INTRODUCTION

This document is your genetic report, which is a straightforward and non-technical presentation of your Nutrigenetics test. The insights obtained from learning about your genes may enable you, in partnership with your healthcare provider, to formulate a plan to live a longer, healthier life. Our Nutrigenetics report tells you how specific genetic variants in your DNA can affect the way you respond to foods and nutrients in order to optimize your diet. Genetic variants are small differences in DNA observed among individuals. Although these variations do not directly cause a disease, they influence how a gene provides the instructions to make proteins. By adjusting and optimizing your diet based on your Nutrigenetics report, you may positively mitigate your risk of developing certain health conditions such as diabetes, obesity, cardiovascular diseases (CVDs), osteoporosis, hypertriglyceridemia (high triglycerides in your blood) and chronic systemic inflammation.

This test is not intended to diagnose any specific disease but rather to provide you with some information on key genetic variations that may influence your susceptibility to health issues in relation to your diet. While the Nutrigenetics test can help you maximize the benefits of a balanced diet, we recommend speaking with your healthcare provider before making big adjustments to your diet and routine. It is especially important to speak with your healthcare provider if you have an existing health condition.

LIMITATIONS AND OTHER IMPORTANT INFORMATION

- This test provides genetic risk information based on the assessment of specific genetic variants. It does not, however, report on your entire genetic profile nor does it report on all genetic variants related to a given nutritional need or related health conditions. Therefore the absence of a variant tested does not rule out the presence of others.
- This test does not provide INDEL mutation analysis (INsertions/DELetions). The genetic variants analyzed are SNPs (Single Nucleotide Polymorphisms). Other genetic risk tests may report different genetic variants for the same nutritional need/condition. You may get different results using a different nutrigenetics test.
- Other factors such as environmental and lifestyle factors may affect your risk of developing a given disease or health condition. This test is not a substitute for visits to your doctor or other health care professional, and you should consult with a healthcare professional if you have any questions or concerns about the results of your test or your current state of health.
- You may wish to speak to a genetic counselor, board-certified clinical molecular geneticist, or equivalent healthcare professional about the results of your test and to help answer any questions you may have. You can identify genetic counselors by visiting the National Society of Genetic Counselors website (https://www.nsgc.org). This test is not intended to
diagnose a disease or condition, tell you about your current state of health, or be used to make medical decisions, including whether you should take medications or alter medication dosages.
- The laboratory may not have been able to process your saliva sample in certain instances. In this case Dante Genomics will offer to send another kit to you to collect a second sample at no charge. If Dante Genomics'attempts to process the second sample are unsuccessful, Dante Genomics will initiate a full refund to the person who paid for the Service. For full Terms of Services, please visit: https://www.dantelabs.com/pages/terms-of-service
- This report has not been evaluated by the FDA. This product is not intended to diagnose, treat, cure, or prevent any disease.

INFORMATION FOR HEALTH CARE PROFESSIONALS

This test is not intended to diagnose a disease, determine medical treatments or cure a condition. The aim of a Nutrigenetics test is to provide users with validated and scientific information regarding some targeted genetic variants so they can improve their diet and lifestyle. This report is not intended to be used for children and pregnant/lactating women.

QUICK SUMMARY

LIPID METABOLISM

How we transform, use, store and eliminate (or metabolize) the fats we introduce to our diet has an enormous impact on our health and the risk of developing severe diseases. In this section, you will find the results of your Nutrigenetics test regarding the most well-studied and scientifically validated genetic variants that have been demonstrated to affect how you metabolize fats (lipids). By modulating the quantity and quality of fats you eat based on this genetic test, you may be able to keep your cholesterol and triglyceride levels under control, improve your weight and optimize your response to dietary fats. You will also find the genetic variants influencing your need for more omega 3.

CONDITION NAME	RESULTS	MAIN MESSAGE
Increased risk of Obesity and Metabolic syndrome	✓	Normal – No presence of genetic variants detected.
Omega 3/Omega 6 ratio	⚑	Flagged – Increase the intake of oily fish and decrease the consumption of vegetable oils such corn and sunflower, which are too rich in omega 6.
Lipid metabolism regulation	✓	Normal – No presence of genetic variants detected.

CIRCADIAN CYCLE AND METABOLISM

Several mechanisms regulate appetite and energy intake, including stress, sleep disturbances and dysregulated eating patterns (i.e., eating late at night and leaving long gaps between meals), which can negatively impact the quantity and quality of your food and the calories we introduce. Genetics can also influence our daily rhythms and appetite. In this section, you will find your Nutrigenetics test results regarding genes regulating energy intake and the physiological day-night cycles. Please note: genetic variants in the FTO gene (covered in the lipid metabolism section) may also affect your appetite.

CONDITION NAME	RESULTS	MAIN MESSAGE
Circadian rhythm and appetite regulation	⚑	Flagged – You should try to educate your body to have very regular rhythms (i.e. go to bed early and always at the same time, avoid skipping meals and have regular, physical activity), implement stress reduction strategies and techniques (i.e., meditation, yoga, mindfulness, relaxing activities and past times) and follow a balanced diet rich in lean protein, complex carbohydrates, fibers and MUFA such as extra virgin olive oil (EVOO) and omega 3 contained in oily fish. Avoid simple sugar and refined carbohydrates.

GLUCOSE & INSULIN HOMEOSTASIS

Maintaining average glucose and insulin levels is necessary to avoid developing insulin resistance and eventually type 2 diabetes (T2D). A chronic elevation in either glycemic (sugar levels in your blood) or insulin can also increase your body inflammation, cause weight gain, and predispose you to chronic diseases such as those affecting the cardiovascular system and kidneys. In this section, you will find the results of your Nutrigenetics test regarding the most well studied and scientifically validated genetic variants that have been demonstrated to increase T2D risk and affect how you respond to sugars and carbohydrates. Therefore, if your results show that you carry variations in these genes, you may decrease your risk by improving the types and quantity of carbohydrates in your diet.

CONDITION NAME	RESULTS	MAIN MESSAGE
Risk of Type II diabetes	✓	Normal – No presence of genetic variants detected.
Fat mass and insulin sensitivity	✓	Normal – No presence of genetic variants detected.

METHYLATION

Homocysteine is an amino acid produced via the metabolism (demethylation) of dietary methionine, an essential amino acid present in animal protein. Homocysteine must be recycled back and transformed again into methionine or converted into cysteine. This pathway requires adequate folate (vitamin B9), vitamin B6 and B12. Elevated homocysteine (hyperhomocysteinemia) is an independent risk factor for cardiovascular diseases (CVDs), atherosclerosis, hypertension and nervous system disorders. Even marginal deficiencies in folate, vitamin B12 and B6 or the presence of genetic variants in the critical enzymes needed for homocysteine metabolism can lead to hyperhomocysteinemia. In this section, you will find the results of your Nutrigenetics test regarding the most well-studied and essential gene involved in the folate metabolism, which directly influences homocysteine level.

CONDITION NAME	RESULTS	MAIN MESSAGE
Homocysteine level	⚑	Flagged –Supplement directly with 5-Methyltetrahydrofolate to bypass the first metabolic step and provide the bioactive form of folate.

INFLAMMATION

Inflammation is a standard and physiological response that our body uses to increment the immune activation to fight infections and the beneficial process needed to get rid of toxins and facilitate proper wound healing and tissue repair. The problems arise when inflammation is out of control or becomes chronic, as this can cause severe tissue and organ damage. Conditions such as overweight and obesity, auto-immune disorders, T2D, allergies, and others are characterized by a dangerously chronic state of inflammation. Genetics plays an essential role as it may influence how we start and control inflammation. In this section, you will find the results of your Nutrigenetics test regarding the most well-studied and scientifically validated genetic variants that affect the formation and quantity of three of the most essential pro-inflammatory cytokines (particular proteins that stimulate the immune system and regulate inflammation).

CONDITION NAME	RESULTS	MAIN MESSAGE
Regulation of inflammation		Flagged – You may be more prone to a higher-than-normal inflammatory state.

DETOXIFICATION

Liver detoxification occurs in two phases; in Phase I, toxins are transformed into intermediate metabolites, which can be even more reactive and potentially detrimental. The enzymes in this phase belong mainly to a family called CYP 450. In Phase II, these intermediates are “conjugated” (bound with) other molecules to make them more soluble and easier to be excreted. In this section, you will find the results of your Nutrigenetics test regarding the most well-studied and scientifically validated genetic variants in two essential CYP 450 encoding genes and two genes encoding for Phase II enzymes. If you carry one or more of these variants, you should aim to balance both Phases of liver detoxification.

CONDITION NAME	RESULTS	MAIN MESSAGE
Estrogen and xenobiotics metabolism		Flagged – Increase the intake of antioxidants containing-foods and magnesium to support hormones detoxification. Avoid cigarette smoking, charred meat and polluted areas. Increase the intake of fresh vegetables and fruits.

OXIDATIVE STRESS

Oxidative stress is caused by an unbalance between the production of free radicals and the number of available antioxidants in our body. Oxidative stress causes damage at every level, from cells to tissues to organs. DNA, fatty acids and proteins are particularly sensitive to the effects of free radicals. Oxidative stress can cause or aggravate various diseases and can accelerate ageing. For this reason, we introduce antioxidants such as vitamin A, C, E and polyphenols (in significant amounts in foods such as berries, green tea, EVOO, cocoa, soya and generally in fresh and colorful fruits and vegetables) through diet. We also have an internal antioxidant system regulated by special enzymes. In this section, you will find the results of your Nutrigenetics test regarding two genes that encode critical antioxidant enzymes. In case of genetic variations, you may need to increase the intake of antioxidants and decrease the overall oxidative stress by avoiding exposure to chemicals, having plenty of sleep and avoiding overeating.

CONDITION NAME	RESULTS	MAIN MESSAGE
Antioxidant defenses		Flagged – Protect yourself by avoiding the exposure to chemicals and increase the intake of fresh fruits and vegetables, rich in antioxidants.

VITAMINS AND MINERALS

The importance of vitamins and minerals for the well-being of our organism is easily revealed by the serious consequences that can be encountered in the event of a deficiency. These nutrients, of which small quantities are sufficient, although they do not possess an ”energy value”, are indispensable in numerous physiological processes (such as vitamin A in vision or K in blood coagulation) and metabolic processes (especially vitamins of the group B). Furthermore, vitamins act as enzymatic and antioxidant cofactors, regulate the homeostasis of other elements (just think of the role of vitamin D in calcium metabolism) and allow correct fetal development, especially as regards the nervous system. Minerals, of inorganic nature, are divided into macro and microelements based on their quantities, and are indispensable in the hydro-salt balance, enzymatic function, muscle contraction (calcium) and hormone synthesis (iodine), among other functions. In this section of your Nutrigenetics report, you will find the most well-studied and scientifically validated genetic variants that have been demonstrated to influence vitamin and minerals levels.

CONDITION NAME	RESULTS	MAIN MESSAGE
Risk of vitamin D deficiency		Flagged – Increase your dietary sources of vitamin D and the exposure to sunlight.

SENSITIVITIES

Our body may react in a negative or inappropriate way to certain substances contained in foods and beverages. These reactions are not proper allergies but a sort of sensitivity, which may or may not involve the immune system. In this section of your Nutrigenetics report, you will find the results regarding genetic variants that affect the way you metabolize caffeine, alcohol and lactose. These polymorphisms do not cause any propensity to allergic reactions but change the function of specific enzymes that metabolize these substances.

CONDITION NAME	RESULTS	MAIN MESSAGE
Caffeine sensitivity		Flagged – Opt for caffeine-free drinks and herbal teas. Avoid excess of dark chocolate/pure cocoa products. Caffeine is also a potent diuretic: drinking too much coffee and/or tea may lead to dehydration. Major sources of caffeine: coffee, tea, guarana', yerba mate, cocoa, cola. Be aware that energy drinks and some supplements may also contain caffeine as a stimulant. If you are pregnant (especially in the last trimester) or taking oral contraceptives, you may metabolize caffeine slower. Smoking can accelerate the breakdown of caffeine.
Alcohol sensitivity		Normal – No presence of genetic variants detected.
Lactose sensitivity		Normal – Your genotype is not associated with increased risk of lactose sensitivity.

KEY SUMMARY

The Summary provides an overview of the predicted risks for the patient. This information is based solely on genotype information and does not replace a doctor visit or a complete patient profile. Additionally, healthcare providers should consider family history, presenting symptoms, current prescriptions, and other factors before making any clinical or therapeutic decisions.

Normal – No presence of genetic variants detected.

We have identified one or more risk variants.

Increased risk of Obesity and Metabolic syndrome

RESULTS

ADIPOQ: gene encoding for adiponectin, which regulates fats and glucose metabolism. Genetic variants can cause a lower-than-normal level of adiponectin, which predisposes you to being overweight, have insulin resistance and increases the risk of Metabolic Syndrome. If you are a carrier of these variants, you should decrease the intake of saturated fats, simple sugars and refined carbohydrates.
FTO: fat mass and obesity associated gene. Genetic variants may significantly increase your risk of being overweight, predispose you to eat more and metabolize fats and sugars less efficiently. If you are a carrier of these variants, you should decrease the intake of saturated fats and preferably follow a Mediterranean diet.

Normal – No presence of genetic variants detected.

Omega 3/Omega 6 ratio

RESULTS

FADS1: gene encoding for Delta 5 desaturase. Genetic variants may increase the levels of Arachidonic Acid (pro-inflammatory) and increase your need for omega 3. If you are a carrier of these variants, you should increase the intake of oily fish and decrease the consumption of vegetable oils such as corn and sunflower, which are too rich in omega 6.
FADS2: gene encoding for Delta 6 desaturase. Genetic variants may increase the levels of circulating omega 6, elevating the risk of inflammation. If you carry these variants, you should increase the intake of oily fish and decrease the consumption of vegetable oils such as corn and sunflower, which are too rich in omega 6.

We have found one or more risk genetic variants.

VARIANTS FOUND

Gene	rsID	Genotype	Message
FADS1	rs174546	CT	T allele decreses desaturase activity.

Lipid metabolism regulation

RESULTS

PPARG: gene encoding for the peroxisome proliferator-activated receptor gamma, the "master" regulator of fat and glucose metabolism. Genetic variants may negatively affect your lipid profile, causing an increase in triglycerides and cholesterol. If you are a carrier of these variants, you should increase the intake of unsaturated fats and omega 3.
APOA5: this gene encodes for the Apolipoprotein A5, which plays a central role in TGs transport and metabolism. Obese individuals tend to have lower levels of apolipoprotein 5, which seems to be inversely correlated with BMI. Although the exact mechanisms trough which Apo5 decreases TGs and cholesterol are not completely understood, it is believed that it may work by activating the lipoprotein lipase. Genetic variants in this protein may cause an increase in TGs and LDL and a decrease in HDL.
PLIN: gene encoding perilipin, a protein that regulates basal and hormone-stimulated lipolysis. It modulates lipid metabolism by covering and protecting the lipid droplets from lipase attack until the lipids can thus be broken down into glycerol and free fatty acids.

Normal – No presence of genetic variants detected.

Circadian rhythm and appetite regulation

RESULTS

CLOCK: gene encoding for a key protein regulating circadian rhythms. Genetic variants in this gene may cause disturbances in your sleep patterns and response to stress and make you introduce more calories than needed.
MC4R: gene encoding for the Melanocortin 4 receptor, a protein expressed mainly in the brain and in the gut. This protein strongly influences the number of calories we introduce. Genetic variants in this gene may cause an increased appetite and a tendency to consume more high fat foods.
GHRL: gene encoding the ghrelin-obestatin preproprotein, which is cleaved to produce two peptides, ghrelin and obestatin. Ghrelin has been shown to be a powerful appetite stimulant. In addition, it is involved in energy homeostasis and various processes such as gastrointestinal motility, gastric acid secretion and pancreatic glucose-stimulated insulin secretion. Genetic variants in this gene may cause an increased appetite and a tendency to consume more sugary foods.

We have found one or more risk genetic variants.

VARIANTS FOUND

Gene	rsID	Genotype	Message
CLOCK	rs1801260	AG	Carriers of G allele have increased appetite and may struggle losing weight. They have a tendency to introduce more fatty foods and have high BMI or obesity. Carriers of G allele have increased appetite and may struggle losing weight. They have a tendency to introduce more fatty foods and have high BMI or obesity.

Risk of Type II diabetes

RESULTS

TCF7L2: gene encoding for the Transcription factor 7- like 2, a protein that has a powerful effect on the regulation of sugar and fat metabolism. Genetic variants in this gene strongly predict the risk of developing T2D.
SLC2A2: gene encoding for the Glucose transporter 2 (GLUT2), a protein that regulates how glucose is transported to cells and used to produce energy. Genetic variants in this gene might cause an incorrect utilization of glucose and increase the risk of having hyperglycemia (high blood sugar levels) and insulin resistance (poor response to insulin).
G6PC2: gene coding for an enzyme belonging to the family of catalytic subunits of glucose-6-phosphatase. This enzyme plays a fundamental role in the final phase of the gluconeogenic and glycogenolytic pathways, allowing the release of glucose into the bloodstream and therefore playing a key role in its homeostatic regulation.

Normal – No presence of genetic variants detected.

Fat mass and insulin sensitivity

RESULTS

FTO: fat mass and obesity associated gene. Genetic variants may significantly increase your risk of being overweight, predispose you to eat more and metabolize fats and sugars less efficiently. If you are a carrier of these variants, you should decrease the intake of saturated fats and preferably follow a Mediterranean diet.

Normal – No presence of genetic variants detected.

Homocysteine level

RESULTS

MTHFR: this gene encodes for methylenetetrahydrofolate reductase, which is the key enzyme converting 5,10-methylenetetrahydrofolate to 5-methyltetrahydrofolate (5-MTHF). 5-MTHF is the biologically active form of folate needed to convert homocysteine (Hcy) to methionine. Genetic variants in this gene can affect the enzyme activity and may cause an increased Hcy level. As Hcy is considered an independent risk factor for CVDs, its levels must be kept within normal range. If risk alleles that may impair MTHFR activity are detected, it is advisable to supplement directly with 5-Methyltetrahydrofolate to bypass the first metabolic step and provide the bioactive form of folate.

We have found one or more risk genetic variants.

VARIANTS FOUND

Gene	rsID	Genotype	Message
MTHFR	rs1801133	GA	Carriers of A allele have a less efficient enzyme activity and, consequently, may have higher level of Hcy and low levels of folate. The enzyme activity can be reduced by 70% in homozygous for T and up to 35/40% in heterozygous.
MTHFR	rs1801131	TG	Carriers of G allele may have a less efficient MTHFR activity, high Hcy and low folate.

Regulation of inflammation

RESULTS

IL-6: gene encoding for interleukin 6, one of the most powerful pro-inflammatory cytokines. Elevated IL-6 are observed in conditions such as depression, obesity, Multiple Sclerosis and several other autoimmune disorders and also acute hyperinflammatory responses (i.e., cytokine storm and severe allergic reactions). If you carry a genetic variation in this gene, you may be more prone to a higher-than-normal inflammatory state.
IL-1 beta: gene encoding for interleukin 1 beta, one of the most important cytokines involved in the initiation and perpetuation of inflammatory responses. Elevated levels of IL-1 beta are observed in autoimmune disorders such as Rheumatoid arthritis and IBD. If you are a carrier of this genetic variation, you may be more prone to a higher-than-normal inflammatory state.
TNF-alpha: gene encoding for the tumor necrosis factor alpha, a pro-inflammatory cytokine and adipokine. If you are a carrier of this genetic variation, you may be more prone to a higher-than-normal inflammatory state.
IL-1 alpha: gene encoding for interleukin-1 alpha, a protein belonging to the interleukin-1 family of cytokines. This cytokine is involved in the immune response, inflammatory processes and also in hematopoiesis. Genetic variants in this gene are associated with the development of autoimmune diseases and Alzheimer's disease. If you are a carrier of this genetic variation, you may be more prone to a higher-than-normal inflammatory state.

We have found one or more risk genetic variants.

VARIANTS FOUND

Gene	rsID	Genotype	Message
IL-6	rs1800795	CG	Carriers of G allele may have high circulating IL-6, which can increase the severity of inflammatory conditions. CRP can also be higher. Moreover, G allele has been found to be positively associated with T2D risk and PCOS.
IL-1 beta	rs1143634	GA	Carriers of A allele may be more prone to inflammation and auto-immune diseases.
TNF-alpha	rs1800629	GA	Carriers of A allele may have high level of TNF alpha and be predisposed to inflammatory conditions (such as RA) and auto-immune diseases.

Estrogen and xenobiotics metabolism

RESULTS

COMT: gene encoding for catechol-O-methyltransferase, the key enzyme of Phase II estrogens and catecholamines (adrenaline, noradrenaline and dopamine) detoxification. If you are a carrier of of this genetic variation, you may have problems in properly detoxifying estrogens and some neurotransmitters.
CYP1A1: gene encoding for the cytochrome P450 1A1 enzyme, responsible for the first transformation of several drugs and xenobiotics (foreign chemical substances). This enzyme is also involved in the first metabolism of estrogens. Genetic variants in this enzyme can cause an "accelerated" Phase 1 detoxification, with a subsequent overproduction of toxic intermediates.
CYP1B1: gene encoding for the cytochrome P450 1B1 enzyme, responsible for the first metabolism of several xenobiotics and estrogens. Genetic variants in this enzyme can cause an "accelerated" Phase 1 detoxification, with a subsequent overproduction of toxic intermediates, especially estrogens metabolites.
NQ01: NAD(P)H quinone dehydrogenase 1 gene is a member of the NAD(P)H dehydrogenase (quinone) family and encodes a cytoplasmic 2-electron reductase, which reduces quinones to hydroquinones. This quinone reductase is mainly involved in the detoxification of carcinogenes, such as those contained in cigarettte smoking, estrogens and diet-derived compounds. Moreover, this enzyme is a component of the plasma membrane redox system generating antioxidants. Genetic variants can decrease its enzymatic activity and lead to impaired detoxification and oxidative stress.

We have found one or more risk genetic variants.

VARIANTS FOUND

Gene	rsID	Genotype	Message
COMT	rs4680	AA	A allele carriers may have a lower-than-normal COMT activity and potentially high level of estrogens.
CYP1B1	rs1056827	CA	A allele carriers may have an increased production of estrogenes metabolites.
NQ01	rs1800566	GA	A allele may have an impaired enzymatic activity with subsequent increase and accumulation of toxic compounds.

Antioxidant defenses

RESULTS

GPX1: gene encoding for Glutathione peroxidase. 1. Genetic variants in this gene may lead to an increase in oxidative stress. If these variants are present, avoid the exposure to chemicals, pesticides, heavy metals and cigarette smoking. Increase the intake of fresh fruits and vegetables rich in antioxidants. Be sure to eat foods rich in selenium such as Brazil nuts, seafoods and organ meats.
MnSOD: gene encoding for the superoxide dismutase enzyme in mitochondria (the "powerhouse of the cell"). Genetic variants in this gene can decrease the activity of the enzyme, which, can be protective against oxidative stress as less dangerous intermediate substances are created. If you do not carry this variant, you should still protect yourself by avoiding the exposure to chemicals and smoke and increase your antioxidant intake.

We have found one or more risk genetic variants.

VARIANTS FOUND

Gene	rsID	Genotype	Message
GPX1	rs1050450	GA	A allele carriers may have a high oxidative stress.
MnSOD	rs4880	AG	G allele carriers may have higher risk of oxidative stress, especially if the activity of CAT and GPX1 is not optimal.

Risk of vitamin D deficiency

RESULTS

VDBR: gene encoding for the vitamin D binding receptor, the protein responsible for transporting vitamin D and its metabolites in all cells. Genetic variants can cause a decrease in the circulating levels of the vitamin.
VDR: gene encoding for the vitamin D receptor, a protein responsible for regulating the biological effects of this vitamin. Genetic variants can cause lower than normal vitamin D levels and/or a decreased activity of this vitamin.
CYP2R1: gene encoding an enzyme called 25-hydroxylase, responsible for the first of two reactions for converting vitamin D into its active form, 1,25-dihydroxyvitamin D3 (also known as calcitriol). Variants in this gene can decrease vitamin D levels.

We have found one or more risk genetic variants.

VARIANTS FOUND

Gene	rsID	Genotype	Message
VDR	rs7975232	CA	Carriers of A allele may have decreased level of vitamin D.

Caffeine sensitivity

RESULTS

Caffeine is a natural chemical that we may consider as a sort of "drug" as it stimulates the central nervous system, increases heart rate and potentially can raise blood pressure. However, the reaction to caffeine is quite personal and not just related to the quantity ingested. Caffeine is metabolized mainly in the liver by specific enzymes.
CYP1A2: this gene encodes for a member of the Cytochrome P450 family of enzymes, which are responsible for Phase I of liver detoxification. This family of enzymes plays an essential role in drugs and chemicals metabolism and detoxification. Caffeine is degraded and metabolised by CYP1A2. Genetic variants in this gene can affect the activity of the enzyme (so, how well and fast it metabolizes caffeine). The so-called fast metabolizers can eliminate caffeine more quickly and, therefore, may result less sensitive to it, even at high dose.
ADORA2A: gene encoding for Adenosine A2a receptor, a member of the G-protein coupled receptor superfamily. When adenosine binds to this specific receptor, which is highly expressed in the basal ganglia of the brain, it can induce sleepiness and a sense of calmness. Caffeine binds with high affinity to ADORA2A and can counteract the effects of adenosine (it acts as an antagonist), making us more alert and focused. The presence of genetic variants in this gene can cause a higher sensitivity to caffeine that may lead to anxiety and difficulties in falling asleep.

We have found one or more risk genetic variants.

VARIANTS FOUND

Gene	rsID	Genotype	Message
ADORA2A	rs5751876	TC	Carriers of C allele may experience anxiety after consuming products containing caffeine, especially if they are infrequent caffeine users. The sensitivity to caffeine is more marked in homozygous carriers. People suffering from Panic and Anxiety disorders and carrying the risk variant should abstain from the consumption of caffeine.

Alcohol sensitivity

RESULTS

Alcohol (ethanol) is very rapidly absorbed in the stomach and first part of intestine. However, the same quantity of alcohol can be distributed in the body and have different effects according to the body size and sex. Lean individuals may be more heavily affected by alcohol consumption. In humans, alcohol is metabolized by two main enzymes: alcohol dehydrogenase (ADH) and aldehyde dehydrogenase (ALDH). Among the different forms of ALDH, ALDH2 is the most efficient enzyme that removes the very toxic acetaldehyde. This enzyme is mainly expressed in liver mitochondria. ALDH2: Genetic variants in ADH2 cause a dramatic reduction in the enzymatic activity and, therefore, ineffective removal and metabolism of alcohol. The functional polymorphism identified as rs671 is particularly common in East Asian population. This genetic variant makes the ALDH enzyme less effective, which causes adverse reactions after alcohol consumption.

Normal – No presence of genetic variants detected.

Lactose sensitivity

RESULTS

Lactose is a sugar contained in dairy products. It is digested by a specific enzyme called lactase, which breaks down the molecule of lactose into galactose and glucose, two simple sugars that can be easily absorbed in the small intestine. If you do not produce enough lactase or this enzyme is somehow less effective, lactose is not properly digested and is fermented by the bacteria in your gut. For this reason, lactose intolerant individuals experience unpleasant symptoms such as bloating, diarrhoea, intestinal cramps and nausea. Lactose intolerance is not the same as milk allergy! This intolerance is due to an enzymatic deficiency and although the symptoms can be troublesome, it is not life-threatening.

Normal – Your genotype is not associated with increased risk of lactose sensitivity.

VARIANTS FOUND

Gene	rsID	Genotype	Message
MCM6	rs4988235	AA	AA carriers have lactase persistence (they are able to digest lactose).

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GLOSSARY

ALLELE	An allele is a variant form of a gene that is located at a specific position (or genetic locus) on a specific chromosome. Humans have two alleles at each genetic locus, with one allele inherited from each parent.
CHROMOSOME	A chromosome is a condensed thread-like structure of DNA that carries hereditary information, or genes. Human cells have 22 chromosome pairs plus two sex chromosomes with a total of 46 per cell.
GENOME	A genome is an organisms'complete set of DNA, including all of its genes. Each genome contains all the information needed to build and maintain that organism. In humans, a copy of the entire genome—more than 3 billion DNA base pairs—is contained in all cells that have a nucleus.
GENOTYPE	A genotype is the genetic makeup of an individual organism. It may also refer to just a particular gene or set of genes carried by an individual. The genotype determines the phenotype, or observable traits of the organism.
ODDS RATIO	The odds ratio is a way of comparing whether the odds of a certain outcome is the same for two different groups. In this report, the odds ratio estimates the probability of a condition occurring in a group of people with a certain genetic variant compared to a group of people without that same variant. An odds ratio of 1 means that the two groups are equally likely to develop the condition. An odds ratio higher than 1 means that the people with the genetic variant are more likely to develop the condition, while an odds ratio of less than1 means that people with the variant are less likely to develop the condition.
PHENOTYPE	Phenotype is a description of an individuals'physical characteristics, including appearance, development and behavior. The phenotype is determined by the individual's genotype as well as environmental factors.
POPULATION ALLELE FREQUENCY	The allele frequency represents the incidence of a variant in a population. Alleles are variant forms of a gene that are located at the same position, or genetic locus, on a chromosome.
SNP	Single nucleotide polymorphisms, frequently called SNPs, are the most common type of genetic variation among people. A SNP is a variation in a single nucleotide that occurs at a specific position in the genome.