics can influence blood pressure.

Moderation is key. Even if you don't have a genetic predisposition to salt sensitivity, it's still a good idea to moderate your salt intake.

Eat a healthy diet. A healthy diet rich in fruits, vegetables, whole grains, lean protein, and low-fat dairy products can help lower your blood pressure, regardless of your salt sensitivity. Aim to eat a balanced diet that's low in saturated and trans fats, cholesterol, and added sugars.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
WNK1	rs12828016	G	T	TG
NEDD4L	rs4149601	G	A	AG
ACE	rs4343	G	A	AA
ADD1	rs4961	G	T	GG
AGT	rs699	A	G	AG

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

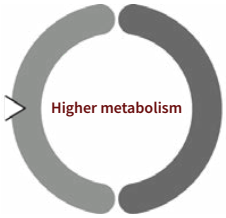
Lifestyle

Our lifestyle plays a crucial role in determining our overall health and well-being. The choices we make in terms of diet, physical activity, stress management, sleep patterns, and substance use directly impact our body's functioning and disease risk. By adopting a healthy lifestyle, we can reduce the likelihood of chronic diseases, maintain a healthy weight, improve our mental and emotional well-being, and enhance our overall quality of life.

Overview of your results

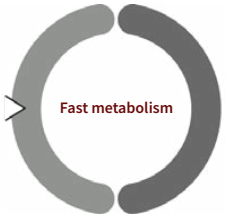
LIFESTYLE

METABOLISM



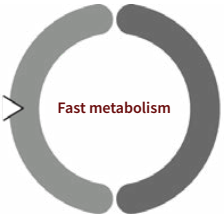
Your GPS is associated with faster metabolism.

CAFEINE METABOLISM



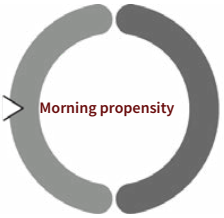
Your GPS is associated with fast caffeine metabolism.

ALCOHOL METABOLISM



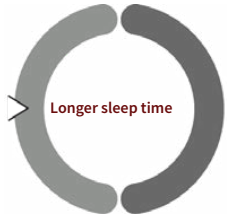
Your GPS is associated with efficient alcohol metabolism and thus a lower likelihood of flushing, nausea, or headaches following alcohol intake.

CIRCADIAN PROPENSITY



Your GPS indicates that you are more likely a morning person. Studies have shown that individuals with your genetic makeup tend to feel sleepy earlier in the evening, wake up early in the morning, and have a shorter sleep cycle.

SLEEP DURATION



Your GPS is associated with longer sleep duration.

SLEEP DISRUPTION

Your GPS is associated with a higher likelihood of good sleep quality. Keep in mind that genetics only influence sleep quality to a certain extent.

Metabolism

Our genetic profile plays a crucial role in determining our metabolism and how our body manages weight. Genes can affect how we process food, store energy, and burn calories, leading to variations in weight gain or loss. Some genetic variations are linked to a higher risk of obesity and type 2 diabetes, as they control sugar metabolism and how our body responds to insulin. Other variations relate to hunger and fullness, with changes potentially causing a higher risk of overeating and weight gain. Research has found that changes in certain genes can influence fat metabolism and energy use, potentially resulting in increased weight gain and obesity. Another gene is connected to cellular energy production, and variations in this gene may make people more likely to develop metabolic disorders like obesity and type 2 diabetes. This shows that our genetic profile can impact our metabolism and predisposition to weight gain, emphasizing the need for individualized approaches to healthcare and treatment.

Genomic Potential Score

Higher metabolism

Result

Your GPS is associated with faster metabolism.

Recommentations

Consume nutrient-dense foods: Focus on eating nutrient-rich foods that are high in calories, protein, healthy fats, and complex carbohydrates to meet your body's energy requirements. Examples include avocados, nuts, seeds, whole grains, lean meats, and dairy products.

Eat larger, balanced meals: Aim for larger portions to ensure you get enough calories and nutrients to maintain a healthy weight. Ensure each meal includes a mix of proteins, carbohydrates, and healthy fats.

Snack wisely: Incorporate healthy, calorie-dense snacks between meals to provide additional energy and prevent excessive weight loss. Snack options include yoghurt with nuts and honey, nut butter on whole-grain toast, or a fruit and protein smoothie.

Strength training: Include strength training exercises in your fitness routine to build muscle mass and promote a healthy body composition. Aim for at least two strength training sessions per week, targeting all major muscle groups. This will help counteract potential muscle loss associated with a faster metabolism.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
MC4R	rs17782313	T	C	TT
FTO	rs17817449	T	G	GG
UCP2	rs659366	C	T	CC
UCP2	rs660339	G	A	AG
GCKR	rs780094	T	C	CC
PPARGC1A	rs8192678	C	T	CC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Caffeine metabolism

Caffeine is a natural compound that can be found in many plant species. It is most commonly known as the active ingredient in coffee but can also be found in lower levels in brewed tea and cocoa. Typically, a cup of coffee contains between 75-100 mg of caffeine.

Caffeine is a mild stimulant that activates the entire nervous system and heart and acts as a weak diuretic. It has both a psychoactive effect, which can cause excitation, unrest, and improved wellbeing, as well as a physiological effect, which includes increased alertness and concentration, reduced fatigue, increased metabolism, and increased blood pressure.

It is important to note that high doses of caffeine can lead to unpleasant side effects such as restlessness, trembling, and high blood pressure problems. Therefore, it is advisable to consume caffeine in moderation.

Genomic Potential Score

Fast metabolism

Result

Your GPS is associated with fast caffeine metabolism.

Recommentations

Instead of consuming a large amount of caffeine all at once, it may be helpful to spread caffeine consumption out over the day. This can help prevent a sudden crash once the effects wear off.

For those with fast caffeine metabolism and who rely on caffeine for energy, it may be beneficial to explore other energy sources. Foods high in protein and fibre, such as nuts, seeds, and whole grains, can help sustain energy levels throughout the day.

Research shows that people with a fast metabolism are not only able to ingest more caffeine without side effects, but they even have more protective outcomes on the cardiovascular system while drinking more than one cup of coffee.

Your Genotype

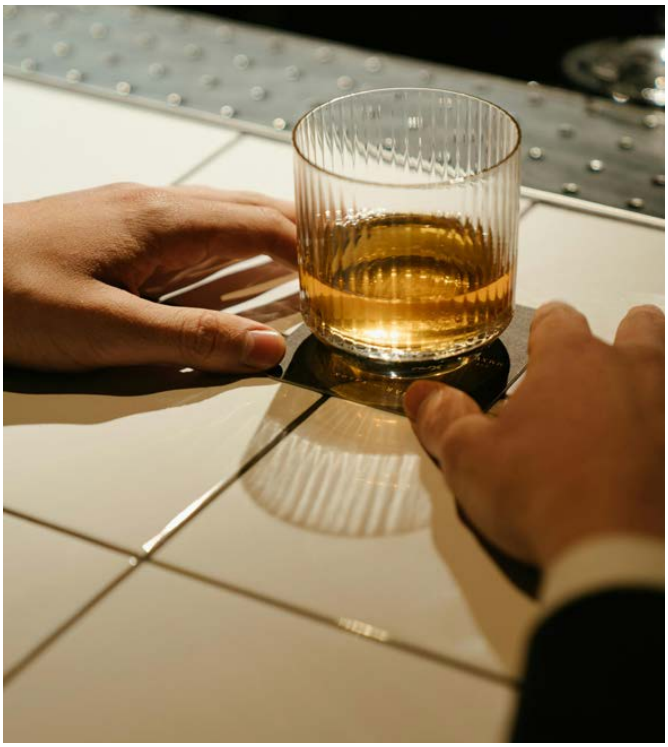
Gene	SNP	Wildtype	Variant	Genotype
CYP1A2	rs2472297	C	T	TC
AHR	rs4410790	T	C	TT
ADORA2A	rs5751876	T	C	TC
ADA	rs73598374	C	T	CC
CYP1A2	rs762551	C	A	AA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Alcohol metabolism

Alcohol is primarily metabolized in the liver by two enzymes: alcohol dehydrogenase (ADH) and aldehyde dehydrogenase (ALDH). ADH converts alcohol into toxic acetaldehyde, causing symptoms like flushing, nausea, and headache, while ALDH breaks it down further into acetate, which is eventually eliminated from the body.

Alcohol metabolism efficiency varies among individuals, partly due to genetic variations in ADH and ALDH enzymes. Some people have a more active ADH, metabolizing alcohol faster, while others have a less active ALDH, leading to acetaldehyde build-up and symptoms like facial flushing and increased heart rate. Genetics can influence alcohol tolerance and susceptibility to its negative effects.



Genomic Potential Score

Fast metabolism

Result

Your GPS is associated with efficient alcohol metabolism and thus a lower likelihood of flushing, nausea, or headaches following alcohol intake.

Recommentations

Limit alcohol intake: Regardless of fast alcohol metabolism, stick to moderate levels – one drink per day for women and two for men.

Stay hydrated: Drink water before, during, and after alcohol consumption to minimize dehydration and related symptoms like headaches, fatigue, and dizziness.

Choose low-alcohol beverages: Opt for drinks with lower alcohol content, such as beer or wine, or select lower ABV wines or spirits to reduce overall alcohol intake.

Prioritize sleep: Ensure 7-8 hours of sleep per night to recover from alcohol's disruptive effects on sleep patterns and to prevent fatigue and cognitive impairment.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
ADH1C	rs1693482	C	T	TC
ADH1C	rs283413	C	A	CC
ADH1B	rs6413413	T	A	TT
ALDH2	rs671	G	A	GG

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Circadian propensity

Do you like waking up early in the morning, or do you prefer evenings? Whether you are an early bird, or a night owl partially depends on your unique circadian rhythm. The circadian rhythm is an internal biological clock that regulates various physiological and behavioral processes, such as sleep-wake cycles, hormone secretion, and metabolism.

Genetic variations in clock genes can affect the functioning of the circadian rhythm. For example, some individuals may have a genetic variation that leads to shorter or longer circadian periods, which can affect their sleep patterns and susceptibility to certain health conditions. Other genetic variations can affect the timing and expression of clock genes, which can also impact the body clock. Understanding your internal biological clock is the first step towards quality sleep and wellbeing. It can help you adjust your daily activities for optimal productivity.

Genomic Potential Score

Morning propensity

Result

Your GPS indicates that you are more likely a morning person. Studies have shown that individuals with your genetic makeup tend to feel sleepy earlier in the evening, wake up early in the morning, and have a shorter sleep cycle.

Recommentations

Maintain a consistent sleep schedule. People who are genetically predisposed to be morning people should aim to maintain a consistent sleep schedule, going to bed and waking up at the same time each day. This can help regulate the body's circadian rhythm and improve overall sleep quality.

Maximize exposure to natural light. Morning people may be more sensitive to natural light, which can help regulate the body's circadian rhythm. Spending time outside in the morning or exposing oneself to natural light indoors can help improve alertness and mood during the day.

Plan activities accordingly. Morning people may have a natural peak in energy and productivity in the morning. Planning activities requiring concentration or physical activity during this time can be helpful to maximize efficiency and take advantage of the body's natural rhythms.

Avoid stimulating activities before bedtime. To ensure a restful night's sleep, individuals who are predisposed to be morning people should avoid stimulating activities before bedtime. This can include avoiding electronic devices or stimulating conversations before bedtime and practicing relaxing activities such as reading or meditation.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
PER3	rs10462021	A	G	AA
CLOCK	rs1801260	A	G	AA
ARNTL	rs2278749	C	T	CC
PER3	rs228697	C	G	CC
PER3	rs2640909	T	C	TT
AANAT	rs28936679	G	A	GG
PER2	rs35333999	C	T	CC
GNB3	rs5443	C	T	TC
PER2	rs934945	G	A	AG

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Sleep duration

Sleep is a basic human need essential for our health and wellbeing. Sleep duration requirements vary throughout our life and from person to person. According to National Sleep Foundation guidelines, healthy adults need between 7 and 9 hours of sleep per night. Changes in sleep quality, quantity, and timing have been associated with several diseases, including heart disease, kidney disease, high blood pressure, diabetes, stroke, obesity, and depression.

Genetics can influence a person's sleep duration by affecting the functioning of the body's circadian rhythm. Genetic variations in clock genes have been found to be associated with differences in sleep duration. For example, some individuals may have a genetic variation that leads to a shorter or longer circadian period, which can affect their natural sleep cycle. Additionally, genetic factors can influence the production and activity of neurotransmitters that regulate sleep, such as dopamine and serotonin.

Genomic Potential Score

Longer sleep time

Result

Your GPS is associated with longer sleep duration.

Recommentations

Allow for enough time for sleep. People with a genetic predisposition to longer sleep duration should aim to allow for enough time for sleep in their daily schedule. This may mean going to bed earlier or waking up later than the average person.

Establish a consistent sleep schedule. It is important to establish a consistent sleep schedule, going to bed and waking up at the same time each day. This can help regulate the body's circadian rhythm and improve overall sleep quality.

Create a relaxing bedtime routine. Individuals with a genetic predisposition to longer sleep should create a relaxing bedtime routine to promote restful sleep. This can include activities such as reading, taking a warm bath, or practicing relaxation techniques such as deep breathing or meditation.

Maximize exposure to natural light. Exposure to natural light can help regulate the body's circadian rhythm and improve alertness during the day. People with a genetic predisposition to longer sleep duration may benefit from spending time outside or exposing themselves to natural light indoors.

Engage in regular physical activity. Regular physical activity can help regulate the body's circadian rhythm and improve overall sleep quality. People with a genetic predisposition to longer sleep duration should aim to engage in regular physical activity, such as walking, cycling, or yoga, for at least 30 minutes a day.

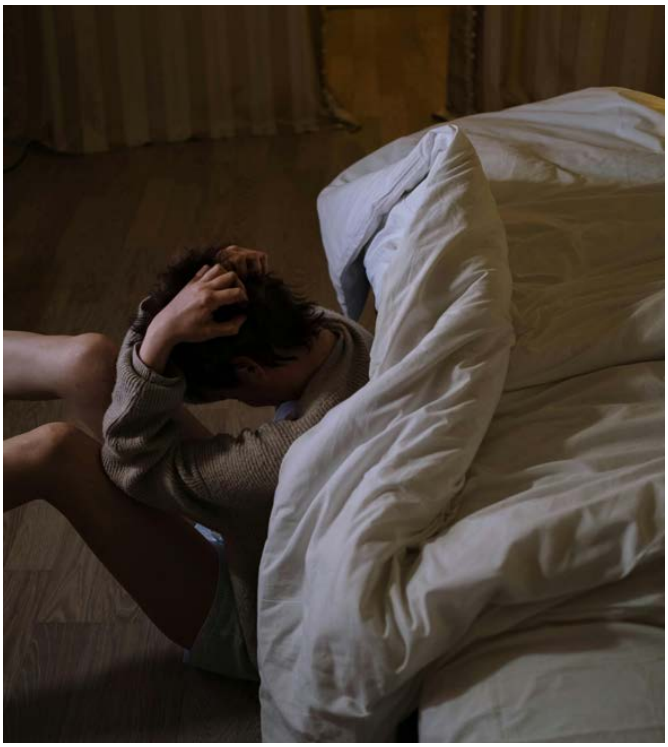
Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
CLOCK	rs11932595	A	G	AA
DEC2	rs121912617	G	T	GG
CLOCK	rs12649507	G	A	AG
CLOCK	rs1801260	A	G	AA
NPSR1	rs324981	A	T	AT
COMT	rs4680	G	A	GA
GNB3	rs5443	C	T	TC
GRIA3	rs687577	A	C	CC
ADA	rs73598374	C	T	CC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Sleep disruption

Sleep is a basic human need important for health and wellbeing. Sleep quality refers to how well we sleep, integrating aspects of sleep initiation (falling asleep within 30 minutes or less), sleep maintenance (waking up no more than once a night), sleep quantity (sleeping at least 85 percent of the total time spent in bed), and feeling refreshed upon waking up. Getting enough quality sleep can help protect mental health, physical health, and quality of life. Changes in sleep quality, quantity, and timing have been associated with several human diseases, including heart disease, kidney disease, high blood pressure, diabetes, stroke, obesity, and depression. Research has shown that sleep is a highly complex physiological function involving many genes and their interactions with environmental factors.



Genomic Potential Score

Good sleep quality

Result

Your GPS is associated with a higher likelihood of good sleep quality. Keep in mind that genetics only influence sleep quality to a certain extent.

Recommentations

Maintain consistent sleep patterns. Despite having a genetic advantage, it's essential to establish and maintain a consistent sleep schedule. This means going to bed and waking up at the same time each day, even on weekends. Consistency helps regulate your body's internal clock, ensuring you continue to enjoy good sleep quality.

Create a sleep-friendly environment. A comfortable and conducive sleep environment can further enhance your natural sleep quality. Make sure your bedroom is cool, quiet, and dark, with a comfortable mattress and pillow. Consider using blackout curtains, white noise machines, or earplugs to block out any potential disturbances.

Avoid excessive stimulants and heavy meals before bedtime. Be mindful of your diet and substance intake to maintain good sleep quality. Limit caffeine and alcohol consumption in the hours leading up to bedtime, as they can interfere with sleep. Similarly, avoid heavy or spicy meals close to bedtime, as they may cause discomfort and disrupt your sleep patterns.

Your Genotype

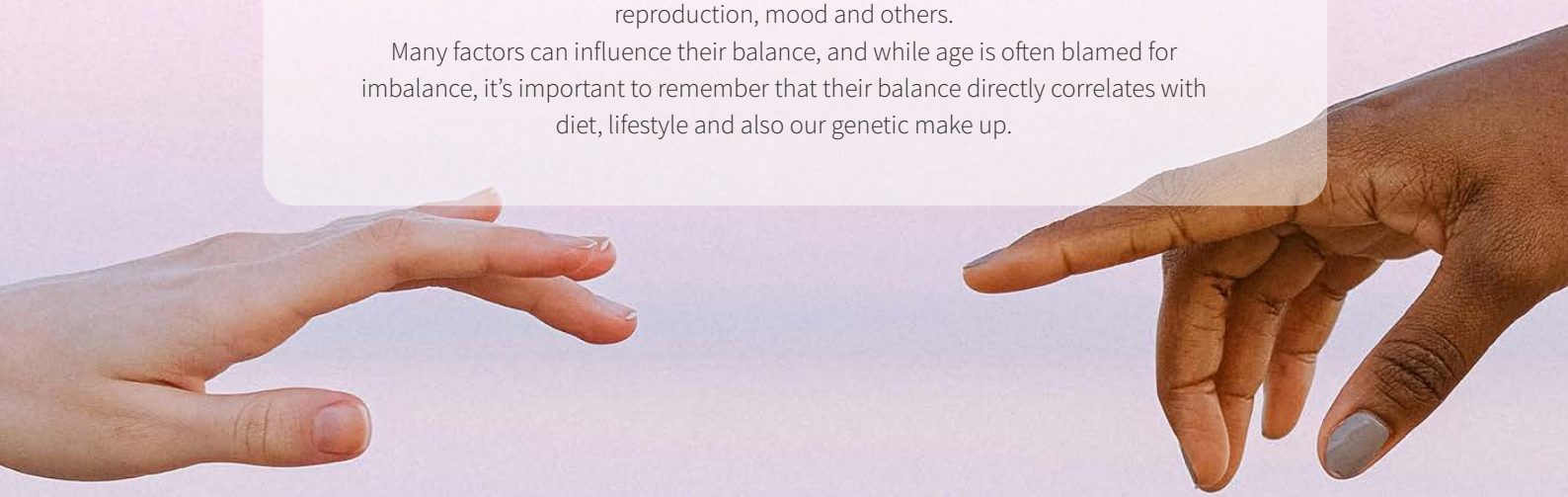
Gene	SNP	Wildtype	Variant	Genotype
P2Y2	rs1791933	T	C	CT
TNF	rs1800629	G	A	GG
AHR	rs2066853	G	A	GG
ARNT	rs2228099	C	G	GG
COMT	rs4680	G	A	GA
GNB3	rs5443	C	T	TC
ADORA2A	rs5751876	T	C	TC
BDNF	rs6265	C	T	TC
HTR2A	rs6311	C	T	TC
HTR2A	rs6314	G	A	GG
GRIA3	rs687577	A	C	CC
MTNR1B	rs7942988	C	T	CC
PPARGC1A	rs8192678	C	T	CC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Hormones

Hormones are our chemical messengers, which travel through the bloodstream to tissues and organs to exert their functions. They are involved in various processes, including growth and development, metabolism, sexual function, reproduction, mood and others.

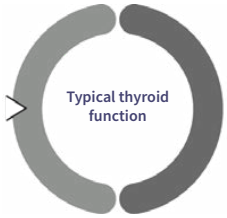
Many factors can influence their balance, and while age is often blamed for imbalance, it's important to remember that their balance directly correlates with diet, lifestyle and also our genetic make up.



Overview of your results

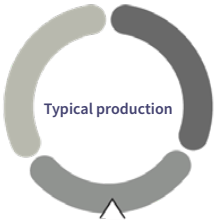
HORMONES

THYROID



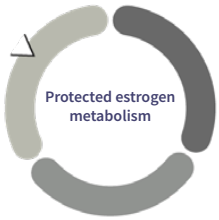
Your GPS is associated with typical thyroid function, which means your risk for thyroid-related disorders is within the normal range.

CORTISOL



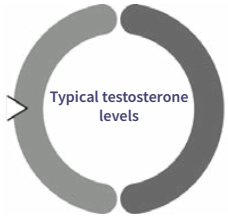
Your GPS is associated with normal cortisol production, suggesting a typical stress response and a balanced risk for stress-related issues.

ESTROGEN



Your GPS is associated with protected estrogen metabolism, indicating a reduced risk of developing certain health conditions.

TESTOSTERONE



Your GPS is associated with typical testosterone levels, which contribute to normal energy, muscle mass, and sex drive, as well as balanced overall health.

Thyroid

The thyroid gland regulates several bodily functions, including metabolism, growth, and development. These hormones help maintain the body's energy levels, temperature, and heart rate. Too much or too little of these hormones can lead to health problems such as weight changes, fatigue, and mood swings.

Genetic variants can affect how people respond to thyroid hormones, making them more or less sensitive to their effects. For instance, gene mutations that regulate thyroid hormone production or metabolism can cause hyperthyroidism or hypothyroidism. Other genetic factors can also impact how the body's cells absorb and use thyroid hormones, leading to thyroid resistance syndrome. Additionally, lifestyle choices such as diet and exercise can influence an individual's health, particularly if they have a genetic predisposition to thyroid hormone sensitivity. By adopting a healthy lifestyle, such as eating a balanced diet and engaging in regular exercise, individuals can mitigate the effects of unfavorable genetic predispositions and reduce their risk of developing thyroid disorders.

Genomic Potential Score

Typical thyroid function

Result

Your GPS is associated with typical thyroid function, which means your risk for thyroid-related disorders is within the normal range.

Recommendations

Even though you are not genetically predisposed to a lower thyroid function it is important to know that there are also other lifestyle factors like the digestive system, stress und environmental toxins that impact the thyroid function. Maintain a balanced diet: Continue to eat a variety of iodine-rich foods, such as seaweed, fish, dairy products, and eggs, to support optimal thyroid hormone production and overall health.

Stay active: Regular exercise is important for overall wellbeing and maintaining healthy thyroid function. Aim for at least 150 minutes of moderate-intensity exercise per week.

Manage stress: Keep stress levels in check with stress-reduction techniques like meditation, yoga, or deep breathing exercises, as prolonged stress can negatively impact thyroid function over time.

Monitor caffeine and alcohol intake: Excessive consumption of caffeine and alcohol can interfere with thyroid function. Moderate your intake to support a healthy thyroid gland.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
IL23R	rs10889677	C	A	AA
DIO1	rs11206244	C	T	TC
PDE8B	rs12515498	T	C	TT
DIO2	rs12885300	C	T	CC
PDE8B	rs1382879	T	C	TT
DIO1	rs2235544	C	A	AC
DIO2	rs225014	T	C	CT
CTLA4	rs231775	A	G	AA
PTPN22	rs2476601	A	G	GG
CTLA4	rs3087243	G	A	AA
PDE8B	rs4704397	G	A	GG
SLC16A2	rs6647476	T	C	TC
PDE8B	rs6885099	A	G	AA
FCRL3	rs7528684	A	G	AA
FOXE1	rs7850258	A	G	AG
THRA	rs939348	T	C	CC
FOXE1	rs965513	A	G	AG

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Cortisol

Cortisol, commonly known as the “stress hormone,” is a crucial hormone the adrenal glands produce in response to stress. It plays a vital role in maintaining various physiological processes, including regulating blood sugar levels, immune system function, and blood pressure. In addition to these essential roles, cortisol aids in the regulation of the body’s sleep-wake cycle and helps to modulate the body’s reaction to stress. In normal circumstances, cortisol levels fluctuate throughout the day; however, prolonged exposure to stress can lead to an imbalance in cortisol levels, resulting in adverse health effects such as insomnia, weight gain, and immune system suppression.

A person’s genes can affect their sensitivity to cortisol and its impact on their body. Different gene variations can change how someone responds to stress. Some gene changes are linked to a higher risk of stress-related issues like depression and PTSD. Knowing your genes can help you manage stress better and improve your well-being.

Genomic Potential Score

Typical production

Result

Your GPS is associated with normal cortisol production, suggesting a typical stress response and a balanced risk for stress-related issues.

Recommendations

Even though you are genetically not predisposed to a higher Cortisol production it is important to support a stressful lifestyle through various methods. Sleep plays an important role when facing more stressful periods.

Establishing a regular sleep, eating, and exercise schedule helps your body maintain a healthy cortisol rhythm. Aim for 7-9 hours of sleep per night, eat balanced meals at regular intervals, and incorporate daily physical activity to support hormone balance and overall well-being.

Foster social connections: Building strong relationships with friends, family, and community members can help buffer against stress and maintain normal cortisol production. Engage in social activities, join clubs or community organizations, or volunteer your time to foster positive connections and support networks.

Opt for whole, unprocessed foods: Choose a balanced diet that emphasizes whole, unprocessed foods such as fruits, vegetables, whole grains, lean proteins, and healthy fats. These nutrient-dense foods provide the essential vitamins, minerals, and antioxidants needed to support overall health and maintain normal cortisol levels. Limit processed foods, added sugars, and excessive caffeine intake, as they can disrupt hormone balance and contribute to stress.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
NR3C1	rs10052957	G	A	GA
CRHR1	rs12938031	A	G	AA
FKBP5	rs1360780	T	C	TT
HTR2C	rs1414334	C	G	GG
GSTP1	rs1695	A	G	AG
CRHR2	rs2190242	C	A	AA
CRHR2	rs2267715	G	A	AA
FKBP5	rs3800373	C	A	CC
NR3C1	rs41423247	G	C	GC
COMT	rs4680	G	A	GA
FKBP5	rs4713916	A	G	AA
NR3C2	rs5522	C	T	TT
NR3C1	rs6190	C	T	CC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the ‘Genotype’ column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Estrogen

Estrogen is an important hormone in our bodies, especially for women. It helps develop features like breasts and regulates periods. It also affects bone strength, heart health, and thinking abilities. Estrogen works with other hormones to keep our bodies working well.

Sometimes, people have genetic differences in their estrogen-related genes. These differences can affect their health. For example, some gene variations increase the risk of certain types of cancers. Other differences can impact bone strength, leading to conditions like osteoporosis. Knowing about these genetic variations can help us better understand and manage health risks.

Genomic Potential Score

Protected estrogen metabolism

Result

Your GPS is associated with protected estrogen metabolism, indicating a reduced risk of developing certain health conditions.

Recommendations

Even though you are genetically predisposed to a protected estrogen metabolism, opt for estrogen-balancing foods: Consume cruciferous vegetables, such as broccoli, cauliflower, and kale, which contain compounds that help maintain healthy estrogen levels.

Limit exposure to xenoestrogens: Avoid using plastic containers and personal care products containing phthalates, parabens, or BPA, as these chemicals can mimic estrogen and disrupt hormonal balance.

Support liver function: Incorporate liver-friendly foods like beets, artichokes, and dandelion tea to enhance detoxification pathways and promote the breakdown of excess estrogen.

Focus on fibre intake: Aim for at least 25-30 grams of dietary fibre per day from whole grains, fruits, and vegetables to facilitate the elimination of excess estrogen through regular bowel movements.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
CYP1B1	rs1056836	G	C	GG
GSTP1	rs1695	A	G	AG
ESR1	rs2234693	T	C	TT
CYP1A1	rs2606345	C	A	AC
CYP3A4	rs2740574	C	T	TT
COMT	rs4680	G	A	GA
CYP19A1	rs7176005	C	T	CC
CYP19A1	rs727479	C	A	CC
CYP19A1	rs749292	G	A	GG
ESR1	rs9340799	A	G	AA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Testosterone

Testosterone is a crucial hormone in our bodies, especially for men. It helps develop features like facial hair and deepening voice and is key for building muscles and maintaining bone strength. Testosterone also affects mood and energy levels, working with other hormones to keep our bodies balanced.

Some people have genetic differences in their testosterone-related genes, which can affect their health. For instance, certain gene variations might lead to low testosterone levels, causing issues like fatigue, low muscle mass, and reduced sex drive. Other differences may increase the risk of heart disease or prostate cancer. By understanding these genetic variations, we can better manage health risks and tailor treatments for individuals.

Genomic Potential Score

Typical testosterone levels

Result

Your GPS is associated with typical testosterone levels, which contribute to normal energy, muscle mass, and sex drive, as well as balanced overall health.

Recommendations

Get enough sleep: Sleep plays a crucial role in maintaining healthy testosterone levels. Aim to get 7-9 hours of sleep each night and establish a regular sleep routine to ensure quality sleep.

Reduce exposure to environmental toxins: Certain environmental toxins, such as pesticides, plastics, and chemicals in personal care products, can disrupt the endocrine system and lower testosterone levels. Reduce exposure by choosing organic produce, using natural personal care products, and avoiding plastics whenever possible.

Incorporate stress-reducing activities into daily routine: Chronic stress can lead to decreased testosterone levels. Incorporating stress-reducing activities such as yoga, meditation, deep breathing exercises, or regular exercise into your daily routine can help manage stress levels and maintain healthy testosterone levels.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
CYP17A1	rs1004467	A	G	AA
REEP3	rs10822184	T	C	TT
CHDH	rs12676	A	C	AA
SHBG	rs1799941	G	A	GG
LHCGR	rs2293275	T	C	CC
FAM9B	rs5934505	T	C	TC
SHBG	rs6258	C	T	CC
SHBG	rs727428	T	C	CC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

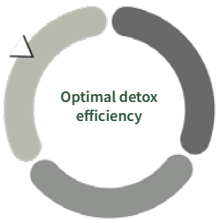
Detox

Detoxification processes are vital for our health as they help eliminate harmful substances and toxins from our body. These processes, primarily carried out by the liver and kidneys, aid in filtering and metabolizing toxins, drugs, and waste products. By supporting efficient detoxification, we can promote optimal organ function, reduce the burden on our body systems, enhance immune function, and decrease the risk of chronic diseases associated with toxin accumulation.

Overview of your results

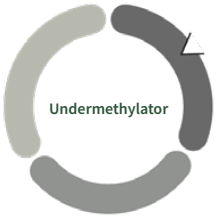
DETOX

PHASE 1 DETOX



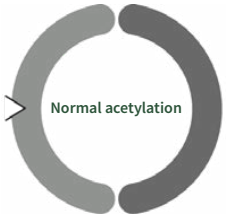
Your GPS is associated with a higher likelihood of optimal detox efficiency.

METHYLATION



Your GPS is associated with under-methylation.

ACETYLATION

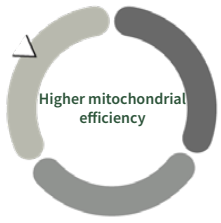


Your GPS is associated with a higher likelihood of typical acetylation efficiency.

GLUTATHIONE

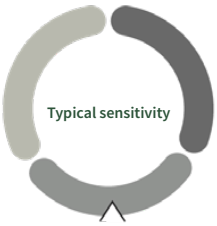
Your GPS is associated with a higher likelihood of lower glutathione levels.

MITOCHONDRIA



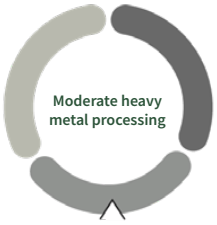
Your GPS is associated with a higher likelihood of better mitochondrial efficiency.

ENVIROMENTAL TOXINS



Your GPS indicates that you have a typical sensitivity to environmental toxins, with average antioxidant and detoxification systems. This enables you to neutralize free radicals and eliminate harmful substances at a normal rate, offering good protection against the adverse effects of environmental toxins and associated chronic diseases.

HEAVY METALS



Your GPS is associated with a moderate capacity to process heavy metals. While this means you may be susceptible to the harmful effects of heavy metal exposure, your body can still manage it to a certain extent.

Phase 1 detox

Phase 1 detoxification enzymes, primarily from the cytochrome P450 family, play a crucial role in maintaining our health by breaking down and removing harmful substances such as environmental pollutants, medications, and toxins. These enzymes convert these substances into forms that can be easily eliminated from the body, ensuring our overall wellbeing.

Our genetic makeup significantly impacts the efficiency of Phase 1 detoxification enzymes. The genes responsible for producing these enzymes can have variations that can lead to differences in the speed and effectiveness of the detoxification process, ultimately affecting an individual's ability to process and eliminate harmful substances.

Individuals with certain genetic variations may experience a slower or faster detoxification process, affecting their ability to break down and eliminate toxins or medications. This can lead to increased sensitivity to harmful chemicals, prolonged exposure to toxins, adverse drug reactions, or issues like the under-dosing of medications and reduced treatment efficacy.

Genomic Potential Score

Optimal detox efficiency

Result

Your GPS is associated with a higher likelihood of optimal detox efficiency.

Recommendations

Maintain a balanced diet: For those with a genetic predisposition to optimal detox efficiency, it is important to consume a balanced diet rich in nutrients, antioxidants, and fibre. Incorporate a variety of fruits, vegetables, whole grains, lean proteins, and healthy fats to support the detoxification process. Include foods high in vitamins and minerals such as B vitamins, vitamin C, and magnesium, which are essential for the proper functioning of detoxification enzymes.

Stay hydrated: Adequate hydration is crucial for optimal detoxification, as it helps to flush out toxins and maintain the proper functioning of the kidneys and liver. Aim to drink at least 2 liters of water or 30ml per kilogram of body weight daily, depending on your individual thirst, exercise habits and climatic conditions.

Engage in regular exercise: Physical activity promotes detoxification by improving circulation, promoting sweating, and stimulating the lymphatic system, which helps to eliminate toxins from the body. Incorporate a variety of exercises, such as cardiovascular activities, strength training, and flexibility exercises, to maintain overall health and enhance detox efficiency.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
CYP1B1	rs1056836	G	C	GG
CYP2D6	rs133333	G	A	GA
CYP2C9	rs1799853	C	T	CC
CYP2E1	rs2031920	C	T	CC
CYP1A1	rs2606345	C	A	AC
CYP3A4	rs2740574	C	T	TT
CYP2C19	rs28399504	A	G	AA
CYP2D6	rs3892097	C	T	CC
CYP2D6	rs5758550	G	A	GA
CYP2E1	rs6413419	G	A	GG
CYP17A1	rs743572	A	G	AG

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Methylation

Methylation is a chemical process that occurs in our cells, where a small molecule called a methyl group is added to DNA. This can affect the way genes are turned on or off, which in turn can influence the production of proteins and other molecules needed for the proper functioning of our bodies. When methylation patterns are altered, it may lead to a range of health issues, such as the increased risk for certain diseases, developmental problems, or even changes in how our bodies respond to medications.

A person's genetic profile, which includes the unique combination of genes they inherit from their parents, can influence methylation patterns. Some genetic variations might make an individual more prone to having altered methylation patterns, potentially increasing the risk for health problems. Additionally, environmental factors, such as diet, stress, and exposure to toxins, can also affect methylation. It's essential to remember that our genes are not our destiny, and a combination of genetic and environmental factors work together to shape our overall health and wellbeing.

Genomic Potential Score

Undermethylator

Result

Your GPS is associated with under-methylation.

Recommendations

Supplement with methyl donors: Methyl donors, such as 5-methylfolate (5-MTHF) and methylcobalamin (vitamin B12), can help support methylation processes. If you have a genetic predisposition or other factors that contribute to unfavorable methylation patterns, consider supplementing with these active forms of folate and B12 under the guidance of a healthcare professional. They can help monitor your progress and adjust dosages as needed to optimize your methylation balance.

Support detoxification pathways: Unfavorable methylation patterns can lead to a reduced ability to detoxify harmful substances from the body. To counteract this, focus on supporting your body's natural detoxification pathways by consuming foods rich in antioxidants, such as berries, nuts, and colorful vegetables. Additionally, consider incorporating supplements like N-acetylcysteine (NAC) or other glutathione precursors to further support detoxification. Consult with a healthcare professional before starting any new supplement regimen.

Personalized lifestyle interventions: Since unfavorable methylation patterns can result from a variety of factors, it is essential to identify and address the underlying causes specific to your situation. This may involve working with a healthcare professional, such as a functional medicine practitioner or an epigenetic coach, who can assess your unique health history, genetic profile, and environmental exposures to develop a personalized plan. This plan might include targeted nutritional strategies, stress reduction techniques, or addressing underlying health issues that could be contributing to unfavorable methylation patterns.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
SLC19A1	rs1051266	T	C	CC
DHFR	rs1643649	T	C	TT
MTHFR	rs1801131	T	G	TT
MTHFR	rs1801133	G	A	AA
FOLR1	rs2071010	G	A	GA
CBS	rs234706	G	A	GA
COMT	rs4680	G	A	GA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Acetylation

Acetylation is an essential process in our bodies that helps us break down and eliminate various substances, including toxins and certain medications. It occurs when an enzyme called N-acetyltransferase 2 (NAT2) attaches an acetyl group to a specific molecule, making it more soluble in water and easier for the body to excrete. This process plays a critical role in maintaining our health, as it helps the body rid itself of harmful substances that can build up and cause damage to our cells and organs.

Interestingly, the efficiency of the acetylation process can vary greatly between individuals due to differences in their NAT2 gene. People can inherit different genetic profiles, or variants, of the NAT2 gene, which can lead to slower or faster acetylation. Those with a slow-acetylating profile might have a harder time breaking down and eliminating toxins and certain drugs, which could increase their risk of adverse reactions or toxic effects. On the other hand, fast acetylators may process these substances more efficiently, reducing their risk. Understanding an individual's NAT2 gene profile can provide valuable information about how their body handles toxins and drugs and may even help doctors personalize treatment plans to ensure better outcomes.

Genomic Potential Score

Normal acetylation

Result

Your GPS is associated with a higher likelihood of typical acetylation efficiency.

Recommendations

Maintain a balanced lifestyle: Although individuals with typical acetylation efficiency may process toxins and medications more efficiently, it is still crucial to prioritize a healthy lifestyle. Engage in regular physical activity, consume a nutrient-dense diet, and manage stress to support your body's natural detoxification processes and overall well-being.

Periodic health check-ups: Schedule regular health check-ups and screenings to monitor your body's functioning, especially if you are taking medications or are exposed to environmental toxins. Early detection of any potential issues can help you make timely adjustments to your lifestyle or medication regimen, ensuring optimal health outcomes.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
NAT2	rs1799931	G	A	GG
NAT2	rs1801279	G	A	GG
NAT2	rs1801280	T	C	TT
NAT1	rs4986782	G	A	GG

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Glutathione

Sleep is a basic human need important for health and wellbeing. Sleep quality refers to how well we sleep, integrating aspects of sleep initiation (falling asleep within 30 minutes or less), sleep maintenance (waking up no more than once a night), sleep quantity (sleeping at least 85 percent of the total time spent in bed), and feeling refreshed upon waking up. Getting enough quality sleep can help protect mental health, physical health, and quality of life. Changes in sleep quality, quantity, and timing have been associated with several human diseases, including heart disease, kidney disease, high blood pressure, diabetes, stroke, obesity, and depression. Research has shown that sleep is a highly complex physiological function involving many genes and their interactions with environmental factors.

Genomic Potential Score

Decreased glutathione profile

Result

Your GPS is associated with a higher likelihood of lower glutathione levels.

Recommendations

Eat glutathione-boosting foods: Consume lean meats, fish, dairy, eggs, legumes, sulphur-rich vegetables, and foods rich in vitamins C and E to support glutathione production.

Supplement with N-acetylcysteine (NAC): NAC is a powerful antioxidant and a precursor to glutathione, playing a crucial role in increasing glutathione levels in the body. It helps counteract oxidative stress and supports overall health, making it especially important for individuals with a genetic predisposition to a typical need for glutathione. Consult a healthcare professional before supplementing with NAC to ensure safe and effective use.

Avoid exposure to toxins: Limit exposure to environmental pollutants, cigarette smoke, and excessive alcohol consumption, which can deplete glutathione levels and increase oxidative stress.

Prioritize sleep: Ensure adequate, quality sleep to support the body's natural detoxification and repair processes, which can help maintain optimal glutathione levels.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
CAT	rs1049982	T	C	TC
GPX1	rs1050450	G	A	GA
GSTM1	rs1056806	C	T	CC
GSTP1	rs1138272	C	T	CT
GSTT1	rs11550605	T	G	TT
GSTP1	rs1695	A	G	AG
TXN	rs2301241	G	A	GG
GPX1	rs3448	T	C	TC
GCLC	rs553822	C	T	TT

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Mitochondria

Mitochondria are small, unique structures found in almost every cell of our body. They are often called the “powerhouses of the cell” because they generate most of the energy cells need to function.

Changes in genes related to mitochondria can affect how well mitochondria work. These gene changes can impact a person’s overall health in different ways. For example, some people might have a higher risk of developing health problems like type 2 diabetes or obesity, experience reduced exercise capacity and endurance, or be more likely to develop age-related diseases. However, it’s important to remember that many environmental factors also play a role in determining a person’s health meaning that genetic variants don’t necessarily determine whether a person will experience negative health outcomes.

Genomic Potential Score

Higher mitochondrial efficiency

Result

Your GPS is associated with a higher likelihood of better mitochondrial efficiency.

Recommendations

Even though your GPS indicates higher mitochondrial efficiency, there are also environmental factors that influence mitochondrial health like high carb diet, not doing sports, unhealthy diet, and stress. Therefore, you still might consider some actions to support your mitochondria even further.

Include specific nutrients in your diet that are known to support mitochondrial function. These include Coenzyme Q10 (found in fish, meats, and whole grains), alpha-lipoic acid (found in spinach, broccoli, and red meat), and L-carnitine (found in red meat, dairy products, and avocados). Consuming these nutrients enhances the functioning of proteins involved in mitochondrial energy production.

HIIT is a form of exercise that alternates short bursts of intense activity with periods of rest or low-intensity activity. This type of training has been shown to improve mitochondrial function and increase the production of proteins involved in energy generation.

Foods high in vitamins C and E, as well as flavonoids and polyphenols support mitochondria efficiency. These antioxidants can be found in foods such as berries, dark chocolate, green tea, citrus fruits, nuts, and seeds. By increasing your intake of antioxidants, you can help protect mitochondrial proteins and support efficient energy production.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
SIRT5	rs10498683	C	T	CC
SIRT1	rs12778366	T	C	TT
NQO1	rs1800566	G	A	GG
NRF2	rs1962142	A	G	GG
UCP4	rs2270450	C	T	CC
SOD2	rs2758331	C	A	CA
SOD2	rs4880	A	G	AG
UCP2	rs659366	C	T	CC
NRF2	rs6721961	T	G	TG
PPARGC1A	rs8192678	C	T	CC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the ‘Genotype’ column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Enviromental Toxins

Environmental toxins, such as pollutants, heavy metals, and pesticides, can trigger oxidative stress within the human body by increasing the production of free radicals and reactive oxygen species (ROS). These unstable molecules are highly reactive and capable of causing cellular damage. As these free radicals and ROS interact with cellular components like lipids, proteins, and DNA, they can lead to structural and functional disruptions, contributing to the development of various chronic diseases, including cancer, cardiovascular disease, and neurodegenerative disorders.

The body has evolved a complex antioxidant defense system to counteract the harmful effects of oxidative stress. A person's genetic profile can significantly influence their ability to deal with environmental toxins, as variations in genes encoding antioxidant enzymes and detoxification pathways can result in different levels of susceptibility to oxidative stress. Genetic polymorphisms may lead to a decreased capacity to neutralize free radicals and detoxify harmful substances, thereby making certain individuals more prone to the adverse effects of environmental toxins.

Genomic Potential Score

Typical sensitivity

Result

Your GPS indicates that you have a typical sensitivity to environmental toxins, with average antioxidant and detoxification systems. This enables you to neutralize free radicals and eliminate harmful substances at a normal rate, offering good protection against the adverse effects of environmental toxins and associated chronic diseases.

Recommendations

Even though having a typical sensitivity in today's life we are exposed to a numerous amount of environmental toxins. The following measures can help you support the body's natural defense system even further.

Even with a typical sensitivity to environmental toxins, it is essential to maintain a balanced diet, exercise regularly, and manage stress. Consuming a variety of nutrient-dense foods, engaging in physical activity, and practicing stress-reduction techniques will contribute to a healthy lifestyle. This will help support your body's natural defense systems and promote well-being.

While your genetic profile may indicate typical sensitivity to environmental toxins, staying informed about potential hazards in your surroundings is still crucial. Be aware of local air and water quality reports and familiarize yourself with common environmental contaminants in your area. This knowledge can help you make informed choices about your living environment and personal habits.

Early detection of potential health issues, even in individuals with typical sensitivity to environmental toxins, can improve treatment outcomes and promote a healthier life. Consider scheduling regular health check-ups and screenings to monitor your overall health status.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
LOX	rs1800449	C	T	CC
NQO1	rs1800566	G	A	GG
IL6	rs1800795	C	G	GC
UGT2B15	rs1902023	A	C	AC
CAT	rs2300181	C	T	CC
UGT1A1	rs34983651	DEL	INS	INSDEL
UGT1A1	rs4148323	G	A	GG
UGT1A1	rs6742078	G	T	TG
UGT2B7	rs7439366	T	C	TC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Heavy Metals

Heavy metal contamination can come from polluted air, water, food, and industrial waste. The body has special ways of dealing with heavy metals, mainly through pathways that involve proteins called metallothioneins and a substance called glutathione. Metallothioneins can attach to heavy metals like cadmium, mercury, and lead, making them less harmful and helping to remove them from the body. Glutathione, an important antioxidant, also helps in getting rid of heavy metals by attaching to them and forming groups that are easier to remove from the body.

Some people with certain gene variations may be better at dealing with heavy metal exposure. These gene differences can affect how well proteins like metallothioneins or enzymes related to glutathione work. As a result, some people might be better at neutralizing and removing heavy metals, while others may be more sensitive to their harmful effects.

Genomic Potential Score

Moderate heavy metal processing

Result

Your GPS is associated with a moderate capacity to process heavy metals. While this means you may be susceptible to the harmful effects of heavy metal exposure, your body can still manage it to a certain extent.

Recommendations

Regularly monitor heavy metal levels: Individuals with a moderate capacity for heavy metal processing should consider regular testing. This will help them stay informed of their exposure levels and take appropriate actions if needed.

Opt for filtered water and air purifiers: To minimize exposure to heavy metals, people with moderate heavy metal processing capacity should use water filtration systems to remove contaminants from their drinking water and air purifiers to reduce indoor air pollution.

Focus on a balanced and varied diet: Consuming a well-balanced diet that includes a variety of fruits, vegetables, whole grains, lean proteins, and healthy fats can provide essential nutrients that support the body's natural detoxification processes. Additionally, certain foods, such as cilantro, chlorella, and spirulina, have been shown to help support the body's ability to remove heavy metals. Including these in moderation as part of a balanced diet may benefit individuals with a moderate capacity for heavy metal processing.

Avoid fish consumption. The oceans are contaminated with heavy metals especially with the very hazardous mercury. This leads to bio accumulation whereas the biggest fish accumulate most of the heavy metals. E.g. tuna is known to contain the highest amount of mercury.

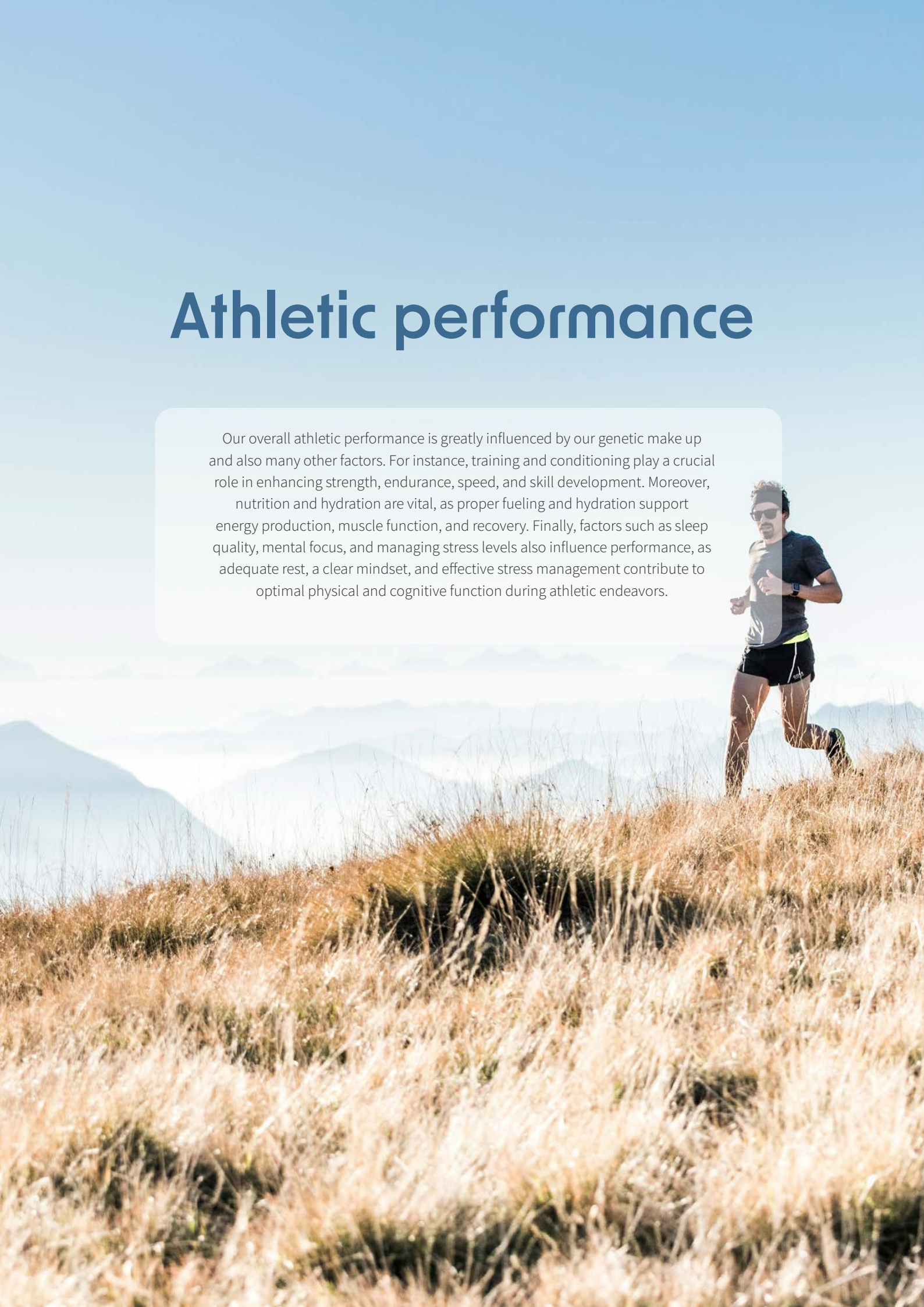
Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
PGR	rs1042838	C	A	CA
GPX1	rs1050450	G	A	GA
ATP7B	rs1061472	T	C	CC
AS3MT	rs11191439	T	C	TC
CPOX4	rs1131857	T	G	TT
GSTP1	rs1138272	C	T	CT
GSTT1	rs11550605	T	G	TT
MT1M	rs11640851	C	A	CA
MT4	rs11643815	G	A	GG
GSTP1	rs1695	A	G	AG
CPOX5	rs1729995	T	C	CT
GCLC	rs17883901	G	A	GG
ABCC2	rs1885301	A	G	AG
ABCC2	rs2273697	G	A	GA
MMP2	rs243865	C	T	CT
AS3MT	rs3740390	C	T	CC
TF	rs3811647	G	A	GG
GCLM	rs41303970	G	A	GG
COMT	rs4680	G	A	GA
BDNF	rs6265	C	T	TC
ABCC2	rs717620	C	T	CC
COMT	rs740603	A	G	AG
SEPP	rs7579	C	T	CC
CHDH	rs7626693	C	T	CC
PON1	rs854561	C	T	TC
CHDH	rs9001	T	G	TT

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Athletic performance

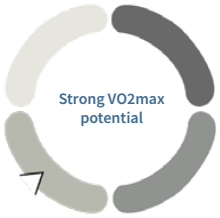
Our overall athletic performance is greatly influenced by our genetic make up and also many other factors. For instance, training and conditioning play a crucial role in enhancing strength, endurance, speed, and skill development. Moreover, nutrition and hydration are vital, as proper fueling and hydration support energy production, muscle function, and recovery. Finally, factors such as sleep quality, mental focus, and managing stress levels also influence performance, as adequate rest, a clear mindset, and effective stress management contribute to optimal physical and cognitive function during athletic endeavors.



Overview of your results

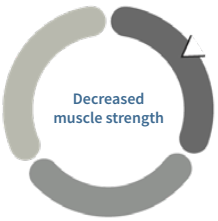
ATHLETIC PERFORMANCE

VO_2MAX



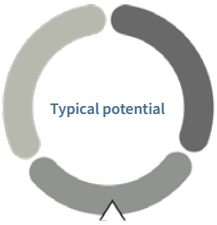
Your GPS is associated with a higher VO2max potential.

STRENGTH



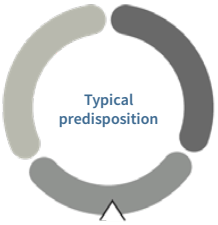
Your GPS is associated with a predisposition to decreased muscle strength, which means that emphasizing factors like training, nutrition, and lifestyle habits will be crucial in enhancing your athletic performance and response to strength training.

HYPERTROPHY



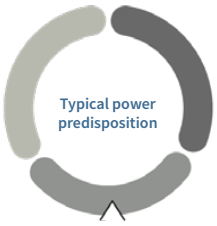
Your GPS is associated with an average potential to build muscle, which means that with consistent resistance training, you can achieve significant gains in muscle size and strength.

ENDURANCE



Your GPS is associated with a typical endurance predisposition.

POWER & SPRINT



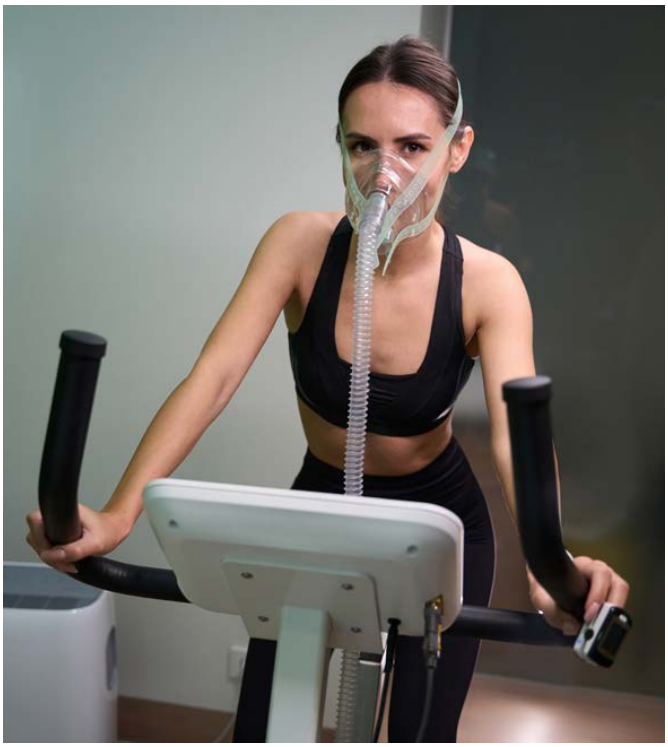
Your GPS is associated with a typical power predisposition.

RECOVERY

Your GPS is associated with an average efficiency of recovery after training.

VO_2 max

VO_2max is a key indicator of cardiovascular fitness, representing the maximum amount of oxygen the body can use per minute during exercise. It depends on effective coordination among respiratory, cardiovascular, and neuromuscular systems and is influenced by factors such as lung and heart capacity, blood flow, oxygen diffusion, and muscle oxygen usage. Additionally, genetic variation plays a role in determining a person's VO2max, with inherited traits affecting lung capacity, heart function, and muscle efficiency. Regular exercise can increase VO2max, while a sedentary lifestyle, smoking, iron deficiency, and dehydration can decrease it.



Genomic Potential Score

Strong VO2max potential

Result

Your GPS is associated with a higher VO2max potential.

Recommendations

Emphasize endurance training. For those genetically predisposed to higher VO2max potential, focus on endurance training, such as running, cycling, or swimming. These activities will help enhance aerobic capacity, allowing you to make the most of your genetic advantage and improve overall cardiovascular fitness.

Incorporate high-intensity interval training (HIIT). To further capitalize on your potential, include HIIT workouts in your routine. These sessions involve alternating between short bursts of intense exercise and recovery periods. HIIT can help boost your VO2max, enhance your cardiovascular system, and improve your body's ability to utilize oxygen efficiently.

Prioritize recovery and nutrition. To maximize the benefits of your genetic predisposition, ensure you prioritize recovery and nutrition. Proper rest and recovery help prevent injuries and allow your body to adapt to training. In addition, consuming a balanced diet with adequate protein, carbohydrates, and healthy fats supports the demands of intense exercise, ensuring you reach your full VO2max potential.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
TTN	rs10497520	T	C	CC
DBX1	rs10500872	T	C	TT
GABPB2	rs12594956	C	A	AA
AGTR2	rs1403543	G	A	AA
NFIA	rs1572312	G	T	GT
NPY	rs16139	T	C	TT
AMPD1	rs17602729	G	A	GA
BDKRB2	rs1799722	C	T	TC
UCP3	rs1800849	G	A	GG
HIF1A	rs1885088	G	A	GG
DAAM1	rs1956197	C	T	TT
KIF5B	rs211302	C	G	CC
CREB1	rs2253206	A	G	GA
NRF1	rs2402970	C	T	CC
ACSL1	rs4862423	C	T	TT
EDN1	rs5370	G	T	GG
ACSL1	rs6552828	A	G	AA
NRF1	rs6949152	A	G	AA
GABPB2	rs7181866	A	G	AA
MIPEP	rs7324557	A	G	GA
DEPDC6	rs7386139	G	A	AA
GABPB2	rs803103	C	A	AA
PPARGC1A	rs8192678	C	T	CC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Strength

Genetics plays a role in determining an individual's muscle strength and athletic performance. Some studies have suggested that certain genetic variations may be associated with greater muscle strength, power, or response to strength training. For example, variations in genes involved in muscle growth and differentiation, metabolism, or immune system function may affect an individual's capacity for strength training.

However, genetics is just one factor influencing muscle strength and athletic performance. Other factors, including training, nutrition, and lifestyle habits, also play important roles. While genetic testing and personalized training programs may be helpful for many, it's important to remember that everyone's body is different, and there is no one-size-fits-all approach to strength training or athletic performance.

Genomic Potential Score

Decreased muscle strength

Result

Your GPS is associated with a predisposition to decreased muscle strength, which means that emphasizing factors like training, nutrition, and lifestyle habits will be crucial in enhancing your athletic performance and response to strength training.

Recommendations

Prioritize functional exercises: Focus on compound movements and exercises that target multiple muscle groups, to improve overall strength and stability while maximizing your workout efficiency.

Gradual progression: Start with lower-intensity workouts and gradually increase resistance or duration over time to safely build muscle strength without causing excessive strain or injury.

Incorporate supportive supplements: Consult with a healthcare professional to discuss potential supplements, such as protein powders or amino acids, which may aid in muscle growth and recovery for individuals with decreased muscle strength.

Seek professional guidance: Work with a certified personal trainer or physical therapist to create a tailored exercise program that addresses your specific needs and limitations while considering your genetic predisposition.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
CCL2	rs1024611	A	G	GA
DIO1	rs11206244	C	T	TC
CCR2	rs1799865	T	C	CC
CACNG1	rs1799938	G	A	GG
CNTF	rs1800169	G	A	GG
IL6	rs1800795	C	G	GC
MSTN	rs1805086	T	C	TT
ACTN3	rs1815739	C	T	CT
VEGFA	rs2010963	C	G	GG
IL15RA	rs2296135	A	C	AA
ACVR1B	rs2854464	A	G	GA
IGFBP3	rs3110697	A	G	AA
RETN	rs3219177	C	T	TC
RETN	rs3219178	C	G	CG
RETN	rs34124816	A	C	AA
RETN	rs3745367	G	A	AG
PPARA	rs4253778	G	C	CG
ACE	rs4343	G	A	AA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Hypertrophy

Hypertrophy is the process of increasing the size and strength of skeletal muscle fibers. This can be achieved through resistance training, which involves placing stress on the muscles through activities such as weightlifting. During hypertrophy, muscle fibers experience microscopic damage, which triggers the repair and growth of the muscle tissue. This growth occurs due to increased protein synthesis, leading to increased muscle mass and strength. Hypertrophy is a key component of strength training and is important for athletes, bodybuilders, and anyone looking to improve their physical fitness.

Certain genes can impact a person's ability to build muscle and lift weights. For example, different genes are involved in regulating blood pressure, muscle contraction, and the activity of proteins important for muscle growth. Other genes can inhibit muscle growth, and some promote muscle cells' survival and differentiation.

Genomic Potential Score

Typical potential

Result

Your GPS is associated with an average potential to build muscle, which means that with consistent resistance training, you can achieve significant gains in muscle size and strength.

Recommendations

Vary your workouts: Incorporate a variety of exercises and training modalities, such as resistance bands, bodyweight exercises, and kettlebells to keep your workouts challenging and engaging.

Monitor your progress: Keep track of your workouts, sets, reps, and weights lifted to ensure that you're making progress and continually challenging your muscles.

Stay consistent: Consistency is key when it comes to building muscle, so make sure you're sticking to a regular workout routine and not skipping sessions.

Take recovery seriously: Give your muscles time to recover between workouts and prioritize good sleep hygiene, stretching, and foam rolling to aid in recovery.

Incorporate functional movements: Consider adding in functional movements like lunges, step-ups, and farmer's walks that mimic movements used in everyday life to improve overall strength and mobility.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
CNTF	rs1800169	G	A	GG
MSTN	rs1805086	T	C	TT
ACTN3	rs1815739	C	T	CT
IL15RA	rs2228059	T	G	TT
ACVR1B	rs2854464	A	G	GA
IGFBP3	rs3110697	A	G	AA
IGF1R	rs35767	A	G	AG
ACE	rs4343	G	A	AA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Endurance

Endurance is defined as our body's physical capacity to sustain an exercise for an extended time period. It consists of two components: cardiorespiratory endurance and muscular endurance. Muscular endurance refers to the ability of your muscles to exert force consistently and repetitively over a stretch of time. Cardiorespiratory endurance measures how well your heart, lungs, and muscles work together to keep your body active over an extended period.

Endurance sports, such as long-distance running, require both of these components. During a run or any other endurance sport, an athlete's body performs the same movements repeatedly. In order to avoid severe fatigue or injury, their muscles must be capable of a high level of endurance.

Muscles also require an adequate supply of oxygen and nutrients to work properly during high-intensity training or extended periods of exercise. Increasing cardiorespiratory endurance thus improves oxygen uptake in the lungs and heart and can help a person sustain physical activity for longer. Proper training plays a crucial role in endurance performance, but people have a varying ability to achieve success in endurance sports. This variability has a genetic component.

Genomic Potential Score

Typical predisposition

Result

Your GPS is associated with a typical endurance predisposition.

Recommendations

Engage in moderate-intensity cardiovascular exercise. Moderate-intensity cardiovascular exercise, such as brisk walking, hiking, or cycling, can benefit individuals with an average endurance predisposition. Aim for at least 30 minutes of moderate-intensity exercise most days of the week.

Incorporate strength training. Strength training, such as lifting weights or bodyweight exercises, can help improve muscular strength and endurance. This can enhance overall physical performance, reduce the risk of injury, and help maintain a healthy body weight.

Try interval training. Interval training involves alternating between periods of high-intensity exercise and periods of rest or lower-intensity exercise. This type of training can help improve cardiovascular endurance and overall fitness levels.

Be consistent. Consistency is key when it comes to physical activity. Aim to exercise regularly most days of the week, even if it's just for a short amount of time. Over time, consistency can significantly improve physical performance and overall health.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
ADRB2	rs1042713	G	A	GG
LTBP4	rs1051303	A	G	GA
EPHX1	rs1051740	T	C	CT
PPARD	rs1053049	C	T	TT
AGTR2	rs11091046	A	C	CC
AMPD1	rs17602729	G	A	GA
BDKRB2	rs1799722	C	T	TC
NOS3	rs1799983	T	G	GG
ACTN3	rs1815739	C	T	CT
VEGFA	rs2010963	C	G	GG
PPARD	rs2016520	C	T	TT
PPARD	rs2016529	A	G	GG
PPARD	rs2267668	G	A	AA
CD44	rs353625	C	T	CT
IGF1R	rs35767	A	G	AG
ACE	rs4343	G	A	AA
ADRB3	rs4994	A	G	AA
ADRA2A	rs553668	A	G	GG
ACSL1	rs6552828	A	G	AA
UCP2	rs660339	G	A	AG
AGT	rs699	A	G	AG
PPARGC1A	rs8192678	C	T	CC

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Power & Sprint

Power is a term used in sports to describe the ability to exert maximum force in a short amount of time. It differs from strength, which refers to the force a muscle can generate. Power is particularly important in sports that require short bursts of intense activity, such as those involved in sprinting and jumping, because it allows athletes to produce a high amount of force quickly, resulting in explosive movements. Developing power can also help prevent injuries by improving an athlete's ability to absorb and redirect forces during physical activity.

A person's genetic profile can impact their predisposition for power. Some individuals may have a genetic tendency towards developing more fast-twitch muscle fibers, better suited for generating power and explosive movements. Others may have more slow-twitch muscle fibers, which are better suited for endurance activities. Additionally, certain genes may affect the production of hormones like testosterone, which can impact muscle development and overall strength.

Genomic Potential Score

Typical power predisposition

Result

Your GPS is associated with a typical power predisposition.

Recommendations

Focus on compound exercises. Compound exercises, like squats, deadlifts, and pull-ups, target multiple muscle groups simultaneously and can help build overall strength, which is beneficial for improving power.

Incorporate high-intensity interval training (HIIT). HIIT involves short bursts of high-intensity exercise followed by brief periods of rest. It can help improve cardiovascular health and endurance, which can enhance athletic performance.

Try resistance band training. Resistance band training is a low-impact form of strength training that can help build power by providing resistance throughout the full range of motion, forcing the muscles to work harder and generate more force.

Get enough sleep. Getting enough restorative sleep is crucial for muscle recovery and repair, which is essential for building power and improving athletic performance.

Focus on nutrition. Eating a balanced diet with plenty of protein, healthy fats, and complex carbohydrates can provide the necessary nutrients and energy to support power-based exercise and improve athletic performance.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
MCT1	rs1049434	A	T	TA
TTN	rs10497520	T	C	CC
AGTR2	rs11091046	A	C	CC
NAT2	rs1208	G	A	AA
AGTR2	rs1403543	G	A	AA
IGF1R	rs1464430	A	C	AA
VDR	rs1544410	C	T	TC
CALCR	rs17734766	A	G	AA
ACTN3	rs1815739	C	T	CT
NOS3	rs2070744	C	T	CT
ACVR1B	rs2854464	A	G	GA
CNTFR	rs41274853	G	A	GG
PPARA	rs4253778	G	C	CG
ACE	rs4343	G	A	AA
MPRIP	rs6502557	G	A	GG
IGF2	rs680	T	C	CC
AGT	rs699	A	G	AG
IGF1	rs7136446	C	T	CT
COTL1	rs7458	A	G	GG
DMD	rs939787	G	A	GA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

Recovery

Post-exercise recovery is an important part of any workout routine that is often overlooked. Recovery doesn't just happen after exercise, but during it as well. During exercise, our bodies need oxygen to provide energy to our muscles. After exercising, we need to continue breathing in extra oxygen to help remove waste products and restore our muscles to their normal state. This process is called "excess post-exercise oxygen consumption" (EPOC).

However, breathing in more oxygen can lead to an increase in the production of reactive oxygen species (ROS). ROS aren't necessarily harmful, but when their concentration increases, they can cause damage to our bodies, potentially affecting our immune system. This increase in ROS can happen during and after physical activity. It's important to note that the recovery process is different for everyone. Factors such as genetics, training status, fatigue, and our ability to handle stress can all impact how quickly our bodies recover after exercise.

Genomic Potential Score

Typical recovery

Result

Your GPS is associated with an average efficiency of recovery after training.

Recommendations

Get enough sleep: Sleep is crucial for recovery after exercise. Individuals with average efficiency recovery may need to prioritize their sleep more than those who recover more quickly. Aim for 7-9 hours of sleep each night and create a sleep-friendly environment by keeping your room dark, cool, and quiet.

Fuel your body with nutritious foods: Proper nutrition is essential for recovery, especially for individuals with average efficiency recovery. Make sure you are consuming a balanced diet with plenty of protein, complex carbohydrates, and healthy fats. Additionally, consider incorporating foods with anti-inflammatory properties, such as turmeric, ginger, and dark leafy greens.

Take rest days: Rest days are critical for allowing your body to recover and adapt to exercise. Listen to your body and prioritize rest when you feel tired or sore. If you have average efficiency recovery, taking an extra rest day or two each week may be beneficial.

Incorporate low-impact exercise: High-impact exercise can be tough on the body, especially for individuals with average efficiency recovery. Consider incorporating low-impact exercises like swimming, cycling, or yoga into your routine. These types of exercises can help you stay active while giving your body a break from high-impact activities.

Your Genotype

Gene	SNP	Wildtype	Variant	Genotype
IL1B	rs1143634	G	A	GG
CRP	rs1205	C	T	CC
NAT2	rs1208	G	A	AA
COL5A1	rs12722	C	T	CT
TNF	rs1800629	G	A	GG
IL6	rs1800795	C	G	GC
IGF2	rs3213221	C	G	GG
CHRM2	rs324640	G	A	AG
SOD2	rs4880	A	G	AG
IGF2	rs680	T	C	CC
IGF2	rs7924316	T	G	GG
CKMM	rs8111989	T	C	TT
CHRM2	rs8191992	T	A	AA

Additional information: For each SNP, the result can contain either the wild-type allele twice (homozygous), the variant allele twice (homozygous) or a mixture of both alleles (heterozygous). You will find your individual result in the 'Genotype' column. Homozygous variant alleles or heterozygous variant alleles can be associated with restricted gene function.

The 101 of genetics

GENES AND GENETIC MUTATIONS

Genes are areas of the DNA chain which carry instructions for the synthesis of proteins. Every gene carries a specific combination of nucleotides marked with the letters A, T, C and G, where an individual combination determines a specific protein. Sometimes a mutation (or an error) occurs in the process of DNA replication, and the nucleotide sequence is not adequate (genetic mutation). This results in the incorrect functioning of the protein.

When doing a personal DNA analysis, we analyse several sites (loci) of your DNA where such mutations can occur. The type of mutation at this locus of DNA is called the genotype. If there is a possibility of substitution at a specific locus of DNA from C to T, we have 3 possible genotypes: CC, CT or TT. This happens because we inherit the DNA from our mother as well as our father, and have every gene present in two copies. It is, therefore, possible for a mutation to occur only in one copy of the gene, in both copies, or not to occur at all.

It is clear that various genotypes are one of the most important factors which make people different: we have different eye colour, skin and talents, we are differently susceptible to illnesses, and we have completely unique eating habits.

We chose five lifestyle chapters in which we analyzed your genetic make up. Every chapter is comprised of several sub sections. Dive in to find out more.

NUTRIGENETICS AND SPORTS GENETICS

Nutrigenetics and sports genetics focus on the consequences of those genetic mutations that affect our nutritional needs and our sports characteristics. The objective of nutrigenetics and sports genetics is to recognise specific characteristics of an individual based on which the diet and training can be optimised. Nutrigenetics/sports genetics, of course, is not part of alternative medicine, and it is not a form of treatment. It is not an approach which would include modifying the DNA, and it does not determine an optimal diet/training regimen based on blood type or any other of a person's phenotypical characteristics.

PERSONALISED NUTRITION AND PERSONALISED TRAINING PLAN

Although 99 per cent of our genetic makeup is completely identical, there are approximately ten million genetic variations among individuals. In accordance with this, the nutritional needs of every individual are very specific. We also know that due to genetics, the same kind of training doesn't work for everyone. A personalised approach is essential and absolutely necessary for an optimal diet and training results, the same way your personal doctor, who knows you, can ensure your health. Diet and physical activity are among the factors we can use to influence our body. They are also the easiest to influence.

AN OPTIMAL DIET – THE KEY TO HEALTH AND HAPPINESS

An optimal diet is an adjusted way of eating, which can help us reach an optimal functioning of our body, as well as a long and healthy life. When our diet is optimal, we are emotionally more stable, physically active, and we have significantly fewer health problems.

By following our recommendations and with consistent use of your nutrition charts, you now have a unique opportunity to step on a path of an optimal diet. You will see food items in the charts are organised according to their importance. They represent a great resource that enables you to choose a food combination which ensures your body a sufficient amount of nutrients. We recommend that you try to include different food items from different food groups on your menu.

Nutrition

Carbohydrates are macronutrients which represent the most important role in our diet, regardless of the type of diet. According to their chemical structure, we divide them into simple and complex ones.

Simple carbohydrates are sugars and are naturally present in fruit, milk, and dairy products. They are also found in processed and refined foods such as candy, pastry, and soft drinks. Those foods contain added free sugars, which have to be limited in our diet. Free sugars are naturally present in honey, syrups, fruit juices, table sugar, etc. Their main property is that they are a quick source of energy as they enter your bloodstream very quickly. It is important that we do not consider sugars in milk, fruits and vegetables in their natural form as free sugars since glucose is not their only component. **Complex carbohydrates** (polysaccharides) have three or more sugars bound together, which can be broken down during digestion. Only then can our body use them. They represent a long-term source of energy for the body. The highest amount of complex carbohydrates are found in vegetables, legumes, cereals, pseudocereals and whole-grain products. These food sources, including fruit, also contain extremely beneficial **fibre**. As a source of energy, it is useless to our body, as it cannot digest it, but it is important for regulating **digestion, blood sugar, and cholesterol levels**. We mentioned pseudocereals among which we count amaranth, buckwheat and quinoa – those are cereal-like seeds, rich with starches, but from botanical point of view, they are not cereals. They are also gluten-free. Here, we will include them among cereals, since they have a similar chemical composition and therefore similar nutritional value.

Remember – **the amount of carbohydrates in the diet is important; but so is the type** that we consume. For example, whole grains such as whole-wheat bread, barley and quinoa are better choices than simple carbohydrates found in white bread, pastries, fizzy drinks, and other processed foods.

A system called the glycemic index has been established for evaluating a food item on the basis of its digestion and absorption rate, and therefore its influence on the increase of blood sugar level. This system arranges foods into classes with values from 0 to 100, according to how quickly they increase blood sugar level compared to pure glucose, which has a glycemic index 100. For example, white bread has a high glycemic index, and it causes a rapid increase in blood sugar. Unrefined cereals have a low glycemic index, the body digests them slower, and they cause a steady increase in blood sugar. But there is a downside to the classification of foods according to the glycemic index because it does not consider the actual amounts of carbohydrates in food. Because of this, a new system has been established, called the glycemic load, which enables us to classify food items more realistically, according to the criterion of blood sugar increase. This is why, for example, carrots have a high glycemic index, but a very low glycemic load. The reason for this is that carrots contain simple sugars, which strongly influence the increase of blood sugar. But, if we consider that the percentage of sugars in carrots is very low, we notice that carrots are actually very beneficial to our body and are highly recommended for diabetics.

Fats are macronutrients important for digestion of fat-soluble vitamins A, D, E and K, synthesis of certain hormones, and are the key building blocks of cell membranes. There are different types of fats, with some fats being healthier than others. They are essentially divided into **saturated and unsaturated fats**. **Saturated fats** are usually linked with an increased risk of heart disease and high blood cholesterol levels. They are usually solid at room temperature and are found in animal-based products, coconut and palm oil, and many processed and packaged foods. Unsaturated fats are, opposed to saturated fats, usually liquid at room temperature. They are found in fish, nuts, seeds, and oils extracted from them. Unsaturated fats are further divided into **mono- and polyunsaturated**. Although both groups are extremely important for our body, polyunsaturated fats (like **omega-3 and omega-6 fatty acids**) are the only ones that our body cannot produce. Even though monounsaturated fats are extremely beneficial for us (they reduce LDL and increase HDL cholesterol), they are less resistant to high temperatures. If they are overly reheated, so-called **trans saturated fats** are formed, which are even worse for our body than saturated ones. Eating less saturated and trans fats may help lower your risk of heart disease. When shopping, check the labels and choose the varieties that are lower in saturated and trans fats and higher in mono and polyunsaturated fats.

Proteins are macronutrients necessary for our body as its main structural component. They are found throughout the body – muscles contain about 30 per cent of protein, liver 20 to 30 per cent, and red blood cells 30 per cent. Proteins are made up of hundreds or thousands of smaller units called **amino acids**, which are attached to one another in long chains. Our bodies make amino acids in two different ways: either from scratch or by modifying others. There are 20 different types of amino acids that can be combined to make a protein, nine of them, known as the essential amino acids and must come from food. **Animal sources of protein** tend to deliver all the amino acids we need. There are a lot of proteins in meat, poultry and fish, but they can also be found in milk and dairy products. **Other protein sources**, such as fruit, vegetables, legumes, nuts, seeds and cereals, may lack one or more essential amino acids. However, pairing them together (rice and beans, peas or corn, whole grains and peanuts or chickpeas) can also deliver all the amino acids we need. Everyone needs protein in their diet, but if you do endurance sports or weight training, you may benefit from increasing your protein intake. What is more, middle-aged and elderly people have more extensive body breakdown than a younger person, which means they need more protein. However, as people enter middle age, hydrochloric acid, which helps digest protein in the stomach, drops to half its regular level. Because protein is crucial in cell regeneration, some researchers suggest that most ageing is due to this drop alone.

Carbohydrates, fats and proteins, which are macronutrients, represent a major part of our diet. However, vitamins and minerals, also called micronutrients, are also of great importance in our diet. Very small amounts are needed for our body to function normally. Even though they do not have any energy content, they are very important for our body. They participate in antioxidative processes, cell renewal processes and numerous enzyme reactions. They can be found in various foods, and we recommend you use the nutrition chart for information on a specific vitamin or mineral. We especially recommend eating a good variety of food, which will help you to fulfil your requirements for micronutrients and macronutrients.

Analysierte Gene

Gene	Description
AANAT	AANAT is involved in the synthesis of melatonin, a hormone that regulates the sleep-wake cycle and other biological rhythms. It catalyzes the conversion of serotonin to N-acetylserotonin, which is a precursor for melatonin production.
ABCA1	ABCA1 is responsible for transporting cholesterol and phospholipids out of cells, particularly from peripheral tissues to the liver. It plays a crucial role in the formation of high-density lipoprotein (HDL) particles and the reverse cholesterol transport pathway, thus contributing to the maintenance of cholesterol homeostasis.
ABCC2	ABCC2, also known as multidrug resistance protein 2 (MRP2), is involved in the cellular efflux of various endogenous and exogenous compounds, including drugs, toxins, and metabolites. It functions as a transporter in the liver, kidney, and intestine, playing a crucial role in the elimination of xenobiotics and maintaining detoxification processes.
ABCG4	ABCG4 is primarily expressed in the brain and is involved in the transport of cholesterol and other lipids across cellular membranes. It is believed to play a role in maintaining cholesterol homeostasis in the brain and may contribute to the formation and clearance of amyloid-beta, a protein associated with Alzheimer's disease.
ABCG8	ABCG8 forms a heterodimer with ABCG5 and functions as a sterol transporter primarily in the liver and intestines. It plays a crucial role in the elimination of dietary cholesterol and plant sterols, preventing their absorption into the bloodstream and promoting their excretion into the bile.
ABDG8	Alpha-synuclein is a protein predominantly found in the brain and is associated with neurodegenerative disorders such as Parkinson's disease. While its biological role is not fully understood, it is believed to play a role in regulating neurotransmitter release and synaptic function, and its misfolding and aggregation are implicated in the pathogenesis of Parkinson's disease.
ACE	ACE is an enzyme involved in the renin-angiotensin-aldosterone system, which regulates blood pressure and fluid balance. It converts angiotensin I to angiotensin II, a potent vasoconstrictor, and also degrades bradykinin, a vasodilator. ACE inhibitors, which block the action of ACE, are commonly used as antihypertensive drugs.
ACSL1	ACSL1 is an enzyme that plays a crucial role in fatty acid metabolism. It catalyzes the activation of long-chain fatty acids by attaching them to CoA, facilitating their transport and utilization in various cellular processes, including energy production and lipid synthesis.
ACTN3	ACTN3 is a structural protein primarily found in fast-twitch muscle fibers. It plays a role in muscle contraction and force generation, and the absence of functional ACTN3 due to genetic variation is associated with reduced sprint performance and muscle strength in some individuals.
ACVR1B	ACVR1B is a receptor for the TGF-beta superfamily of growth factors, specifically involved in the signaling of activin and inhibin. It plays a role in various cellular processes, including cell growth, differentiation, and apoptosis, and is implicated in the regulation of reproductive functions, bone development, and cancer progression.
ADA	ADA is an enzyme involved in purine metabolism, specifically the breakdown of adenosine and deoxyadenosine. It catalyzes the conversion of adenosine to inosine, preventing the accumulation of toxic metabolites and maintaining the balance of nucleotides in cells. Mutations in the ADA gene can lead to severe combined immunodeficiency (SCID).
ADAM12	ADAM12 is a member of the ADAM family of proteins, which are involved in various biological processes, including cell adhesion, migration, and proteolysis. ADAM12 is particularly associated with tissue remodeling and development.
ADD1	ADD1 is a cytoskeletal protein that plays a role in maintaining cell structure and regulating ion transport. It interacts with spectrin and actin, forming a complex involved in stabilizing the cytoskeleton and modulating the activity of ion channels, particularly those related to sodium transport in the kidneys.
ADH1B	ADH1B and ADH1C are genes that encode alcohol dehydrogenase enzymes involved in the metabolism of ethanol. They catalyze the conversion of alcohol to acetaldehyde, an intermediate in the breakdown of ethanol. Genetic variations in ADH1B and ADH1C are associated with differences in alcohol metabolism and susceptibility to alcohol-related diseases.
ADH1C	ADH1B and ADH1C are genes that encode alcohol dehydrogenase enzymes involved in the metabolism of ethanol. They catalyze the conversion of alcohol to acetaldehyde, an intermediate in the breakdown of ethanol. Genetic variations in ADH1B and ADH1C are associated with differences in alcohol metabolism and susceptibility to alcohol-related diseases.
ADIPOQ	ADIPOQ is a gene that encodes the adiponectin protein, which is primarily produced by adipose tissue. Adiponectin plays a role in regulating glucose and lipid metabolism, insulin sensitivity, and inflammation. It has anti-inflammatory and insulin-sensitizing properties, and lower levels of adiponectin are associated with obesity, insulin resistance, and metabolic disorders.
ADORA2A	ADORA2A is a receptor for adenosine, a signaling molecule involved in various physiological processes. ADORA2A is predominantly expressed in the brain, where it modulates neurotransmission and plays a role in regulating sleep, cognition, and inflammation. It is also involved in cardiovascular function and immune responses.
ADRA2A	ADRA2A is a receptor that binds to norepinephrine and plays a role in regulating sympathetic nervous system activity. It is involved in the modulation of neurotransmitter release, blood pressure regulation, and smooth muscle contraction in various organs.
ADRB1	ADRB1 is a receptor that binds to norepinephrine and epinephrine, which are involved in the "fight or flight" response. It is primarily expressed in the heart and plays a role in regulating heart rate and contractility, as well as promoting lipolysis in adipose tissue.
ADRB2	ADRB2 is a receptor that binds to norepinephrine and epinephrine, exerting various effects in different tissues. It plays a role in smooth muscle relaxation, bronchodilation in the lungs, vasodilation, and glycogenolysis in skeletal muscle. It is also targeted by medications used to treat asthma and other respiratory conditions.

Gene	Description
ADRB3	ADRB3 is a receptor that binds to norepinephrine and epinephrine and is primarily expressed in adipose tissue. It plays a role in regulating lipolysis, thermogenesis, and energy expenditure. Activation of ADRB3 can stimulate the breakdown of stored fat, making it a potential target for weight management therapies.
AGA	AGA is an enzyme involved in the breakdown of certain glycoproteins and glycosaminoglycans. Deficiencies in AGA activity result in the lysosomal storage disorder known as aspartylglucosaminuria, characterized by the accumulation of undegraded glycoproteins and glycosaminoglycans in tissues.
AGER	AGER, also known as the receptor for advanced glycation end products (RAGE), is a cell surface receptor that binds to various molecules formed during prolonged hyperglycemia and oxidative stress. It is involved in inflammation, cell proliferation, and tissue remodeling.
AGT	AGT is a precursor protein that is cleaved to produce angiotensin I, a hormone involved in the regulation of blood pressure and fluid balance. AGT is primarily produced and secreted by the liver and is a key component of the renin-angiotensin-aldosterone system, which plays a crucial role in cardiovascular and renal function.
AGTR2	AGTR2 is a receptor that binds to angiotensin II, a hormone involved in vasoconstriction, sodium retention, and cell growth. AGTR2 has a wide tissue distribution and its activation can have vasodilatory, anti-inflammatory, and antiproliferative effects. It is implicated in the regulation of blood pressure, cardiovascular development, and tissue remodeling.
AHR	AHR is a transcription factor that plays a crucial role in the metabolism of xenobiotics and environmental toxins. It is involved in the activation of genes responsible for the detoxification and elimination of harmful substances, as well as regulating processes such as cell growth, immune response, and inflammation.
ALDH2	ALDH2 is an enzyme that catalyzes the metabolism of acetaldehyde, a toxic byproduct of alcohol metabolism. It plays a critical role in alcohol clearance and the detoxification of acetaldehyde, and variations in the ALDH2 gene are associated with alcohol sensitivity and susceptibility to alcohol-related disorders.
ALPL	ALPL is an enzyme involved in the mineralization of bones and teeth. It catalyzes the hydrolysis of phosphate groups from various molecules, contributing to the regulation of phosphate and calcium homeostasis.
AMPD1	AMPD1 is an enzyme involved in purine metabolism. It catalyzes the conversion of adenosine monophosphate (AMP) to inosine monophosphate (IMP), which is a precursor for the synthesis of purine nucleotides. Variations in the AMPD1 gene are associated with altered muscle metabolism and exercise-related phenotypes.
ANKK1	ANKK1 is a gene that codes for a protein involved in signal transduction pathways in the brain, particularly those related to dopamine neurotransmission.
AOC1	AOC1, also known as diamine oxidase (DAO), is an enzyme involved in the breakdown of histamine and other biogenic amines. It plays a crucial role in regulating histamine levels and modulating immune responses. Variations in the AOC1 gene have been linked to impaired histamine metabolism and increased susceptibility to histamine intolerance.
APOA2	APOA2 is a protein component of high-density lipoprotein (HDL), often referred to as the "good cholesterol." It plays a role in lipid metabolism and transport, and variations in the APOA2 gene have been associated with altered plasma lipid levels and increased risk of cardiovascular disease.
APOA5	APOA5 is a protein that plays a critical role in lipid metabolism. It is involved in the regulation of triglyceride levels by enhancing lipoprotein lipase activity, which leads to increased breakdown of triglycerides in circulation. Variations in the APOA5 gene have been associated with dyslipidemia and increased risk of cardiovascular disease.
APOB	APOB is a protein that is a major component of low-density lipoprotein (LDL) particles. It plays a crucial role in the transport of cholesterol and other lipids in the bloodstream. APOB acts as a ligand for LDL receptors, facilitating the uptake of LDL particles into cells. Variations in the APOB gene can lead to familial hypercholesterolemia, a condition characterized by elevated LDL cholesterol levels.
APOE	APOE is a protein involved in lipid metabolism and transport. It plays a role in the clearance of cholesterol and other lipoproteins from the bloodstream. Variations in the APOE gene are associated with different isoforms of APOE (APOE2, APOE3, and APOE4), which have varying effects on cholesterol metabolism and the risk of developing cardiovascular disease and Alzheimer's disease.
ARMS2	ARMS2 is a gene that has been implicated in age-related macular degeneration (AMD), a leading cause of vision loss in the elderly. The precise biological role of ARMS2 is still not fully understood, but it is believed to be involved in oxidative stress responses and mitochondrial function in the retinal pigment epithelium.
ARNT	ARNT is a protein that forms a dimer with aryl hydrocarbon receptor (AHR) and plays a role in mediating the transcriptional response to environmental toxins and endogenous ligands. It regulates the expression of genes involved in xenobiotic metabolism and detoxification pathways.
ARNTL	ARNTL, also known as BMAL1, is a key component of the molecular circadian clock. It is involved in regulating the expression of genes involved in the circadian rhythm, including those related to sleep-wake cycles, metabolism, and cellular processes. Variations in the ARNTL gene have been associated with disrupted circadian rhythms and increased susceptibility to sleep disorders.
AS3MT	AS3MT is an enzyme that plays a crucial role in the methylation of inorganic arsenic, facilitating its detoxification and elimination from the body. It is involved in arsenic metabolism and variations in the AS3MT gene can influence individual susceptibility to the toxic effects of arsenic exposure.
ATP7B	ATP7B is a protein involved in copper homeostasis. It plays a crucial role in transporting copper from the liver into bile for elimination.
BCMO1	BCMO1 is an enzyme responsible for the conversion of dietary beta-carotene into vitamin A. It plays a critical role in vitamin A metabolism and is particularly important for the production of retinal, a component essential for vision. Variations in the BCMO1 gene can affect the efficiency of beta-carotene conversion and influence individual vitamin A status.

Gene	Description
BDKRB2	BDKRB2 is a receptor involved in the regulation of blood pressure and inflammation. It binds to bradykinin, a peptide that promotes vasodilation and mediates various physiological processes, including smooth muscle contraction and pain sensation.
BDNF	BDNF is a protein that supports the survival, growth, and differentiation of neurons in the brain. It plays a critical role in neurodevelopment, synaptic plasticity, and neuronal survival.
BHMT	BHMT is an enzyme involved in the metabolism of homocysteine, an amino acid associated with cardiovascular health. BHMT facilitates the remethylation of homocysteine, converting it back to methionine. Variations in the BHMT gene can influence homocysteine levels and the risk of developing cardiovascular disease.
C3	C3 is a protein that plays a central role in the complement system, which is a part of the immune system. It is involved in the opsonization, inflammation, and clearance of pathogens and immune complexes. Variations in the C3 gene can impact immune function.
CA1	CA1 is an enzyme that catalyzes the reversible hydration of carbon dioxide to bicarbonate, playing a crucial role in maintaining acid-base balance in tissues and organs. It is particularly abundant in the red blood cells, where it helps transport carbon dioxide from tissues to the lungs for elimination.
CACNG1	CACNG1 is a subunit of voltage-gated calcium channels, which are involved in the regulation of calcium influx into cells. It modulates the activity and properties of these channels, affecting neuronal excitability, synaptic transmission, and calcium-dependent signaling pathways.
CALCR	CALCR is a receptor that binds to calcitonin, a hormone involved in the regulation of calcium and phosphate metabolism. Activation of CALCR leads to reduced calcium levels in the blood by inhibiting bone resorption and promoting calcium excretion in the kidneys.
CAT	CAT is an enzyme that plays a crucial role in antioxidant defense by catalyzing the breakdown of hydrogen peroxide into water and oxygen. It protects cells and tissues from oxidative damage caused by reactive oxygen species, and its activity is particularly high in organs with high oxygen consumption, such as the liver and red blood cells.
CBS	CBS is an enzyme involved in the transsulfuration pathway, which converts methionine to cysteine. It plays a key role in the metabolism of sulfur-containing amino acids and the production of the antioxidant molecule glutathione.
CCDC111	CCDC111 is a gene that codes for a protein with a coiled-coil domain, a structural motif involved in protein-protein interactions. The specific biological role of CCDC111 is still under investigation, and further research is needed to fully understand its function.
CCL2	CCL2 is a chemokine involved in immune responses and inflammation. It acts as a chemoattractant, recruiting immune cells, particularly monocytes and macrophages, to sites of inflammation and tissue injury. CCL2 plays a role in various physiological and pathological processes, including immune cell trafficking, and wound healing.
CCR2	CCR2 is a receptor that binds to chemokines, including CCL2, and mediates the cellular responses to these chemokines. It is primarily expressed on monocytes and macrophages and plays a crucial role in their migration and recruitment to inflammatory sites.
CD36	CD36 is a transmembrane protein that acts as a receptor for various ligands, including fatty acids, oxidized low-density lipoprotein (LDL), and thrombospondins. It plays a role in lipid metabolism, cellular uptake of fatty acids, modulation of immune responses, and clearance of apoptotic cells. CD36 is particularly expressed in tissues involved in lipid metabolism, such as adipose tissue, skeletal muscle, and the liver.
CD44	CD44 is a cell surface glycoprotein that functions as a receptor for hyaluronic acid and other extracellular matrix components. It is involved in cell adhesion, migration, and signaling, playing a critical role in processes such as tissue development, wound healing, and immune responses.
CDKN2BAS1	CDKN2BAS1, also known as ANRIL (antisense non-coding RNA in the INK4 locus), is a long non-coding RNA located in the INK4 locus on chromosome 9p21. It is involved in the regulation of cell cycle progression and cellular senescence. Variations in CDKN2BAS1 have been associated with increased susceptibility to cardiovascular diseases, including coronary artery disease and stroke.
CETP	CETP is an enzyme involved in lipid metabolism, specifically in the transfer of cholesterol esters between lipoproteins. It facilitates the transfer of cholesterol from high-density lipoprotein (HDL) particles to other lipoproteins, such as very-low-density lipoproteins (VLDL) and low-density lipoproteins (LDL). CETP influences plasma lipid levels and is associated with the risk of developing cardiovascular disease.
CFH	CFH is a regulator of the complement system, a part of the immune system involved in the defense against pathogens and the clearance of immune complexes. CFH inhibits excessive complement activation, preventing damage to healthy tissues.
CHDH	CHDH is an enzyme involved in the metabolism of choline, an essential nutrient. It catalyzes the oxidation of choline to betaine, which serves as a methyl donor in various biochemical reactions. CHDH plays a role in cellular membrane integrity, lipid metabolism, and the production of the neurotransmitter acetylcholine.
CHKA	CHKA is an enzyme that phosphorylates choline, converting it to phosphocholine, which is a precursor for the synthesis of phosphatidylcholine, a major component of cell membranes. CHKA is involved in cellular membrane synthesis, lipid metabolism, and signal transduction pathways. It plays a critical role in cell growth and proliferation.
CHRM2	CHRM2 is a receptor protein that binds acetylcholine, a neurotransmitter involved in the central and peripheral nervous systems. Activation of CHRM2 modulates various physiological processes, including neurotransmission, smooth muscle contraction, and cognitive functions.
CILP	CILP is a protein found in the extracellular matrix of cartilage and other connective tissues. It is involved in maintaining the structure and function of cartilage, contributing to its mechanical properties and stability.

Gene	Description
CKMM	CKMM is an enzyme that catalyzes the reversible transfer of a phosphate group between creatine and adenosine triphosphate (ATP), resulting in the production of creatine phosphate and adenosine diphosphate (ADP). CKMM is primarily found in skeletal muscle and serves as an energy buffer, replenishing ATP levels during high-intensity muscle contraction. It is commonly used as a biomarker in diagnosing muscle-related disorders and assessing muscle damage.
CLOCK	CLOCK is a transcription factor involved in the regulation of circadian rhythm, which governs the biological processes and behaviors that follow a 24-hour cycle. It forms a molecular clock with other proteins and plays a crucial role in controlling the expression of genes involved in various physiological processes, including sleep-wake cycles, metabolism, and hormone regulation.
CNTF	CNTF is a neurotrophic factor that supports the survival and differentiation of various neuronal cell types, particularly in the nervous system. It promotes the growth and maintenance of motor neurons and has neuroprotective effects. CNTF is also involved in regulating metabolic processes and immune responses.
CNTFR	CNTFR is a receptor protein that binds to ciliary neurotrophic factor (CNTF) and mediates its signaling. It forms a complex with other receptor components to activate downstream signaling pathways involved in cell survival, differentiation, and plasticity. CNTFR is expressed in various tissues, including the nervous system, muscle, and liver.
COL11A1	COL11A1 is a gene that codes for one of the alpha chains of type XI collagen, a fibrillar collagen found in connective tissues. It contributes to the structural integrity and mechanical properties of tissues such as cartilage, bone, and the vitreous humor of the eye. Variations in COL11A1 have been associated with various conditions affecting skeletal and ocular tissues.
COL12A1	COL12A1 is a gene that encodes the alpha chain of type XII collagen, a fibrillar collagen present in connective tissues. It plays a role in the structural organization of tissues, providing mechanical support and influencing cell behavior. COL12A1 is particularly abundant in tendons and ligaments, where it contributes to their strength and elasticity.
COL1A1	COL1A1 is a gene that encodes the alpha chain of type I collagen, the most abundant collagen in the human body. It provides structural support and strength to various tissues, including bones, tendons, ligaments, and skin.
COL3A1	COL3A1 is a gene that codes for the alpha chain of type III collagen, which is found in connective tissues such as skin, blood vessels, and internal organs. It contributes to the tensile strength and flexibility of these tissues.
COL5A1	COL5A1 is a gene that encodes the alpha chain of type V collagen, a minor component of the extracellular matrix in various tissues. It plays a role in regulating collagen fibril assembly and organization.
COL6A4P1	COL6A4P1 is a pseudogene, which means it is a non-functional copy of a gene that does not produce a functional protein. In this case, it is a non-functional copy of the COL6A4 gene, which is involved in the formation of collagen type VI. Pseudogenes typically arise from gene duplication events and may have regulatory roles or be remnants of genes that have become non-functional throughout evolution.
COMT	COMT is an enzyme that plays a role in the breakdown and inactivation of catecholamine neurotransmitters, such as dopamine, norepinephrine, and epinephrine. It catalyzes the transfer of a methyl group to these neurotransmitters, regulating their availability and duration of action. Genetic variations in COMT have been associated with altered dopamine signaling and have been implicated in various neurological and psychiatric conditions.
COTL1	COTL1 is a protein that belongs to the actin-binding protein family. It is involved in regulating actin cytoskeleton dynamics, cell motility, and adhesion. COTL1 interacts with actin filaments and modulates their organization and stability, influencing cellular processes such as cell shape changes, migration, and invasion.
COX2	COX2 is an enzyme involved in the production of prostaglandins, which are lipid signaling molecules involved in inflammation, pain, and other physiological processes. COX2 is inducible and is upregulated in response to inflammatory stimuli. It plays a role in the synthesis of prostaglandins involved in pain, fever, and tissue repair. COX2 is the target of nonsteroidal anti-inflammatory drugs (NSAIDs) used to alleviate pain and inflammation.
CPOX4	CPOX4 is an enzyme involved in the heme biosynthesis pathway. It catalyzes the conversion of coproporphyrinogen III to protoporphyrinogen IX, a crucial step in the synthesis of heme, a component of hemoglobin and other heme-containing proteins.
CPOX5	CPOX5 is another isoform of coproporphyrinogen oxidase, playing a similar role to CPOX4 in the heme biosynthesis pathway. It contributes to the conversion of coproporphyrinogen III to protoporphyrinogen IX, ultimately leading to the production of heme.
CREB1	CREB1 is a transcription factor that regulates gene expression in response to cellular signals, particularly those mediated by cyclic AMP (cAMP). It binds to specific DNA sequences called cAMP response elements (CREs) and modulates the transcription of target genes involved in diverse processes such as neuronal plasticity, memory formation, and cellular survival.
CRHR1	CRHR1 is a receptor for corticotropin-releasing hormone (CRH), a neuropeptide involved in the regulation of the stress response and other physiological processes. Activation of CRHR1 triggers downstream signaling pathways that modulate hormone release, stress-related behaviors, and immune responses.
CRHR2	CRHR2 is another receptor for corticotropin-releasing hormone (CRH). It plays a role in mediating the physiological effects of CRH in different tissues and brain regions. CRHR2 is involved in the regulation of stress responses, anxiety, and behaviors related to reward and addiction.
CRP	CRP is an acute-phase protein produced by the liver in response to inflammation and tissue damage. It plays a role in the innate immune response and serves as a marker of systemic inflammation. Elevated levels of CRP are associated with various inflammatory conditions.
CTLA4	CTLA4 is a protein receptor found on the surface of immune cells, particularly T cells. It regulates the activation of T cells and acts as a negative regulator of the immune response. CTLA4 competes with another receptor, CD28, for binding to its ligands, which helps to dampen excessive immune activation and maintain immune homeostasis. CTLA4 is a target for immune checkpoint inhibitors used in cancer immunotherapy.
CYP19A1	CYP19A1 is an enzyme involved in the synthesis of estrogen, a key hormone involved in the development and maintenance of reproductive tissues and secondary sexual characteristics. It catalyzes the conversion of androgens (such as testosterone) into estrogens, predominantly in the ovaries and placenta in females, and in peripheral tissues in both males and females.

Gene	Description
CYP1A1	CYP1A1 is an enzyme that metabolizes various environmental toxins and xenobiotics, including polycyclic aromatic hydrocarbons found in tobacco smoke and certain dietary compounds. It plays a critical role in the detoxification of these compounds by catalyzing their conversion into more water-soluble metabolites, which can then be eliminated from the body.
CYP1A2	CYP1A2 is an enzyme responsible for the metabolism of several drugs and environmental toxins, including caffeine, certain medications, and carcinogens found in cooked meat. It is primarily expressed in the liver and metabolizes these substances into more easily excreted forms, contributing to drug clearance and detoxification processes.
CYP1B1	CYP1B1 is an enzyme involved in the metabolism of endogenous compounds and xenobiotics. It is predominantly expressed in tissues such as the liver, adrenal glands, and reproductive organs. CYP1B1 metabolizes a variety of substrates, including steroid hormones and certain environmental carcinogens.
CYP24A1	CYP24A1 is an enzyme that regulates the metabolism of vitamin D. It plays a crucial role in the breakdown of the active form of vitamin D, calcitriol, into inactive metabolites. CYP24A1 is primarily expressed in the kidneys and other tissues involved in vitamin D metabolism. Its activity helps to control the levels of active vitamin D, maintaining calcium homeostasis and bone health.
CYP27B1	CYP27B1 is an enzyme involved in the activation of vitamin D. It converts the precursor form of vitamin D, calcidiol, into its active form, calcitriol, in the kidneys and various other tissues. Calcitriol is essential for the regulation of calcium and phosphate metabolism, bone health, and immune function.
CYP2C19	CYP2C19 is an enzyme that metabolizes several medications, including antiplatelet drugs (such as clopidogrel) and certain antidepressants. It plays a significant role in drug metabolism and can influence the efficacy and safety of medications. Genetic variations in CYP2C19 can lead to differences in drug response and metabolism, affecting individual drug sensitivity and personalized medicine approaches.
CYP2C9	CYP2C9 is an enzyme responsible for the metabolism of many drugs, including nonsteroidal anti-inflammatory drugs (NSAIDs), anticoagulants, and antidiabetic medications. It is primarily expressed in the liver and plays a crucial role in drug clearance and elimination from the body. Variations in the CYP2C9 gene can affect individual drug response and influence the dosage requirements for certain medications.
CYP2D6	CYP2D6 is an enzyme involved in the metabolism of a wide range of drugs, including antidepressants, antipsychotics, and opioids. It is highly expressed in the liver and contributes to the biotransformation of these drugs into active or inactive metabolites. Genetic variations in CYP2D6 can lead to differences in drug metabolism and can influence individual drug response and therapeutic outcomes.
CYP2E1	CYP2E1 is an enzyme primarily expressed in the liver and is involved in the metabolism of various compounds, including alcohol, certain drugs, and environmental toxins. It plays a significant role in the oxidative metabolism of substances, contributing to their detoxification and elimination from the body. CYP2E1 can also generate reactive oxygen species, potentially leading to oxidative stress and tissue damage under certain conditions.
CYP2R1	CYP2R1 is an enzyme involved in the metabolism of vitamin D. It catalyzes the hydroxylation of vitamin D to produce calcidiol, the precursor form of active vitamin D. CYP2R1 is primarily expressed in the liver and contributes to the regulation of vitamin D levels in the body, impacting calcium metabolism, bone health, and other physiological processes.
CYP3A4	CYP3A4 is an enzyme responsible for the metabolism of a vast number of drugs, including many commonly prescribed medications. It is predominantly expressed in the liver and intestines and is involved in the biotransformation of drugs into metabolites that can be excreted from the body. CYP3A4 is known for its high substrate specificity and its role in drug-drug interactions, as it can be influenced by inhibitors or inducers of its activity.
DAAM1	DAAM1 is a protein involved in the regulation of cell signaling pathways, particularly those associated with Wnt signaling and cytoskeletal dynamics. It plays a role in cellular processes such as cell migration, tissue development, and organ morphogenesis. DAAM1 interacts with Dishevelled proteins and contributes to the activation of downstream signaling events involved in cellular responses to extracellular cues.
DBX1	DBX1 is a gene that encodes a transcription factor involved in the development of the central nervous system, particularly during embryonic development. It plays a role in patterning and regionalization of the brain, contributing to the formation of specific neuronal populations and brain structures.
DCDC5	DCDC5 is a protein associated with neuronal development and migration. It contains a doublecortin domain, which is involved in microtubule dynamics and cytoskeletal organization. DCDC5 is expressed in various brain regions and is believed to play a role in brain development and neuronal connectivity.
DEC2	DEC2 is a gene involved in the regulation of circadian rhythm and sleep patterns. It is a transcription factor that plays a role in the control of genes involved in sleep-wake cycles and the timing of various physiological processes. Genetic variations in DEC2 have been associated with altered sleep patterns, including short sleep duration.
DEPTOR	DEPTOR is a protein that interacts with the mammalian target of rapamycin (mTOR) pathway, which is involved in the regulation of cell growth, proliferation, and metabolism. DEPTOR acts as a negative regulator of mTOR signaling, influencing cellular processes such as protein synthesis, autophagy, and cell survival.
DHCR7	DHCR7 is an enzyme involved in the synthesis of cholesterol. It catalyzes the conversion of 7-dehydrocholesterol, a precursor molecule derived from cholesterol synthesis, to cholesterol. DHCR7 is particularly important in the production of cholesterol in the skin, where it is a crucial step in the synthesis of vitamin D3 when exposed to sunlight.
DHFR	DHFR is an enzyme that plays a role in the metabolism of folate, a B-vitamin involved in various cellular processes, including DNA synthesis and methylation. DHFR converts dihydrofolate into tetrahydrofolate, a form of folate that is essential for the synthesis of nucleotides and other important molecules.
DIO1	DIO1 is an enzyme involved in the regulation of thyroid hormone levels in the body. It catalyzes the conversion of the prohormone thyroxine (T4) to the active hormone triiodothyronine (T3) in various tissues. DIO1 helps to control the levels and availability of thyroid hormones, which are important for regulating metabolism, growth, and development.
DIO2	DIO2 is an enzyme involved in the regulation of thyroid hormone levels. It converts the prohormone thyroxine (T4) to the active hormone triiodothyronine (T3) in specific tissues, such as the brain, skeletal muscle, and brown adipose tissue. DIO2 helps to fine-tune the local concentrations of T3, influencing metabolic rate, thermogenesis, and other physiological processes.
DMD	DMD is a gene that encodes the dystrophin protein, which plays a crucial role in muscle function and structure. Dystrophin is part of a complex called the dystrophin-glycoprotein complex (DGC), which helps to stabilize muscle fibers and transmit forces during muscle contractions.

Gene	Description
DRD2	DRD2 is a receptor for the neurotransmitter dopamine, which plays a role in the regulation of reward, motivation, and movement control. DRD2 is primarily found in the brain and is involved in mediating the effects of dopamine in various neuronal circuits.
EDN1	EDN1 is a gene that encodes endothelin-1, a peptide involved in the regulation of blood vessel constriction and cell growth. Endothelin-1 acts on endothelin receptors located on smooth muscle cells in blood vessels, causing vasoconstriction and influencing blood pressure.
ELOVL2	ELOVL2 is an enzyme involved in the elongation of fatty acids, contributing to the synthesis of longer-chain fatty acids. It catalyzes the addition of two carbon units to fatty acids, influencing their length and saturation. ELOVL2 plays a role in lipid metabolism and is particularly important in the production of very long-chain fatty acids, which are essential for various cellular functions.
EPHX1	EPHX1 is an enzyme involved in the metabolism of certain chemicals and drugs, particularly epoxides. It catalyzes the hydrolysis of epoxides into more soluble and less toxic compounds. EPHX1 contributes to the detoxification of environmental pollutants and xenobiotics, and genetic variations in the EPHX1 gene can affect individual susceptibility to certain toxic compounds.
ESR1	ESR1 is a gene that encodes the estrogen receptor alpha, a nuclear hormone receptor that binds to estrogen hormones. Estrogen receptor alpha is expressed in various tissues and plays a critical role in mediating the effects of estrogen, including regulation of gene expression and modulation of reproductive functions.
ESRRB1	ESRRB1 is a gene that encodes the estrogen-related receptor beta protein, which belongs to the nuclear receptor superfamily. It is involved in the regulation of various physiological processes, including energy metabolism, embryonic development, and cell differentiation. ESRRB1 acts as a transcription factor, controlling the expression of target genes involved in these processes.
FAAH	FAAH is an enzyme involved in the metabolism of endocannabinoids, which are lipid molecules that act as signaling molecules in the body. FAAH breaks down endocannabinoids, such as anandamide, into their constituent components, terminating their signaling effects. FAAH plays a role in regulating pain sensation, mood, and inflammation.
FABP2	FABP2 is a protein that binds and transports fatty acids within cells. It is primarily expressed in the small intestine and plays a role in the absorption and intracellular transport of dietary fatty acids. FABP2 facilitates the movement of fatty acids across the intestinal cells, aiding in their utilization and storage.
FADS1	FADS1 is an enzyme involved in the synthesis of long-chain polyunsaturated fatty acids (PUFAs), such as omega-3 and omega-6 fatty acids. It catalyzes the desaturation of precursor fatty acids, converting them into more unsaturated forms. FADS1 is important for the production of essential PUFAs that play crucial roles in cell membrane structure, inflammation, and various physiological processes.
FAM46A	FAM46A is a gene that is involved in the regulation of cell growth and division. Its specific functions are not fully understood, but it has been implicated in processes such as cell cycle control and tumor suppression. FAM46A is expressed in various tissues and its dysregulation has been associated with certain cancers.
FAM9B	FAM9B is a gene that belongs to a family of genes with sequence similarity. Its specific functions are not well characterized, and further research is needed to understand its biological role.
FCRL3	FCRL3 is a gene that encodes a member of the Fc receptor-like (FCRL) protein family. FCRL3 is primarily expressed on B cells and is involved in the regulation of B cell signaling and activation. It interacts with other molecules involved in immune responses and plays a role in modulating antibody production and immune cell function.
FGF10	FGF10 is a gene that encodes a protein belonging to the fibroblast growth factor (FGF) family. It is involved in the regulation of cell growth, proliferation, and differentiation during embryonic development. FGF10 plays a crucial role in the development of various organs, including the lungs, limbs, and mammary glands.
FGFR1	FGFR1 is a gene that encodes a receptor protein for fibroblast growth factors. It is involved in cell signaling pathways that regulate cell growth, differentiation, and tissue development. FGFR1 plays a crucial role in various processes during embryonic development and is essential for the normal development of multiple organ systems.
FKBP5	FKBP5 is a gene that encodes a protein involved in the regulation of the stress response and glucocorticoid receptor signaling. It interacts with the glucocorticoid receptor, modulating its activity and influencing the body's response to stress.
FOLR1	FOLR1 is a gene that encodes a receptor protein for folate, a B-vitamin essential for DNA synthesis and other cellular processes. FOLR1 is involved in the uptake and transport of folate into cells. It plays a critical role in folate metabolism and is expressed in tissues with high folate demand.
FOXA2	FOXA2 is a gene that encodes a transcription factor involved in the regulation of gene expression during embryonic development and organogenesis. It is particularly important in the development of the liver, pancreas, and lungs. FOXA2 plays a role in the differentiation and function of these organs and is involved in various physiological processes, including glucose and lipid metabolism.
FOXE1	FOXE1 is a gene that encodes a transcription factor involved in the development of the thyroid gland. It plays a crucial role in thyroid morphogenesis and the regulation of thyroid-specific gene expression. FOXE1 is essential for normal thyroid function and is associated with certain thyroid disorders and congenital hypothyroidism.
FTO	FTO is a gene that has been associated with obesity and body weight regulation. It is involved in the control of energy balance and metabolism. Variations in the FTO gene have been linked to increased risk of obesity and influence body mass index (BMI) and food intake regulation.
FUT2	FUT2 is a gene that encodes an enzyme involved in the addition of fucose sugars to proteins and other molecules. It plays a role in the synthesis of blood group antigens and the modification of cell surface molecules. FUT2 is particularly important in determining the secretor status and blood group phenotype, as well as influencing interactions between host cells and microorganisms in the gut and respiratory tract.
GABPB1	GABPB1 is a gene that encodes a subunit of the GA-binding protein (GABP), a transcription factor involved in the regulation of gene expression. GABPB1 forms a heterotetrameric complex with GABPA subunit and binds to specific DNA sequences to activate the transcription of target genes. GABPB1 plays a role in diverse biological processes, including cell growth, development, and metabolism.

Gene	Description
CYP1A1	CYP1A1 is an enzyme that metabolizes various environmental toxins and xenobiotics, including polycyclic aromatic hydrocarbons found in tobacco smoke and certain dietary compounds. It plays a critical role in the detoxification of these compounds by catalyzing their conversion into more water-soluble metabolites, which can then be eliminated from the body.
CYP1A2	CYP1A2 is an enzyme responsible for the metabolism of several drugs and environmental toxins, including caffeine, certain medications, and carcinogens found in cooked meat. It is primarily expressed in the liver and metabolizes these substances into more easily excreted forms, contributing to drug clearance and detoxification processes.
CYP1B1	CYP1B1 is an enzyme involved in the metabolism of endogenous compounds and xenobiotics. It is predominantly expressed in tissues such as the liver, adrenal glands, and reproductive organs. CYP1B1 metabolizes a variety of substrates, including steroid hormones and certain environmental carcinogens.
CYP24A1	CYP24A1 is an enzyme that regulates the metabolism of vitamin D. It plays a crucial role in the breakdown of the active form of vitamin D, calcitriol, into inactive metabolites. CYP24A1 is primarily expressed in the kidneys and other tissues involved in vitamin D metabolism. Its activity helps to control the levels of active vitamin D, maintaining calcium homeostasis and bone health.
CYP27B1	CYP27B1 is an enzyme involved in the activation of vitamin D. It converts the precursor form of vitamin D, calcidiol, into its active form, calcitriol, in the kidneys and various other tissues. Calcitriol is essential for the regulation of calcium and phosphate metabolism, bone health, and immune function.
CYP2C19	CYP2C19 is an enzyme that metabolizes several medications, including antiplatelet drugs (such as clopidogrel) and certain antidepressants. It plays a significant role in drug metabolism and can influence the efficacy and safety of medications. Genetic variations in CYP2C19 can lead to differences in drug response and metabolism, affecting individual drug sensitivity and personalized medicine approaches.
CYP2C9	CYP2C9 is an enzyme responsible for the metabolism of many drugs, including nonsteroidal anti-inflammatory drugs (NSAIDs), anticoagulants, and antidiabetic medications. It is primarily expressed in the liver and plays a crucial role in drug clearance and elimination from the body. Variations in the CYP2C9 gene can affect individual drug response and influence the dosage requirements for certain medications.
CYP2D6	CYP2D6 is an enzyme involved in the metabolism of a wide range of drugs, including antidepressants, antipsychotics, and opioids. It is highly expressed in the liver and contributes to the biotransformation of these drugs into active or inactive metabolites. Genetic variations in CYP2D6 can lead to differences in drug metabolism and can influence individual drug response and therapeutic outcomes.
CYP2E1	CYP2E1 is an enzyme primarily expressed in the liver and is involved in the metabolism of various compounds, including alcohol, certain drugs, and environmental toxins. It plays a significant role in the oxidative metabolism of substances, contributing to their detoxification and elimination from the body. CYP2E1 can also generate reactive oxygen species, potentially leading to oxidative stress and tissue damage under certain conditions.
CYP2R1	CYP2R1 is an enzyme involved in the metabolism of vitamin D. It catalyzes the hydroxylation of vitamin D to produce calcidiol, the precursor form of active vitamin D. CYP2R1 is primarily expressed in the liver and contributes to the regulation of vitamin D levels in the body, impacting calcium metabolism, bone health, and other physiological processes.
CYP3A4	CYP3A4 is an enzyme responsible for the metabolism of a vast number of drugs, including many commonly prescribed medications. It is predominantly expressed in the liver and intestines and is involved in the biotransformation of drugs into metabolites that can be excreted from the body. CYP3A4 is known for its high substrate specificity and its role in drug-drug interactions, as it can be influenced by inhibitors or inducers of its activity.
DAAM1	DAAM1 is a protein involved in the regulation of cell signaling pathways, particularly those associated with Wnt signaling and cytoskeletal dynamics. It plays a role in cellular processes such as cell migration, tissue development, and organ morphogenesis. DAAM1 interacts with Dishevelled proteins and contributes to the activation of downstream signaling events involved in cellular responses to extracellular cues.
DBX1	DBX1 is a gene that encodes a transcription factor involved in the development of the central nervous system, particularly during embryonic development. It plays a role in patterning and regionalization of the brain, contributing to the formation of specific neuronal populations and brain structures.
DCDC5	DCDC5 is a protein associated with neuronal development and migration. It contains a doublecortin domain, which is involved in microtubule dynamics and cytoskeletal organization. DCDC5 is expressed in various brain regions and is believed to play a role in brain development and neuronal connectivity.
DEC2	DEC2 is a gene involved in the regulation of circadian rhythm and sleep patterns. It is a transcription factor that plays a role in the control of genes involved in sleep-wake cycles and the timing of various physiological processes. Genetic variations in DEC2 have been associated with altered sleep patterns, including short sleep duration.
DEPTOR	DEPTOR is a protein that interacts with the mammalian target of rapamycin (mTOR) pathway, which is involved in the regulation of cell growth, proliferation, and metabolism. DEPTOR acts as a negative regulator of mTOR signaling, influencing cellular processes such as protein synthesis, autophagy, and cell survival.
DHCR7	DHCR7 is an enzyme involved in the synthesis of cholesterol. It catalyzes the conversion of 7-dehydrocholesterol, a precursor molecule derived from cholesterol synthesis, to cholesterol. DHCR7 is particularly important in the production of cholesterol in the skin, where it is a crucial step in the synthesis of vitamin D3 when exposed to sunlight.
DHFR	DHFR is an enzyme that plays a role in the metabolism of folate, a B-vitamin involved in various cellular processes, including DNA synthesis and methylation. DHFR converts dihydrofolate into tetrahydrofolate, a form of folate that is essential for the synthesis of nucleotides and other important molecules.
DIO1	DIO1 is an enzyme involved in the regulation of thyroid hormone levels in the body. It catalyzes the conversion of the prohormone thyroxine (T4) to the active hormone triiodothyronine (T3) in various tissues. DIO1 helps to control the levels and availability of thyroid hormones, which are important for regulating metabolism, growth, and development.
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FGF10	FGF10 is a gene that encodes a protein belonging to the fibroblast growth factor (FGF) family. It is involved in the regulation of cell growth, proliferation, and differentiation during embryonic development. FGF10 plays a crucial role in the development of various organs, including the lungs, limbs, and mammary glands.
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FKBP5	FKBP5 is a gene that encodes a protein involved in the regulation of the stress response and glucocorticoid receptor signaling. It interacts with the glucocorticoid receptor, modulating its activity and influencing the body's response to stress.
FOLR1	FOLR1 is a gene that encodes a receptor protein for folate, a B-vitamin essential for DNA synthesis and other cellular processes. FOLR1 is involved in the uptake and transport of folate into cells. It plays a critical role in folate metabolism and is expressed in tissues with high folate demand.
FOXA2	FOXA2 is a gene that encodes a transcription factor involved in the regulation of gene expression during embryonic development and organogenesis. It is particularly important in the development of the liver, pancreas, and lungs. FOXA2 plays a role in the differentiation and function of these organs and is involved in various physiological processes, including glucose and lipid metabolism.
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FTO	FTO is a gene that has been associated with obesity and body weight regulation. It is involved in the control of energy balance and metabolism. Variations in the FTO gene have been linked to increased risk of obesity and influence body mass index (BMI) and food intake regulation.
FUT2	FUT2 is a gene that encodes an enzyme involved in the addition of fucose sugars to proteins and other molecules. It plays a role in the synthesis of blood group antigens and the modification of cell surface molecules. FUT2 is particularly important in determining the secretor status and blood group phenotype, as well as influencing interactions between host cells and microorganisms in the gut and respiratory tract.
GABPB1	GABPB1 is a gene that encodes a subunit of the GA-binding protein (GABP), a transcription factor involved in the regulation of gene expression. GABPB1 forms a heterotetrameric complex with GABPA subunit and binds to specific DNA sequences to activate the transcription of target genes. GABPB1 plays a role in diverse biological processes, including cell growth, development, and metabolism.

Gene	Description
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CYP1A2	CYP1A2 is an enzyme responsible for the metabolism of several drugs and environmental toxins, including caffeine, certain medications, and carcinogens found in cooked meat. It is primarily expressed in the liver and metabolizes these substances into more easily excreted forms, contributing to drug clearance and detoxification processes.
CYP1B1	CYP1B1 is an enzyme involved in the metabolism of endogenous compounds and xenobiotics. It is predominantly expressed in tissues such as the liver, adrenal glands, and reproductive organs. CYP1B1 metabolizes a variety of substrates, including steroid hormones and certain environmental carcinogens.
CYP24A1	CYP24A1 is an enzyme that regulates the metabolism of vitamin D. It plays a crucial role in the breakdown of the active form of vitamin D, calcitriol, into inactive metabolites. CYP24A1 is primarily expressed in the kidneys and other tissues involved in vitamin D metabolism. Its activity helps to control the levels of active vitamin D, maintaining calcium homeostasis and bone health.
CYP27B1	CYP27B1 is an enzyme involved in the activation of vitamin D. It converts the precursor form of vitamin D, calcidiol, into its active form, calcitriol, in the kidneys and various other tissues. Calcitriol is essential for the regulation of calcium and phosphate metabolism, bone health, and immune function.
CYP2C19	CYP2C19 is an enzyme that metabolizes several medications, including antiplatelet drugs (such as clopidogrel) and certain antidepressants. It plays a significant role in drug metabolism and can influence the efficacy and safety of medications. Genetic variations in CYP2C19 can lead to differences in drug response and metabolism, affecting individual drug sensitivity and personalized medicine approaches.
CYP2C9	CYP2C9 is an enzyme responsible for the metabolism of many drugs, including nonsteroidal anti-inflammatory drugs (NSAIDs), anticoagulants, and antidiabetic medications. It is primarily expressed in the liver and plays a crucial role in drug clearance and elimination from the body. Variations in the CYP2C9 gene can affect individual drug response and influence the dosage requirements for certain medications.
CYP2D6	CYP2D6 is an enzyme involved in the metabolism of a wide range of drugs, including antidepressants, antipsychotics, and opioids. It is highly expressed in the liver and contributes to the biotransformation of these drugs into active or inactive metabolites. Genetic variations in CYP2D6 can lead to differences in drug metabolism and can influence individual drug response and therapeutic outcomes.
CYP2E1	CYP2E1 is an enzyme primarily expressed in the liver and is involved in the metabolism of various compounds, including alcohol, certain drugs, and environmental toxins. It plays a significant role in the oxidative metabolism of substances, contributing to their detoxification and elimination from the body. CYP2E1 can also generate reactive oxygen species, potentially leading to oxidative stress and tissue damage under certain conditions.
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CYP1A1	CYP1A1 is an enzyme that metabolizes various environmental toxins and xenobiotics, including polycyclic aromatic hydrocarbons found in tobacco smoke and certain dietary compounds. It plays a critical role in the detoxification of these compounds by catalyzing their conversion into more water-soluble metabolites, which can then be eliminated from the body.
CYP1A2	CYP1A2 is an enzyme responsible for the metabolism of several drugs and environmental toxins, including caffeine, certain medications, and carcinogens found in cooked meat. It is primarily expressed in the liver and metabolizes these substances into more easily excreted forms, contributing to drug clearance and detoxification processes.
CYP1B1	CYP1B1 is an enzyme involved in the metabolism of endogenous compounds and xenobiotics. It is predominantly expressed in tissues such as the liver, adrenal glands, and reproductive organs. CYP1B1 metabolizes a variety of substrates, including steroid hormones and certain environmental carcinogens.
CYP24A1	CYP24A1 is an enzyme that regulates the metabolism of vitamin D. It plays a crucial role in the breakdown of the active form of vitamin D, calcitriol, into inactive metabolites. CYP24A1 is primarily expressed in the kidneys and other tissues involved in vitamin D metabolism. Its activity helps to control the levels of active vitamin D, maintaining calcium homeostasis and bone health.
CYP27B1	CYP27B1 is an enzyme involved in the activation of vitamin D. It converts the precursor form of vitamin D, calcidiol, into its active form, calcitriol, in the kidneys and various other tissues. Calcitriol is essential for the regulation of calcium and phosphate metabolism, bone health, and immune function.
CYP2C19	CYP2C19 is an enzyme that metabolizes several medications, including antiplatelet drugs (such as clopidogrel) and certain antidepressants. It plays a significant role in drug metabolism and can influence the efficacy and safety of medications. Genetic variations in CYP2C19 can lead to differences in drug response and metabolism, affecting individual drug sensitivity and personalized medicine approaches.
CYP2C9	CYP2C9 is an enzyme responsible for the metabolism of many drugs, including nonsteroidal anti-inflammatory drugs (NSAIDs), anticoagulants, and antidiabetic medications. It is primarily expressed in the liver and plays a crucial role in drug clearance and elimination from the body. Variations in the CYP2C9 gene can affect individual drug response and influence the dosage requirements for certain medications.
CYP2D6	CYP2D6 is an enzyme involved in the metabolism of a wide range of drugs, including antidepressants, antipsychotics, and opioids. It is highly expressed in the liver and contributes to the biotransformation of these drugs into active or inactive metabolites. Genetic variations in CYP2D6 can lead to differences in drug metabolism and can influence individual drug response and therapeutic outcomes.
CYP2E1	CYP2E1 is an enzyme primarily expressed in the liver and is involved in the metabolism of various compounds, including alcohol, certain drugs, and environmental toxins. It plays a significant role in the oxidative metabolism of substances, contributing to their detoxification and elimination from the body. CYP2E1 can also generate reactive oxygen species, potentially leading to oxidative stress and tissue damage under certain conditions.
CYP2R1	CYP2R1 is an enzyme involved in the metabolism of vitamin D. It catalyzes the hydroxylation of vitamin D to produce calcidiol, the precursor form of active vitamin D. CYP2R1 is primarily expressed in the liver and contributes to the regulation of vitamin D levels in the body, impacting calcium metabolism, bone health, and other physiological processes.
CYP3A4	CYP3A4 is an enzyme responsible for the metabolism of a vast number of drugs, including many commonly prescribed medications. It is predominantly expressed in the liver and intestines and is involved in the biotransformation of drugs into metabolites that can be excreted from the body. CYP3A4 is known for its high substrate specificity and its role in drug-drug interactions, as it can be influenced by inhibitors or inducers of its activity.
DAAM1	DAAM1 is a protein involved in the regulation of cell signaling pathways, particularly those associated with Wnt signaling and cytoskeletal dynamics. It plays a role in cellular processes such as cell migration, tissue development, and organ morphogenesis. DAAM1 interacts with Dishevelled proteins and contributes to the activation of downstream signaling events involved in cellular responses to extracellular cues.
DBX1	DBX1 is a gene that encodes a transcription factor involved in the development of the central nervous system, particularly during embryonic development. It plays a role in patterning and regionalization of the brain, contributing to the formation of specific neuronal populations and brain structures.
DCDC5	DCDC5 is a protein associated with neuronal development and migration. It contains a doublecortin domain, which is involved in microtubule dynamics and cytoskeletal organization. DCDC5 is expressed in various brain regions and is believed to play a role in brain development and neuronal connectivity.
DEC2	DEC2 is a gene involved in the regulation of circadian rhythm and sleep patterns. It is a transcription factor that plays a role in the control of genes involved in sleep-wake cycles and the timing of various physiological processes. Genetic variations in DEC2 have been associated with altered sleep patterns, including short sleep duration.
DEPTOR	DEPTOR is a protein that interacts with the mammalian target of rapamycin (mTOR) pathway, which is involved in the regulation of cell growth, proliferation, and metabolism. DEPTOR acts as a negative regulator of mTOR signaling, influencing cellular processes such as protein synthesis, autophagy, and cell survival.
DHCR7	DHCR7 is an enzyme involved in the synthesis of cholesterol. It catalyzes the conversion of 7-dehydrocholesterol, a precursor molecule derived from cholesterol synthesis, to cholesterol. DHCR7 is particularly important in the production of cholesterol in the skin, where it is a crucial step in the synthesis of vitamin D3 when exposed to sunlight.
DHFR	DHFR is an enzyme that plays a role in the metabolism of folate, a B-vitamin involved in various cellular processes, including DNA synthesis and methylation. DHFR converts dihydrofolate into tetrahydrofolate, a form of folate that is essential for the synthesis of nucleotides and other important molecules.
DIO1	DIO1 is an enzyme involved in the regulation of thyroid hormone levels in the body. It catalyzes the conversion of the prohormone thyroxine (T4) to the active hormone triiodothyronine (T3) in various tissues. DIO1 helps to control the levels and availability of thyroid hormones, which are important for regulating metabolism, growth, and development.
DIO2	DIO2 is an enzyme involved in the regulation of thyroid hormone levels. It converts the prohormone thyroxine (T4) to the active hormone triiodothyronine (T3) in specific tissues, such as the brain, skeletal muscle, and brown adipose tissue. DIO2 helps to fine-tune the local concentrations of T3, influencing metabolic rate, thermogenesis, and other physiological processes.
DMD	DMD is a gene that encodes the dystrophin protein, which plays a crucial role in muscle function and structure. Dystrophin is part of a complex called the dystrophin-glycoprotein complex (DGC), which helps to stabilize muscle fibers and transmit forces during muscle contractions.

Gene	Description
DRD2	DRD2 is a receptor for the neurotransmitter dopamine, which plays a role in the regulation of reward, motivation, and movement control. DRD2 is primarily found in the brain and is involved in mediating the effects of dopamine in various neuronal circuits.
EDN1	EDN1 is a gene that encodes endothelin-1, a peptide involved in the regulation of blood vessel constriction and cell growth. Endothelin-1 acts on endothelin receptors located on smooth muscle cells in blood vessels, causing vasoconstriction and influencing blood pressure.
ELOVL2	ELOVL2 is an enzyme involved in the elongation of fatty acids, contributing to the synthesis of longer-chain fatty acids. It catalyzes the addition of two carbon units to fatty acids, influencing their length and saturation. ELOVL2 plays a role in lipid metabolism and is particularly important in the production of very long-chain fatty acids, which are essential for various cellular functions.
EPHX1	EPHX1 is an enzyme involved in the metabolism of certain chemicals and drugs, particularly epoxides. It catalyzes the hydrolysis of epoxides into more soluble and less toxic compounds. EPHX1 contributes to the detoxification of environmental pollutants and xenobiotics, and genetic variations in the EPHX1 gene can affect individual susceptibility to certain toxic compounds.
ESR1	ESR1 is a gene that encodes the estrogen receptor alpha, a nuclear hormone receptor that binds to estrogen hormones. Estrogen receptor alpha is expressed in various tissues and plays a critical role in mediating the effects of estrogen, including regulation of gene expression and modulation of reproductive functions.
ESRRB1	ESRRB1 is a gene that encodes the estrogen-related receptor beta protein, which belongs to the nuclear receptor superfamily. It is involved in the regulation of various physiological processes, including energy metabolism, embryonic development, and cell differentiation. ESRRB1 acts as a transcription factor, controlling the expression of target genes involved in these processes.
FAAH	FAAH is an enzyme involved in the metabolism of endocannabinoids, which are lipid molecules that act as signaling molecules in the body. FAAH breaks down endocannabinoids, such as anandamide, into their constituent components, terminating their signaling effects. FAAH plays a role in regulating pain sensation, mood, and inflammation.
FABP2	FABP2 is a protein that binds and transports fatty acids within cells. It is primarily expressed in the small intestine and plays a role in the absorption and intracellular transport of dietary fatty acids. FABP2 facilitates the movement of fatty acids across the intestinal cells, aiding in their utilization and storage.
FADS1	FADS1 is an enzyme involved in the synthesis of long-chain polyunsaturated fatty acids (PUFAs), such as omega-3 and omega-6 fatty acids. It catalyzes the desaturation of precursor fatty acids, converting them into more unsaturated forms. FADS1 is important for the production of essential PUFAs that play crucial roles in cell membrane structure, inflammation, and various physiological processes.
FAM46A	FAM46A is a gene that is involved in the regulation of cell growth and division. Its specific functions are not fully understood, but it has been implicated in processes such as cell cycle control and tumor suppression. FAM46A is expressed in various tissues and its dysregulation has been associated with certain cancers.
FAM9B	FAM9B is a gene that belongs to a family of genes with sequence similarity. Its specific functions are not well characterized, and further research is needed to understand its biological role.
FCRL3	FCRL3 is a gene that encodes a member of the Fc receptor-like (FCRL) protein family. FCRL3 is primarily expressed on B cells and is involved in the regulation of B cell signaling and activation. It interacts with other molecules involved in immune responses and plays a role in modulating antibody production and immune cell function.
FGF10	FGF10 is a gene that encodes a protein belonging to the fibroblast growth factor (FGF) family. It is involved in the regulation of cell growth, proliferation, and differentiation during embryonic development. FGF10 plays a crucial role in the development of various organs, including the lungs, limbs, and mammary glands.
FGFR1	FGFR1 is a gene that encodes a receptor protein for fibroblast growth factors. It is involved in cell signaling pathways that regulate cell growth, differentiation, and tissue development. FGFR1 plays a crucial role in various processes during embryonic development and is essential for the normal development of multiple organ systems.
FKBP5	FKBP5 is a gene that encodes a protein involved in the regulation of the stress response and glucocorticoid receptor signaling. It interacts with the glucocorticoid receptor, modulating its activity and influencing the body's response to stress.
FOLR1	FOLR1 is a gene that encodes a receptor protein for folate, a B-vitamin essential for DNA synthesis and other cellular processes. FOLR1 is involved in the uptake and transport of folate into cells. It plays a critical role in folate metabolism and is expressed in tissues with high folate demand.
FOXA2	FOXA2 is a gene that encodes a transcription factor involved in the regulation of gene expression during embryonic development and organogenesis. It is particularly important in the development of the liver, pancreas, and lungs. FOXA2 plays a role in the differentiation and function of these organs and is involved in various physiological processes, including glucose and lipid metabolism.
FOXE1	FOXE1 is a gene that encodes a transcription factor involved in the development of the thyroid gland. It plays a crucial role in thyroid morphogenesis and the regulation of thyroid-specific gene expression. FOXE1 is essential for normal thyroid function and is associated with certain thyroid disorders and congenital hypothyroidism.
FTO	FTO is a gene that has been associated with obesity and body weight regulation. It is involved in the control of energy balance and metabolism. Variations in the FTO gene have been linked to increased risk of obesity and influence body mass index (BMI) and food intake regulation.
FUT2	FUT2 is a gene that encodes an enzyme involved in the addition of fucose sugars to proteins and other molecules. It plays a role in the synthesis of blood group antigens and the modification of cell surface molecules. FUT2 is particularly important in determining the secretor status and blood group phenotype, as well as influencing interactions between host cells and microorganisms in the gut and respiratory tract.
GABPB1	GABPB1 is a gene that encodes a subunit of the GA-binding protein (GABP), a transcription factor involved in the regulation of gene expression. GABPB1 forms a heterotetrameric complex with GABPA subunit and binds to specific DNA sequences to activate the transcription of target genes. GABPB1 plays a role in diverse biological processes, including cell growth, development, and metabolism.

Gene	Description
TCN1	TCN1 is a gene that encodes the transcobalamin 1 protein, also known as haptocorrin. TCN1 is involved in the transport and delivery of vitamin B12 (cobalamin) in the bloodstream. It binds to vitamin B12 and protects it from degradation, facilitating its uptake and utilization by cells. TCN1 is primarily expressed in the salivary glands and stomach, where it assists in the absorption of dietary vitamin B12.
TF	TF is a gene that encodes the protein transferrin, which is involved in the transport and regulation of iron in the body. Transferrin binds to iron and facilitates its transport in the bloodstream to target tissues and organs. It plays a critical role in iron homeostasis and is involved in various biological processes, including oxygen transport, immune response, and cellular growth.
TFAP2B	TFAP2B is a gene that encodes the transcription factor activating enhancer-binding protein 2 beta. TFAP2B plays a crucial role in embryonic development and is involved in the regulation of gene expression. It contributes to the development of various tissues and organs, including the heart, limbs, and neural crest cells.
TFR2	TFR2 is a gene that encodes the transferrin receptor 2 protein, which is involved in iron homeostasis and regulation. TFR2 is primarily expressed in the liver and interacts with transferrin to regulate iron uptake and storage. It plays a role in sensing iron levels and modulating the expression of genes involved in iron metabolism.
THRA	THRA is a gene that encodes the thyroid hormone receptor alpha protein, which is a nuclear receptor involved in the regulation of thyroid hormone signaling and gene expression. THRA binds to thyroid hormones and influences their effects on target tissues. It plays a critical role in the development and function of multiple organs, including the brain, heart, and skeletal muscles.
TMCO1	TMCO1 is a gene that encodes the transmembrane and coiled-coil domains 1 protein. TMCO1 is involved in protein trafficking and localization within cells. It plays a role in the formation and maintenance of cellular structures, such as the Golgi apparatus, and contributes to cellular processes such as vesicle transport and protein secretion.
TMPRSS6	TMPRSS6 is a gene that encodes the transmembrane protease serine 6 protein. TMPRSS6 is primarily expressed in the liver and plays a crucial role in iron homeostasis. It acts as a negative regulator of hepcidin, a hormone involved in iron metabolism, by cleaving and inactivating its precursor.
TNF	TNF is a gene that encodes the tumor necrosis factor protein. TNF is a cytokine involved in the regulation of immune responses and inflammation. It plays a critical role in the activation of immune cells and the initiation of inflammatory processes.
TPH2	TPH2 is a gene that encodes the enzyme tryptophan hydroxylase 2. TPH2 is primarily expressed in the brain, specifically in neurons that produce serotonin. It is involved in the biosynthesis of serotonin, a neurotransmitter that regulates mood, behavior, and cognition.
TRPM	TRPM refers to the transient receptor potential melastatin family of ion channels. These channels are involved in a wide range of cellular functions, including sensory perception, regulation of ion homeostasis, and modulation of neuronal activity. Different members of the TRPM family have diverse roles, such as thermosensation, pain perception, and regulation of cellular calcium levels.
TRPM6	TRPM6 is a gene that encodes the transient receptor potential melastatin 6 protein. TRPM6 is an ion channel involved in magnesium homeostasis. It is predominantly expressed in the intestine and kidney, where it facilitates the absorption of magnesium from the diet and its reabsorption in the kidneys. TRPM6 plays a crucial role in maintaining magnesium balance in the body.
TTN	TTN is a gene that encodes the protein titin, also known as connectin. Titin is the largest known protein and is primarily expressed in muscle tissues. It plays a critical role in muscle contraction and contributes to the structural integrity of muscle cells.
TXN	TXN is a gene that encodes the thioredoxin protein. Thioredoxin is an antioxidant protein involved in cellular redox regulation and defense against oxidative stress. It acts as a reducing agent, facilitating the maintenance of proper protein structure and function. TXN is involved in multiple cellular processes, including cell growth, apoptosis, and immune response.
UCP1	UCP1 is a gene that encodes the uncoupling protein 1, also known as thermogenin. UCP1 is primarily expressed in brown adipose tissue and plays a crucial role in energy expenditure and thermogenesis. It uncouples the process of oxidative phosphorylation from ATP synthesis, dissipating energy as heat instead. UCP1 is involved in regulating body temperature and is associated with metabolic processes, including energy balance and obesity.
UCP2	UCP2 is a gene that encodes the uncoupling protein 2. UCP2 is expressed in various tissues, including adipose tissue, liver, and immune cells. It plays a role in the regulation of energy metabolism and mitochondrial function. UCP2 is involved in the modulation of reactive oxygen species production, regulation of insulin secretion, and lipid metabolism. It has been implicated in the development of obesity, type 2 diabetes, and other metabolic disorders.
UCP3	UCP3 is a gene that encodes the uncoupling protein 3. UCP3 is primarily expressed in skeletal muscle and to a lesser extent in other tissues such as adipose tissue and heart. It shares similarities with UCP2 in terms of its functions and regulation of mitochondrial uncoupling. UCP3 is associated with fatty acid oxidation, energy expenditure, and protection against oxidative stress.
UCP4	UCP4 is a gene that encodes the uncoupling protein 4. UCP4 is predominantly expressed in the brain and plays a role in mitochondrial uncoupling and energy metabolism. It is involved in neuronal function and has been implicated in neuroprotection, as well as the regulation of oxidative stress and reactive oxygen species in the brain.
UGT1A1	UGT1A1 is a gene that encodes the uridine diphosphate-glucuronosyltransferase 1A1 enzyme. UGT1A1 is primarily expressed in the liver and is involved in the metabolism and detoxification of various endogenous and exogenous compounds. It catalyzes the glucuronidation reaction, which enhances the solubility and elimination of substances such as bilirubin, drugs, and environmental toxins.
UGT1A2	UGT1A2 is a gene that encodes the uridine diphosphate-glucuronosyltransferase 1A2 enzyme. UGT1A2 is primarily expressed in the liver and is involved in the glucuronidation of various drugs, dietary components, and environmental toxins. It contributes to the metabolism and elimination of substances from the body. Genetic variations in UGT1A2 can affect drug response and susceptibility to certain diseases by altering the enzyme's activity and efficiency in drug metabolism.
UGT1A3	UGT1A3 is a gene that encodes the uridine diphosphate-glucuronosyltransferase 1A3 enzyme. UGT1A3 is primarily expressed in the liver and is involved in the glucuronidation of various drugs, toxins, and endogenous compounds. It plays a role in the detoxification and elimination of substances from the body, contributing to drug metabolism and clearance.
UGT2B15	UGT2B15 is a gene that encodes the uridine diphosphate-glucuronosyltransferase 2B15 enzyme. UGT2B15 is predominantly expressed in the liver, prostate, and other tissues. It is involved in the glucuronidation of diverse substrates, including steroid hormones and drugs. UGT2B15 contributes to the metabolism and elimination of these substances, affecting their bioavailability, activity, and clearance.

Gene	Description
UGT2B7	UGT2B7 is a gene that encodes the uridine diphosphate-glucuronosyltransferase 2B7 enzyme. UGT2B7 is widely expressed in various tissues, including the liver, intestine, and kidney. It is responsible for the glucuronidation of numerous drugs and endogenous compounds. UGT2B7 plays a significant role in drug metabolism and elimination, influencing drug efficacy, toxicity, and pharmacokinetics.
VDR	VDR is a gene that encodes the vitamin D receptor protein. VDR is primarily expressed in tissues involved in calcium homeostasis, such as the intestine, bone, and kidney. It functions as a transcription factor, regulating the expression of genes involved in vitamin D metabolism and calcium regulation. VDR plays a critical role in skeletal development, calcium absorption, immune function, and cell growth.
VEGFa	VEGFa is a gene that encodes vascular endothelial growth factor A. VEGFa is primarily expressed in endothelial cells and plays a crucial role in angiogenesis, the formation of new blood vessels. It stimulates endothelial cell proliferation, migration, and survival, promoting the growth and development of blood vessels during embryogenesis, tissue repair, and pathological conditions such as tumor growth.
VLDLR	VLDLR is a gene that encodes the very low-density lipoprotein receptor protein. VLDLR is expressed in various tissues, including the liver, brain, and adipose tissue. It functions in lipoprotein metabolism, specifically in the uptake and clearance of triglyceride-rich lipoproteins, such as very low-density lipoproteins (VLDL) and chylomicrons. VLDLR plays a role in lipid homeostasis, cardiovascular health, and neuronal development.
WNK1	WNK1 is a gene that encodes the WNK lysine-deficient protein kinase 1. WNK1 is expressed in multiple tissues and plays a role in regulating ion transport and blood pressure. It is involved in the regulation of electrolyte balance, particularly sodium and potassium ions, in the kidneys and other organs.
ZPR1	ZPR1 is a gene that encodes the zinc finger protein ZPR1. ZPR1 is expressed in various tissues and is involved in diverse cellular processes, including mRNA transport, nuclear-cytoplasmic shuttling, and regulation of protein translation. It interacts with RNA-binding proteins and components of the translation machinery, influencing gene expression and protein synthesis.

Glossary

NUTRIGENETICS GLOSSARY

Absorption: uptake

Allele: one of the variants of genetic material on a specific location (locus) of the chromosome. An individual has a chromosome pair where there are two alleles, which can be identical (homozygosis) or not (heterozygosis). Different alleles in a human population can be the reason for inherited characteristics, such as blood type or hair color.

Alkaloid: a natural substance that is found in plants and has a bitter taste.

Amino acid: a basic structural unit, from which protein is built. Its formation is encoded in DNA with three sequential nucleotides, which in different combinations give different amino acids: GCU is the code for amino acid alanine, UGU for cysteine…

Anticarcinogenic: prevents the development of cancer.

Antioxidants: substances which protect us from oxidative stress.

Artery: a blood vessel that carries blood away from the heart. The main artery is the aorta.

BMI: body mass index. Body mass divided by the square of body height (kg/m 2).

Carbohydrates: apart from proteins and fats, it is the main macronutrient. It is the basic source of energy.

Caucasians: a term generally used in scientific articles for members of the white race.

Cell respiration: a basic process where energy, carbon dioxide and water are formed from glucose and oxygen.

Chromosome: a stick-like form of DNA molecule, which encodes hundreds or thousands of genes. In the nucleus, there are 22 autosomal chromosome pairs and 2 sex-determining chromosomes. In addition to the molecules of DNA, there are also proteins (mostly histones) present, around which the DNA is coiled. Such coiling and further formation result in a tightly formed chromosome, which takes up less space than an uncoiled molecule.

Chromosome (autosomal): a chromosome, where both of the chromosomal pairs are similar. One chromosome out of the pair is given to an individual by his father and the other chromosome from his mother.

Chromosome (sex): there are X (female) and Y (male) chromosomes existing. Women have a pair of two X chromosomes (XX), and men have an X and Y chromosome (XY), from which Y is inherited only from the father. Its presence/absence determines the sex of the child.

Chylomicron: it helps cholesterol in passing through the intestinal mucus, and it contains a minimal amount of cholesterol and triglycerides.

Cofactor: non-protein compound, bound to a protein, and is necessary for protein's biological activity.

Common variant (copy) of the gene: DNA sequence of the analyzed locus, which contains a nucleotide that is more common in a population (its frequency is higher than 50 per cent).

Complex carbohydrates: compound carbohydrates, which are slowly digested, and energy is provided for a long time, which makes us feel satiety longer. The increase in blood sugar level is slow, and not rapid, as in simple carbohydrates.

Creatine phosphate: a high-energy molecule, which is a source of energy for the muscle.

Detoxification: the process of removing harmful substances.

Diabetes: a chronic state in which pancreatic cells do not produce enough insulin or the body cannot effectively use the produced insulin.

Dimethylation: the addition of two methyl compounds.

DNA: a molecule, found in the cell nucleus, which carries the instructions for the development of an organism. Human DNA is consisted of four different nucleotides and has the form of a double-helix coil. This means that two chains of DNA, which are anti-parallel and coil around one another. Anti-parallel means that the nucleotide C is always paired with G, and A always with T.

Enzyme: a protein involved in chemical processes in the body. Its purpose is to reduce the activation energy required for chemical reactions, facilitating their course. This enables faster conversion of substrate to product, for example, conversion of starch into glucose.

Essential fats: plant fats necessary for our body.

Fats: important constituents and an energy source, which contains twice the amount of energy of carbohydrates or proteins.

Fibres: indigestible carbohydrates, which ensure good digestion and the feeling of satiety. They include cellulose, lignin, and pectin.

Free radicals: unstable chemical substances, which harm the cell.

Gene: Part of the DNA sequence that carries the information for the formation of protein. Genes are inherited from parents to their descendants and give information, which is needed for the formation and development of an organism.

Genetic analysis: review or the analysis of your genes.

Genetic makeup: is a general term, which is usually a synonym for genotype, or a variant of the DNA gene sequence. However, the term can also refer to the region of the genome, where the gene is not present.

Genetic risk: risk of, for example, excess body weight, lack of a vitamin or a mineral, which is determined by your genes.

Genome: the entire DNA which is present in the cell nucleus, and includes all the autosomal chromosomes, and both sex chromosomes.

Genotype: allele variants of a gene, present in an individual. Genotype can represent all of the alleles in a cell, but mostly it is used for describing one or more genes, which together influence a certain characteristic.

Glycaemic index: indicates how much a certain food increases blood sugar (it does not consider the amount of food).

Glycaemic load: indicates how much a certain food increases blood sugar (it considers the amount of food).

Glycogen: the basic structural form in which glucose is stored in our body.

Glucose: the basic representative of carbohydrates, also called blood sugar.

Hydrogenised fats: are trans fats, which are formed with the heating of plant oils at high temperatures.

Hypothalamus: is cherry-size part in the middle of the brain, and it is the centre of all information concerning endocrine hormones.

Insulin: a hormone that regulates blood sugar level.

Insulin resistance: the state of our body being irresponsive to insulin, the hormone that regulates blood sugar level.

Kcal: kilocalorie, in lay terms, simply calories.

Lactose: milk sugar, consisting of glucose and galactose.

LDL cholesterol: harmful to our health and this is why its level should be as low as possible.

Lipolysis: the process of fat metabolism.

Lipoprotein particles: bind cholesterol and transport it through the body.

Macronutrient: group, consists of carbohydrates, proteins and fats (saturated, monounsaturated, polyunsaturated).

Metabolism: the process of the breakdown, or formation of new substances in the body.

Micronutrients: nutrients our body needs in small quantities, but are nevertheless vital to our health. This includes vitamins and minerals.

Monounsaturated fats: an extremely beneficial type of fatty acids.

Monosaccharide: the most basic and simple carbohydrates such as glucose, fructose, and mannose.

Muscle fibres: cells that form muscles. Their name is due to their elongated shape.

Mutation: a random change in the genetic material. Deletions are mutations where nucleotides on the part of genetic material are erased (deleted), insertions, where there is an insertion of nucleotides on the part of the genetic material, and substitution, where nucleotides are replaced with other nucleotides.

Myoglobin: transports and stores oxygen in muscles.

Nucleotide: the basic unit of our DNA. Each unit consists of a phosphate group, pentose (sugar with five carbons in the ring) and nitrogenous bases. Between individual nucleotides, only the nitrogenous bases differ. In human DNA, there are four different nitrogenous bases (cytosine (C), guanine (G), thymine (T), and adenosine (A)) and, consequently, four different nucleotides.

Phenotypic features: the composite of an organism's observable characteristics or traits, such as eye color.

Polymorphism: the presence of two or more different alleles of one gene in the population. The result of this is the presence of several phenotypes. However, a different allele has to be present in more than one per cent of the population to be called polymorphism.

Polyunsaturated fats: a very beneficial type of fatty acids. They include omega-3 and omega-6 fatty acids.

Probiotic yoghurt: contains lactic acid bacteria, which help regulate digestion.

Refined: purified, industrially processed, and it unfavorably influences our health.

Rare variant (copy) of a gene: DNA sequence of the analyzed locus, which contains a nucleotide that is rarer in the population (its frequency is lower than 50 per cent).

Reactive oxygen species: highly reactive free radicals, which contain oxygen.

Saturated fats: mainly animal fats, also called "bad fats" because they increase cholesterol levels.

SNP (single nucleotide polymorphism): polymorphism at specific DNA site (locus), which occurs because of the substitution of one nucleotide with another (i.e. A → C). It represents a variation in the genetic makeup, which differs among people. These variations can be numerous because there are approximately 10 million SNPs in the human genome. The mentioned substitutions express in phenotypical differences (illnesses, characteristics) among individual people.

Tannins: plant polyphenolic compounds with a bitter taste. Tannins are notably found naturally occurring in grapes, tea leaves and oak.

Types of fats: in essence, we differentiate animal saturated fats and plant mono- and polyunsaturated fats.

Trans fats: also known as hydrogenated or bad fats, they are produced as a result of overheating the oil. They increase bad cholesterol and reduce the good one.

Triglycerides: structural form in which our body stores fat. A high triglyceride level in the blood is not healthy, and it is related to numerous medical conditions.

VLDL: very-low-density lipoprotein, responsible for the transport of cholesterol, produced by the liver.

Unsaturated fats: fats of vegetable origin, exceptions are coconut and palm oil.

SPORTS GENETICS GLOSSARY

Absolute strength: it refers to the ability to move objects, expressed in terms of absolute weight. For example: “She can squat 80 kilos for one repetition”.

Cardiac output: the amount of blood that is moving through our cardio-vascular system in a minute.

Cardiovascular endurance: a description of overall aerobic capacity, which includes central (heart, lungs, blood vessels) and peripheral (muscles) components.

Continuous training: the training that involves low to moderate-intensity activity without rest intervals: walking, cycling, running, swimming.

Endurance (strength/muscular endurance): strength endurance is the ability to execute a high number of repetitions with a given weight or to sustain a static muscular contraction for a long period of time.

Explosive strength: the ability to express strength in a very fast manner.

Heart rate: number of heart contractions per minute.

Hypertrophy: the term, related to cell growth, used when talking about muscle growth or fat cells volume changes.

Intensity: the level of exertion. Or, “how hard is the effort, relative to one’s maximal capacity”. In the endurance field, intensity usually refers to a given per cent of the maximal heart rate (e.g. 70% HRmax for a moderate Intensity). In the strength training field, it is usually presented by RM (repetitions maximum).

Interval training: training that combines bouts of moderate to high-intensity performance with rest periods between them. The intensity of the bouts and the recovery time should be well planned and depend on the final goal of the training.

Maximal strength: the maximal weight one can lift in a given movement pattern.

Plyometric exercise: the exercise that engages the so-called “short-stretching cycle”. Some examples: hoops, landing to jumping transition, medicine ball drills.

Power: the mechanical work (W) done in a certain period of time (t), or W/t. The units of power are “Watts”. As work equals force times distance (d), or F*d, Power turns to be Force*Speed (d/t) or, applying to an athlete’s ability and formulated in an accessible language - Power is the ability to express force in a fast manner.

Prehab: a term, used to define a set of activities that aim to take care of known intrinsic (related to a person) injury risk factors. Some of the risk factors cannot be treated by an exercise intervention, but others definitely can. Among the risk factors that can be accessed and treated by exercise are: inadequate range of motion; strength, timing and motor control deficits, asymmetry and low aerobic fitness. Usually, those Prehab interventions are prescribed after an appropriate screening procedure and are extremely personal, according to the activities the person takes part in and matching their personal characteristics. The athlete is guided to perform the set of exercises (self-myofascial release, mobility drills, stretching, strengthening, aerobics, etc.) as a special warm-up routine or as an additional training session itself.

Rate of perceived exertion (RPE): an alternative way to measure the intensity of the training effort. The person evaluates his own level of effort by grading it on the 6–20 scale (BORG scale) or 0–10 (OMNI scale). Researchers have found that a high correlation exists between the subjectively evaluated level of exertion and the scientifically measured one (%HRmax or %VO2max).

Relative strength: it describes the capability to execute bodyweight exercises (e.g. chin up, handstand push-ups) or to move external objects when the weight is expressed relative to his/her body weight. For example: “He can deadlift 2 times his body weight” (2BW).

Resting heart rate (RHR): the number of heartbeats per minute in a seated posture, measured after a rest period. When you wake up in the morning, sit on your bed and count the heart rate (beats per minute) before you get involved in any kind of activity.

RM (repetitions maximum): the maximal number of repetitions that may be executed with a “strict form” in a given exercise. For example, if someone’s RM10 for Back Squat is 80 kg, this means that a person can lift an 80 kg barbell 10 times. RM1 refers to the maximal intensity (the weight that can sport-specific only one time).

Strength: the term is usually used to describe one’s ability to apply force to external objects.

Stroke Volume: the amount of blood that is pumped out from the heart to aorta with a single heart contraction.

Training methods: among the most widely used methods are continuous training and interval training. Other training methods are a variation or a combination of these two. Some forms of the methods are tempo, fartlek, HIIT, circuit training and time or volume-dependent density training (AMRAP, AFAP).

Training principles: the principle of training designed for the achievement of the desired goals. The established principles are universal, but their applications should be adapted for the given field and person. Most of the principles are grounded in sports science and approved by time. The most well-known principles are the overload principle, specificity principle, individualization principle, reversibility principle and diminishing returns principle.

VO2max: the label for the maximum oxygen consumption of an individual which indicates the maximal volume of oxygen our body is able to use within one minute.

Volume: the “amount of the work done”. In the endurance field, it refers to the distance “covered” or to the time spent for the activity, while in the strength training field, it usually means the total amount of repetitions done.

Weight/resistance training: any type of training with an external resistance/load, aimed to develop various types of strength (maximal strength, strength endurance, explosive strength) or to “build” muscle tissue. The volume, the intensity and the manner of exercise execution will define the main outcome of resistance training.

Weightlifting: an Olympic sport event, where the athletes lift the loaded barbell from the ground to overhead in two lifting styles: Clean and Jerk technique and Snatch. The aim is to lift the highest weight possible. In CROSSFIT and in sport-specific training, those two lifting styles and their components (clean, jerk, hang clean, power snatch) are used for power development.

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