ARC SANCTUM

A Beautiful YOU

LIFESTYLE DNA REPORT

					Genetics & Epigenetics
Stealth Infections	Adrenal, Thyroid, & Sex Hormones	Immune Imbalance, Autoimmunity	Exercise, Movement & time in nature	Detoxification	Metal toxicity & Inflammation
Meditation & Spirituality	Gut health	Stress management & Sleep	Diet & Food intolerance	Methylation	Blood sugar, Lipids, Cholesterol & Metabolism

PERSONAL DETAILS

Name
DOB :
Gender : Male
Report No : 1113-SG230353
Report Date : 12-Nov-2023

Laboratory Info

Specimen Type : Saliva
Specimen ID :SG230353



Welcome to Your Personal **DNA Report.**

Thank you for choosing **ARC Sanctum** to understand your genetic profile. **ARC Sanctum** is a proprietary test developed by the market leader in personalized health improvement and nutrigenomics. Using the saliva samples provided by you, we have analyzed 1000+ genes to provide insights on your nutrient needs, food and dietary sensitivities, well-being, fitness, skincare, personality and physical traits.

The **ARC Sanctum** report covers aspects on how your genes influence the way your body processes and metabolises nutrients, including carbohydrates, fats, specific vitamins; your food sensitivities to certain nutrients found in foods; as well as how well your genes affect your exercise performance and skin condition in order to achieve the optimal health. In addition, report related to your personality and other traits aim to provide unique insightful perspectives to help you realise your potential in developing important personal aspects in your life.

With the report in hand, we hope to assist you in achieving your health and life goal, with personalised diet, nutrition, fitness, and other areas in daily life recommendation specially for you. We hope that you enjoy reading your unique DNA profile on the journey of self-discovery.

If you have any questions or concerns regarding any aspects of your report, kindly contact us at **0323807239**

ARC SANCTUM

Disclaimer: The test does not provide a diagnosis or treatment. The report and comments are for informational purposes only and should not be interpreted as specific professional medical advice. The results are based on tested genes and variations in the panel. Untested genes, variations, and nongenetic factors also influence your dietary and fitness needs or sensitivities. Please consult your doctor or qualified healthcare professional before making decisions about medical conditions, or before starting and stopping any treatment prescribed for you. The contents in this report, including (but not limited to) the interpretation of lab results and recommendations, may change in future versions as more scientific discovery and/or research become available. This report is based solely on the sample and information provided to our company and does not take all factors of the customer's care into account. Therefore, our company and employees shall have no liability to any person or entity with regards to claims, loss, or damage caused, or alleged to be caused, directly or indirectly, by the use of the information contained herein.

Table of Contents

About Nutrigenomics

What is Nutrigenomics? 06
Your DNA Results Summary: Nutrient Needs 07
Your DNA Results Summary: Food and Dietary Sensitivities 09
Your DNA Results Summary: Well-Being 10
Your DNA Results Summary: Fitness 11
Your DNA Results Summary: Skin Care. 13
References. 74

Your Results: Nutrient Needs

Protein pg.15
Omega-3 pg.16
Omega-6 pg.17
Fiber pg.18
Antioxidants pg.19
Vitamin A pg.19
Beta Carotene pg.20
Folic Acid pg.21
Vitamin B6 pg.22
Vitamin B12 pg.23
Vitamin C pg.24
Vitamin D pg.25
Vitamin E pg.26
Calcium pg.27
Iron pg.28
Zinc pg.29
Magnesium pg.30
Phosphorus pg.31
Coenzyme Q10 pg.32
Selenium pg.33

Your Results: Food and Dietary Sensitivities

Carbohydrates pg.35
Fat pg.36
Caffeine pg.37
Sweet Tooth pg.38
Salt pg.39
Taste pg.40
Alcohol pg.41
Lactose pg.42
Gluten pg.43

Your Results: Well-Being

Total Cholesterol pg.45
Low Density Lipoprotein (LDL) pg.46
High Density Lipoprotein (HDL) pg.47
Triglyceride pg.48
Obesity Risk pg.49
Metabolic Response pg.50
Appetite Control pg.51
Inflammatory Response pg.51
Anti-Inflammatory Response pg.52
Detox Phase I: Toxin Generation Speed pg.53
Detox Phase II: Cruciferous Vegetable Needs pg.54

Table of Contents

Your Results: Fitness

	Injury Risk	pg.56
	Oxygen Efficiency	pg.56
	Recovery Efficiency	pg.56
	Power	pg.57
	Endurance	pg.57
New	Sprint Performance	pg.58
New	Muscular Strength	pg.58
New	Athletic Ability	pg.58
New	Post-Exercise Heart Rate Recovery Rate	pg.59
New	Marathon Endurance	pg.59
New	Achilles Tendon Ruptures	pg.59
New	Anterior Cruciate Ligament Rupture	pg.60
New	Marathon Personal Best Time	pg.60
New	VO2 Max and Training	pg.60

Your Results: Skin Care

Skin Barrier	pg.62
Moisture	pg.62
Dermal Sensitivity	pg.62
Anti-photoaging	pg.63
Anti-tanning	pg.63
Freckles	pg.63
Anti-oxidant	pg.64
Elasticity	pg.64
Wrinkles	pg.64
Anti-Acne	pg.65
Cellulites	pg.65
Varicose Veins	pg.65

Table of Contents

Your Results: Personality and Physical Traits

Reward Dependence	pg.67	Memory Performance	pg.71
Agreeableness	pg.67	Hippocampal Volume	pg.71
Openness	pg.67	Cognitive Ability	pg.72
Extraversion	pg.68	Working Memory	pg.72
Parental Overcontrol	pg.68	Educational Attainment	pg.72
Novelty Seeking Behavior	pg.68	Word Reading Ability	pg.72
Harm Avoidance Behavior	pg.68	Intelligence	pg.72
Instant Gratification	pg.68	Hearing Ability	pg.72
Gambling Behavior	pg.68	Music Ability	pg.73
Resilience	pg.69	Linguistics	pg.73
Resurgence of Fear	pg.69	Earlobe Size	pg.73
Hypnotizability	pg.69	Genetic Weight	pg.73
Susceptibility to Framing	pg.69	Motion Sickness	pg.73
Excessive Daytime Sleepiness	pg.69	Body Fat Percentage	pg.73
Loneliness	pg.69	BMI	pg.74
Impulsivity	pg.70	Earwax Type	pg.74
Positive Affect	pg.70	Longevity	pg.74
Social Network	pg.70	Lean Body Mass	pg.74
Anger	pg.70	Sleep Duration	pg.74
Empathy	pg.70	Male-Pattern Baldness	pg.74
Social Rejection	pg.70	Waist Size	pg.75
Facial Emotion Recognition Ability	pg.71	Breast Size	pg.75
Hedonic Well-being	pg.71	Height	pg.75
Sensitive Personality	pg.71	Morningness	pg.75
Childhood Intelligence	pg.71	Bet-placing	pg.75

01.

About Nutrigenomics



What is **Nutrigenomics?**

One of the main factors that greatly influence your well-being is your diet. Standard nutritional guidelines tend to be on a one-size-fits-all approach, but do you know that your genetic makeup makes a difference to what and how much you should you eat to achieve optimal health? This is where nutrigenomics can help you. There is vast scientific evidence demonstrating the link between genetics, nutritional requirements and health. With the help of nutrigenomics, your diet can be tailored to your needs.

Nutrient Needs



Your nutrient needs, or the amount of a particular nutrient you need to consume, differs depending on your DNA. For instance, some individuals with certain genetic variations may be predisposed to low folic acid levels in their blood. For such individuals, their folic acid intake will need to be higher than the norm to achieve a normal level of this nutrient in their blood, i.e. they have higher needs for folic acid.

Do note that nutrient needs in this report reflects your genetic susceptibility and not your current nutrient status. The foods that you are eating may already be providing sufficient nutrients to make up for moderate or higher needs of a particular nutrient.

Food Sensitivity

How your body reacts to everyday foods is termed sensitivity. For example, a person who is sensitive to caffeine may show higher blood caffeine content (compared to someone who is not sensitive to caffeine) after taking a cup of coffee.

Do bear in mind that your actual end results can be influenced by your environment. For example, people who are sensitive to caffeine but have developed a tolerance to the substance may not feel anxious or experience rapid heartbeats after drinking coffee. However, their bodies' reaction to caffeine does not change even though they have developed a tolerance to it and they may still experience other side effects.

Your DNA Results Summary



Name : Kuladeva Retnam
Report No : 1113-SG230353
Report Date : 12-Nov-2023

Nutrient Needs

Protein (Pg.15)
Your results suggest that you need normal protein intake. Higher protein intake (25%-35% of daily caloric intake) may not improve weight loss, insulin resistance and metabolic health for this genotype.

Normal Needs

Omega-3 (Pg.16)
Your results suggest that you have normal omega-3 metabolism. Omega-3 is important for optimal brain function and heart health.

Normal Needs

Omega 6 (Pg.17)
Your results suggest that you need lower omega-6 intake.

Lower Needs

Fiber (Pg.18)
Your results suggest that you have have normal fiber needs. Try to maintain your fiber intake at 30-38 g/day for men and 21-25 g/day for women.

Normal Needs

Antioxidants (Pg.19)
Your results suggest that you have normal antioxidant activity. Antioxidants help fight aging and prevent diseases.

Normal Needs

Vitamin A & Beta-Carotene (Pg.20)
Your results suggest that you have higher vitamin A needs. Consider to increase vitamin A intake to over 900 ug/day for men and 700 ug/day for women.

Vitamin A

Higher Needs

Beta-Carotene

Normal Needs

Folic Acid (Pg.21)
Your results suggest that you have normal folic acid metabolism. Adequate folic acid intake is vital for heart and reproductive health.

Normal Needs

Vitamin B6 (Pg.22)
Your results suggest that your body is moderately efficient in metabolizing vitamin B6. Try increasing your intake of vitamin B6 for optimal energy levels and a strong immune system.

Moderate Needs

Nutrient Needs



Vitamin B12 (Pg.23)

Your results suggest that you have moderate absorption of vitamin B12. It is recommended that you consume more vitamin B12 for a healthy nervous system.

Moderate Needs



Vitamin C (Pg.24)

Your results suggest that you have normal vitamin C metabolism. Vitamin C is important for your skin and immune system.

Normal Needs



Vitamin D (Pg.25)

Your results suggest that you have normal vitamin D metabolism. Vitamin D is important for strong bones and muscles.

Normal Needs



Vitamin E (Pg.26)

Your results suggest that you have slightly higher vitamin E needs. Consider to increase vitamin E intake to over 15 mg/day for adults.

Moderate Needs



Calcium (Pg.27)

Your results suggest that you have slightly higher calcium needs. Consider to increase calcium intake to over 1200 mg/day for men and women. It is not advisable to exceed more than 2500 mg/day.

Moderate Needs



Iron (Pg.28)

Your results suggest that you have higher iron needs. Consider to increase iron intake to over 8 mg/day for men and 18 mg/day for women. It is not advisable to exceed the intake more than 45 mg/day.

Higher Needs



Zinc (Pg.29)

Your results suggest that you have higher zinc needs. Consider to increase zinc intake to over 11 mg/day for men and over 8 mg/day for women. It is not advisable to exceed more than 40 mg/day.

Higher Needs



Magnesium (Pg.30)

Your results suggest that you have normal magnesium needs. Try to maintain your magnesium intake at 400-420 mg/day for men and 310-320 mg/day for women.

Normal Needs



Phosphorus (Pg.31)

Your results suggest that you have normal phosphorus needs. Try to maintain your phosphorus intake at 700 mg/day for men and women.

Normal Needs



Coenzyme Q10 (Pg.32)

Your results suggest that you have higher coenzyme Q10 needs. Consider to increase coenzyme Q10 intake to over 60 mg/day for adults.

Higher Needs



Selenium (Pg.33)

Your results suggest that you have higher selenium needs. Consider to increase selenium intake to over 55 ug/day for adults. It is not advisable to exceed more than 400 ug/day.

Higher Needs

Food & Dietary Sensitivities

Carbohydrate (Pg.35)

Your results suggest that you have higher sensitivity to carbohydrates. You have lower tolerance to carbohydrates and may experience higher increases in blood sugar content after consuming carbohydrates.

Higher Sensitivity

Fat (Pg.36)

Your results suggest that you are sensitive to fats. Your cholesterol level is easily influenced by the amount of fat you consumed. Please refrain from taking too much fat.

Higher Sensitivity

Caffeine (Pg.37)

Your results suggest that you have moderate sensitivy to caffeine. Anxiety and sleep problems are more likely to show up even with low caffeine intake. Try cutting down your caffeine consumption.

Moderate Sensitivity

Sweet (Pg.38)

Your results suggest that you have higher preference towards sugar. Try to limit your sugar intake.

Higher Sensitivity

Salt (Pg.39)

Your results suggest that you are sensitive to salt. You have increased risk of high blood pressure. Be mindful of your salt consumption.

Higher Sensitivity

Taste (Pg.40)

Your results suggest that you are sensitive to taste. Your sensation of taste will be enhanced. Your eating behavior is more likely to be influenced by how foods taste.

Super Taster

Alcohol (Pg.41)

Your results suggest that you respond normally to alcohol. You have a better tolerance to alcohol and are less likely to blush. Don't drink more than you can handle.

Normal Sensitivity

Lactose (Pg.42)

Your results suggest that your body cannot tolerate lactose. Your lactose digestion is likely to be poor. Gut bacteria can help to alleviate symptoms of lactose intolerance and allow you to consume moderate amounts of lactose.

Intolerant

Gluten (Pg.43)

Your results suggest that you respond normally to gluten. You have the ability to digest gluten. Wheat is one of the grains that contain gluten.

Normal Sensitivity



Well-Being

Total Cholesterol (Pg.45)

You are more likely to have normal level of total cholesterol.

Normal Level

Low Density Lipoprotein (Pg.46)

You are at a moderate risk of getting higher level of LDL.

Moderate Level

High Density Lipoprotein (Pg.47)

You are more likely to have normal level of HDL.

Normal Level

Triglyceride (Pg.48)

You are at a moderate risk of getting higher level of triglycerides, please pay attention to your food intake.

Moderate Level

Obesity Risk (Pg.49)

Your results suggest that you have normal obesity risk. However, it is still important to consume a healthy balanced diet and be physically active.

Normal Risk

Metabolic Response (Pg.50)

Your results suggest that you have a genetic variation associated with normal metabolic rate. Maintain lean muscle mass by being physically active and consume three regular meals a day.

Normal Response

Appetite Control (Pg.51)

Your results suggest that you have normal appetite control. Try to consume a balanced healthy diet.

Normal Control

Inflammation (Pg.52)

You are part of the 85% of population with a normal inflammation response. You are less likely to develop arthritis.

Inflammatory Response

Normal Response

Anti-inflammatory Response

Decreased Response

Detox Phase I: Toxin Generation Speed (Pg.53)

Your results suggest that preserved foods will make your body produce more unhealthy chemical compounds. Over time, these toxins have the potential to harm your health by destroying your DNA and the protein in your cells.

Higher Speed

Detox Phase II: Cruciferous Vegetable Needs (Pg.54)

Your results suggest that you have normal detoxification speed. Aim for at least 1-2 servings per week of cruciferous vegetables.

Normal Needs

Fitness

Injury Risk
(Pg.56)

Your results suggest that you have a high risk of injury. To avoid injuries, take more time to prepare yourself before engaging in any exercise. Spend 5-10 minutes to stretch and warm up, and also remember to cool down after completing your exercise.

Higher Risk



Oxygen Efficiency
(Pg.56)

Your results suggest that you have normal oxygen efficiency. You can probably manage moderate-duration cardio sessions but find it difficult to complete longer-duration workouts. To enhance your body's ability to utilise oxygen more efficiently, consider endurance-training activities such as brisk walking, jogging or cycling for 30-45 minutes, 4-5 times each week. Higher oxygen efficiency means your body can produce more energy, allowing you to endure longer periods of exercise or physical activity.

Normal Efficiency



Recovery Efficiency
(Pg.56)

Your results suggest that you have a low post-exercise recovery rate, although this is not uncommon; about 8 in 10 people have this trait. Our body needs time to heal itself. Please give yourself additional time to recover between each exercise session (an additional 1-2 days of rest, on top of the usual 2-3 days) so that you can perform at your best. Although it is perfectly fine to stay active while you are recovering, try not to over-exert yourself.

Slower Recovery



Power & Endurance
(Pg.57)

Your results suggest that you have lower level of power. Power is the ability to move a weight with speed. Increase your muscle power by including some strength training or power-based workouts 2-4 times per week.Your results suggest that you have lower level of endurance. Try to increase endurance training. Examples of such exercises are swimming, cycling, jogging and hiking.

Power

Lower Power

Endurance

Lower Endurance



Fitness

Sprint Performance (Pg.58)

You are likely to show high sprint performance.

Higher Performance

Muscular Strength (Pg.58)

You tend to have greater muscular strength.

Stronger Strength

Athletic Ability (Pg.58)

Your sports performance is average, so it will take some effort to stand out.

Intermediate Ability

Post-Exercise Heart Rate Recovery Rate (Pg.59)

Your heart rate tends to recover more quickly after exercise.

Faster Recovery

Marathon Endurance (Pg.59)

Your running performance in a marathon is lower.

Lower Endurance

Achilles Tendon Ruptures (Pg.59)

You are less likely to have achilles tendon ruptures.

Normal Risk

Anterior Cruciate Ligament Rupture (Pg.60)

You are less likely to have ACL ruptures.

Normal Risk

Marathon Personal Best Time (Pg.60)

You are less likely to mark a better marathon personal record.

Weak Performance

VO2 Max and Training (Pg.60)

You are likely to show average peak oxygen uptake (VO2peak) after high-intensity interval training.

Average Improvement







Skin Care



Skin barrier (Pg.62)

Your results suggest that you have vulnerable skin barrier. Your genotypes lead to highly permeable keratinocytes which tend to lose water easily and susceptible to damages by foreign harmful substances. You can improve the performance of your skin barrier by keeping your skin moisturized.

Higher Sensitivity



Moisture (Pg.62)

Your results suggest that you have moderate skin moisture capacity. The FLG variant in your DNA could lead to a reduction in filaggrin protein which is important in maintaining the structure of the skin's outermost layer.

Moderate Capacity



Dermal Sensitivity (Pg.62)

Your results suggest that you do not have related variant which could increase the occurrence of sensitive skin.

Normal Sensitivity



Anti-photoaging (Pg.63)

Your results suggest that you have moderate anti-photoaging ability. Your genotypes are more likely to be associated with photoaging and to exhibit symptoms such as uneven skin tone and dullness.

Moderate Ability



Anti-tanning (Pg.63)

Your results suggest that you have weak anti-tanning ability. You are more easily tanned and your natural skin colour may be darker.

Weak Ability



Freckles (Pg.63)

Your results suggest that you are less likely to have freckles. Freckles are more common in light-skinned individuals, who usually also have difficulties in getting a tan, sunburn and sun spots.

Normal Risk



Anti-oxidant (Pg.64)

Your results suggest that you have strong anti-oxidant capacity. Your genotypes are unlikely to cause accumulation of superoxide and hydrogen peroxide which could lower your skin's antioxidant capacity and become more susceptible to aging.

Strong Capacity



Elasticity (Pg.64)

Your results suggest that you have strong skin elasticity. Your genotypes are not associated with lower collagen synthesis and higher collagen breakdown, which both contribute to the loss of skin elasticity.

Strong Elasticity



Wrinkles (Pg.64)

Your results suggest that you have moderate risk of glycation in the skin components. Try to reduce advanced glycation products by consuming more niacinamide, carnosine and green tea.

Moderate Risk



Anti-acne (Pg.65)

Your results suggest that you have strong anti-acne ability. You are less likely to have occasional acne breakouts or persistent acne for a period of time. That said, your personal experience could be different as this is also affected by any changes in your diet, sleep pattern and the environment.

Strong Ability



Cellulites (Pg.65)

Your results suggest that you have higher risk to develop cellulite.

Higher Risk



Varicose Veins (Pg.65)

Your results suggest that you are less likely to have varicose veins. Varicose veins tend to run in families as it can be inherited through the genetic variations in the MTHFR gene. Other non-genetic risk factors include obesity, aging, prolonged periods of sitting or standing and hormonal changes.

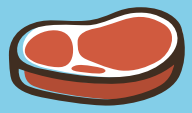
Normal Risk

02.

Your Results: Nutrient Needs

Nutrient Needs

PROTEIN



Your Result:



Your Action Items

- Maintain your protein intake at 56 g/day for men and 46 g/day women to build and maintain your bones, muscle and skin.
- Consume protein-rich foods from animal sources, such as meat, poultry, fish, eggs, milk, cheese and yogurt to provide all indispensable amino acids.
- For vegans, in order to meet protein and amino acid requirements, make sure to incorporate a variety of protein-rich, plant-based foods into the diet. This includes grains, beans, legumes, nuts, seeds and vegetables.

About Protein

Proteins are the building blocks of life that are present in every cell in our bodies. Amino acids are the basic structure of protein.

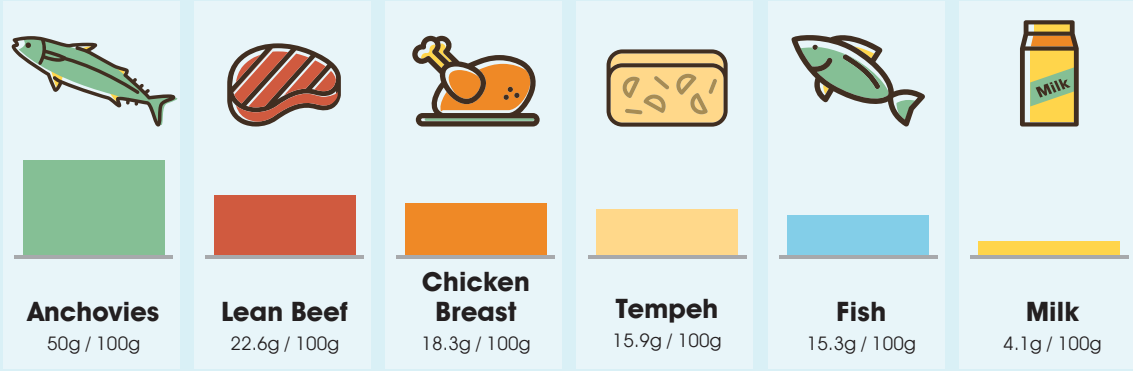
Risk of Insufficient Protein Intake

Lack of proteins leads to anemia, delayed wound-healing process and fractures. Low serum protein levels and hormonal changes might lead to edema and the affected person is susceptible to infection due to the reduced production of antibodies.

Importance of Protein

You need to consume enough protein daily as your body does not store it as protein, instead stores it as fats or carbohydrates. Protein from dietary foods are important to build and maintain bones, muscles and skin, help your body repair cells and make new ones and maintain growth and development in children, teens, and pregnant women.

GOOD SOURCES OF PROTEIN



Anchovies	Lean Beef	Chicken Breast	Tempeh	Fish	Milk
50g / 100g	22.6g / 100g	18.3g / 100g	15.9g / 100g	15.3g / 100g	4.1g / 100g

Random Facts

Proteins are digested into small units called amino acids. A number of amino acids are needed to maintain good health. "Complete proteins" contains all of the amino acids that your body cannot make and are usually from animal sources while "incomplete proteins" contains part of amino acids that your body cannot make and are usually from plant proteins. Therefore, individuals with vegan diet should eat a variety of plant proteins daily in order to get all of the amino acids that your body needs.

Your Genotype Table

		NADSYN1	FTO	Explanation
	Higher Needs	TT	AA	Your body has higher protein needs. Consider to increase protein intake to more than 56 g/day for men and more than 46g/day for women.
	Moderate Needs	GT	AT	Your body has slightly higher protein needs. Consider to increase protein intake to more than 56 g/day for men and more than 46g/day for women.
YOU ▶	Normal Needs	GG	TT	Your body has normal protein needs. Try to maintain your protein intake at 56 g/day for men and 46 g/day women.

Nutrient Needs
OMEGA- 3

Your Result:

Normal Needs | Moderate Needs | Higher Needs

Your Action Items

- Oily fish such as salmon, mackerel and tuna are high in omega-3, consider including these in your daily diet.
- You can also include plant-based foods that are rich in omega-3 such as chia seeds and flaxseeds. Limit the intake of omega-6 rich foods such as vegetable oils that is high in omega-6, which may reduce the absorption of omega-3.

About Omega-3

Our body cannot produce omega-3, but it is an essential fatty acid which is commonly known as the "good" fat. Omega-3 helps to ward off heart diseases through reducing the blood triglyceride levels and preventing clogged arteries.

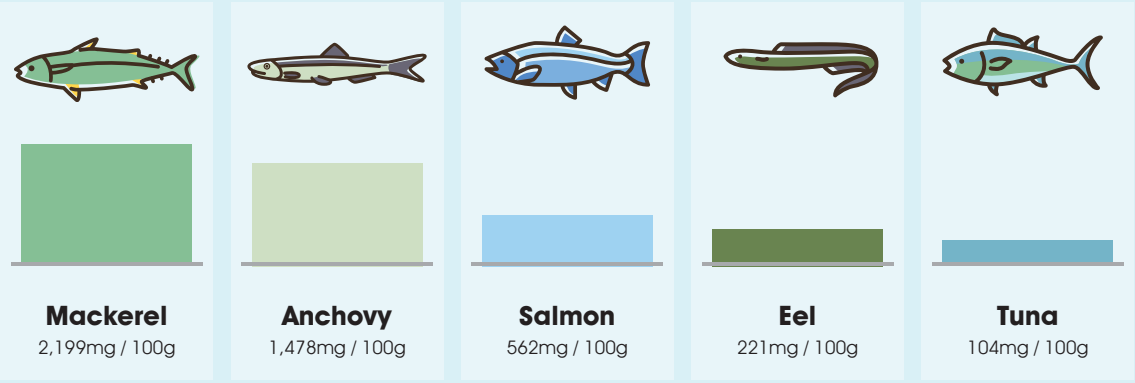
Risk of Insufficient Omega-3 Intake

You will stand a higher chance of getting heart diseases, elevated blood pressure, poor memory, dry skin and depression if you have extremely low level of omega-3.

Importance of Omega-3

Omega-3 is essential in supporting a healthy heart and circulatory system besides maintaining an optimal brain function and keeping inflammation at bay.

Milligrams of Omega-3 per 100g serving of popular fish



Mackerel	Anchovy	Salmon	Eel	Tuna
2,199mg / 100g	1,478mg / 100g	562mg / 100g	221mg / 100g	104mg / 100g

Random Facts

Surprisingly, omega-3 possesses the ability to boost the strength of bones. Most people consume much more omega-6 than omega-3 in the modern diet, although the ideal intake ratio is 1:1.

Your Genotype Table

	FADS1	MYRF	SFRPS	MYRF_1	Explanation
Higher Needs	CC	AA	CC	AA	You have higher omega-3 needs. Try to increase omega-3 intake by consuming 3 or more servings (at least 270g) of omega-3 rich fish in a
Moderate Needs	CT	AG	CA	AC	You have slightly higher omega-3 needs. Try to increase omega-3 intake by consuming 3 or more servings (at least 270g) of omega-3 rich fish in a week.
YOU ▶ Normal Needs	TT	GG	AA	CC	Try to follow standard recommended guidelines of 2 servings (1 serving ~ 90g) of omega-3 rich fish in a week.

Nutrient Needs

OMEGA-6



Your Result:

Moderate Needs Lower Needs

Your Action Items

- Consuming adequate intake of omega-6 from dietary sources such as nuts and seeds, poultry, wholegrains and eggs. Avoid the overcumption of omega-6 primarily from seed oils such as sunflower, corn and soybean oils as omega-6 may compete with the absorption of omega-3.
- Avoid overconsumption of omega-6 primarily from seed oils such as sunflower, corn and soybean oils as omega-6 may compete with the absorption of omega-3.
- Increase the consumption of omega-3 food sources such as salmon, anchovies or flaxseeds to get a balance intake of both omega 6 and omega 3.

1113-SG230353

About Omega-6

Scientists believe that omega-6s are pro-inflammatory, while omega-3s are anti-inflammatory. Inflammation is essential for your survival as it helps protect your body from infection and injury. However, excessive inflammation can be damaging and contributes to diseases in a long run.

Risk of Insufficient Omega-6 Intake

It is unlikely to have any insufficiency in the diet.

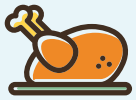
Importance of Omega-6

It is a component of structural membrane lipids that is required for normal epithelial cell function, cell signaling pathways and regulation of gene expression.

Foods rich in Omega-6



Soy Bean



Poultry



Nuts



Durum Wheat



Eggs

Random Facts

Omega 6 are abundant in our diet. We do not need to supplement it.

Your Genotype Table

		TNF	Explanation
you ▶	Lower Needs	AA	You have lower omega-6 needs.
	Moderate Needs	GG	You have moderate omega-6 needs.

Nutrient Needs
FIBER

Your Result:

Normal Needs | Moderate Needs | Higher Needs

Your Action Items

- Maintain your fiber intake to allow the natural bacteria to adapt to the change in your digestive system.
- Consume dietary fiber from whole-grain products, fruits, vegetables, beans, legumes, nuts and seeds.
- Drink plenty of water as fiber works best when it absorbs water.

About Fiber

Dietary fiber is a type of non-digestible carbohydrate from plant sources, either water-soluble and insoluble. Water-soluble fiber helps reduce the blood glucose and cholesterol levels. Insoluble fiber promotes digestion and prevents constipation. Both fibers make you feel full and stay satisfied longer.

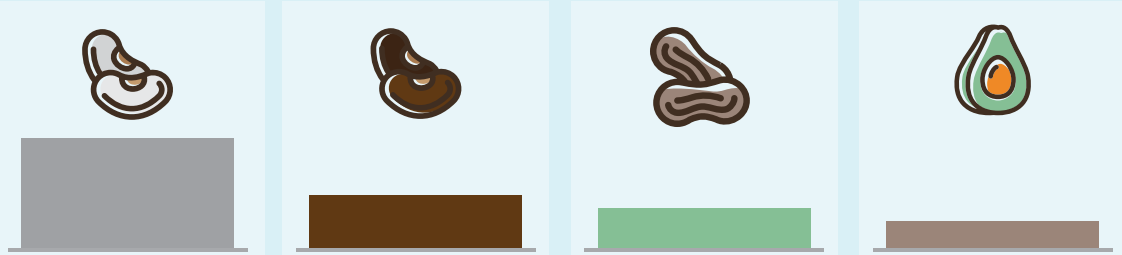
Risk of Insufficient Fiber Intake

Low dietary fiber disrupt your bowel movements and are susceptible to potential health risks such as cardiovascular disease.

Importance of Fiber

Water-soluble and insoluble fibers are found in different plant foods. To obtain these two type of fibers, you have to eat a wide range of high-fiber foods. High-fiber diet normalizes your bowel movements, lowers cholesterol leves and helps control blood sugar levels. Dietary fiber also promotes satiety, which may help you reduce energy intake and therefore reduce risk of obesity and coronary heart disease.

DIETARY FIBER RICH FOOD



White Beans	Black Beans	Peanuts (oil roasted)	Avocado
15.2g / 100g	6.9g / 100g	6.1g / 100g	5.8g / 100g

Random Facts

Although high-fiber foods are good for your health, consuming too much fiber too quickly can promote intestinal gas, abdominal bloating and cramping. It is advisable to drink plenty of water as fiber absorbs water to make your stool soft and bulky.

Your Genotype Table

	ZBED3	TCF7L2	Explanation
Higher Needs	GG	GG	Your body has higher fiber needs. Consider to increase fiber intake to over 38 g/day for men and over 25 g/day for women.
Moderate Needs	GA	GT	Your body has slightly higher fiber needs. Consider to increase fiber intake to over 38 g/day for men and over 25 g/day for women.
YOU ▶ Normal Needs	AA	TT	Your body has normal fiber needs. Try to maintain your fiber intake at 30-38 g/day for men and 21-25 g/day for women.

Nutrient Needs

ANTIOXIDANTS

Your Result:



Your Action Items

- Consume at least 2 servings of fruits a day (1 serving = ½ cup of fruit) such as berries, dragon fruit and papaya.

- Eat at least 3 servings of vegetables with different colours (such as carrots, spinach and red bell peppers) daily. One serving is equal to 1 cup of uncooked vegetable or 1/2 cup of cooked vegetable.

About Antioxidants

Vitamin A, C, E and trace mineral selenium are some of the antioxidants that can be found in fruits and vegetables. The detrimental effects of free radicals on our health include heart disease and cancer which can be reduced by antioxidants.

Risk of Insufficient Antioxidants Intake

The level of antioxidants in our blood is controlled by our genetics and the amount of antioxidants we ingest. Insufficient intake of antioxidants will lead to elevated levels of free radicals, which in turn destruct your body cells and DNA. Consequently, you will have higher risks of contracting cardiovascular disease, cancer, Parkinson's disease, Alzheimer's disease, rheumatoid arthritis and many more.

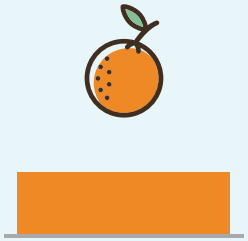
Importance of Antioxidants

Antioxidants provide protection against common colds, cardiovascular disease, cancer and auto-immune disease by countering the damaging effects of free radicals. Antioxidants can also resist premature aging by shielding the skin from the deleterious effects of the sun.

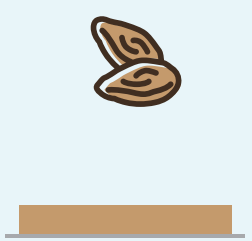
ANTIOXIDANT FOOD TABLE



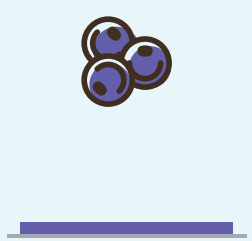
Broccoli
Vitamin K
101.6mg / 100g



Oranges
Vitamin C
53.2mg / 100g



Almonds
Vitamin E
25.6mg / 100g



Blueberries
Vitamin C
9.7mg / 100g

Random Facts

Antioxidants exhibit age-defying properties by combating the harmful effects of environmental exposures on our skin. Over exposure to pollution and ultraviolet (UV) light causes damage to our skin cells resulting in wrinkles, pigmentation and sagging. Antioxidants are abundant in goji berries, blueberries, pomegranates and bananas.

Your Genotype Table

	GPX1	CAT	SOD2	Explanation
Higher Needs	TT	TT	AA	Consume more than 5 servings of vegetables and fruits a day.
Moderate Needs	CT	CT	AG	Consume more than 5 servings of vegetables and fruits a day.
YOU ▶ Normal Needs	CC	CC	GG	Consume at least five servings of vegetables and fruits a day according to standard dietary guidelines.

Nutrient Needs

VITAMIN A

Your Result: Vitamin A

Normal Needs | Moderate Needs | Higher Needs

Your Result: Beta Carotene

Normal Needs | Moderate Needs | Higher Needs

Your Action Items

- Increase your vitamin A intake to 900 ug/day for men and 700 ug/day for women for healthy eyes and skin. Ensure that you do not exceed the intake more than 3000 ug/day.
- Consume at least five daily servings of fruits and vegetables to ensure an adequate supply.
- If meeting dietary requirement from food source is difficult, try getting from vitamin A supplement, such as beta carotene with proper recommendation from your doctor, as overdose might pose health risks.

1113-SG230353

About Vitamin A

Vitamin A is a fat-soluble vitamin and is classified into two groups, i.e. preformed vitamin A (retinol and retinyl esters) from animal sources and provitamin A precursors (mainly beta-carotene) in plant-derived foods. Beta-carotene is a precursor that can be converted into vitamin A in your body.

Risk of Insufficient Vitamin A Intake

Lack of vitamin A can cause problems seeing in the dark (night blindness).

Importance of Vitamin A

Vitamin A is needed for healthy vision, bone, tissue growth and regulation of your immune system to fight infection. It has antioxidant activity that reduces the effects of free radicals from tobacco smoke and radiation.

VITAMIN A RICH FOOD



Spinach
Vitamin A 712ug / 100g
Carotene 4,269ug / 100g



Red Spinach
Vitamin A 552ug / 100g
Carotene 3,313ug / 100g



Carrots
Vitamin A 408ug / 100g
Carotene 2,449ug / 100g

Random Facts

Although beta-carotene from supplement can be converted into vitamin A in your body, vitamin A from animal sources are better absorbed by your body. Research found that people who consume high fruits and vegetables diet have a reduced risk of heart disease and certain cancers due to the content of beta-carotene and other nutrients that may be beneficial. Vitamins cannot work alone and need other dietary nutrients, such as carbohydrate, protein, fat and mineral to help with the absorption into your body.

Your Genotype Table

	FFAR4	TTR	BCO1	Explanation
Higher Needs	CC	CC	TT	Your body has higher vitamin A needs. Consider to increase vitamin A intake to over 900 ug/day for men and over 700 ug/day women.
YOU ▶ Moderate Needs	CT	CA	TG	Your body has slightly higher vitamin A needs. Consider to increase vitamin A intake to over 900 ug/day for men and over 700 ug/day women.
Normal Needs	TT	AA	GG	Your body has normal vitamin A needs. Try to maintain your vitamin A intake at 900 ug/day for men and 700 ug/day women.

Nutrient Needs

FOLIC ACID*

(*also referred to as Folate)

Your Result:

Normal Needs Higher Needs

Your Action Items

- Follow recommended intake of folic acid at 400 ug a day.
- Include folate-rich foods in your diet such as beans, spinach, kailan and lentils. A cup of lentils provides 400ug folate.
- If meeting dietary requirement from food source is difficult, try getting from supplement in the active form such as 5-MTHF (methylfolate).

About Folic Acid

Folic acid (also known as vitamin B9, or folate in its natural form) is a water-soluble vitamin. It is essential in the production of DNA. Folic acid cannot be retained by the body, so it has to be consumed daily.

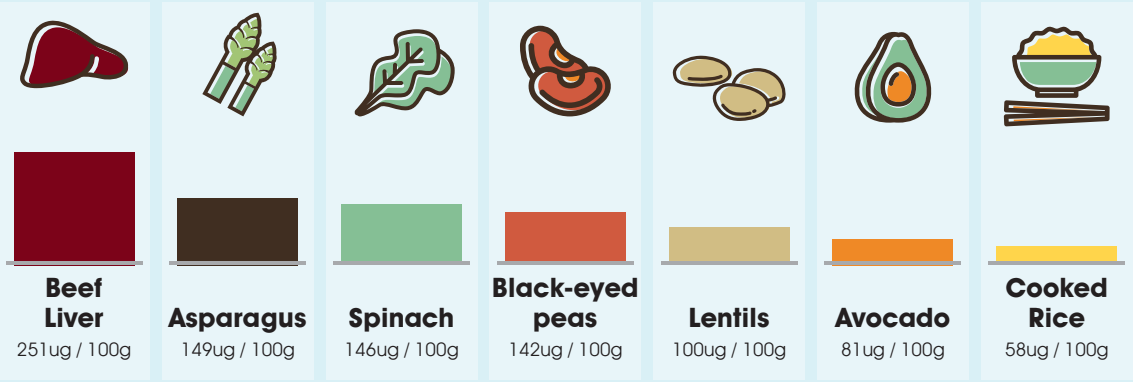
Risk of Insufficient Folic Acid Intake

The efficiency of folic acid utilization by your body is influenced by your genes. Folate deficiency may leave you susceptible to anemia, higher risk of cardiovascular diseases and stroke.

Importance of Folic Acid

Folic acid is needed for a variety of functions such as producing DNA, mending damaged DNA, promoting rapid cell division, supporting cell growth and making healthy red blood cells. Major birth defects in a baby's brain and spine can be prevented if women who are pregnant or trying to conceive consume enough folic acid.

TOP FOLATE FOOD SOURCES



Beef Liver	Asparagus	Spinach	Black-eyed peas	Lentils	Avocado	Cooked Rice
251ug / 100g	149ug / 100g	146ug / 100g	142ug / 100g	100ug / 100g	81ug / 100g	58ug / 100g

Random Facts

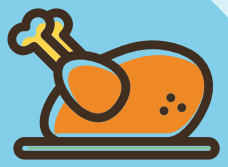
Although chicken liver and pork liver contain high amounts of folate, these animal products are also high in cholesterol content. Therefore, it is advisable to consume these food items in moderation. Fatigue, irritability and difficulty concentrating are some of the easily missed symptoms of folate deficiency. Folic acid is one of the key vitamins for women who are planning to conceive.

Your Genotype Table

		MTHFR (C677T)	MTHFR (A1298C)	Explanation
	Higher Needs	AA	GG	Increase folic acid intake to over 400ug/day. Not advisable to exceed more than 1000 ug/day.
YOU ▶	Normal Needs	GG	TT	Follow recommended intake of folic acid at 400 ug/day.

Nutrient Needs

VITAMIN B6



Your Result:

Normal Needs | Moderate Needs | Higher Needs

Your Action Items

- Consume more than 1.7 mg of vitamin B6 a day, but do not exceed 100 mg/day.
- Include B6-rich foods in your diet such as chicken breast, avocado, wheat bran and banana.
- Consider taking vitamin B complex supplements, if needed.

About Vitamin B6

Vitamin B6 is an important water-soluble vitamin in the process of converting food into energy. You need to consume vitamin B6 every day because it is not produced by your body.

Risk of Insufficient Vitamin B6 Intake

Generally it is unlikely for an individual to have vitamin B6 deficiency, but certain genetic differences are able to affect the vitamin B6 levels in the blood. Anemia, depression and a compromised immune system are some of the consequences of vitamin B6 deficiency. Other minor drawbacks include skin rashes, dry scaly lips and cracks at the corners of your mouth.

Importance of Vitamin B6

More than 100 reactions in the human body requires the presence of vitamin B6. Besides extracting energy from foods, vitamin B6 also plays a crucial role in the manufacture of cells for an optimal immune system. Vitamin B6 also helps in the production of neurotransmitter which is then used for the delivery of information between your brain and other parts of your body.

VITAMIN B6 RICH FOODS



Tuna	Beef Liver	Salmon	Chickpea	Chicken Breast	Avocado
1.038mg / 100g	1.018mg / 100g	0.827mg / 100g	0.748mg / 100g	0.298mg / 100g	0.287mg / 100g

Random Facts

Beef liver is packed with vitamin B6 but at the same time it contains high cholestrol, hence it should be consumed with care. More vitamin B6 is required by your body when you consume more protein as vitamin B6 aids in breaking down proteins into smaller molecules. Low dietary intake of vitamin B6 is associated with the increased risk of heart disease and stroke as vitamin B6 is essential for the body to process fat properly.

Your Genotype Table

		NBPF3	Explanation
you ▶	Higher Needs	CC	Your body has higher need for vitamin B6. Consider to increase vitamin B6 intake to more than 1.7 mg/day. Do not exceed the amount of 100 mg/day if you are taking vitamin B6 supplement.
	Moderate Needs	CT	Your body has higher need for vitamin B6. Consider to increase vitamin B6 intake to more than 1.7 mg/day. Do not exceed the amount of 100 mg/day if you are taking vitamin B6 supplement.
	Normal Needs	TT	Follow standard recommended guidelines for vitamin B6 of 1.3-1.7 mg/day.

Nutrient Needs

VITAMIN B12

Your Result:

Normal Needs | Moderate Needs | Higher Needs

Your Action Items

- Increase vitamin B12 intake to 6-10 ug/day.
- Include more vitamin B12-rich foods in your diet. Example of foods that are rich in vitamin B12 are tuna, chicken and beef.
- If meeting dietary requirement from food source is difficult, try getting from supplements. Try getting B complex vitamins if you are a strict vegan.

About Vitamin B12

Vitamin B12 is stored in the liver and it helps to maintain a healthy nervous system, which includes allowing efficient delivery of brain signals to other parts of the body. Vitamin B12 is generally absent from plant foods, and you can only take it from animal products.

Risk of Insufficient Vitamin B12 Intake

Not getting enough vitamin B12 can lead to anemia and feelings of tiredness and weakness.The absorption of vitamin B12 from food is hindered in the elderly population because elderly people produce less gastric acid during digestion. Therefore, mild B12 deficiency is more common among the elderly than the younger generations.

Importance of Vitamin B12

Vitamin B12 is essential for the conversion of energy from food, maintenance of a healthy nervous system and the manufacture of red blood cells and DNA.

TOP VITAMIN B12 FOOD SOURCES



Beef Liver	Clams	Mussels	Mackerel	Salmon	Tuna
69.99ug / 100g	13.10ug / 100g	12.00ug / 100g	6.94ug / 100g	4.47ug / 100g	2.99ug / 100g

Random Facts

A healthy liver can store tremendous amounts of vitamin B12 for up to 2 years. Seaweed (nori) is also a source of vitamin B12, which is widely used in Japanese cuisine. It is common for vegans who do not consume vitamin B12 fortified foods or take vitamin B12 supplements to develop vitamin B12 deficiency.

Your Genotype Table

		FUT2	MS4A3	FUT6	CLYBL	PRELID2	Explanation
YOU ▶	Higher Needs	GG	CC	GG	TT	TT	Your body has higher vitamin B12 needs. Consider to increase vitamin B12 intake to 6-10ug/day.
	Moderate Needs	AG	CT	AG	CT	CT	Your body has slightly higher vitamin B12 needs. Consider to increase vitamin B12 intake to 6-10ug/day.
	Normal Needs	AA	TT	AA	CC	CC	Your body has normal vitamin B12 needs. Try to follow standard recommended guidelines for B12 of 4.0 ug/day.

Nutrient Needs
VITAMIN C



Your Result:

Normal Needs | Moderate Needs | Higher Needs

Your Action Items

- Consume at least 70 mg of vitamin C per day.
- Include vitamin C rich foods in your diet. You can get 70 mg vitamin C from eating 1 orange, 3/4 cup of broccoli or 1 kiwi.

About Vitamin C

Your vitamin C intake is solely dependent on your diet because the human body cannot manufacture vitamin C. The water-soluble vitamin C is best known for its function in producing collagen, which is a key component of connective tissues, skin, blood vessels, bones and teeth.

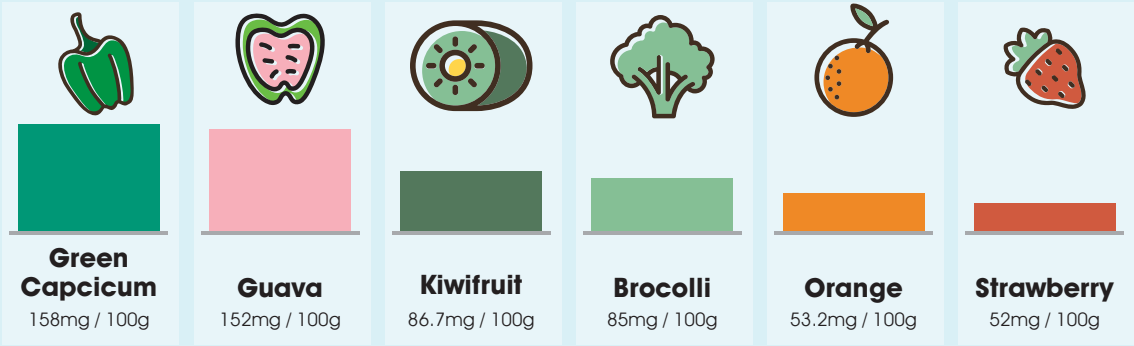
Risk of Insufficient Vitamin C Intake

Your chances of vitamin C deficiency may be higher, attributable to the presence of certain genetic differences, which could affect your body's ability to process vitamin C. The common symptoms of vitamin C deficiency are muscle and joint pains, bleeding gums, compromised wound healing and poor immune system.

Importance of Vitamin C

Vitamin C is a strong antioxidant which guard our cells against harmful free radicals - unstable atoms or molecules that are related to aging. This is especially useful in helping you to achieve a brighter skin and reducing the signs of aging. On top of that, vitamin C can contribute in maintaining a healthy immune system by preventing the body from catching diseases.

VITAMIN C RICH FRUITS



Green Capcicum	Guava	Kiwifruit	Brocolli	Orange	Strawberry
158mg / 100g	152mg / 100g	86.7mg / 100g	85mg / 100g	53.2mg / 100g	52mg / 100g

Random Facts

Since vitamin C is essential for the production of collagen in the body, it is no surprise that vitamin C is the key to maintain a healthy and youthful skin. Absorption of iron from fruits and vegetables is greatly enhanced by vitamin C. Vitamin C level of a food is compromised if it is cooked and/or stored for too long.

Your Genotype Table

	NBPF3	Explanation
Higher Needs	TT	You need to increase vitamin C intake to 300-400mg a day.
Moderate Needs	CT	You need to increase vitamin C intake to 200-300mg a day.
YOU ▶ Normal Needs	CC	You have normal vitamin C needs. Try to follow standard recommended guidelines for vitamin C of 70 mg/day.

Nutrient Needs
VITAMIN D

Your Result:

Normal Needs | Moderate Needs | Higher Needs

Your Action Items

- Follow standard recommended guidelines for vitamin D of 600 IU (15 ug)/day.
- You can achieve your daily requirement by exposing your skin to sunlight for 10-15 minutes.
- Consider taking vitamin D supplements if you find it difficult to get it from food and/or if you lack of exposure to sunlight.

About Vitamin D

Vitamin D supports the maintenance of healthy bones and muscles by enhancing calcium absorption in the body. The fat-soluble vitamin D is produced from your skin when it comes in contact with sunlight.

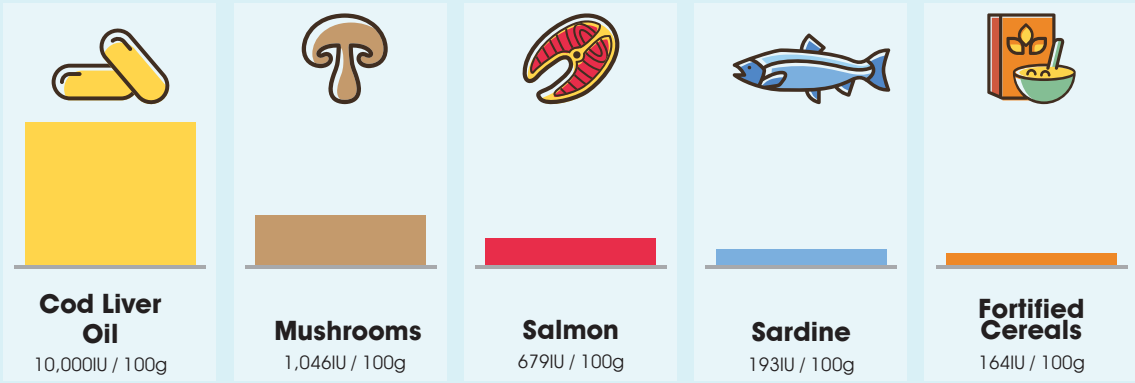
Risk of Insufficient Vitamin D Intake

The vitamin D level in your blood depends on the amount of vitamin D you obtain from your diet and the sun. How vitamin D is processed in your body is influenced by your genetic variations and this could lead to low level of vitamin D. The risk of bone fractures and osteoporosis is elevated in vitamin D deficient individuals due to the lack of vitamin D for modulation of blood calcium levels. When your blood calcium level is low, calcium is released from your skeleton which results in more fragile bones.

Importance of Vitamin D

Vitamin D is also indispensable in building an optimal immune system, besides maintaining strong bones and regulating calcium levels in the blood.

TOP 5 FOODS HIGHEST IN VITAMIN D



Random Facts

About 80% of genetics determine the vitamin D content in your blood. Vitamin D deficiency is found in 78-98% of the Asian population. Most of our natural source of vitamin D is produced in our skin.

Your Genotype Table

	CYP2R1_1	NADSYN1_1	PDE3B	GC_1	VDR(BsmI)	VDR(TaqI)	GC	CYP2R1	NADSYN1	Explanation
Higher Needs	AA	AA	GG	TT	TT	AA	GG	GG	TT	You have higher vitamin D needs. It is suggested to increase vitamin D intake to 1000 IU (25ug)/day.
Moderate Needs	AG	AG	CG	CT	CT	GA	GT	AG	GT	You have slightly higher vitamin D needs. It is suggested to increase vitamin D intake to 800 IU (20ug)/day
YOU ▶ Normal Needs	GG	GG	CC	CC	CC	GG	TT	AA	GG	You have normal vitamin D needs. Try to follow recommended guidelines for vitamin D of 600 IU (15ug)/day.

Nutrient Needs

VITAMIN E



Your Result:



Your Action Items

- Slightly increase your vitamin E intake to over 15 mg/day for adults for proper function of nerves and muscles. Ensure that you do not exceed the intake more than 1000 mg/day.
- Consume vitamin E-rich foods such as vegetable oils, whole-grain cereals and green leafy vegetables.
- If meeting dietary requirement from food source is difficult, try getting from vitamin E supplement with proper recommendation from your doctor, as overdose might pose health risks.

About Vitamin E

Vitamin E is a fat-soluble vitamin and is classified into two groups, i.e. tocopherols and tocotrienols.

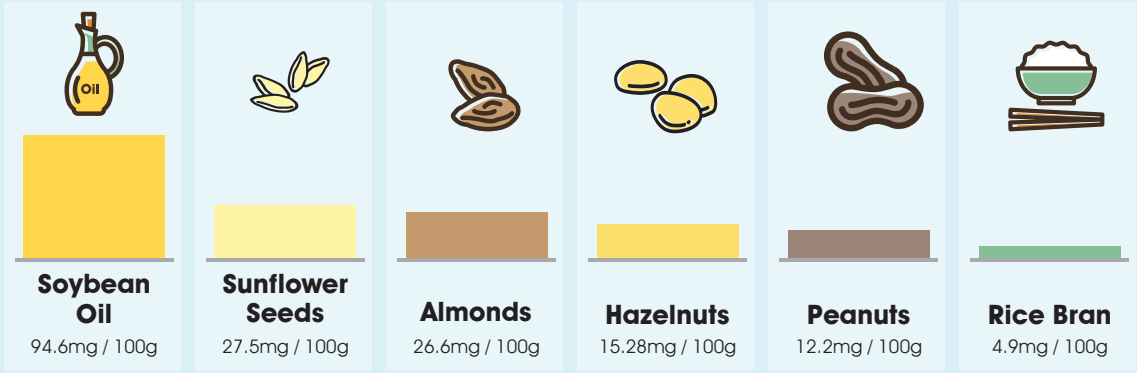
Risk of Insufficient Vitamin E Intake

Lack of vitamin E can cause pain in nerve (neuropathy).

Importance of Vitamin E

Vitamin E is needed for proper function of nerves and muscles, DNA repair, regulation of your immune system and other metabolic functions. It has antioxidant activities that reduces the effects of free radicals from tobacco smoke and radiation. Excessive free radicals in your body can lead to heart disease, cancer and other diseases.

VITAMIN E FOOD TABLE (TOCOPHEROLS CLASS)



Random Facts

Most of us can get adequate vitamin E from a balanced diet. High doses of vitamin E supplementation may be harmful to your health, e.g. increase the risk of heart failure or death. Vitamins cannot work alone and needs other dietary nutrients, such as carbohydrate, protein, fat and mineral to help with the absorption into your body.

Your Genotype Table

	ZPR1	CYP4F2	SCARB1	Explanation
Higher Needs	CC	CC	GG	Your body has higher vitamin E needs. Consider to increase vitamin E intake to over 15 mg/day for adults.
YOU ▶ Moderate Needs	CG	CT	GA	Your body has slightly higher vitamin E needs. Consider to increase vitamin E intake to over 15 mg/day for adults.
Normal Needs	GG	TT	AA	Your body has normal vitamin E needs. Try to maintain your vitamin E intake at 15 mg/day for adults.

Nutrient Needs

CALCIUM



Your Result:

Normal Needs | Moderate Needs | Higher Needs

Your Action Items

- Slightly increase your calcium intake more than 1200 mg/day to build and maintain your bones and teeth. Ensure that you do not exceed the intake more than 2500 mg/day.
- Consume calcium-rich foods together with phosphorus, magnesium and vitamin D in your diet to help absorption and usage of calcium in the body.
- If meeting dietary requirement from food source is difficult, try getting from calcium supplement such as calcium carbonate, calcium citrate, calcium gluconate and calcium lactate.

About Calcium

Calcium is an important mineral that is found plentifully in your body to supply an optimal bone health. Both teeth and bones contain the majority of calcium while the rest of the calcium is found in nerve cells, body tissues, blood and other body fluids.

Risk of Insufficient Calcium Intake

Those who do not receive enough calcium over a long period of time can develop osteoporosis (thinning of bone tissue and loss of bone density). However, receiving high amounts of calcium over a long period of time also has its side effect. It will raise the risk of kidney stones for certain people.

Importance of Calcium

Calcium is not only important for maintaining strong bones and teeth, it also helps with the blood clotting process, maintaining normal muscle and nerve functions and allowing the heart to beat normally.

CALCIUM RICH FOOD



Anchovy	Sardine	Almond	Watercress	Tofu	Milk
500mg / 100g	234mg / 100g	222mg / 100g	200mg / 100g	135mg / 100g	109mg / 100g

Random Facts

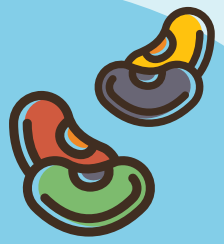
You can only get calcium from food as your body does not produce calcium. Body absorbs and uses calcium more effectively with the presence of phosphorus, magnesium and Vitamin D. To keep more calcium in your dishes, you have to cook in small amount of water and as fast as possible, such as steam or sauté instead of boil. Calcium functions together with vitamin D to protect against cancer, diabetes and high blood pressure.

Your Genotype Table

	CASR	CYP24A1	DGKD	GCKR	CARS	RPS28P8	LINC 00709	CASR	Explanation
Higher Needs	TT	TT	TT	TT	TT	TT	AA	GG	Your body has higher calcium needs. Consider to increase calcium intake to over 1200 mg/day for men and women. Not advisable to exceed more than 2500 mg/day.
you ▶ Moderate Needs	CT	CT	CT	CT	CT	CT	AG	GC	Your body has slightly higher calcium needs. Consider to increase calcium intake to over 1200 mg/day for men and women. Not advisable to exceed more than 2500 mg/day.
Normal Needs	CC	CC	CC	CC	CC	CC	GG	CC	Your body has normal calcium needs. Try to maintain your calcium intake at 1000-1200 mg/day for men and women.

Nutrient Needs

IRON



Your Result:



Your Action Items

- Slightly increase your iron intake to more than 8 mg/day for men and 18 mg/day for women to allow red blood cells carrry oxygen around your body. Ensure that you do not exceed the intake more than 45 mg/day.

- Consume red meat (iron-rich), chicken, turkey and fish to get enough dietary iron. Iron from cereals, beans and some vegetables are poorly absorbed, but can be absorbed better in the presence foods rich in vitamin C (citrus fruits and fresh vegetables).

- Consider taking iron supplements if you are pregnant or have periods, vegetarians and frequent blood donors.

1113-SG230353

About Iron

Iron is an essential mineral found in every cell of the body. It is required to produce hemoglobin, a protein that carries oxygen from lungs to other parts of the body. It is also a part of many other proteins and enzymes.

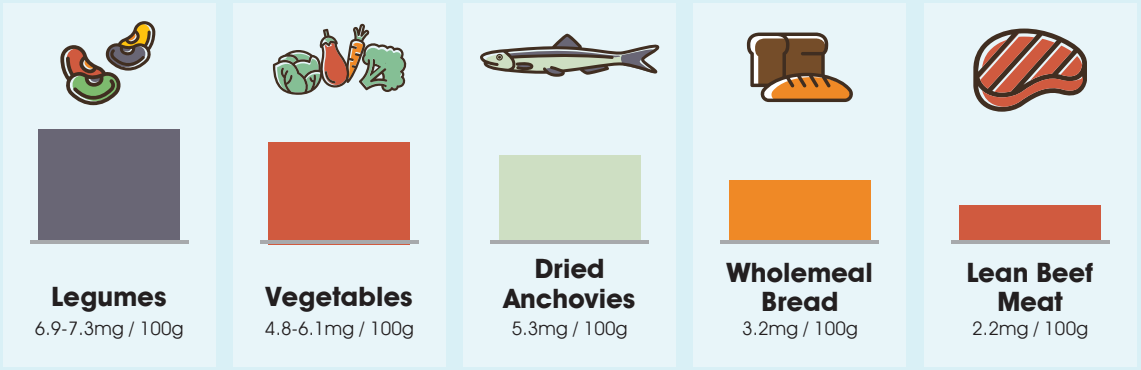
Risk of Insufficient Iron Intake

Lack of iron over long periods can cause iron deficiency anemia as your body cannot produce enough red blood cells to carry oxygen. It may leave you feeling tired, short of breath and a decrease in physical performance. In severe cases, it will cause learning difficulty in children and adults and you will have an increase chance of getting an infection.

Importance of Iron

Iron is needed to produce the oxygen-carrying proteins hemoglobin and myoglobin. Hemoglobin is found in red blood cells while myoglobin is found in muscles.

TOP IRON RICH FOOD



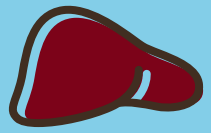
Random Facts

Iron absorption can be enhanced with vitamin C, i.e. eat high-iron foods and drink citrus juice or eating other foods rich in vitamin C at the same time. Iron from meat is more readily to be absorbed into your body. However, do take precaution when you are taking iron supplements (always follow recommended dosage) as excessive iron in our body can be toxic and damaging.

Your Genotype Table

	TMPRSS6	HFE	TF	TFR2	TMPRSS6_1	TMPRSS6_2	Explanation
YOU ▶ Higher Needs	TT	TT	TT	TT	TT	AA	Your body has higher iron needs. Consider to increase iron intake to over 8mg/day for men and over 18 mg/day for women. Not advisable to exceed more than 45 mg/day.
Moderate Needs	CT	CT	CT	CT	CT	AG	Your body has slightly higher iron needs. Consider to increase iron intake to over 8mg/day for men and over 18 mg/day for women. Not advisable to exceed more than 45 mg/day.
Normal Needs	CC	CC	CC	CC	CC	GG	Your body has normal iron needs. Try to maintain your iron intake at 8mg/day for men and 8-18 mg/day for women.

Nutrient Needs
ZINC



Your Result:



Your Action Items

- Increase your zinc intake more than 11 mg/day for men and more than 8 mg/day for women to maintain good immune system. Ensure that you do not exceed the intake more than 40 mg/day.
- Consume lean red meats, seafood, peas and beans to get dietary zinc. Do avoid taking large amount of whole grains together as it inhibits the absorption of zinc into the body. Leave a 2 hours gap in between.
- If meeting dietary requirement from food source is difficult, try getting from zinc supplement and consume it at least 1 hour before or 2 hours after meals.

About Zinc

Zinc plays a vital role in every cell of our body. It helps to keep your immune system strong to fight off bacteria and viruses. This mineral is also fundamental to skin health, protein production and DNA synthesis. Zinc supports normal growth and development during pregnancy, childhood, and adolescence.

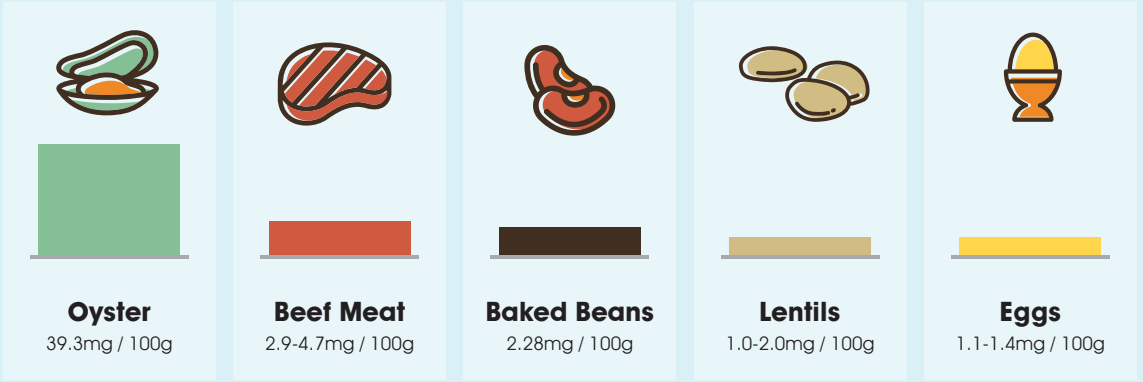
Risk of Insufficient Zinc Intake

Zinc deficiency causes loss of appetite, delayed wound healing and hair loss to name a few. In more severe cases, impaired immune function, growth retardation, delayed sexual development and impotence in men could occur.

Importance of Zinc

Zinc plays an important role in the body's defensive (immune) system. It is also needed in cell division, cell growth, wound healing process and the senses of smell and taste.

ZINC FOOD TABLE



Oyster	Beef Meat	Baked Beans	Lentils	Eggs
39.3mg / 100g	2.9-4.7mg / 100g	2.28mg / 100g	1.0-2.0mg / 100g	1.1-1.4mg / 100g

Random Facts

Zinc may not be absorbed if it is combined with certain foods. Therefore, if you are taking zinc, avoid foods like bran, fiber-containing foods, phosphorus-containing foods such as milk or poultry. Zinc from plant sources are usually harder to be absorbed as there is a compound (phytate) in them that inhibits the absorption. However, food preparation methods such as soaking, heating, fermenting and leavening can help alleviate the situation.

Your Genotype Table

		SLC39A14	SLC30A8	IL6	Explanation
YOU ▶	Higher Needs	GG	TT	GG	Your body has slightly higher zinc needs. Consider to increase zinc intake to more than 11 mg/day for men and more than 8 mg/day for women. Not advisable to exceed more than 40 mg/day.
	Moderate Needs	TG	TC	CG	Your body has slightly higher zinc needs. Consider to increase zinc intake to over 11 mg/day for men and over 8 mg/day for women. Not advisable to exceed more than 40 mg/day.
	Normal Needs	TT	CC	CC	Your body has normal zinc needs. Try to maintain your zinc intake at 11 mg/day for men and 8 mg/day for women.

Nutrient Needs

MAGNESIUM

Your Result:

Normal Needs | Moderate Needs | Higher Needs

Your Action Items

- Maintain your magnesium intake at 400-420 mg/day for men and 310-320 mg/day for women to carry out biochemical reactions in your body.
- Consume magnesium-rich foods such as nuts, seeds, whole grains, beans, leafy vegetables, milk, yogurt and fortified foods. Just 1 ounce of almonds or cashews contains 20% of the daily magnesium an adult needs.
- If meeting dietary requirement from food source is difficult, try getting from magnesium supplement but do not exceed 350 mg/day.

About Magnesium

Magnesium is an essential mineral for human nutrition and plays many crucial roles in the body, such as supporting muscle and nerve function and energy production.

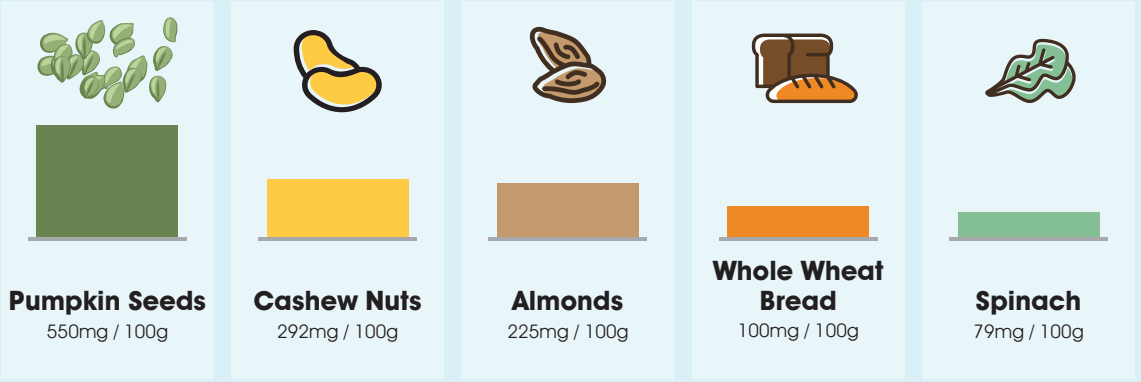
Risk of Insufficient Magnesium Intake

Lack of magnesium can increase the risk of high blood pressure, heart disease, type 2 diabetes and osteoporosis.

Importance of Magnesium

Magnesium is needed for more than 300 biochemical reactions in the body. It helps to ensure normal nerve and muscle function, supports a healthy immune system, keeps a healthy heartbeat and strenghten your bones.

FOODS RICH IN MAGNESIUM



Pumpkin Seeds
550mg / 100g

Cashew Nuts
292mg / 100g

Almonds
225mg / 100g

Whole Wheat Bread
100mg / 100g

Spinach
79mg / 100g

Random Facts

The need for magnesium increases if your diet intake is higher in protein, calcium or vitamin D.

Your Genotype Table

	MUC1	AC009522.1	DCDC1	SHROOM3	MECOM	Explanation
Higher Needs	TT	TT	TT	TT	AA	Your body has higher magnesium needs. Consider to increase magnesium intake to over 420 mg/day for men and over 320 mg/day for women.
Moderate Needs	CT	CT	CT	CT	AG	Your body has slightly higher magnesium needs. Consider to increase magnesium intake to over 420 mg/day for men and over 320 mg/day for women.
YOU ▶ Normal Needs	CC	CC	CC	CC	GG	Your body has normal magnesium needs. Try to maintain your magnesium intake at 400-420 mg/day for men and 310-320 mg/day for women.

Nutrient Needs
PHOSPHORUS

Your Result:

Normal Needs | Moderate Needs | Higher Needs

Your Action Items

- Maintain your phosphorus intake at 700 mg/day for adults to maintain your bones and teeth.
- If your diet contains enough calcium and protein, you will likely have enough phosphorus. You can also get phosphorus from non-protein food sources such as whole grains, potatoes, garlic, dried fruit and carbonated drinks.
- Only few people need to take phosporus supplements.

About Phosphorus

Phosphorus is the second most abundant mineral that makes up 1% of a person's total body weight. Most of the phosphorus in the body is found in the bones and teeth.

Risk of Insufficient Phosphorus Intake

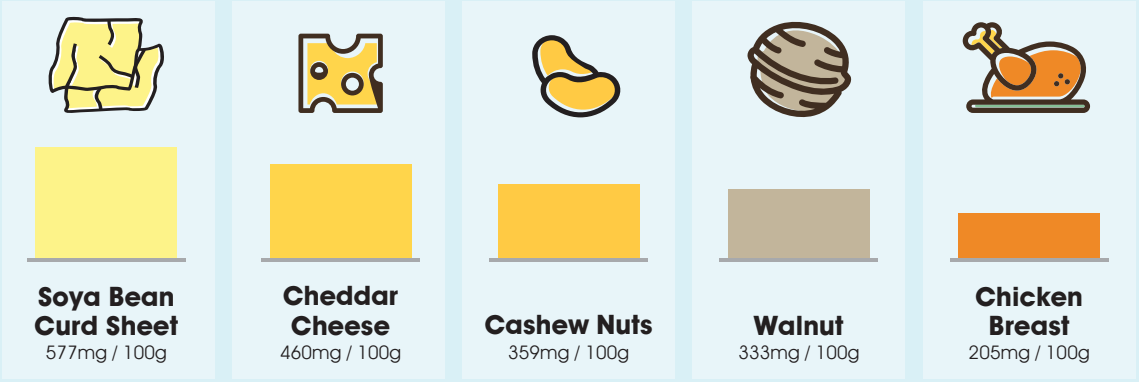
Lack of phosphorus is a rare case as it is readily available in your diet. In fact, it is more common to have too much than to little. Kidney disease or eating too much phosphorus and not enough calcium can lead to an excess of phosphorous. Phosphorus levels that are too high or too low can cause medical complications, such as heart disease, joint pain, or fatigue.

Importance of Phosphorus

You need phosphorus to:

- keep your bones strong
- manage how your body stores and uses energy
- filter out waste in your kidneys
- maintain muscle function (muscle contraction, and normal heartbeat)

PHOSPHORUS FOOD TABLE



Random Facts

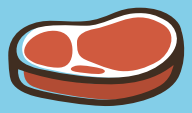
Healthy kidneys help to remove extra phosphorus from the blood. A diet that includes the right amounts of calcium and protein will provide enough phosphorus while fruits and vegetables contain only small amounts of phosphorus. Whole-grain breads and cereals contain more phosphorus than cereals and breads made from refined flour.

Your Genotype Table

	NBPF3	CSTA	IP6K3	PDE7B	C12orf4	Explanation
Higher Needs	TT	TT	TT	AA	AA	Your body has higher phosphorus needs. Consider to increase phosphorus intake to over 700 mg/day for men and women.
Moderate Needs	CT	CT	CT	AG	AG	Your body has slightly higher phosphorus needs. Consider to increase phosphorus intake to over 700 mg/day for men and women.
YOU ▶ Normal Needs	CC	CC	CC	GG	GG	Your body has normal phosphorus needs. Try to maintain your phosphorus intake at 700 mg/day for men and women.

Nutrient Needs

COENZYME Q10



Your Result:

Normal Needs Higher Needs

Your Action Items

- Increase your coenzyme Q10 intake to over 60 mg/day for adults for growth and maintanence in your body.
- Consume coenzyme Q10-rich foods such as meats and seafood.
- If meeting dietary requirement from food source is difficult, try getting from coenzyme Q10 supplement.

1113-SG230353

About Coenzyme Q10

Coenzyme Q10 (CoQ10) is a vitamin-like nutrient lipid-soluble compound which is produced naturally in your body, mainly in the mitochondria of cells. Mitochondria is the powerhouses of cells that produces main energy source.

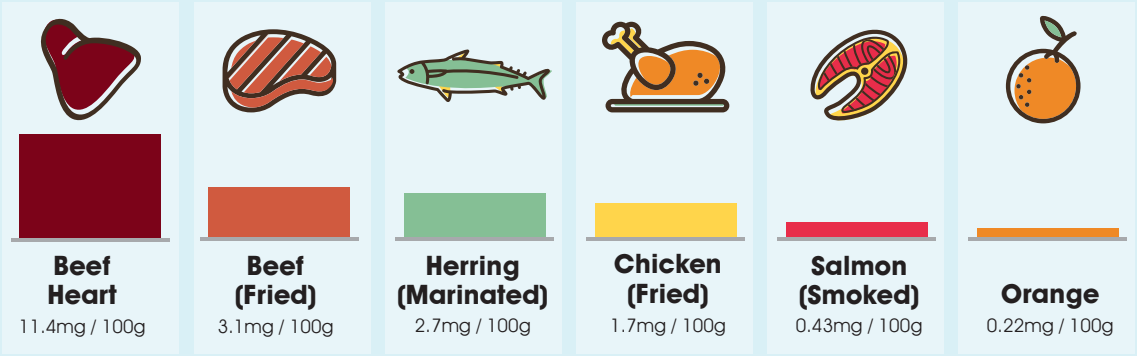
Risk of Insufficient Coenzyme Q10 Intake

Lack of coenzyme Q10 leads to weakness, fatigue, and seizures.

Importance of Coenzyme Q10

Coenzyme Q10 plays an important role in growth and maintenance for your body, especially in energy production, protection from oxidative cell damage and disease-causing bacteria or viruses. CoQ10 is a vital nutrient with many benefits, but we are generally unable to get the amounts of CoQ10 recommended from diet alone. Even if you include a lot of CoQ10 food sources, it would be almost impossible to reach the levels suggested to support cardiovascular health. While including CoQ10-rich foods in your diets can help, adding a CoQ10 supplement to your regimen may be a good way to ensure you are supporting your levels.

COENZYME Q10 FOOD TABLE



Random Facts

Coenzyme Q10 decreases as you age and lower levels has found to be linked with people having certain diseases, such as heart failure, high blood pressure, gum disease, Parkinson's disease, blood infections, certain diseases of the muscles and HIV infection. Some studies showed that coenzyme Q10 may reduce the risk of some complications of heart surgery. Although it has not shown any value in treating cancer, it may reduce the complications of cancer chemotherapy drug.

Your Genotype Table

		NQO1	Explanation
YOU ▶	Higher Needs	GG	Your body has higher coenzyme Q10 needs. Consider to increase coenzyme Q10 intake to over 60 mg/day for adults.
	Normal Needs	AA	Your body has normal coenzyme Q10 needs. Try to maintain coenzyme Q10 intake at 30-60 mg/day for adults.

Nutrient Needs

SELENIUM



Your Result:



Your Action Items

- Slightly increase your selenium intake to over 55 ug/day for adults for normal body functions. Ensure that you do not exceed the intake more than 400 ug/day.
- Consume lean red meats, seafood, liver and grains grown in soil to get dietary selenium.
- If meeting dietary requirement from food source is difficult, try getting from selenium supplement.

About Selenium

Selenium is a trace mineral found mainly in the soil. This mineral migrates to the food source, which are grown on the soil.

Risk of Insufficient Selenium Intake

Lack of selenium leads to skeletal myopathy, muscle weakness and cardiomyopathy.

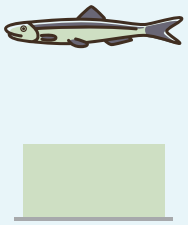
Importance of Selenium

Selenium is needed by certain enzyme to ensure normal body functions. It has antioxidant activity that helps your body to fight off illnesses, maintain the immune system and regulate thyroid function.

FOODS RICH IN SELENIUM



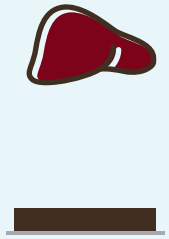
Brazil Nuts
1,917ug / 100g



Anchovies
589.9ug / 100g



Chicken Liver
100.2ug / 100g



Beef Liver
55.8ug / 100g



Salmon
46.2ug / 100g

Random Facts

Brazil nuts are high in selenium, even though they are grown in soil that is not rich in the element. A single nut contains 68 to 91 ug of selenium, meaning that one nut provides enough selenium to meet the daily requirement for a human adult.

Your Genotype Table

		DMGDH	SEP15	GPX1	SELENOF	Explanation
YOU ▶	Higher Needs	CC	TT	TT	TT	Your body has higher selenium needs. Consider to increase selenium intake to over 55 ug/day for adults. Not advisable to exceed more than 400 ug/day.
	Moderate Needs	CT	CT	CT	TC	Your body has slightly higher selenium needs. Consider to increase selenium intake to over 55 ug/day for adults. Not advisable to exceed more than 400 ug/day.
	Normal Needs	TT	CC	CC	CC	Your body has normal selenium needs. Try to maintain your selenium intake at 55 ug/day for adults.

03.

Your Results:
Food & Dietary Sensitivities

Food and Dietary Sensitivities

CARBOHYDRATES



Your Result:

Normal Sensitivity | Higher Sensitivity

Your Action Items

- Cut down the intake of highly refined and processed carbohydrates as your body is sensitive to the bad carbohydrates. Avoid sugary beverages and refined grains.
- Substitute the bad carbohydrates with unprocessed whole grains, fruits and vegetables.

About Carbohydrates

Carbohydrates are one of the fundamental nutrients that you cannot live without. Glucose is the building blocks of carbohydrates and the energy source that supports bodily functions and physical activity.

Risks of Excess Carbohydrate Intake

Your blood glucose level will increase for a short period of time following a meal containing carbohydrates. However, excess carbohydrate intake places a large metabolic load on the body. When the body constantly has high levels of blood sugars, over time, this leads to weight gain, poor metabolic health and an increased risk of heart disease.

Types of Carbohydrates

Carbohydrates should be consumed in moderation as too much carbohydrates can cause you to pack on the extra pounds. Although all carbohydrates are our main source of energy, different types of carbohydrates behave in different ways and have different impact on our body. Bad carbohydrates have insignificant amount of key nutrients and may cause substantial fluctuations in blood glucose. In contrast, healthier versions of carbohydrates provide more fiber, vitamins and minerals that are crucial for maintaining good health. At the same time, these healthy carbohydrates will be broken down into glucose at a slower rate. This process allows energy to be released at a more stable level throughout the day.

GOOD CARBOHYDRATES



BAD CARBOHYDRATES



Did You Know?

Carbohydrates are the only energy fuel for our brain and we need at least 150g of carbs per day to do this. Chocolates have high carbohydrates content but the significant amount of fat in chocolates might increase your chance to put on more weight. Another option of carbohydrate-rich food would be apple, which also contains fiber, vitamins and minerals. The name "carbohydrates" is derived from its chemical composition: carbon, hydrogen and oxygen.

Your Genotype Table

		TCF7L2	FABP2	Explanation
YOU ▶	Higher Sensitivity	TT	TT	Limit the intake of bad carbohydrates that are highly refined and processed, only consume unprocess, unrefined carbohydrates such as fruits, vegetables and wholegrains.
	Normal Sensitivity	CC	CC	Consume good carbohydrates such as fruits, vegetables and wholegrains.

Food and Dietary Sensitivities

FAT



Your Result:

Normal Sensitivity | Higher Sensitivity

Your Action Items

- Focus on healthy fats such as olive oil, nuts and avocado.
- Avoid overly processed (or bad) fats such as hydrogenated fats which contain trans-fatty acids.

About Fat

Fat functions as the energy reservoir for your body. You cannot live without fats. Not only does it provides protection to your vital organs, it enables the absorption of fat-soluble vitamins A, D, E and K into your body.

Risks of Excess Fat Intake

Obesity, high blood pressure and high cholesterol are some of the negative health effects from consuming too much fat. Your risk of getting heart disease will be greater if you consume too much unhealthy trans fat. Your fat sensitivity profile indicates that you should pay more attention to the type and amount of fat that you eat in order to stay healthy.

Types of Fats

It is good to be aware of the types of fat that you are eating as it has a greater impact to your health compared to just looking at your fat consumption volume. Dietary fats can be divided into saturated and unsaturated fats. A moderate amount of both saturated and unsaturated fat intake promotes optimal bodily functions and can help in the prevention of diseases. In contrast, overconsumption of fats may lead to weight gain and greater risk to develop heart diseases and stroke.

GOOD FATS
Unsaturated Fat



Almonds | Avocado | Olives

NOT-SO-GOOD-FATS
Saturated Fat



Butter | Fatty Beef | Cheese

BAD FATS
Trans Fat



Donut | Pizza | Fries

Random facts

Calories content per gram for fat is at least double of what we see for carbohydrates. (1 gram fat = 9 calories; 1 gram carbohydrates= 4 calories; 1 gram protein = 4 calories). Fat is essential for keeping our hair and skin healthy. To diminish the risk of damage to our vital organs, fat cushions our internal organs and acts as a protective barrier.

Your Genotype Table

		LEPR	FTO1	FTO2	PPARG	APOA2	APOA5	PLIN	Explanation
YOU ▶	Higher Sensitivity	GG	AA	AA	GG	GG	AA	TT	Limit the overall intake of fat, in particular unhealthy fats such as trans fats.
	Normal Sensitivity	AA	TT	GG	CC	AA	GG	CC	Consume good and healthy fats such as monounsaturated fats and avoid the intake of bad fats such as hydrogenated fats.

Food and Dietary Sensitivities
CAFFEINE



Your Result:

Normal Sensitivity | Moderate Sensitivity | Higher Sensitivity

Your Action Items

- Limit your daily caffeine intake to no more than 200 mg, which is equivalent to 1 cup of coffee a day, or you can choose coffee beverages with lower caffeine content such as espresso or cappuccino.
- You may substitute your coffee intake with other beverages such as herbal tea, which contains less amount of caffeine.

About Caffeine

Caffeine is a dispensable nutrient, but it can help you to take edge off sleepiness and make you happy. Chances are you can tolerate caffeine better as time goes. Both the frequency and the amount of caffeine intake determines the effect of caffeine on your body. You will lose some caffeine tolerance if you abstain from caffeinated beverages for an extended period of time.

Positive Effects of Caffeine

Improved memory and mental functioning are some benefits of caffeine. If you are sensitive to caffeine, reducing your caffeine intake will promote better sleep at night.

Risks of Caffeine Intake

Excessive caffeine intake can lead to hypertension, as well as making you restless, anxious, irritable and difficult to fall asleep. Higher caffeine sensitivity indicates that one should pay extra attention to his/her caffeine consumption. This is even more crucial if you have sleep problems and anxiety.

CAFFEINE CONTENT IN DRINKS



Random Facts

The most popular stimulant being used in the world as a mood booster is caffeine. People who respond normally to caffeine will be able to reap the benefit of caffeine for 4-6 hours for each cup of coffee they consume.

Your Genotype Table

	CYP1A2	Explanation
Higher Sensitivity	CC	Your may limit your caffeine intake to maximum 100-150mg/day.
Moderate Sensitivity ◀ YOU	CA	Your may limit your caffeine intake to maximum 200mg/day.
Normal Sensitivity	AA	You may limit your caffeine intake to maximum 400mg/day.

Food and Dietary Sensitivities

SWEET TOOTH

Your Result:

Normal Preference — Higher Preference

Your Action Items

- You have higher sensitivity to sweetness. High intake of sugary foods may predispose you to the risk of developing type-2 diabetes.
- Limit your intake of simple sugars to less than 10% total calorie a day, which is below 12 teaspoons.
- Substitute food with processed sugar to food that have natural sugar, e.g. apples, which are packed with nutrients such as dietary fiber, vitamins and minerals.

About Sugar

Sugars can be found in many foods. While some sugars are natural, many are not. Unnatural or highly refined/processed sugars are often found in our commonly eaten foods such as sweets, chocolates as well as baked goods such as cakes and pastries. Too much sugar consumption in a short period of time will cause a spike in your blood sugar levels. It will lead to a sugar crash soon after, leaving you feeling sluggish and tired.

The Risks

Side effects from an overconsumption of sugar includes low energy levels, weight gain and a constant feeling of lethargy (even though you had sufficient rest).

Sweet Alternatives

Fruits is a very good substitute to curb your sweet tooth as they contain natural sugars and many other key nutrients.

HEALTHY SWEET-TASTING FOOD (Teaspoons of sugar per 100g serving of foods)



Dates	Grape	Low Fat Milk	Strawberry	Carrot	Sweet Potato
13.2 teaspoon	3.2 teaspoon	1 teaspoon	0.98 teaspoon	0.95 teaspoon	0.8 teaspoon

Did You Know?

Added sugars only contribute to extra calories without any additional nutrient. It is estimated that 40-60% of people drink more than the recommended 1 litre (450 calories, around 28 teapoons) of sugar-sweetened beverages per week.

Your Genotype Table

	TAS1R2	FUT1	Explanation
YOU ▶ Higher Preference	GG	TT	Take less than 5% total calorie (below 6 teaspoons) from simple sugar a day.
Normal Preference	TT	GG	Take less than 10% total calorie (below 12 teaspoons) from simple sugar a day.

Food and Dietary Sensitivities

SALT

Your Result:

Normal Sensitivity — Higher Sensitivity

Your Action Items

- Limit salt intake to less than a teaspoon (5 g) a day.
- Read food labels carefully while choosing processed foods. Choose foods with the lowest sodium content.
- Natural wholesome foods are usually lower in sodium. You can control your salt intake by preparing your own meals.

About Salt

Sodium and chlorine are the two elements that make up a grain of salt. Salt is a flavor enhancer and is commonly used in all kinds of food preparation globally. Salt is also one of the main ingredients for food preservation.

Risks of Salt Intake

A healthy body will be able to eliminate extra salt under normal condition. However, excessive salt intake elevates your risks of getting high blood pressure, calcium loss, cardiovascular disease and kidney failure. Calcium loss may potentially lead to osteoporosis. Overconsumption of salt will also result in water retention. Individual with high salt sensitivity needs to be more careful on the amount of salt you consume, especially if you have hypertension.

Benefits of Salt

We need sufficient amount of salt to keep us healthy, as sodium deficiency may threaten our health through dehydration, low blood pressure or even death.

5 TIPS TO CUT DOWN ON SALT



Eat less processed food



Flavor food with herbs, spices or pepper



When eating out, request for less salt during food preparation



Watch for hidden salt in sauces such as ketchup



Check food labels and be mindful of the ingredients

Random Facts

Generally we find large amount of salt is used for the preparation of pickled foods (eg. fermented baguio petsay) and processed foods (eg. sausages). That said, you may be surprised by the amount of salt contained in breads and breakfast cereals. Many Asian countries are known to have high salt consumption where we see an average of 10-14g of salt consumption each day, which is 2-3 times more than the amount of salt intake recommended by the World Health Organization.

Your Genotype Table

		ACE	AGT	Explanation
YOU ▶	Higher Sensitivity	AA	GG	Aim to take less than 5g salt (2g sodium) a day.
	Normal Sensitivity	GG	AA	Follow standard dietary guidelines to not exceed a teaspoon (5g) intake of salt a day.

Food and Dietary Sensitivities
TASTE



Your Result:

Non-Taster Super-Taster

Your Action Items

- There are two sides of the coin. The good news is, honey will taste sweeter but bitter gourd will definitely taste more bitter to you. You are more sensitive to the sweetness of sugar, the burning sensation of chilli peppers and the tannin of tea.

- These taste sensations matter because how food taste to you influences your eating behavior. For example, super tasters typically like their coffee with milk and sugar.

About Taste Sensitivity

Everyone favors different tastes when it comes to food. Probably unknown to you, your genetics play a role in determining the level of taste intensity you experience in life. If you see "super-taster" as your screening results, you are part of the 90% of the population who are highly sensitive to tastes.

Risks of Taste Sensitivity

Any taste becomes more intense when it comes to the tongue of a super-taster, e.g. bitter melons taste more bitter, candies taste sweeter and curry taste spicier. "Super-tasters" may refrain from taking certain foods since they perceive them as unappealing. Therefore, it is important for super-tasters be mindful to keep a well-balanced diet.

Benefits of Taste Sensitivity

"Super-tasters" tend to have greater flair in distinguishing the low-fat foods from the high-fat foods just by their taste. "Super-tasters" are more likely to savor low-fat foods over the high-fat version, so their risk of obesity could be lower than non-tasters.

WHICH HEALTHY FOODS ARE BITTER?



Arugula

Arugula helps with detoxing by helping your liver stimulate bile production.



Bitter Melon

Through its antibacterial properties, bitter melon can decrease inflammation and strengthen the immune system.



Coriander

The rich antioxidant properties of coriander can prevent cancer-causing chemicals from forming in meats during high heat cooking.



Mustard Greens

Mustard green's soluble fiber and sulfur contents, coupled with its many vitamins and antioxidants, make it a powerful detoxifier.



Sesame Seeds

Sesame seeds are high in calcium and magnesium and help cleanse the colon.

Random Facts

We do not usually consume bitter food as this ability is thought to be useful in protecting us from toxic food. Bitterness sensitivity (being able to taste bitterness or not) may affect your drinking habit because some alcoholic beverages taste bitter. Sweet, salty, sour, bitter and umami (a savory, meaty taste) are the five well-established basic tastes. There is also growing popularity of including fat as a sixth basic taste.

Your Genotype Table

		TAS2R38_1	AS2R38_2	TAS2R38_3	Explanation
YOU ▶	SUPER-TASTER	GG	GG	CC	You are more sensitive to taste, bitter foods taste bitter and sweet foods are sweeter.
	NON-TASTER	CC	AA	TT	You are less sensitive to taste, bitter foods taste less bitter and sweet are less sweet.

Food and Dietary Sensitivities
ALCOHOL



Your Result:

Normal Sensitivity | Higher Sensitivity

Your Action Items

- You can enjoy drinking alcohol in moderation.

About Alcohol

Alcohol, present in wine, beer and spirits, can bring about pleasant feelings. You may develop a tolerance to alcohol over time or you may lose your tolerance level from a period of abstinence. The amount and frequency of your alcohol intake can have an impact on how you respond to alcohol over time.

Risks of Alcohol Intake

Overconsumption of alcohol may elicit greater risks of cardiovascular disease, certain types of cancer and have deleterious effects on the liver, pancreas and immune system. Moreover, alcohol has the potential to block the absorption of critical nutrients such as vitamin C, vitamin B12 and folic acid.

Positive Effects of Alcohol

Alcohol consumption in moderation may benefit your health by reducing the risk of heart disease. It is advisable not to begin taking alcohol if you have not started. But if you do drink, it is best to drink responsibly and restrict your alcohol intake to prevent serious health issues.

A STANDARD DRINK

ABOUT 5% ABV	ABOUT 7% ABV	ABOUT 12% ABV	ABOUT 40% ABV
			
12 fl oz of Regular Beer 355ml	**8-9 fl oz of Malt Liquor** 250ml	**5 fl oz of Table Wine** 148ml	**1.5 fl oz shot of 80-proof spirits** Hard liquor: Whiskey, Gin, Rum, Vodka, Tequila etc.

Random Facts

Alcoholic drinks contain calories that can add up quickly, e.g. 1 gram of alcohol has about the same amount of calories as 1 gram of fat. To reduce your alcohol consumption, try to fill up your drinks with more ice and soda water. Alcohol suppresses the absorption of folate and inhibits the activity of folate in the blood and tissue. Try to compensate for this loss by supplementing more folate in your diet if you drink.

Your Genotype Table

		ALDH2	ADH1B	ADH1C	Explanation
	Higher Sensitivity	AA	TT	AA	Limit intake of alcohol to maximum a drink per day.
YOU ▶	Normal Sensitivity	GG	CC	CC	Follow standard guidelines for the drinking of alcohol.

Food and Dietary Sensitivities
LACTOSE



Your Result:

Tolerant Intolerant

Your Action Items

- Reduce your intake of dairy products by replacing them with other non-dairy options.
- Non-dairy products such as plant-based milk, avocado and olive oil are healthy alternatives.

About Lactose

Lactose is the main sugar present in milk and other dairy products. Some of the lactose content is eliminated when milk is processed into cheese or yogurt. Hence, these food items could be more friendly to those who cannot digest lactose properly.

The Risks

Lactose intolerance is highly prevalent in adults of Asian descent, creating gastric issues and wreaking havoc on your gastrointestinal tract when lactose is consumed. Nevertheless, the gut bacteria can make up for this shortcoming (but not always) by allowing lactose intolerant individuals to ingest moderate amounts of lactose without producing any symptoms.

What Are The Benefits?

A lactose molecule is made up of two simple sugars: one glucose molecule and one galactose molecule. These sugar subunits are required for optimal cell and brain development. Lactose-rich milk and dairy products are good sources of calcium and vitamin D.

Alternatives if you are lactose intolerant

Swap This	For That
Cow Milk	Soya Milk (Calcium-fortified)
Butter	Olive Oil
Ice-Cream	Sorbet
Yoghurt	Soybean Pudding
Milk Chocolate	Dark Chocolate

Random Facts

Lactose intolerance might run you into the risk of not consuming enough dairy products, which is an essential supply of vitamin D and calcium. Consider incorporating lactose-free products such as soy products into your diet as an alternative source of calcium. Lactose-intolerant individuals may experience bloating, gas, cramping or diarrhea after consuming dairy products, and generally it could last for 30-120 minutes.

Your Genotype Table

	MCM6_1	MCM6_2	Recommendation
you ▶ Intolerant	GG	AA	You are likely to have inability to digest lactose when consumed in larger amount. It is advisable to reduce the intake of dairy products by replacing with other non dairy sources.
Tolerant	AA	CC	You are likely to digest lactose normally. You can include 1-2 servings of dairy as part of a healthy balanced diet.

Food and Dietary Sensitivities
GLUTEN

Your Result:

Normal Sensitivity | Moderate Sensitivity | Higher Sensitivity

Your Action Items

- You can enjoy foods with gluten such as wheat, barley, rye and couscous.

About Gluten

Gluten is a critical baking ingredient. It is a protein present in grain products such as wheat, barley, rye and many more. An immune response is triggered in the small intestine of a gluten sensitive individual, leading to gut lining destruction over time.

Risks of Gluten Intake

Gluten has the tendency to elicit digestive and health issues in certain individuals. Typically, the symptoms of gluten sensitivity are stomach pain, bloating, irritability and brain fog (mental fatigue).

Benefits of Gluten

Gluten-abundant foods such as grains and flour could be a healthy source of various nutrients including protein, iron, thiamin and so on. Just bear in mind that natural gluten-containing foods could be healthier than highly processed gluten-free alternatives.



Random Facts

Soy sauce, salad dressings and food coloring are some of the unusual food items that contain gluten. Gluten-free foods are not necessarily healthy, and it may or may not help with shedding excess weight. Contrary to popular belief, not all grains contain gluten. Rice and buckwheat are some of the naturally gluten-free grains.

Your Genotype Table

		HLADQ 2.2_1	HLADQ 2.2_2	HLADQ 2.2_3	HLADQ 2.2_5	HLADQ8	Recommendation
	Higher Sensitivity	TT	CC	GG	TT	-	Only a small percentage of individual with gluten sensivitiy may actually experience symtoms with gluten. If you have a family history of celiac disease, speak with your physician for advice.
	Moderate Sensitivity	GT	CT	AG	CT	CC	You may have moderate genetic impact of gluten intolerence, but it does not mean that you are gluten sensitive. You may consult a physician if you have family history of celiac disease.
YOU ▶	Normal Sensitivity	GG	TT	AA	CC	TT	You are unlikely to have gluten intolerance, speak to your physician if you have any sensitivity.

04.

Your Results:
Well Being

Well-Being

TOTAL CHOLESTEROL



Your Result:

Normal Level | Moderate Level | Higher Level

Total cholesterol levels versus risk of getting cardiovascular diseases:

- < 5.2 mmol/L: Low risk
- 5.2-6.2 mmol/L: Intermediate risk
- > 6.2 mmol/L: High risk

Please take note that the risk level is also based on your age, smoking status, family history and blood pressure levels.

About Total Cholesterol

Lipids are biology molecules which is not soluble in water but soluble in organic solvent. A complete lipid profile includes four types of fats in your blood, i.e. total cholesterol, high-density lipoprotein (HDL) cholesterol, low-density lipoprotein (LDL) cholesterol and triglycerides. This is a sum of your blood's cholesterol content.

Importance

Generally, lipid profile assessment is a good method to monitor your risk of cardiovascular diseases. High level of total cholesterol, LDL cholesterol, triglycerides and low HDL cholesterol level gives you an increased risk of heart attack, stroke and hypertension.

FOODS TO LIMIT

Fatty meats

Fatty beef, lards, dairy products from whole milk or vegetable oils rich in saturated fats like coconut oil



Pastries

Doughnuts, cake and packaged cookies



Processed foods

Commercially fried food, buttered popcorns or any food that contain partially hydrogenated oils



Did You Know?

You cannot live without cholesterol. We are born with cholesterol in our bodies, and infants get it from their mother's milk or milk formula. Cholesterol is essential because all of our hormones and cells need it to function properly. It is also a building block for all of the body's cells, and it helps the liver make acids that are required to process fat.

Your Genotype Table

		APOB	MC4R	PCSK9	PSRC1	Explanation
	Higher Level	AA	CC	TT	GG	You are at a high risk of getting higher level of total cholesterol, please pay attention to your food intake.
	Moderate Level	AG	CT	TC	AG	You are at a moderate risk of getting higher level of total cholesterol, please pay attention to your food intake.
YOU ▶	Normal Level	GG	TT	CC	AA	You are more likely to have normal level of total cholesterol.

LDL

Well-Being

LOW DENSITY LIPOPROTEIN (LDL)

Your Result:

Normal Level | Moderate Level | Higher Level

LDL cholesterol levels versus risk of getting cardiovascular diseases:

- < 2.6 mmol/L: Low risk
- 2.6-4.1 mmol/L: Intermediate risk
- > 4.1 mmol/L: High risk

Other factors such as age, smoking status, family history and blood pressure levels may contribute to your risk level of getting cardiovascular disease as well.

About LDL

LDL is well-known as "bad" cholesterol. Too much of it in your blood causes the buildup of fatty deposits (plaques) in your arteries (atherosclerosis), which reduces blood flow. These plaques sometimes rupture and can lead to a heart attack or stroke.

Importance

If your LDL level is high, it will cause plaque buildup in your arteries. It then causes your arteries to become hardened and narrowed, which slows down the oxygen carrying blood to your heart. This can cause chest pain (angina) and ultimately a heart attack.

CHOLESTEROL: TOP FOODS TO IMPROVE YOUR NUMBERS



OATMEAL, OATBRAN

Oatmeal reduces LDL due to the soluble fiber it contains. LDL cholesterol can be reduced by having five to ten grams of soluble fiber a day.



FISH, OMEGA-3 FATTY ACIDS

Mackerel, salmon, tuna, herring and trout are some of the foods that are rich in omega-3 fatty acids. Small amounts of omega-3 can be found in canola oil, walnuts and flaxseeds.



ALMOND AND OTHER NUTS

Blood cholesterol can be improved by almonds and other tree nuts. A handful of nuts added to salads or eaten as snacks will be sufficient because nuts are rich in calories.



AVOCADOS

A lot of nutrients and monounsaturated fatty acids (MUFAs) can be found in avocados. Mediterranean diets are heart-healthy as avocados are often included in the meals.



OLIVE OIL

Replace fats in your diet with olive oil. For example, butter can be replaced with olive oil when basting meat.

Did You Know?

30 minutes of exercise for 5 times a week can help reduce your LDL levels and boost your HDL levels.

Your Genotype Table

	HNF1A	PSRC1	PCSK9	Explanation
Higher Level	AA	AA	TT	You are at a high risk of getting higher level of LDL.
YOU ▶ Moderate Level	AC	AG	CT	You are at a moderate risk of getting higher level of LDL.
Normal Level	CC	GG	CC	You are more likely to have normal level of LDL.

HDL

Well-Being

HIGH DENSITY LIPOPROTEIN (HDL)

Your Result:

Normal Level | Moderate Level | Lower Level

HDL cholesterol levels versus risks of getting cardiovascular diseases:
Men
- > 1.45 mmol/L: Low risk
- 0.9-1.45 mmol/L: Intermediate risk
- < 0.90 mmol/L: High risk

Women
- > 1.68 mmol/L: Low risk
- 1.15-1.68 mmol/L: Intermediate risk
- < 1.15 mmol/L: High risk

Other factors such as age, smoking status, family history and blood pressure levels may contribute to your risk level of getting cardiovascular disease as well.

About HDL

HDL is well-known as "good" cholesterol because it helps carry away LDL cholesterol, thus keeping arteries open and your blood flowing more freely.

Importance

HDL helps remove plaques by carrying LDL (bad) cholesterol away from the arteries and back to the liver, where the LDL is broken down and passed from the body.

IMPROVING HDL CHOLESTEROL

Reduce saturated fat

Avoid trans fat as they increase LDL cholesterol and reduce HDL levels. Fried foods, cookie and cakes contain trans fat as well. In addition to that, meats and full-fat dairy products should be consumed in moderation.

Changing lifestyle

Exercise more often and quit smoking can help to reduce the heart attack risks.

Avoid certain medications

Drugs containing testosterone and other anabolic steroids reduces HDL cholesterol levels. It is beneficial to avoid these drugs to improve your HDL numbers.







Did You Know?

HDL cholesterol normally makes up to 20%-30% of your total blood cholesterol. Studies show that a drop in your HDL levels increases your risk of getting a heart attack.

Your Genotype Table

	LPL	APOA5	CETP	Explanation
Lower Level	CC	GG	GG	You are at a high risk of getting lower level of HDL.
Moderate Level	CG	AG	AG	You are at a moderate risk of getting lower level of HDL.
YOU ▶ Normal Level	GG	AA	AA	You are more likely to have normal level of HDL.

Well-Being

TRIGLYCERIDE

Your Result:

Normal Level | Moderate Level | Higher Level

Healthy triglycerides levels:
- < 2.26 mmol/L

Please take note that the risk level is also based on your age, smoking status, family history and blood pressure levels.

About Triglyceride

Triglycerides are a type of fat in the blood. When you eat, your body converts calories it does not need into triglycerides, which are stored in fat cells.The triglycerides are stored in your fat cells. Our hormones will then release triglycerides for energy between meals.

Importance

If you regularly eat more calories than you burn, particularly from high-carbohydrate foods, you may have high triglycerides. High triglycerides can increase your risk for developing heart disease.

BEST WAY TO LOWER TRIGLYCERIDES



Workout for at least 30 minutes is encouraged



Triglyceride increases with simple carbohydrates intake



Focus on cutting weights to reduce conversion of triglyceride to fat



Foods with hydrogenated oils and fats should be avoided



Minimize alcohol intake as they are high in calories

Did You Know?

Alcoholic beverages can significantly raise triglyceride levels. Taking too much alcohol provides extra calories that can turn into fat which increases triglyceride levels. The best line of defense is, of course, to exercise, eat a moderate diet and load up on fresh vegetables and fruits.

Your Genotype Table

	APOA5	APOA5_1	ZPR1	APOA5_2	Explanation
Higher Level	GG	CC	GG	GG	You are at a high risk of getting higher level of triglycerides, please pay attention to your food intake.
▶ YOU — Moderate Level	GA	GC	GC	AG	You are at a moderate risk of getting higher level of triglycerides, please pay attention to your food intake.
Normal Level	AA	GG	CC	AA	You are more likely to have normal level of triglycerides.

Well-Being

OBESITY RISK



Your Result:

Normal Risk | Moderate Risk | Higher Risk

Your Action Items

- Consume a balanced healthy diet with fresh food and try to be physically active.
- Limit the intake of unhealthy foods such as fast food as they are usually high in refined sugar and fat.
- Have regular meals and snacks throughout the day and avoid skipping meals or eating late.

About Obesity

Obesity is a major health risk worldwide. Sedentary lifestyle and dietary changes are among the major contributing factors.

The Risks

Obesity is linked to many diseases, such as diabetes, cardiovascular disease, cancer and hypertension. Lack of physical activity and a poor diet can increase the risk of developing obesity, alongside with other complications. Genetics is also one of the well known factors predisposes to obesity.

The Benefits Of Understanding Your Obesity Risk

Understanding health hazards related to obesity cultivates your health awareness. Adopting an active lifestyle with healthy eating habits can help to maintain body weight within a healthy range. If you are overweight, shedding some weight using appropriate approach, could significantly improve blood pressure, sugar and cholesterol levels.

OBESITY IS A LEADING CAUSE OF...



High Blood Pressure



Heart Disease



Diabetes



High Cholesterol



Cancer

Did You Know?

Creating energy deficit and adopting an active lifestyle are important in maintaining our body weight. Obesity is linked to heightened risks of pancreatic cancer, colorectal cancer, liver cancer and kidney cancer.

Your Genotype Table

	FTO	MC4R	Explanation
Higher Risk	AA	CC	Increase your physical and workout activies. Limit your overall food intake and consume a healthy balanced diet.
Moderate Risk	AG	CT	Increase your physical and workout activies. Limit your overall food intake and consume a healthy balanced diet.
YOU ▶ Normal Risk	GG	TT	Be physically active and consume a healthy balanced diet.

Well-Being

METABOLIC RESPONSE

Your Result:

Normal Response | **Lower Response**

Your Action Items

- Consume a balanced diet and be aware of your intake of foods that contain high amounts of saturated fats and/or refined sugar.
- Do include protein in all your meals. Milk, eggs and yogurt are examples of good protein sources.
- Do muscle-strengthening workouts such as sit ups and push ups to increase lean muscle mass.

About Metabolism

Metabolism can be defined as chemical processes in your body which involve the utilization of food as source of energy and growth. The energy generated can be used as immediate fuel, or to be stored for future use. A person with high metabolism can burn and use energy faster; whereas those with low metabolism use energy less efficiently and tend to store fat more easily, which may lead to increased weight gain over time.

The Risks

Metabolism can be affected by various factors such as differences in muscle mass, pregnancy, as well as genetic make-up. Abnormal condition such as hyperthyroidism (high metabolism) can lead to sudden weight loss and muscle weakness. As a contrast, people with hypothyroidism has low metabolism which may lead to weight gain.

The Benefits Of Understanding Your Metabolic Response

Knowing your metabolism response can be beneficial in maintaining a healthy weight and decrease your predisposition to various chronic diseases such as diabetes and cardiovascular diseases.



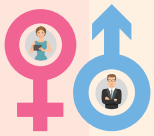
Age

Our metabolism tends to reduce as we age. Reduction in physical activities will lower muscle mass and increase the amount of fat gained in the body as we grow older.

Muscle Mass

People with a higher muscle to fat ratio tends to have a higher metabolism because muscle utilizes more energy than fat.





Gender

Males usually have a faster metabolic rate than females because muscle to fat ratio in men is generally higher than women.

Calorie Restriction

Our body in starvation state will have to break down muscle to obtain energy. This will decrease your body's muscle mass and slow down your metabolism. It will be much easier to gain body fat after stopping the diet.



Did You Know?

Higher muscle mass allows your body to burn more calories. Your metabolism can be improved through strength workout or resistance training. Maintain exercise routine in the morning to boost your energy level throughout the day.

Your Genotype Table

		ADRB2	Explanation
YOU ▶	Lower Response	CC	Do more muscle-strengthening activities such as weight lifting, push-ups and squats to increase lean muscle mass.
	Normal Response	GG	Be physically active to maintain lean muscle mass.

Well-Being

APPETITE CONTROL



Your Result:

Normal Control | Lower Control

Your Action Items

- Consume a healthy balanced diet with sufficient portions of vegetables, fruits, grains, lean protein, dairy products, nuts and oils.
- You can include higher fiber and protein foods in your diet. Those foods can help you to feel full for longer.
- Include at least 30 minutes of exercise on most days.

About Appetite Control

Appetite control is about finding the right balance between energy intake and energy expenditure. This is a crucial component in weight control, of which is affected by environmental factors such as exercise, diet, habits as well as genetics. Controlling your appetite with a balanced and nutritious diet helps you to maintain a healthy weight.

The Risks

Without proper appetite control, you may run the risk of overeating and hence gaining extra weight. This will in turn elevate your risk of developing diabetes, heart disease, hypertension and stroke.

Benefits Of Understanding Your Appetite Control

Weight maintenance is closely related to your appetite control. You may consume foods which is helpful in curbing appetite if you would like to achieve lower energy intake. Your genetics may tell you the type of weight control that is suitable for you, which will be helpful in increasing your awareness of health.

GOOD FOOD SOURCES TO CURB YOUR APPETITE



Eggs

Studies shown that eating eggs boost PYY levels (satiety hormone) and lower ghrelin levels (hunger hormone). So, it helps us to feel full longer.



Green Tea

Green tea not only helps increase your metabolic rate and burn fat. It also helps curb food cravings.



Almonds

Almond is a good source of protein and dietary fiber. These nutrients sate your appetite, resulting in lower calorie intake.



Greek Yogurt

Greek yogurt is high in protein and its thick, creamy texture helps to make you feel full.



Water

Although water passes through your body quickly, it fills up your stomach which reduces the feeling of hunger.

Did You Know?

Getting enough sleep is important to appetite control. Skipping meals does not help with appetite control, your body will naturally try to make up for the lost calories in the next meal.

Your Genotype Table

		FTO	MC4R	Explanation
	Lower Control	AA	CC	You have lower control on your appetite. Try to limit the portion size when you eat. Consume more nutrient-rich foods.
YOU ▶	Normal Control	TT	TT	You have normal appetite control. Try to consume healthy balanced diet with sufficient portion of grains, lean protein, vegetables, fruits and oil.

Well-Being

INFLAMMATION

Your Result: Inflammatory Response

Normal Response | Moderate Response | Increased Response

Your Result: Anti-inflammatory Re-

Normal Response | Moderately Decreased Response | Decreased Response

Your Action Items

- Maintain a balanced intake between pro-inflammatory omega-6 rich foods (e.g. sunflower and soybean oils) and anti-inflammatory omega-3 rich foods (e.g. salmon and almonds).
- Limit the intake of foods that can stimulate inflammation such as refined carbohydrates and trans fats.
- Limit the intake of alcohol as it can promote inflammation.

About Inflammation

Inflammation is part of our body's immune system to protect us from infections, wounds and any damages to tissue. These would not be healed without inflammatory response. Prolonged inflammation may lead to diseases such as cancer, arthritis and cardiovascular disease.

The Risks

There can be many factors attributable to prolonged inflammation, which include infections, exposure to toxins, unhealthy dietary patterns and genetics.

What Are The Benefits?

Understanding your body's inflammatory response helps to lower your risks of developing chronic diseases such as cancer, cardiovascular disease and diabetes. Good understanding on the factors contributing to inflammation, as well as your genetic make-up, are useful in the prevention of many diseases.

FOODS THAT FIGHT INFLAMMATION



Lycopene-containing Foods

Tomato
Pink Grapefruit
Watermelon



Fruits

Strawberries,
Blueberries,
Oranges,
Cherries



Nuts

Almonds,
Walnuts
Other Nuts



Leafy Greens

Spinach,
Cabbage,
Collards
and more.



Fatty Fish

Salmon,
Mackarel,
Tuna,
Sardines

Did You Know?

Inflammation, literally carry the meaning of "on fire" from Latin words. There are pro- and anti-inflammatory responses. Many foods such as vegetables and fruits are anti-inflammatory and protect us from diseases.

Your Genotype Table

		IL10_1	IL10_2	IL10_3	TNFA	IL1A_1	IL1B	IL6	IL8	IL18	CRP_1	COX2_1	COX2_2	Explanation
	Increased Response	TT	AA	TT	AA	AA	GG	GG	AA	TT	GG	AA	AA	You have higher chance of inflammation which could lead to arthritis. You may consider to increase
	Moderate Response	TC	AG	TG	AG	AG	CG	CG	AT	GT	AG	AG	AG	You have moderate higher chance of inflammation which could lead to arthritis. You may consider to increase your intake of omega-3.
YOU ▶	Normal Response	CC	GG	GG	GG	GG	CC	CC	TT	GG	AA	GG	GG	You have normal inflammatory response. Maintain balance intake of proinflammatory omega-6 and anti-inflammatory omega-3.

Well-Being

DETOX PHASE I:
TOXIN GENERATION SPEED

Your Result:

Normal Speed Higher Speed

Your Action Items

- Limit your consumption of smoked or grilled meats to 1-2 portions per week.
- Cook meats at lower temperatures or increase the amount of liquids (e.g. curry or stew) to protect the meat from direct heat.
- One of the ways to reduce toxic compound formation is to cook with acid-based marinades such as lime, lemon and vinegar.

About Toxins Generation Speed

Your body detoxifies in two phases, namely Phase I and Phase II detoxification. In Phase I detoxification, your liver metabolizes chemicals consumed and converts these chemicals into potentially harmful toxins. Your genetic predisposition plays a key role in how quickly your liver performs this role.

The Risks

Excessive toxin levels lead to dangerously high free radicals. It is harmful to our body when liver detoxification is overloaded with excessive toxins.

The Benefits Of Understanding Toxins Generation Speed

Avoiding toxins that cause Phase I detoxification overactitivty can be your benefit, leading to more balanced Phase II process. Knowing your genotype of Phase I detoxification can help you to avoid foods that are harmful to your body. Grilled red meat for example, generates certain chemicals that can increase the risk of developing cancers.

3 WAYS TO REDUCE RISK OF DNA DAMAGE

Choose More Fish or Plant Proteins

This can help you to reduce your saturated fat intake from red meat, and increase your intake of heart healthy nutrients such as omega-3 found in oily fish, and fiber in beans and lentils.



Focus on Fruit and Vegetables

Many fruits and vegetables are rich in antioxidants can help to fight oxidative stress. Make meat a side dish instead of the main focus of your meal.



Marinate First

When cooking meat, using marinades that are rich in antioxidants (e.g. garlic or fresh herbs) can reduce carcinogen formation and act as a barrier against flames in an open grill.



Did You Know?

Cooking red meat with high temperature can generate chemicals that can cause DNA changes, which may lead to certain cancer development.

Your Genotype Table

		EPHX1	CYP1A2	CYP1A1	CYP1B1	Recommendation
you ▶	Higher Speed	TT	AA	GG	GG	Minimize your grilled meat intake, try to avoid processed red meat and avoid meat from direct heat while cooking.
	Normal Speed	CC	CC	TT	CC	Limit your grilled meat intake and try to avoid processed red meat.

Well-Being

DETOX PHASE II: CRUCIFEROUS VEGETABLE NEEDS

Your Result:

Normal Needs Higher Needs

Your Action Items

- Try to have at least 1-2 weekly servings of cruciferous vegetables.
- You can accompany red meat intake with cruciferous vegetables such as broccoli, kai lan and kale.
- Creative recipes such as roasting florets of cauliflower can release its pleasant flavor.

About Cruciferous Vegetable Needs

Phase II detoxification process helps to convert certain toxins to less harmful substances. This process allow the harmful substances to be water-soluble so that they can be eliminated from the body. Cruciferous vegetables, such as broccoli, is a good source of sulforaphane which helps to improve the body's ability to excrete toxins.

The Risks

The accumulation of harmful substances in our body may predisposes us to cancers.

The Benefits Of Understanding Cruciferous Vegetable Needs

Certain variants of genotypes may not be able to process toxins efficiently. Hence cruciferous vegetables may help in the process by providing the enzymes required.

WHAT ARE CRUCIFEROUS VEGETABLES?



Did You Know?

Sulforaphane found in cruciferous vegetables has been shown to have anti cancer properties in a number of studies. The best way to retain sulforaphane is to cook/steam the vegetables lightly for one to three minutes.

Your Genotype Table

		NAT2	TPMT	GCLC	GSTP1	NQO1	Recommendation
	Higher Needs	TT	CC	AA	GG	AA	You may have increased risk of inflammation and oxidative stress. You also have decreased anti-inflammatory and anti-oxidant enzyme activities. Try to have at least 3-4 servings of cruciferous vegetables per week.
YOU ▶	Normal Needs	CC	TT	GG	AA	GG	You have normal needs on cruciferous vegetables. Try to have at least 1-2 servings of cruciferous vegetables per week.

05.

Your Results:
Fitness

Fitness INJURY RISK



Your Result:

Normal Risk — Higher Risk

- As you have higher injury risk, increase your preparation time to avoid injury.
- Enough preparation time before exercise/sports can go a long way in helping to prevent injuries.
- Make sure you spend at least 15 minutes before and after each exercise session to warm-up and cool-down.

Your Genotype Table

	COL1A1	Explanation
Higher Risk	CC	You may have higher injury risk. Try to increase your warm up time before exercise and sports. You may spend some extra time stretching which can help to prevent injury.
Normal Risk	AA	You have normal injury risk. However, do maintain normal warm up and cool down for 5-10 minutes when you exercising.

YOU ▸

Fitness OXYGEN EFFICIENCY



Your Result:

Higher Efficiency — Normal Efficiency

- You can handle moderate-duration cardio workouts, but you may have difficulty to work out for a longer duration.
- If you have higher oxygen efficiency it means you can produce more energy and keep yourself going for longer duration.
- You can try endurance-training activities such as light jogging or cycling for 30-45 minutes, 4-5 times a week.

Your Genotype Table

	ADRB2	VEGF	PPARGC1A	Explanation
Higher Efficiency	AA	CC	CC	You have higher oxygen efficiency. You can maintain your normal aerobic exercise routine to keep your cardiovascular fitness high.
Normal Efficiency	GG	GG	TT	You have normal oxygen efficiency. You can increase cardio based exercises or endurance workout to enhance oxygen efficiency.

YOU ▸

Fitness RECOVERY EFFICIENCY



Your Result:

Normal Recovery — Slower Recovery

- Recovery time is important because your body needs rebuilding after exercise.
- You may take longer to recover after intense exercise.
- You can stay active during recovery period but do not overdo it.

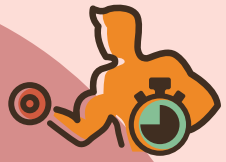
Your Genotype Table

	SOD2	Explanation
Slower Recovery	AA	You may have lower recovery rate after intense exercise. Try to increase extra 1-2 days (4-5 days in total) recovery time from your normal resting time after intense exercise.
Normal Recovery	GG	You have normal recovery rate after intense exercise. It is suggested to have 2-3 days recovery time after intense exercise.

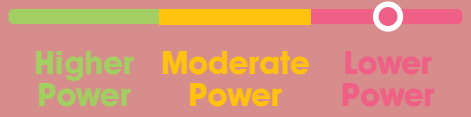
YOU ▸

Fitness

POWER & ENDURANCE



Your Result:





About Power and Endurance

Power is described as an ability of a group of muscles to produce maximal force in a short amount of time. Endurance is defined as a group of muscles that can generate sub-maximal force over a sustained amount of time or through repeated movements. Endurance training is usually a lower intensity activity that performed for a longer period of time. We have collated your key genes related with power and endurance to assist you to plan for your unique training guide.

- Increase power by including some strength training or power-based workouts 2-4 times per week.
- Examples: Power lifting, tennis, long jump, sprinting, golf, badminton and football.
- A lower endurance result means that you have lower number of genetic variations related with endurance.
- Try to increase endurance training activities such as swimming, cycling, jogging and hiking.

Your Genotype Table

	ACE	HIF1A	NOS3	MTHFR	PPARG	SOD2	TRHR	Explanation
Higher Power	AA	TT	TT	GG	GG	GG	TT	Your body has higher power level. This demonstrates that you may be more suitable to perform exercises that need a higher degree of power.
Moderate Power	AG	CT	CT	GT	-	-	CT	Your body has moderate powel level. This demonstrates that you may more suitable to perform exercises that require short bursts at a higher intensity such as sprinting.
YOU ▸ Lower Power	GG	CC	CC	TT	CC	AA	CC	Your body has lower power level. You can try to increase your power by including some strength training or power based exercises frequently.

Your Genotype Table

	ACE	ADRB2	VEGF	PPARGC1A	Explanation
Higher Endurance	AA	AA	GG	CC	Your body has higher endurance. This demonstrates that you may be more suitable to perform exercises require longer endurance such as running longer distances, hiking or cycling.
Moderate Endurance	AG	AG	CG	CT	Your body has moderate endurance level. This demonstrates that you may perform quite well at exercises require endurance such as jogging or cycling for longer distances.
YOU ▸ Lower Endurance	GG	GG	CC	TT	Your body has lower endurance level. You can increase endurance by conducting endurance training or cardio based exercises few days in a week for at least 30 minutes, such as jogging and hiking.

Fitness
SPRINT PERFORMANCE

Your Result:



Sprint speed is an important component of track and field events. Muscular strength is one of the factors which contribute to sprint speed. A number of genetic variants have been reported to be associated with elite athlete status. MORC4 that increases the proportion of fast-twitch muscle fibers is suggested to influence sprint speed.

Your Genotype Table

	MORC4	Explanation
Lower Performance	TT	You are less likely to show high sprint performance.
Moderate Performance	CT	Your sprint ability is average.
YOU ▶ Higher Performance	CC	You are likely to show high sprint performance.

Fitness
MUSCULAR STRENGTH

Your Result:



Muscular strength is measured by grip strength. Muscular strength may be influenced by your dominant muscle type -- slow-twitch (endurance) or fast-twitch (power) -- and also your exercise habits. Grip strength was found to have a positive correlation with cardiometabolic and cognitive health in some studies.

Your Genotype Table

	RNU4-17P	AL391869.1	THAP12P9	FKBPL	BDNF	UNC79	GNAT2	MLN	Explanation
Weaker Strength	TT	CC	TT	AA	AA	TT	CC	AA	You tend to have less muscular strength.
Interme-diate Strength	CT	CT	CT	AG	AG	CT	CT	AG	You tend to have intermediate muscular strength.
YOU ▶ Stronger Strength	CC	TT	CC	GG	GG	CC	TT	GG	You tend to have greater muscular strength.

Fitness
ATHLETIC ABILITY

Your Result:



Your athletic ability, unsurprisingly, determines your performance in sports. Athletics can be classified into strength or power-based activities (like sprinting) and endurance activities (like marathons), and usually, athletes 'specialize' in one type. Although the type of sports activity that you excel at can be influenced by many factors, genes also play a role in determining your performance in strength-based sports and endurance sports.

Your Genotype Table

	PPARGC1A	Explanation
Weaker Ability	TT	Your sports performance is weaker. Sports may not come naturally, but that does not mean you should not try.
YOU ▶ Intermedi-ate Ability	CT	Your sports performance is average, so it will take some effort to stand out.
Stronger Ability	CC	Your sports performance is stronger. You thrive and perform highly when you play sports.

Fitness

POST-EXERCISE HEART RATE RECOVERY RATE

Your Result:



This trait indicates the rate of heart rate recovery following exercise. In one study, researchers found a large number of candidate causal genes in heart rate recovery after exercise to also be involved in neuron biology. This provides new evidence that the autonomic nervous system plays a major role in the regulation of heart rate.

Your Genotype Table

	AC092640.1	Explanation
Slower Recovery	AA	Your heart rate tends to recover more slowly after exercise.
Moderate Recovery	AG	Your heart rate tends to recover at an intermediate rate after exercise.
YOU ▶ Faster Recovery	GG	Your heart rate tends to recover more quickly after exercise.

Fitness

MARATHON ENDURANCE

Your Result:



Marathon running is an athletic event that requires considerable endurance. Higher cardiovascular and pulmonary function, skeletal muscle strength and efficient metabolism of available substrates are probably needed for athletes to achieve optimal performance when competing in long duration events. A growing number of candidate genes that may influence athletic performance have been proposed.

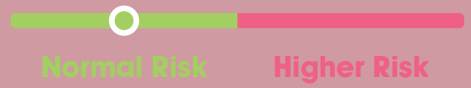
Your Genotype Table

	AMPD1	ADRB2	Explanation
YOU ▶ Lower Endurance	GG	GG	You are less likely to be a faster marathon runner.
Intermediate Endurance	AG	AG	Your running performance in a marathon is likely average.
Higher Endurance	AA	AA	You are likely to be a faster marathon runner.

Fitness

ACHILLES TENDON RUPTURES

Your Result:



Achilles tendon rupture along with Achilles tendinopathy is an injury that occurs at the back of your lower leg. This injury mainly happens to people playing recreational sports. An increasing number of association studies have demonstrated that genetic variants can predispose to the condition.

Your Genotype Table

	MMP3	Explanation
Higher Risk	CC	You are likely to have achilles tendon ruptures.
YOU ▶ Normal Risk	TT	You are less likely to have achilles tendon ruptures.

Fitness
ANTERIOR CRUCIATE LIGAMENT RUPTURE

Your Result:



Injuries to the anterior cruciate ligament (ACL) of the knee commonly occur during pivoting and cutting sports. This injury is not without severe consequences as the ACL never fully heals and studies report between 10% and 90% of all patients develop premature osteoarthritis.

Your Genotype Table

	KDR	Explanation
Higher Risk	GG	You are likely to have ACL ruptures.
YOU ▶ Normal Risk	AA	You are less likely to have ACL ruptures.

Fitness
MARATHON PERSONAL BEST TIME

Your Result:



Skeletal muscle architecture is one of the factors which can influence a person's marathon running performance. Muscle fascicles are bundles of skeletal muscle fibers and it has been reported that shorter fascicles are advantageous for elite distance runners because the shorter length contributes to improved mechanical efficiency. To date, however, it remains unclear whether these differences in the muscle architecture of elite runners are the result of adaptations to training or genetic variation.

Your Genotype Table

	TTN	Explanation
YOU ▶ Less Likely	CC	You are less likely to mark a better marathon personal record.
Intermediate Likelihood	CT	Your marathon personal best time is likely average.
More Likely	TT	You are likely to mark a better marathon personal record.

Fitness
VO2 MAX AND TRAINING

Your Result:



Response to exercise training regimens, such as high-intensity interval training (HIIT), depends on the type of exercise stimulus, and varies considerably between individuals. Peak oxygen uptake (VO2peak) has been used to predict VO2 max, which is a measurement of the maximum amount of oxygen a person can utilize during intense exercise. Mitochondria are the key mediators of intracellular energy, thus variants of mitochondrial-related genes may be involved in the individual differences in outcome of exercise training.

Your Genotype Table

	CHR1	KIAA0564	CEBPZ	MED12	Explanation
Slower Improvement	TT	AA	GG	GG	You are less likely to show improved peak oxygen uptake (VO2 peak) after high-intensity interval training.
YOU ▶ Average Improvement	CT	AG	-	AG	You are likely to show average peak oxygen uptake (VO2 peak) after high-intensity interval training.
Faster Improvement	CC	GG	AA	AA	You are likely to show improved peak oxygen uptake (VO2 peak) after high-intensity interval training.

06.

Your Results:
Skin Care

Skin Care
Skin barrier



Your Result:

Strong Skin Barrier | Vulnerable Skin Barrier

The skin barrier is responsible for maintaining water content of the skin and prevent harmful substances such as bacteria from damaging the skin. Once the skin barrier is damaged, the skin will be prone to dryness, inflammation and the repair function will be lowered too.

Your Genotype Table

		Chr 1 Intergenic	Explanation
YOU ▶	Vulnerable Barrier	AA	You may have vulnerable skin barrier.
	Strong Barrier	GG	You may have stronger skin barrier.

Skin Care
Moisture



Your Result:

Normal Capacity | Moderate Capacity | Weak Capacity

Just like any other part of the body, your skin is an organ (largest, in fact) that requires adequate hydration to perform at its best. Keeping it properly moisturized can help with slowing down the skin aging process, fighting of wrinkles and rid your skin of toxins. The weaker the moisture capacity, the more care is needed for external intervention (skin care regime).

Your Genotype Table

		FLG	Explanation
YOU ▶	Weak Capacity	DD	You may have weaker skin moisture capacity.
	Moderate Capacity	ID	You may have moderate skin moisture capacity.
	Normal Capacity	II	You may have normal skin moisture capacity.

Skin Care
Dermal Sensitivity



Your Result:

Normal Sensitivity | Higher Sensitivity

Sensitive skin is more prone to skin reactions such as pustules, skin bumps, skin erosion and skin flushing. Genetic factors, age, race and environmental factors all plays a role in causing skin reactions. Sensitive skin reacts more severely towards the sun, wind, heat, cold and chemicals. In severe cases, the individual will have other conditions such as eczema, rosacea and allergic contact dermatitis.

Your Genotype Table

		IL18	Explanation
YOU ▶	Higher Sensitivity	GG	You may have higher dermal sensitivity.
	Normal Sensitivity	CC	You may have normal dermal sensitivity.

Skin Care
Anti-photoaging



Your Result:

Strong Ability | Moderate Ability | Weak Ability

Photoaging is the premature aging of the skin caused by repeated exposure to ultraviolet radiation (UV). The most visible part of photoaging appears on your face, neck, upper chest and back of the hand where it receives significant sun exposure. Signs of photoaging are spider veins, pigmented spots, loss of skin tone, wrinkles and deep creases.

Your Genotype Table

	STXBP5L	MC1R	Explanation
Weak Ability	CC	AA	You may have weaker anti-photoaging ability.
YOU ▶ Moderate Ability	CT	AG	You may have moderate anti-photoaging ability.
Strong Ability	TT	GG	You may have stronger anti-photoaging ability.

Skin Care
Anti-tanning



Your Result:

Strong Ability | Moderate Ability | Weak Ability

UV rays is what makes the skin tan. UV rays penetrate the epidermis layers to trigger melanin production. Melanin is the brown pigments that causes tanning. Usually, the easier it is for an individual to get a tan, the weaker their anti-tanning ability will be.

Your Genotype Table

	SLC24A5	SLC45A5	OCA2_1	OCA2_2	Explanation
YOU ▶ Weak Ability	GG	CC	CC	TT	You may have weaker anti-tanning ability.
Moderate Ability	AG	GC	CT	CT	You may have moderate anti-tanning ability.
Strong Ability	AA	GG	TT	CC	You may have stronger anti-tanning ability.

Skin Care
Freckles



Your Result:

Normal Risk | Moderate Risk | Higher Risk

Freckles are hyperpigmented (brown) spots, results from increased production of melanin in the skin. They are often found on the face, neck, thorax and arms. They appear more frequently in light-skinned individuals that have difficulty in tanning and getting sunburn easily. These individuals should also take precaution to be extra diligent in protecting their skin from the sun to avoid getting skin cancers (the likelihood for them is higher).

Your Genotype Table

	TYR_1	TYR_2	MC1R_1	MC1R_2	Explanation
Higher Risk	AA	AA	TT	TT	Higher risk of having freckles.
Moderate Risk	AC	AG	TC	TC	Moderate risk of having freckles.
YOU ▶ Normal Risk	CC	GG	CC	CC	Normal risk of having freckles.

Skin Care
Anti-oxidant



Your Result:

Strong Capacity | Moderate Capacity | Weak Capacity

Oxidative stress (pollution, unhealthy diet, smoking) is an ongoing issue that is happening to our body and skin. If it is not under control, signs of skin aging will start to happen.

Anti-oxidants are substances that slow down the damage caused by oxidative stress. The greater the ability of your body to retain anti-oxidant, the better they are in counter attacking damaged cells.

Your Genotype Table

	GPX1	SOD2	NQO1	NFE2L2	Explanation
Weak Capacity	TT	AA	AA	TT	You may have weaker anti-oxidant capacity.
Moderate Capacity	TC	AG	AG	TC	You may have moderate anti-oxidant capacity.
YOU ▶ Strong Capacity	CC	GG	GG	CC	You may have stronger anti-oxidant capacity.

Skin Care
Elasticity



Your Result:

Strong Elasticity | Moderate Elasticity | Decreased Elasticity

The skin is the most intuitive organ that responds to body aging. After 25 years old, the skin elasticity decreases which is mainly due to the destruction of own collagen by the external environment. The speed of collagen synthesis cannot catch up with the speed of collagen degradation, leading to the generation of wrinkles.

Your Genotype Table

	IL6	AHR	MMP3	Explanation
Weak Elasticity	CC	AA	DD	You may have weaker elasticity.
Moderate Elasticity	GC	GA	ID	You may have moderate elasticity.
YOU ▶ Strong Elasticity	GG	GG	II	You may have stronger elasticity.

Skin Care
Wrinkles



Your Result:

Normal Risk | Moderate Risk | Higher Risk

Glycation occurs when the body's proteins react with sugar forming a substance in the body called Advanced Glycation End or AGEs for short. While glycation is a normal process, the rate of glycation is significantly increased by genetic factor, diet and lifestyle. Glycation causes tissues to become harder, thicker and less pliable. This results in wrinkles, skin thickening and loss of firmness.

Your Genotype Table

	AGER_1	AGER_2	GLO1	Explanation
Higher Risk	AA	AA	GG	Higher risk of having wrinkles.
YOU ▶ Moderate Risk	AT	AG	GT	Moderate risk of having wrinkles.
Normal Risk	TT	GG	TT	Normal risk of having wrinkles.

Skin Care
Anti-acne



Your Result:

Strong Ability | Moderate Ability | Weak Ability

Acne, also known as acne vulgaris, mainly includes whiteheads, blackheads, pimples, pustules and nodules. Excessive production of androgens (hormone) and skin oil secretion will increase the tendency of getting acne.

Your Genotype Table

	TGFB2	OVOL1	SELL	TNFa	Chr 1 Intergenic	DDB2	Explanation
Weak Ability	AA	TT	AA	AA	AA	CC	You may have weaker anti-acne ability
Moderate Ability	AG	TG	AG	AG	AG	CT	You may have moderate anti-acne ability
YOU ▸ Strong Ability	GG	GG	GG	GG	GG	TT	You may have stronger anti-acne ability

Skin Care
Cellulites



Your Result:

Normal Risk | Higher Risk

Cellulite is characterized as an uneven skin appearance due to irregular fibrous tissues and subcutaneous fat accumulation. Some name it the "orange peel" appearance. Factors causing cellulite are genetic predisposition, hormonal factors, circulatory system and weight fluctuations.

Take away tips:
1) Stay hydrated
2) Cut down on refined and processed food
3) Massage and scrub frequently to promote circulation

Your Genotype Table

	HIF1A	Explanation
Higher Risk	CC	Higher risk of having cellulites.
YOU ▸ Normal Risk	TT	Normal risk of having cellulites.

Skin Care
Varicose Veins



Your Result:

Normal Risk | Moderate Risk | Higher Risk

Varicose veins are superficial veins that have became large and twisted. Spider veins are the milder tiny version of it. Varicose veins usually appears in the legs and are usually caused by prolonged periods of standing and walking. For severe cases, it causes pain, discomfort, itching or venous thrombosis (blood clot).

Take away tips:
1) exercise more
2) eat a high fiber, low sodium diet
3) change your standing and sitting position regularly

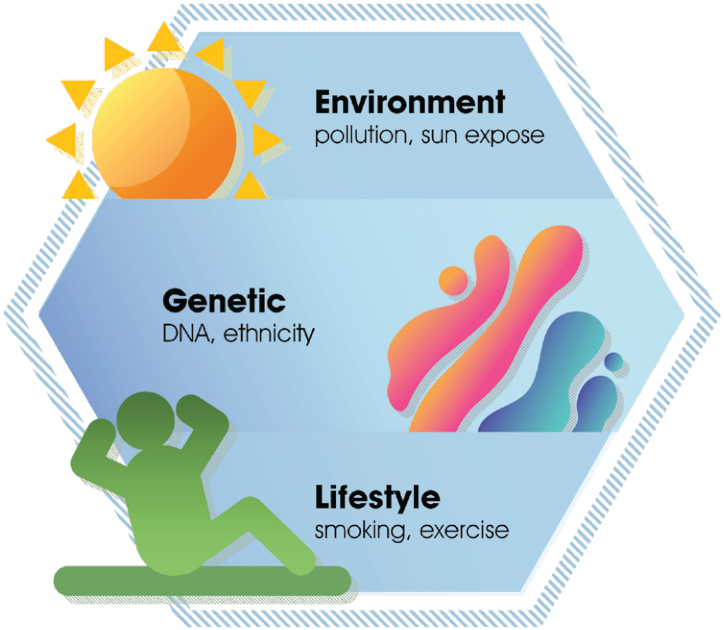
Your Genotype Table

	MTHFR_1	MTHFR_2	Explanation
Higher Risk	AA	GG	Higher risk of having varicose veins.
Moderate Risk	AG	GT	Moderate risk of having varicose veins.
YOU ▸ Normal Risk	GG	TT	Normal risk of having varicose veins.

07.

Your Results:

Personality and Physical Traits



Many scientific studies have linked our genetics to possible predispositions in certain traits of our personality. Even so, your characteristics are the result of the long interplay of your DNA (Nature) with your Environment (Nurture), such as your social and cultural background as well as your way of lifestyle. In other words, a healthy mixture of nature and nurture. The information extracted from these studies should not be taken as predestination, but rather as a predisposition that may or may not resemble reality depending on the rest of the factors which, in the case of personality, tend to be the most important.

We remind you that any change you want to make regarding your health must be guided by your doctor. The results of this report are personal, and not applicable to studies on other members of your family.

Reward Dependence

Weak Tendency | Intermediate Tendency | Strong Tendency

You have less tendency to be more reward dependent.

High reward dependence is characterized by a strong motivation to act in a way that earns social or emotional rewards. Extreme reward dependence may lead to personality or addictive disorders. This trait is moderately heritable, but mostly influenced by upbringing and environment during development.

Gene list: CSMD3

Agreeableness

Strong Tendency | Intermediate Tendency | Weak Tendency

You have intermediate tendency to be agreeable.

An agreeable person are more trusting, cooperative and values harmony. People at the other end of the spectrum are more cautious, less willing to co-operate with others and prefers to pursue their personal interest.

Gene list: CLOCK

Openness

Strong Tendency | Intermediate Tendency | Weak Tendency

You have stronger tendency to be open-minded.

Openness indicates a person is open to new experiences and ideas. Someone with a high level of openness is imaginative, curious, and open-minded. Individuals who are low in openness would rather not try new things. They prefer having familiar routines, people and ideas.

Gene list: PTPRD, ZNF285B, FUNDC1

Extraversion



Strong Tendency | Intermediate Tendency | Weak Tendency

You have intermediate tendency to be extroverted.

Extraverts are energized by being around and interacting with other people. They tend to be enthusiastic, talkative, and do not mind being the center of attention. Introverts (low in extraversion) tends to be more reserved and feels exhausted when having to socialize a lot. They do not enjoy making small talk and usually think things through before speaking.

Gene list: ZNF285B

Parental Overcontrol



Less Vulnerable | Intermediate Vulnerable | More Vulnerable

You are somewhat vulnerable to the negative effects of helicopter parenting.

Overcontrolling parenting can negatively affect a child's ability to manage his or her emotions and behavior. Children who cannot regulate their emotions and behavior effectively are more likely to act out in the classroom, to have a harder time making friends and to struggle in school. However, a recent study showed that only individuals with the minor-G allele in a SNP in the OPRM1 gene are vulnerable to the negative effects of helicopter parenting.

Gene list: OPRM1

Novelty Seeking Behavior



Strong Behavior | Intermediate Behavior | Weak Behavior

You may have weak novelty-seeking behavior.

Novelty seeking behavior is a highly heritable personality trait. Individuals with high novelty seeking behavior tend to get bored easily and enjoy the dopamine and adrenaline rush from new and exciting stimulation. This also cause them to make decisions more impulsively.

Gene list: NRXN1, ADGRL2, TCERG1L, AC087564.1, FLG-AS1, DMRTA1

Harm Avoidance Behavior



Strong Behavior | Intermediate Behavior | Weak Behavior

You may have intermediate harm avoidance behavior.

This behavior is a personality trait characterized by excessive worrying, fear of uncertainty, shyness and self-doubt. Individuals with this strong behavior are less likely to be assertive and stand up for themselves for the fear of hurting people's feelings. Thus, this is the reason why anxiety and depression are linked with this trait.

Gene list: TG, APBA2

Instant Gratification



Resist Tendency | Intemediate Tendency | Strong Tendency

You may be more tend toward instant gratification.

Instant gratification refers to the temptation to forgo a future benefit in order to obtain a less rewarding but more immediate benefit. Two areas of the brain plays a role in this trait- the emotion and logic-based parts. Impulsive choices happen when the emotional part of your brain triumphs over the logical one. Examples of instant gratifications are such as hitting snooze over getting up to exercise or to watch a movie instead of finishing up a paper or studying for an exam.

Gene list: GPM6B, HLA

Gambling Behavior



Less Addicted | Somehow Addicted | More Addicted

You may somehow prone to gambling addiction.

Gambling, when done reasonably, can be an entertaining leisure activity. Excessive gambling is often tied to personality or other disorders and it can be hazardous. The link between genetic markers related to gambling addiction have been reported to be associated with genes involved in the brain's reward and impulse control systems.

Gene list: PLTP, DPPA2P4

Resilience



Higher Resilience | Intermediate Resilience | Lower Resilience

You tend to have intermediate resilience.

Resilience is defined as the ability to bounce back from stress. Resilient people are aware of situations, their own emotional reactions and the behavior of those around them. By remaining aware, resilient people can maintain control of a situation and think of new ways to tackle problems.

Gene list: LINC01221

Resurgence of Fear



Lower Level | Moderate Level | Higher Level

You may have higher level of resurgence of fear.

Fear and uncertainty are strong emotions and natural responses to things that we do not understand that threaten our safety and health. Reappearance of a fear from a previous trauma (e.g. abuse, accidents or assault) can be very daunting for an individual. However, too much fear can indicate mental health illness: one example is post-traumatic stress disorder (PTSD), which affects up to 10% of the population.

Gene list: ADRB2

Hypnotizability



Lower Tendency | Moderate Tendency | Higher Tendency

You may be somehow likely to be easily hypnotized.

Hypnotizability looks at how easily a person can be hypnotized. Hypnotherapy is used clinically for diverse applications like resolving trauma, improving sleep and treating anxiety.

Gene list: COMT

Susceptibility to Framing



Less Susceptible | Intermediate Susceptible | More Susceptible

You may be swayed by one choice or another, depending on how information is presented.

The framing effect is the principle of how our choices are influenced by the way they are presented through different wordings, settings and situations. For example, between 80% lean ground beef vs 20% fat ground beef, most people would be more likely to choose the first option, even though the two choices are identical.

Gene list: COMT

Excessive Daytime Sleepiness



Less Susceptible | Intermediate Susceptible | More Susceptible

You may be more prone to daytime sleepiness.

An adult who is compelled to nap repeatedly during the day may have excessive daytime sleepiness if it persists chronically. It is characterized by persistent sleepiness and often a general lack of energy, even during the day after apparently adequate or even prolonged nighttime sleep.

Gene list: PATJ

Loneliness



Weak Tendency | Intermediate Tendency | Strong Tendency

You have a stronger tendency to experience loneliness more.

Loneliness can be affected by the existence of several genetic markers and it is largely shaped by age and environment. Loneliness is the negative emotional response to isolation and it is on the rise. A 2018 study on loneliness found that almost half of Americans feel alone. Young people between the ages of 18-22 are more likely to experience loneliness.

Gene list: TCF4

Impulsivity



Low Impulsivity | Moderate Impulsivity | **High Impulsivity**

You are or were likely to engage in risky behavior on a whim.

Impulsivity is the tendency to swiftly act without careful consideration of possible effects. People who are overly impulsive, seem unable to curb their immediate reactions or think before they act. As a result, they may blurt out inappropriate comments or engage in dangerous activities. Impulsivity in a child may make it hard for them to wait for things they want or to take their turn in games. They may grab a toy from another child or hit when they are upset.

Gene list: CNR1

Positive Affect



More Affect | Moderate Affect | **Less Affect**

You tend to have somewhat more positive affect.

Positive affect is a positive emotion such as satisfaction, enthusiasm, or happiness. It is a trait that is heavily influenced by genetics as positive affect is up to 64% heritable. Some studies showed that young adults reporting high positive affect will more likely obtain significantly higher annual income 10 years down the line.

Gene list: LINC01221

Social Network



Wider Network | Moderate Network | **Smaller Network**

You are more likely to have trouble expanding your social network.

Maintaining and expanding your personal and professional networks can be challenging. Most people can improve their social skills. However, those with a variant at the dopamine receptor D2 gene are more likely to be naturals at networking.

Gene list: DRD2

Anger



Less Angered | Moderate Angered | **Easily Angered**

You have weaker tendency to feel angry easily.

Anger is the state of feeling or showing rage and aggression. The genetic variation may be caused by the differential amount of chemicals released in the brain when we experience upsetting situations. The released chemical contribute to a greater or lesser physiological and psychological response in those situations. However, the quality of feeling easily angered is inherited.

Gene list: FYN, HERPUD2

Empathy



More Empathy | Moderate Empathy | **Less Empathy**

You tend to have stronger empathy.

Empathy is the ability to perceive, identify, and respond to the emotions of others. Empathy helps individuals navigate social situations. Having the ability to empathize is important in maintaining physical and mental health.

Gene list: AC013444.1, AC024084.1

Social Rejection



Resilient Rejection | Moderate Rejection | **Sensitive Rejection**

Your response to social rejection is likely to be average.

Social rejection, or deliberate exclusion from social interaction by individuals or groups, can be a painful experience. Study has suggested that psychological distress due to social rejection shares a similar neural pathway with the experience of physical pain. Tolerance to social rejection depends on the person, and some of this is already wired into DNA.

Gene list: OPRM1

Facial Emotion Recognition Ability



Good Recognition | Average Recognition | **Poor Recognition**

You have lower tendency for a strong facial emotion recognition ability.

Facial emotion recognition are important social cues in everyday interaction. Facial expressions communicate both the emotional state and behavioral intentions of an individual. The ability to recognize it allows you to respond accordingly on how to approach an individual.

Gene list: Chr7

Hedonic Well-being



More Hedonic | Average Hedonic | **Less Hedonic**

You tend to experience an average level of hedonic well-being.

Hedonic well-being is the happiness derived from maximizing pleasure and avoiding pain. It is characterized by experiencing more of what we commonly refer to as "happiness", and experiencing less negative emotions such as anxiety and fear.

Gene list: STAU1

Sensitive Personality



Less Sensitive | Moderate Sensitive | **More Sensitive**

You may be more easily overwhelmed by your surroundings.

Some people tend to be more sensitive to their surroundings. Highly sensitive people respond to very subtle stimuli and become easily overwhelmed. Research suggests that this may be caused by differences in the activity of brain chemicals, especially dopamine.

Gene list: DBH, NTSR2

Childhood Intelligence



Stronger Tendency | Intermediate Tendency | **Normal Tendency**

You have stronger tendency to have a high childhood intelligence.

Intelligence in childhood, as measured by IQ tests, is correlated with important outcomes in later life, such as educational attainment, income, and health. The referenced study on children aged 6-18 years old found that while no single SNP could explain variance in childhood intelligence independently, the aggregate effect of an array of SNPs predicted 22-46% of variance in childhood intelligence.

Gene list: ABRA, RAPGEF2, ESF1, LOC100507560, LOC10192954, LRPPRC

Memory Performance



Stronger Tendency | Intermediate Tendency | **Normal Tendency**

You have higher tendency to have a strong memory performance.

An analysis on differential memory performance in older populations, measured by verbal memory test scores, was used to identify the genetic markers associated with age-related memory abilities. Two genetic markers were identified -- this means the degree of age-related decline in memory is stronger for those that have the relevant genetic variants.

Gene list: APOE, TOMM40

Hippocampal Volume



Bigger Size | Intermediate Size | **Smaller Size**

You tend to have hippocampus at intermediate size.

The hippocampus is a brain structure that plays a prominent role in memory and cognition. Some studies have shown that a decreased volume in the hippocampus will increase the risk for Alzheimer's.

3 ways to improve your hippocampus:
1) Exercise
2) Diet
3) Brain training

Gene list: FBXW8, MSRB3

Cognitive Ability



Stronger Ability | Intermediate Ability | **Normal Ability**

You have a normal tendency to have a strong cognitive ability.

Cognitive functions encompass reasoning, memory, attention, and language. It leads directly to the attainment of information and, thus, knowledge. Besides interindividual differences resulting from genetic variation, formal education trains cognitive skills. This trait only informs on the genetic tendency for cognitive function and does not indicate your actual cognitive ability.

Gene list: LOC101927335

Working Memory



Stronger Memory | Intermediate Memory | **Normal Memory**

Your working memory is likely to be average.

Working memory is the short-term memory that allows us to hold and process information, and, for the tech-savvy, is essentially like the random-access memory (RAM) of a computer. If your working memory is impaired, you would, for example, not be able to carry a conversation because you would have trouble remembering what you had just said. Typically, the average person can hold about seven 'items' in their working memory simultaneously, but this number varies. Genes do matter in your working memory function, but fret not: it is possible to train your brain to retain and process more information.

Gene list: DRD2

Educational Attainment



Higher Attainment | Intermediate Attainment | **Normal Attainment**

You have intermediate tendency to have a higher educational attainment.

Researchers conducted a large-scale genetic association analysis of educational attainment in a sample of approximately 1.1 million individuals and identified 1271 independent genome-wide-significant SNPs.

Gene list: LRRN2, BCL11A

Word Reading Ability



Stronger Ability | Intermediate Ability | **Normal Ability**

You have lower tendency to have acute word reading ability.

Word reading ability is the ability to recognise and pronounce words with accuracy. While some SNPs were found to be correlated with word reading ability, significant environmental factors -- like the education you received -- plays a major role and may better account for your actual word reading ability.

Gene list: MAB21L3

Intelligence



Stronger Tendency | Intermediate Tendency | **Normal Tendency**

You have normal tendency to have a high intelligence.

Researchers report a meta-analysis for intelligence and identify 336 associated SNPs in 18 genomic loci, of which 15 are new. The strongest emerging association with intelligence is an SNP in an intronic region of FOXO3 and neighboring SNPs in the promotor of the same gene. They also identified genes are predominantly expressed in brain tissue, and pathway analysis indicates the involvement of genes regulating cell development. Despite the well-known difference in twin-based heritability for intelligence in childhood and adulthood, the result shows substantial genetic correlation.

Gene list: MEF2C, BCL11A, RPL15

Hearing Ability



Stronger Ability | Intermediate Ability | Normal Ability

You have stronger tendency to have an acute hearing ability.

Hearing ability is heritable. While research is still in the early stages, a candidate causal gene for human hearing ability identified in the referenced study was found to play a role in early development and maintenance of hearing function in mouse models.

Gene list: SIK3

Music Ability



Stronger Ability | Intermediate Ability | **Normal Ability**

You tend to have a normal musical ability.

Music is known to stimulate certain areas of the brain. But how that happens, at the molecular level, is not yet well understood. In a study, scientists identified the top SNPs significantly associated with musical ability to be located near the UNC5C gene. This gene plays a role in the functioning of the nervous system.

Gene list: UNC5C

Linguistics



Stronger Ability | Intermediate Ability | **Normal Ability**

You tend to have a stronger linguistics ability.

It is the scientific study of language and its structure, including the study of grammar, syntax, and phonetics. Specific branches of linguistics include sociolinguistics, dialectology, psycholinguistics, computational linguistics, comparative linguistics, and structural linguistics.

Gene list: ANKK1

Earlobe Size



Smaller Size | Average Size | **Larger Size**

You have stronger tendency to have a larger earlobe size.

Ear lobes are not a facial feature most people take note of, or even notice, when encountering another person. However, if you think carefully, you may recall that people you know have earlobes of varying sizes and shapes. In fact, the size of earlobes has been associated with several genetic markers. Buddha must have had the genetic variant for extra large earlobes!

Gene list: LOC153910, EDAR

Genetic Weight



Lower Weight | Average Weight | **Higher Weight**

You have stronger tendency to have a higher body weight.

Body weight is the weight of the whole body including muscles, bones, organs, blood and body fat. While obesity can be hereditary, there are many other factors influencing body weight that are within your control: your diet, exercise, sleep, and lifestyle habits.

Gene list: FTO, TMEM18, FTO_1, MC4R, BDNF-AS, ETV5, KCTD15, SEC16B, AIF1, LOC105378797, BCDIN3D, Intergenic, CDK17

Motion Sickness



Weaker Tendency | Intermediate Tendency | **Stronger Tendency**

You have weaker tendency to get motion sickness.

Research on motion sickness suggests that nausea associated with movement in a car, boat, or airplane is hereditary. Specific genetic markers have been identified.

Gene list: AC068781.1,GPD2, LINC01243, LOC105375344, LOC105378531, SLC35B3, LINGO2, CPNE4

Body Fat Percentage



Lower Percentage | Intermediate Percentage | **Higher Percentage**

You have stronger tendency to have a lower body fat percentage.

Body fat percentage is a common measure for obesity. Keeping track of body fat percentage and keeping it in check while losing weight is the best way to avoid rebound weight gain.

Gene list: FTO, RPS3AP49, SEC16B

BMI



Lower BMI | Average BMI | Higher BMI

You have stronger tendency to have a lower BMI.

Body mass index (BMI) is a measure of weight status based on height and weight that applies to adult men and women. It is calculated as weight in kilograms divided by the square of height in meters. A score of over 25 is considered overweight, and obese if over 30. A score below 18.5 is considered underweight.

Gene list: FTO, RPS3AP49, LOC105373353, PRKRIRP9, SEC16B

Earwax Type



Drier Earwax | Slight Earwax | Wetter Earwax

You tend to have drier earwax.

There are two kinds of earwax -- dry and wet. The former is common in East Asians while the latter is frequently seen in European and African populations. Recently, a SNP that acts as the determinant of earwax type was identified in the ABCC11 gene. Interestingly, axillary osmidrosis -- the clinical term for intense armpit odor -- is associated with the wet earwax genotype at the identified SNP in ABCC11.

Gene list: ABCC11

Longevity



Stronger Tendency | Intermediate Tendency | Normal Tendency

You have normal tendency to have a longer lifespan.

This trait examines the common genetic markers found for elderly humans of over 80 years old.

Gene list: APOC1, LOC101927697, TOMM40, IL6

Lean Body Mass



More Mass | Average Mass | Less Mass

You have intermediate tendency to have more lean mass.

Lean body mass represents your total body weight minus fat mass. This composes of your muscles and bones.

Gene list: TRHR

Sleep Duration



Longer Duration | Average Duration | Shorter Duration

You have variants for both short and long sleep duration.

Sleep duration is the length of shut-eye time needed. Whatever our sleep duration is, we should strive to meet that. Chronic sleep deprivation or disturbance is associated with a host of chronic diseases.

Gene list: PAX8, LINC01122, LOC105377632

Male - Pattern Baldness



Lower Risk | Intermediate Risk | Higher Risk

You have stronger tendency for balding.

Male pattern baldness, or androgenetic alopecia (AGA), is a highly heritable condition and the most common form of hair loss in humans.

Gene list: RPL41P1, LINC01432, LOC100287387, HDAC9, C1orf127, LOC105375343, SLC14A2, RPL41P1

Waist Size



Smaller Waist | Average Waist | Larger Waist

You have stronger tendency to have a larger waist.

Waist circumference is a measure for abdominal obesity. Several genetic markers linked to waist size were identified in research studies to understand the genetic underpinnings of abdominal obesity.

Gene list: PAN2, SERP1, SLC22A2

Breast Size



Bigger Size | Average Size | Smaller Size

You have stronger tendency to have a larger breast size.

Breast size is moderately heritable, yet the genetic variants leading to differences in breast size have only recently been identified. This trait only applies to women, so if you are male, please disregard these results!

Gene list: LOC102723593, LINC01101, LOC105378058, ZNF365, LOC107986229

Height



Taller Height | Average Height | Normal Height

You have stronger tendency to be short.

Height is greatly impacted by genetics, but in a complex way. Hundreds of genetic markers contribute to your height, not to mention all the environmental factors at play. Therefore, while it is difficult to obtain a reliable read on your height, this is the best estimate based on the most reliable pieces of research on human height.

Gene list: SERPINH1, ZBTB38, GDF5, HMGA2, CDK6, HHIP, HIST1H2AD, AMZ1, DLEU7, COLGALT2, CYCSP55, SOCS2, CASC20, PRKG2, GSDMC

Morningness



Morning Person | Morning/ Night | Night Owl

You have stronger tendency to be a morning person.

Are you an early bird or a night owl? Age plays a big role -- teenagers tend toward a night owl lifestyle, while senior people are usually up at the crack of dawn. Besides your age, genetics also influences the time of day you tend to be more active and alert.

Gene list: CLOCK

Bet-Placing



Less Bet-placing | Average Bet-placing | Higher Bet-placing

You are more likely to be willing to place higher bets.

How much you are wiling to put on a bet depends on your environment, personality traits and the way your brain are wired.

Gene list: CNR1

08.

Appendix

References

Ahmetov, II, Naumov VA, Donnikov AE, Maciejewska-Karlowska A, Kostryukova ES, Larin AK, et al. SOD2 gene polymorphism and muscle damage markers in elite athletes. Free Radic Res. 2014;48(8):948-55.

Akhmetov, II, Khakimullina AM, Popov DV, Missina SS, Vinogradova OL, Rogozkin VA. [Polymorphism of the vascular endothelial growth factor gene (VEGF) and aerobic performance in athletes]. Fiziol Cheloveka. 2008;34(4):97-101.

Anderson D, Holt BJ, Pennell CE, Holt PG, Hart PH, Blackwell JM. Genome-wide association study of vitamin D levels in children: replication in the Western Australian Pregnancy Cohort (Raine) study. Genes Immun. 2014;15(8):578-83.

Arkadianos I, Valdes AM, Marinos E, Florou A, Gill RD, Grimaldi KA. Improved weight management using genetic information to personalize a calorie controlled diet. Nutr J. 2007;6:29.

Asashima M, Shimada K, Pfeiffer CJ. Magnetic shielding induces early developmental abnormalities in the newt, Cynops pyrrhogaster. Bioelectromagnetics. 1991;12(4):215-24.

Beeks E, Kessels AG, Kroon AA, van der Klauw MM, de Leeuw PW. Genetic predisposition to salt-sensitivity: a systematic review. J Hypertens. 2004;22(7):1243-9.

Benyamin B, Esko T, Ried JS, Radhakrishnan A, Vermeulen SH, Traglia M, et al. Novel loci affecting iron homeostasis and their effects in individuals at risk for hemochromatosis. Nat Commun. 2014;5:4926.

Benyamin B, Esko T, Ried JS, Radhakrishnan A, Vermeulen SH, Traglia M, et al. Corrigendum: Novel loci affecting iron homeostasis and their effects in individuals at risk for hemochromatosis. Nat Commun. 2015;6:6542.

Berry D, Hypponen E. Determinants of vitamin D status: focus on genetic variations. Curr Opin Nephrol Hypertens. 2011;20(4):331-6.

Bersaglieri T, Sabeti PC, Patterson N, Vanderploeg T, Schaffner SF, Drake JA, et al. Genetic signatures of strong recent positive selection at the lactase gene. Am J Hum Genet. 2004;74(6):1111-20.

Brown JC, Miller CJ, Schwellnus MP, Collins M. Range of motion measurements diverge with increasing age for COL5A1 genotypes. Scand J Med Sci Sports. 2011;21(6):e266-72.

Charbonneau DE, Hanson ED, Ludlow AT, Delmonico MJ, Hurley BF, Roth SM. ACE genotype and the muscle hypertrophic and strength responses to strength training. Med Sci Sports Exerc. 2008;40(4):677-83.

Cheung CL, Lau KS, Sham PC, Tan KC, Kung AW. Genetic variant in vitamin D binding protein is associated with serum 25-hydroxyvitamin D and vitamin D insufficiency in southern Chinese. J Hum Genet. 2013;58(11):749-51.

Cheung CY, Tso AW, Cheung BM, Xu A, Ong KL, Fong CH, et al. Obesity susceptibility genetic variants identified from recent genome-wide association studies: implications in a chinese population. J Clin Endocrinol Metab. 2010;95(3):1395-403.

Childs E, Hohoff C, Deckert J, Xu K, Badner J, de Wit H. Association between ADORA2A and DRD2 polymorphisms and caffeine-induced anxiety. Neuropsychopharmacology. 2008;33(12):2791-800.

Codd V, Nelson CP, Albrecht E, Mangino M, Deelen J, Buxton JL, et al. Identification of seven loci affecting mean telomere length and their association with disease. Nat Genet. 2013;45(4):422-7, 7e1-2.

Corella D, Arnett DK, Tucker KL, Kabagambe EK, Tsai M, Parnell LD, et al. A high intake of saturated fatty acids strengthens the association between the fat mass and obesity-associated gene and BMI. J Nutr. 2011;141(12):2219-25.

Corella D, Tai ES, Sorli JV, Chew SK, Coltell O, Sotos-Prieto M, et al. Association between the APOA2 promoter polymorphism and body weight in Mediterranean and Asian populations: replication of a gene-saturated fat interaction. Int J Obes (Lond). 2011;35(5):666-75.

Cornelis MC. Coffee intake. Prog Mol Biol Transl Sci. 2012;108:293-322.

Cornelis MC, Qi L, Kraft P, Hu FB. TCF7L2, dietary carbohydrate, and risk of type 2 diabetes in US women. Am J Clin Nutr. 2009;89(4):1256-62.

Day KJ, Adamski MM, Dordevic AL, Murgia C. Genetic Variations as Modifying Factors to Dietary Zinc Requirements-A Systematic Review. Nutrients. 2017;9(2).

Doimo M, Desbats MA, Cerqua C, Cassina M, Trevisson E, Salviati L. Genetics of coenzyme q10 deficiency. Mol Syndromol. 2014;5(3-4):156-62.

References

Dorajoo R, Sun Y, Han Y, Ke T, Burger A, Chang X, et al. A genome-wide association study of n-3 and n-6 plasma fatty acids in a Singaporean Chinese population. Genes Nutr. 2015;10(6):53.

Draelos ZD, Ertel K, Berge C. Niacinamide-containing facial moisturizer improves skin barrier and benefits subjects with rosacea. Cutis. 2005;76(2):135-41.

Du J, Zhu X, Xie C, Dai N, Gu Y, Zhu M, et al. Telomere length, genetic variants and gastric cancer risk in a Chinese population. Carcinogenesis. 2015;36(9):963-70.

Eaton K, Edwards M, Krithika S, Cook G, Norton H, Parra EJ. Association study confirms the role of two OCA2 polymorphisms in normal skin pigmentation variation in East Asian populations. Am J Hum Biol. 2015;27(4):520-5.

Enattah NS, Sahi T, Savilahti E, Terwilliger JD, Peltonen L, Jarvela I. Identification of a variant associated with adult-type hypolactasia. Nat Genet. 2002;30(2):233-7.

Ferrucci L, Perry JR, Matteini A, Perola M, Tanaka T, Silander K, et al. Common variation in the beta-carotene 15,15'-monooxygenase 1 gene affects circulating levels of carotenoids: a genome-wide association study. Am J Hum Genet. 2009;84(2):123-33.

Fischer A, Schmelzer C, Rimbach G, Niklowitz P, Menke T, Doring F. Association between genetic variants in the Coenzyme Q10 metabolism and Coenzyme Q10 status in humans. BMC Res Notes. 2011;4:245.

Fisher E, Boeing H, Fritsche A, Doering F, Joost HG, Schulze MB. Whole-grain consumption and transcription factor-7-like 2 (TCF7L2) rs7903146: gene-diet interaction in modulating type 2 diabetes risk. Br J Nutr. 2009;101(4):478-81.

Forsberg L, Lyrenas L, de Faire U, Morgenstern R. A common functional C-T substitution polymorphism in the promoter region of the human catalase gene influences transcription factor binding, reporter gene transcription and is correlated to blood catalase levels. Free Radic Biol Med. 2001;30(5):500-5.

Frosst P, Blom HJ, Milos R, Goyette P, Sheppard CA, Matthews RG, et al. A candidate genetic risk factor for vascular disease: a common mutation in methylenetetrahydrofolate reductase. Nat Genet. 1995;10(1):111-3.

Fujihara J, Yasuda T, Kimura-Kataoka K, Takinami Y, Nagao M, Takeshita H. Association of SNPs in genes encoding zinc transporters on blood zinc levels in humans. Leg Med (Tokyo). 2018;30:28-33.

Gao W, Tan J, Huls A, Ding A, Liu Y, Matsui MS, et al. Genetic variants associated with skin aging in the Chinese Han population. J Dermatol Sci. 2017;86(1):21-9.

Grimble RF, Howell WM, O'Reilly G, Turner SJ, Markovic O, Hirrell S, et al. The ability of fish oil to suppress tumor necrosis factor alpha production by peripheral blood mononuclear cells in healthy men is associated with polymorphisms in genes that influence tumor necrosis factor alpha production. Am J Clin Nutr. 2002;76(2):454-9.

Guo T, Yin RX, Huang F, Yao LM, Lin WX, Pan SL. Association between the DOCK7, PCSK9 and GALNT2 Gene Polymorphisms and Serum Lipid levels. Sci Rep. 2016;6:19079.

Hazra A, Kraft P, Lazarus R, Chen C, Chanock SJ, Jacques P, et al. Genome-wide significant predictors of metabolites in the one-carbon metabolism pathway. Hum Mol Genet. 2009;18(23):4677-87.

Hazra A, Kraft P, Selhub J, Giovannucci EL, Thomas G, Hoover RN, et al. Common variants of FUT2 are associated with plasma vitamin B12 levels. Nat Genet. 2008;40(10):1160-2.

He J, Gu D, Chen J, Wu X, Kelly TN, Huang JF, et al. Premature deaths attributable to blood pressure in China: a prospective cohort study. Lancet. 2009;374(9703):1765-72.

He L, Wu WJ, Yang JK, Cheng H, Zuo XB, Lai W, et al. Two new susceptibility loci 1q24.2 and 11p11.2 confer risk to severe acne. Nat Commun. 2014;5:2870.

Hindy G, Mollet IG, Rukh G, Ericson U, Orho-Melander M. Several type 2 diabetes-associated variants in genes annotated to WNT signaling interact with dietary fiber in relation to incidence of type 2 diabetes. Genes Nutr. 2016;11:6.

Joffe YT, Collins M, Goedecke JH. The relationship between dietary fatty acids and inflammatory genes on the obese phenotype and serum lipids. Nutrients. 2013;5(5):1672-705.

Karunasinghe N, Han DY, Zhu S, Yu J, Lange K, Duan H, et al. Serum selenium and single-nucleotide polymorphisms in genes for selenoproteins: relationship to markers of oxidative stress in men from Auckland, New Zealand. Genes Nutr. 2012;7(2):179-90.

Kestenbaum B, Glazer NL, Kottgen A, Felix JF, Hwang SJ, Liu Y, et al. Common genetic variants associate with serum phosphorus concentration. J Am Soc Nephrol. 2010;21(7):1223-32.

References

Kim M, Yoo J, Kim J, Park J, Han E, Jang W, et al. Association of FLG single nucleotide variations with clinical phenotypes of atopic dermatitis. PLoS One. 2017;12(12):e0190077.

Kim SY, Yang SW, Kim HL, Kim SH, Kim SJ, Park SM, et al. Association between P478S polymorphism of the filaggrin gene & atopic dermatitis. Indian J Med Res. 2013;138(6):922-7.

Kopp TI, Outzen M, Olsen A, Vogel U, Ravn-Haren G. Genetic polymorphism in selenoprotein P modifies the response to selenium-rich foods on blood levels of selenium and selenoprotein P in a randomized dietary intervention study in Danes. Genes Nutr. 2018;13:20.

Le Clerc S, Taing L, Ezzedine K, Latreille J, Delaneau O, Labib T, et al. A genome-wide association study in Caucasian women points out a putative role of the STXBP5L gene in facial photoaging. J Invest Dermatol. 2013;133(4):929-35.

Lee ST, Nicholls RD, Bundey S, Laxova R, Musarella M, Spritz RA. Mutations of the P gene in oculocutaneous albinism, ocular albinism, and Prader-Willi syndrome plus albinism. N Engl J Med. 1994;330(8):529-34.

Li S, Hu B, Wang Y, Wu D, Jin L, Wang X. Influences of APOA5 variants on plasma triglyceride levels in Uyghur population. PLoS One. 2014;9(10):e110258.

Lin X, Lu D, Gao Y, Tao S, Yang X, Feng J, et al. Genome-wide association study identifies novel loci associated with serum level of vitamin B12 in Chinese men. Hum Mol Genet. 2012;21(11):2610-7.

Liu L, Zuo X, Zhu Z, Wen L, Yang C, Zhu C, et al. Genome-wide association study identifies three novel susceptibility loci for systemic lupus erythematosus in Han Chinese. Br J Dermatol. 2018;179(2):506-8.

Liu Y, Gao W, Koellmann C, Le Clerc S, Huls A, Li B, et al. Genome-wide scan identified genetic variants associated with skin aging in a Chinese female population. J Dermatol Sci. 2019;96(1):42-9.

Major JM, Yu K, Chung CC, Weinstein SJ, Yeager M, Wheeler W, et al. Genome-wide association study identifies three common variants associated with serologic response to vitamin E supplementation in men. J Nutr. 2012;142(5):866-71.

Manti S, Amorini M, Cuppari C, Salpietro A, Porcino F, Leonardi S, et al. Filaggrin mutations and Molluscum contagiosum skin infection in patients with atopic dermatitis. Ann Allergy Asthma Immunol. 2017;119(5):446-51.

McGrath JA. Profilaggrin, dry skin, and atopic dermatitis risk: size matters. J Invest Dermatol. 2012;132(1):10-1.

Merritt DC, Jamnik J, El-Sohemy A. FTO genotype, dietary protein intake, and body weight in a multiethnic population of young adults: a cross-sectional study. Genes Nutr. 2018;13:4.

Meyer TE, Verwoert GC, Hwang SJ, Glazer NL, Smith AV, van Rooij FJ, et al. Genome-wide association studies of serum magnesium, potassium, and sodium concentrations identify six Loci influencing serum magnesium levels. PLoS Genet. 2010;6(8).

Mirhafez SR, Avan A, Pasdar A, Khatamianfar S, Hosseinzadeh L, Ganjali S, et al. Zinc Finger 259 Gene Polymorphism rs964184 is Associated with Serum Triglyceride Levels and Metabolic Syndrome. Int J Mol Cell Med. 2016;5(1):8-18.

Mondul AM, Yu K, Wheeler W, Zhang H, Weinstein SJ, Major JM, et al. Genome-wide association study of circulating retinol levels. Hum Mol Genet. 2011;20(23):4724-31.

Naval J, Alonso V, Herranz MA. Genetic polymorphisms and skin aging: the identification of population genotypic groups holds potential for personalized treatments. Clin Cosmet Investig Dermatol. 2014;7:207-14.

Navarini AA, Simpson MA, Weale M, Knight J, Carlavan I, Reiniche P, et al. Genome-wide association study identifies three novel susceptibility loci for severe Acne vulgaris. Nat Commun. 2014;5:4020.

Nishio K, Goto Y, Kondo T, Ito S, Ishida Y, Kawai S, et al. Serum folate and methylenetetrahydrofolate reductase (MTHFR) C677T polymorphism adjusted for folate intake. J Epidemiol. 2008;18(3):125-31.

Nock NL, Tang D, Rundle A, Neslund-Dudas C, Savera AT, Bock CH, et al. Associations between smoking, polymorphisms in polycyclic aromatic hydrocarbon (PAH) metabolism and conjugation genes and PAH-DNA adducts in prostate tumors differ by race. Cancer Epidemiol Biomarkers Prev. 2007;16(6):1236-45.

Norat T, Bowman R, Luben R, Welch A, Khaw KT, Wareham N, et al. Blood pressure and interactions between the angiotensin polymorphism AGT M235T and sodium intake: a cross-sectional population study. Am J Clin Nutr. 2008;88(2):392-7.

Ortega A, Berna G, Rojas A, Martin F, Soria B. Gene-Diet Interactions in Type 2 Diabetes: The Chicken and Egg Debate. Int J Mol Sci. 2017;18(6).

References

O'Seaghdha CM, Wu H, Yang Q, Kapur K, Guessous I, Zuber AM, et al. Meta-analysis of genome-wide association studies identifies six new Loci for serum calcium concentrations. PLoS Genet. 2013;9(9):e1003796.

Palli D, Masala G, Peluso M, Gaspari L, Krogh V, Munnia A, et al. The effects of diet on DNA bulky adduct levels are strongly modified by GSTM1 genotype: a study on 634 subjects. Carcinogenesis. 2004;25(4):577-84.

Pilic L, Mavrommatis Y. Genetic predisposition to salt-sensitive normotension and its effects on salt taste perception and intake. Br J Nutr. 2018;120(7):721-31.

Poch E, Gonzalez D, Giner V, Bragulat E, Coca A, de La Sierra A. Molecular basis of salt sensitivity in human hypertension. Evaluation of renin-angiotensin-aldosterone system gene polymorphisms. Hypertension. 2001;38(5):1204-9.

Posthumus M, September AV, O'Cuinneagain D, van der Merwe W, Schwellnus MP, Collins M. The COL5A1 gene is associated with increased risk of anterior cruciate ligament ruptures in female participants. Am J Sports Med. 2009;37(11):2234-40.

Qi Q, Zheng Y, Huang T, Rood J, Bray GA, Sacks FM, et al. Vitamin D metabolism-related genetic variants, dietary protein intake and improvement of insulin resistance in a 2 year weight-loss trial: POUNDS Lost. Diabetologia. 2015;58(12):2791-9.

Ramos-Lopez O, Panduro A, Rivera-Iniguez I, Roman S. Dopamine D2 receptor polymorphism (C957T) is associated with sugar consumption and triglyceride levels in West Mexicans. Physiol Behav. 2018;194:532-7.

Retey JV, Adam M, Khatami R, Luhmann UF, Jung HH, Berger W, et al. A genetic variation in the adenosine A2A receptor gene (ADORA2A) contributes to individual sensitivity to caffeine effects on sleep. Clin Pharmacol Ther. 2007;81(5):692-8.

Rizk NM, El-Menyar A, Egue H, Souleman Wais I, Mohamed Baluli H, Alali K, et al. The Association between Serum LDL Cholesterol and Genetic Variation in Chromosomal Locus 1p13.3 among Coronary Artery Disease Patients. Biomed Res Int. 2015;2015:678924.

Ruiz JR, Larrarte E, Margareto J, Ares R, Labayen I. Role of beta(2)-adrenergic receptor polymorphisms on body weight and body composition response to energy restriction in obese women: preliminary results. Obesity (Silver Spring). 2011;19(1):212-5.

Sachse C, Brockmoller J, Bauer S, Roots I. Functional significance of a C-->A polymorphism in intron 1 of the cytochrome P450 CYP1A2 gene tested with caffeine. Br J Clin Pharmacol. 1999;47(4):445-9.

September AV, Cook J, Handley CJ, van der Merwe L, Schwellnus MP, Collins M. Variants within the COL5A1 gene are associated with Achilles tendinopathy in two populations. Br J Sports Med. 2009;43(5):357-65.

Shahid SU, Shabana NA, Cooper JA, Rehman A, Humphries SE. Common variants in the genes of triglyceride and HDL-C metabolism lack association with coronary artery disease in the Pakistani subjects. Lipids Health Dis. 2017;16(1):24.

Shen Y, Wang T, Zhou C, Wang X, Ding X, Tian S, et al. Prevalence of acne vulgaris in Chinese adolescents and adults: a community-based study of 17,345 subjects in six cities. Acta Derm Venereol. 2012;92(1):40-4.

Sonestedt E, Gullberg B, Ericson U, Wirfalt E, Hedblad B, Orho-Melander M. Association between fat intake, physical activity and mortality depending on genetic variation in FTO. Int J Obes (Lond). 2011;35(8):1041-9.

Speakman JR. The 'Fat Mass and Obesity Related' (FTO) gene: Mechanisms of Impact on Obesity and Energy Balance. Curr Obes Rep. 2015;4(1):73-91.

Steinbrecher A, Rohrmann S, Timofeeva M, Risch A, Jansen E, Linseisen J. Dietary glucosinolate intake, polymorphisms in selected biotransformation enzymes, and risk of prostate cancer. Cancer Epidemiol Biomarkers Prev. 2010;19(1):135-43.

Tanaka T, Roy CN, Yao W, Matteini A, Semba RD, Arking D, et al. A genome-wide association analysis of serum iron concentrations. Blood. 2010;115(1):94-6.

Tanaka T, Scheet P, Giusti B, Bandinelli S, Piras MG, Usala G, et al. Genome-wide association study of vitamin B6, vitamin B12, folate, and homocysteine blood concentrations. Am J Hum Genet. 2009;84(4):477-82.

Tepper BJ. Nutritional implications of genetic taste variation: the role of PROP sensitivity and other taste phenotypes. Annu Rev Nutr. 2008;28:367-88.

References

Timpson NJ, Forouhi NG, Brion MJ, Harbord RM, Cook DG, Johnson P, et al. Genetic variation at the SLC23A1 locus is associated with circulating concentrations of L-ascorbic acid (vitamin C): evidence from 5 independent studies with >15,000 participants. Am J Clin Nutr. 2010;92(2):375-82.

Ukkola O, Tremblay A, Bouchard C. Beta-2 adrenergic receptor variants are associated with subcutaneous fat accumulation in response to long-term overfeeding. Int J Obes Relat Metab Disord. 2001;25(11):1604-8.

Vierkotter A, Schikowski T, Sugiri D, Matsui MS, Kramer U, Krutmann J. MMP-1 and -3 promoter variants are indicative of a common susceptibility for skin and lung aging: results from a cohort of elderly women (SALIA). J Invest Dermatol. 2015;135(5):1268-74.

Vimaleswaran KS, Li S, Zhao JH, Luan J, Bingham SA, Khaw KT, et al. Physical activity attenuates the body mass index-increasing influence of genetic variation in the FTO gene. Am J Clin Nutr. 2009;90(2):425-8.

Vinayagamoorthy N, Yim SH, Jung SH, Park SW, Kim YJ, Kim BJ, et al. Association of common variants in the calcium-sensing receptor gene with serum calcium levels in East Asians. J Hum Genet. 2015;60(8):407-12.

Vogiatzoglou A, Smith AD, Nurk E, Berstad P, Drevon CA, Ueland PM, et al. Dietary sources of vitamin B-12 and their association with plasma vitamin B-12 concentrations in the general population: the Hordaland Homocysteine Study. Am J Clin Nutr. 2009;89(4):1078-87.

Wade KH, Forouhi NG, Cook DG, Johnson P, McConnachie A, Morris RW, et al. Variation in the SLC23A1 gene does not influence cardiometabolic outcomes to the extent expected given its association with L-ascorbic acid. Am J Clin Nutr. 2015;101(1):202-9.

Wagoner LE, Craft LL, Singh B, Suresh DP, Zengel PW, McGuire N, et al. Polymorphisms of the beta(2)-adrenergic receptor determine exercise capacity in patients with heart failure. Circ Res. 2000;86(8):834-40.

Wang G, Mikami E, Chiu LL, A DEP, Deason M, Fuku N, et al. Association analysis of ACE and ACTN3 in elite Caucasian and East Asian swimmers. Med Sci Sports Exerc. 2013;45(5):892-900.

Weinstein SJ, Gridley G, Harty LC, Diehl SR, Brown LM, Winn DM, et al. Folate intake, serum homocysteine and methylenetetrahydrofolate reductase (MTHFR) C677T genotype are not associated with oral cancer risk in Puerto Rico. J Nutr. 2002;132(4):762-7.

Weisberg I, Tran P, Christensen B, Sibani S, Rozen R. A second genetic polymorphism in methylenetetrahydrofolate reductase (MTHFR) associated with decreased enzyme activity. Mol Genet Metab. 1998;64(3):169-72.

Weiss EP, Brandauer J, Kulaputana O, Ghiu IA, Wohn CR, Phares DA, et al. FABP2 Ala54Thr genotype is associated with glucoregulatory function and lipid oxidation after a high-fat meal in sedentary nondiabetic men and women. Am J Clin Nutr. 2007;85(1):102-8.

Wilson AG, di Giovine FS, Duff GW. Genetics of tumour necrosis factor-alpha in autoimmune, infectious, and neoplastic diseases. J Inflamm. 1995;45(1):1-12.

Wu M, Chang SC, Kampman E, Yang J, Wang XS, Gu XP, et al. Single nucleotide polymorphisms of ADH1B, ADH1C and ALDH2 genes and esophageal cancer: a population-based case-control study in China. Int J Cancer. 2013;132(8):1868-77.

Yamin C, Amir O, Sagiv M, Attias E, Meckel Y, Eynon N, et al. ACE ID genotype affects blood creatine kinase response to eccentric exercise. J Appl Physiol (1985). 2007;103(6):2057-61.

Yang JK, Wu WJ, Qi J, He L, Zhang YP. TNF-308 G/A polymorphism and risk of acne vulgaris: a meta-analysis. PLoS One. 2014;9(2):e87806.

Yoshida A, Huang IY, Ikawa M. Molecular abnormality of an inactive aldehyde dehydrogenase variant commonly found in Orientals. Proc Natl Acad Sci U S A. 1984;81(1):258-61.

You Y, Wu YH, Zhang Y, Zhang L, Song Y, Bai W, et al. Effects of polymorphisms in APOA5 on the plasma levels of triglycerides and risk of coronary heart disease in Jilin, northeast China: a case-control study. BMJ Open. 2018;8(6):e020016.

Zhang M, Li B, Wu S, Tan J, Yang Y, Marini A, et al. A Genome-Wide Association Study of Basal Transepidermal Water Loss Finds that Variants at 9q34.3 Are Associated with Skin Barrier Function. J Invest Dermatol. 2017;137(4):979-82.

Zhang M, Qureshi AA, Hunter DJ, Han J. A genome-wide association study of severe teenage acne in European Americans. Hum Genet. 2014;133(3):259-64.

Zhu J, Sun Q, Zong G, Si Y, Liu C, Qi Q, et al. Interaction between a common variant in FADS1 and erythrocyte polyunsaturated fatty acids on lipid profile in Chinese Hans. J Lipid Res. 2013;54(5):1477-83.