



# HAIRNOME

Precision Genotype Hair &  
Scalp Assessment



Hair Profile  
Scalp Profile  
Vitamins and Minerals



Thank you for using LifeNome, the personalized nutrition, fitness and wellbeing advice based on your genes.

We are excited to provide you with one of the most comprehensive genome-based nutrition and well-being information reports currently available. The information provided by LifeNome does not constitute medical advice and is provided solely as complementary insight to assist you and your doctor in making more personalized decisions for your nutrition and well being.

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My Genetic Strengths **0**

My Genetic Risks **13**

- Hair Thickness
- Scalp Glycation
- Scalp Pollution Defense Impairment
- Sebum Overproduction
- Iron Deficiency
- Vitamin B9 Deficiency
- Hair Lipids (Fatty Acids Imbalance)
- Scalp Antioxidant Deficiency
- Scalp Thinning (Fragile Skin)
- Magnesium Deficiency
- Phytosterols Imbalance
- Vitamin A (Carotene) Deficiency
- Vitamin B6 Deficiency

My Genetic Strengths Levels

- Typical
- Slightly Advantaged
- Advantaged

My Genetic Risk Levels

- Low
- Slightly Elevated
- Elevated



*There never were in the world two opinions alike, no more than two hairs or two grains; the most universal quality is diversity (Michel de Montaigne, 16th century).*

Hair appearance (color, shape, density) is heavily influenced by our genes. Hair color varies a lot in places like Western Europe, East Asians tend to have strong straight hair while no one has straight hair in sub-Saharan Africa. Hair quality (growth, strength) and hair aging (baldness, graying) are also determined by genetics we inherit from our parents. Hair traits are generally polygenic, they depend on many genetic variants, not just one or two. In addition, hair quality and aging depends on our lifestyle, environment, and general health.

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## Hair Dryness

Typical

higher than  
**5%**  
of the population

MY TOP GENETIC VARIANTS

rs74486977

**18/41**

MY TOTAL

### WHAT IS HAIR DRYNESS?

Dry hair lacks the lustre, shine or gleam of normal hair. When your hair is dry, the outer layer breaks down, resulting in the hair being more difficult to comb and the hair may be more fragile than usual. Dry hair can affect men and women of any age, but you're more likely to develop it as you get older. A variety of factors can lead to dry hair, including environmental conditions, hair care habits, and your physical health. Genetics contributes to the risk of dry hair too, specifically variations in several keratin genes (KRT71, KRT74 and KRT25).

### YOUR GENETIC VARIANTS

This is 1 genetic variant (SNP) associated with Hair Dryness out of 41 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ To keep your hair shiny use good quality hair care products.
- ♥ Take extra care if your hair if you live in a hot, dry climate, or spend a lot of time in the sun or wind.
- ♥ If you frequently swim in chlorinated or salty water. Use stay-on conditioner and a weekly hair mask.
- ♥ Use styling products that support the outer layer of your hair.

## Hair Propensity for Greying

Typical

higher than  
**50%**  
of the population

MY TOP GENETIC VARIANTS

rs11237851

rs1434533

rs2085601

**4/6**

MY TOTAL

### WHAT IS HAIR PROPENSITY FOR GREYING?

Hair greying occurs when pigment production slows down for hair follicles or when hydrogen peroxide buildup within the hair goes beyond a certain threshold. What is considered premature greying depends on the ethnicity of individuals. In general, more than 50% of the population experiences significant grey hair by the age of 50. The timing of your hair greying is predominantly determined by your genetics, stress and certain vitamin deficiencies.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Hair Propensity for Greying out of 6 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ Assess your intake of essential micronutrients, such as biotin (vitamin B7), vitamin B12, folic acid, copper, and glutathione.
- ♥ Increase protein intake.
- ♥ Try techniques to reduce stress.
- ♥ If you are experiencing hair graying at younger age, consult your physician during next visit to rule out medical causes.

## Hair Growth Deficiency (Slower Hair Growth)

Typical

higher than  
**32%**  
of the population

MY TOP GENETIC VARIANTS

rs1570360

rs1800469

rs4444903

6/7

MY TOTAL

### WHAT IS HAIR GROWTH DEFICIENCY (SLOWER HAIR GROWTH)?

Hair growth in humans happens in three different phases. They are called the anagen, catagen, and telogen phases. The average hair growth speed is around 0.5 inch per month. The anagen phase (also known as the growth phase) can last 24-72 months and the actual length of this phase is determined by your genes and determines how long your hair will grow. At any time more than 80% of your hair is in the anagen phase. In the catagen phase which is about 14 days long, the follicles renew themselves and pushes the follicle upward. In the telogen, or resting phase of the hair, the hair follicles remain dormant for 2 to 4 months and upon its completion, the hair is shed in a natural process and a new follicle starts to take shape. Some individuals experience slower hair growth due to their genetic variations in several genes coding for growth factors that tightly control all phases of hair growth.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Hair Growth Deficiency (Slower Hair Growth) out of 7 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ Trim 1/4 inch from the ends of your hair every six to eight weeks to remove split ends and keep your hair healthy.
- ♥ Use conditioner every time you shampoo but do not shampoo every time you take a shower.
- ♥ Eat a healthy balanced diet rich in protein, iron and vitamin C.

## Hair Lipids (Fatty Acids Imbalance)

Slightly  
Elevated

higher than  
**75%**  
of the population

MY TOP GENETIC VARIANTS

rs174537 rs174546 rs174547

**10/12**  
MY TOTAL

### WHAT IS HAIR LIPIDS (FATTY ACIDS IMBALANCE)?

Healthy hair are protected by hydro-lipid layer that is composed of hydro (water) and lipids (fats). Essential fatty acids play primary roles in the structure of the hydro-lipid layer, contributing to hair's elasticity and aiding ceramides in keeping the cuticle scales attached to the hair shaft, and hair well hydrated. Hair's natural oils are stripped away with age, over-washing, chemical treatments, and over-styling. Additionally, variations in genes involved in lipid metabolism (FADs enzymes and members of ELOVL family ) affect the levels of "good oils". People with variations in lipid metabolism genes will have greater benefit from additional fatty acids in their diets, and their hair products and treatments. With proper care this integral part of the hair can be preserved, and replenished.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Hair Lipids (Fatty Acids Imbalance) out of 12 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ☛ Aim to eat fish high in fatty acids two to three times a week. These include anchovies, herring mackerel, salmon (wild has more omega-3s than farmed), sardines, lake trout, tuna.
- ☛ Avocado, walnuts and flaxseed have omegas too.
- ☛ Consider taking supplements that contain essential fatty acids.
- ☛ Use stay-on conditioner and shampoos that protect your hydro-lipid layer.

## Hair Loss (Alopecia Areata)

Typical

higher than  
**62%**  
of the population

MY TOP GENETIC VARIANTS

rs10761660 rs1867277 rs2155219

**21/33**

MY TOTAL

### WHAT IS HAIR LOSS (ALOPECIA AREATA)?

Hair loss can have different reasons, some that are genetic and some that have to do with lifestyle and environmental factors. In general, men are more likely to lose their hair than women due to genetic factors, in particular with regards to male pattern baldness. Women's hair loss can also be exacerbated by genetic factors, but can also be due to vitamin deficiencies or underlying health conditions. One of hair loss conditions is alopecia areata that causes hair loss in patches. It is an autoimmune disease with a lifetime risk of over 2%. The cause of this hair loss condition is not yet known but genetic factors contribute to the risk. Almost 40% of people younger than age 30 with alopecia areata have at least one family member who has been diagnosed with the same disorder.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Hair Loss (Alopecia Areata) out of 33 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ Hair loss develops when your immune system attacks your hair follicles.
- ♥ While the exact cause of this condition is not known, experts agree that it may be triggered by stress.
- ♥ If you notice your hair is thinning, talk to you hairdresses about topical preparations to the affected areas.

## Hair Thickness

Elevated

higher than  
**92%**  
of the population

MY TOP GENETIC VARIANTS

rs4752566

2/2

MY TOTAL

### WHAT IS HAIR THICKNESS?

Hair thickness refers to the diameter of an individual strand of hair. Hair thickness affects how different haircuts and hairstyles will suit you best. If you have thin hair, you may want for it to look fuller and you have thicker hair you may want to try to leverage it for emphasizing it. In addition, hair care treatments should be different for different hair types. Counter to intuition hair thickness and hair density are not always synonymous. Sometimes curly hair makes your hair looks more dense, but the individual strands of hair are fine. Therefore it helps having extra insights into your hair thickness using a variety of additional information, including your potential genetic predispositions.

### YOUR GENETIC VARIANTS

This is 1 genetic variant (SNP) associated with Hair Thickness out of 2 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ Wash your hair less frequently. To wash your hair, make sure to use high quality products formulated for fine hair (such as give example of products).
- ♥ Balance the amount of conditioner you use. While moisture is necessary for health hair, too much conditioner can weigh the hair down and make it seem more limp.
- ♥ Dry your hair gently: use a cool or warm setting on your heat tools.
- ♥ Try to only brush or comb your hair when it's dry.
- ♥ Use volumizing mousse or styling spray rather than serums or creams to style your hair.
- ♥ Don't use too much product. Even lightweight formulas can weigh down hair when used excessively.
- ♥ A layered hairstyle can help create more volume for fine hair.

## Hair Breakage Potential (Keratin Type II Imbalance)

Typical

higher than  
**48%**  
of the population

MY TOP GENETIC VARIANTS

rs146753414 rs2245203 rs998820

**9/12**  
MY TOTAL

### WHAT IS HAIR BREAKAGE POTENTIAL (KERATIN TYPE II IMBALANCE)?

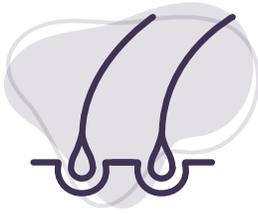
Hair breakage potential, or hair fragility is largely determined by keratin which is a major component of your hair as well as skin, and nails. It's a vital protein that helps make up both the internal structure and the outer cuticle of your hair strands. The level of keratin in your hair determines the strength of your hair and its resistance towards breakage. When your hair experiences keratin loss, your hair becomes significantly more susceptible to breakage, and damage. Certain genetic predispositions are associated with keratin II levels imbalance.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Hair Breakage Potential (Keratin Type II Imbalance) out of 12 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ Take good care of your hair and use high quality products.
- ♥ To keep healthy levels of keratin in your hair, use keratin-infused shampoos and conditioners.
- ♥ Avoid shampooing when it is not necessary.
- ♥ Do not overdo styling with high heat.
- ♥ In addition to a genetic predisposition, extensive exposure to chemicals, UV rays, and other natural elements like salt water and wind, can also deplete the keratin in your hair.



According to [Harpers Bazaar \(UK\)](#), "scalp health" is the beauty buzzword du jour for good reason; the hair of your dreams starts with the skin that covers your head. Just like your overall skin, scalp skin's quality and aging depend on genetics. In addition, stress, psychological factors, overuse of treatments and styling tools contribute to scalp conditions. Understanding your scalp health and factors that contribute to it is very important for your hair health.

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## Scalp Antioxidant Deficiency

Slightly Elevated

higher than  
**50%**  
of the population

### MY TOP GENETIC VARIANTS

rs2300181 rs35652124 rs769214

**7/7**  
MY TOTAL

### WHAT IS SCALP ANTIOXIDANT DEFICIENCY?

A balance between free radicals and intrinsic antioxidants is necessary for proper general physiological functioning and for the maintenance of youthful and healthy hair and skin. Increased amounts of free radicals contribute to a dangerous chain of reactions that target tissues and organs in the body, including hair and skin. This can trigger many chronic and late-onset diseases while also leading to premature aging by damaging the skin's proteins and lipids. To prevent such an occurrence, a master regulator gene, NRF2 (NF-E2-Related Factor 2), prompts the activation of SOD2/ CAT(enzyme/protein) when it is triggered by oxidative stress and electrophiles. These enzymes convert free radicals into less harmful products. Genetic variations in NRF2, SOD2, and CAT can result in reduced antioxidant activities which then increases risk of damage to the skin's lipids and proteins.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Scalp Antioxidant Deficiency out of 7 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- Use hair care products that are infused with natural antioxidants (vitamin C, carotene, vitamin E) that boost your intrinsic antioxidant capacity.
- Another group of antioxidants, such as glutathione and green tea extract, activate antioxidant master regulator, NRF2.
- Include more antioxidant-rich foods in your diet such as blueberries, red berries, dark green leafy vegetables, sweet potatoes, oranges, nuts, whole grains, and green tea.
- Consider taking supplements that target antioxidant imbalances in your hair.

## Scalp Barrier Function

Typical

higher than  
**55%**  
of the population

MY TOP GENETIC VARIANTS

rs6661961

**3/4**

MY TOTAL

### WHAT IS SCALP BARRIER FUNCTION?

Our scalp barrier serves a crucial, protective function for the skin by preventing entry of harmful microbes, toxins, and allergens while maintaining proper skin hydration. The scalp barrier function is performed primarily in the outermost layer of the epidermis called the Stratum Corneum (SC). Stratum Corneum is also responsible for thermoregulation and innate immunity. Genetic variations in the Flaggirin (FLG) gene may cause skin barrier defects increasing its permeability, and causing skin sensitivity and irritation. In more extreme cases, genetic variations in the FLG gene are also associated with eczema and allergies. In up to 10% persons of European ancestry, parts of the FLG gene are deleted. As a result, this has strongly predisposes those people to eczema, asthma, and allergies to various ingredients in hair and scalp products, or susceptibility to dandruff. People with a permeable skin/scalp barrier are also three times more likely to suffer from a peanut allergy.

### YOUR GENETIC VARIANTS

This is 1 genetic variant (SNP) associated with Scalp Barrier Function out of 4 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- 💡 If you experience irritation of scalp skin, evaluate the hair products that you have been using.
- 💡 Consider using products that reinforce the skin barrier function (give example of products).
- 💡 Clean up your diet from potential allergens.

## Collagen Breakdown for Scalp

Typical

higher than  
**48%**  
of the population

MY TOP GENETIC VARIANTS

rs3918241

2/4

MY TOTAL

### WHAT IS COLLAGEN BREAKDOWN FOR SCALP?

Collagen is a natural amino acid that is the good the most abundant protein. It helps support and strengthen bones, teeth, tendons, skin, and internal organs, and can also be used for hair growth. Collagen greatly helps in hair growth and hair regeneration. It possesses anti-oxidant properties and fights the production of free radicals that are a result of the body's different metabolic processes and are responsible for damaging the hair follicles. Sufficient amount of collagen in the hair shaft, strengthens the hair follicles and improves hair growth. Collagen can also improve the overall volume of your hair by increasing the diameter of each individual hair, thereby giving your flow a fuller appearance. Collagen levels decrease as the levels of enzymes responsible for collagen breakdown (MMPs) increase with normal aging, and exposure to environmental factors (UV radiation) and irritation (chlorine in swimming pools). In addition, genetic variants increase activity of MMPs contributing to accelerated loss of collagen.

### YOUR GENETIC VARIANTS

This is 1 genetic variant (SNP) associated with Collagen Breakdown for Scalp out of 4 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- As collagen greatly helps in hair growth and hair regeneration, include collagen-rich foods in your diet.
- To boost collagen production consume foods rich in vitamin C, polyphenols, carotenoids and flavonoids.
- You may consider using collagen-infused hair products, and/or collagen supplementation for glowing skin.

## Scalp Glycation

Elevated

higher than  
**92%**  
of the population

MY TOP GENETIC VARIANTS

rs1049346 rs1800624 rs4746

7/7

MY TOTAL

### WHAT IS SCALP GLYCATION?

Our bodies use glucose as its main source of fuel. If glucose is not metabolized properly, it can bind to hair and skin collagen and elastin fibers forming abnormal cross-links. This leads to structural and functional tissue impairment which produces advanced glycation products (AGEs). This process, called glycation, causes damage and inflammation (at cellular level) resulting from an overload of processed sugary foods. The scalp, and therefore the hair follicles, are susceptible to the deleterious effects of glycation. Scientific research identified several genetic variations in NAT2, GLO1, and AGER genes are associated with excessive glycation. A recent study found that the presence of slow NAT2 acetylator types correlates with higher levels of AGEs. Genetic variations in the glyoxalase 1 enzyme (GLO1) that protects cells from AGEs can lower their activity which leads to the build-up of AGEs. Another gene implicated in glycation and skin aging is AGER receptor. Binding of AGEs to AGER results in activation of collagen breakdown enzymes and the pro-inflammatory cytokines.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Scalp Glycation out of 7 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- To protect your scalp and hair against glycation, use products infused with anti-glycation agents such as green tea, blueberries or pomegranate.
- For a more intensive hair and scalp treatment, use products that contains ginger extract that has both antioxidant and antiglycation potential.
- Gradually change your relationship with sugar. The obvious answer is to cut-out sugars. While it is easier said than done, start monitoring your sugar (refined or unrefined) intake. Include more complex carbs (peas, beans, whole grains, and vegetables) to your diet.
- Consume a diet rich in polyphenols (nuts, berries etc) and antioxidants (fruits, green leafy vegetables etc) to promote healthy blood sugar, that will be immediately reflected in their appearance of your hair and scalp.

## Scalp Hydration Impairment

Typical

higher than  
**45%**  
of the population

MY TOP GENETIC VARIANTS

**3/3**  
MY TOTAL

### WHAT IS SCALP HYDRATION IMPAIRMENT?

The scalp is a balanced eco-system. Balanced levels of hydration is absolutely fundamental for a healthy scalp. Aquaporin channels, a family of integral cell membrane proteins, play central role in keeping our scalp hydrated by allowing the movement of water and glycerol across the cell membrane. The quality of aquaporin channels in the human scalp is strongly affected by aging, chronic sun exposure, and inflammation. The most abundant (and best studied) aquaporin in the scalp is the AQP3 gene. It transports water, glycerol, and small solutes (urea) across the plasma membrane hence regulating skin hydration, skin barrier recovery, and wound healing. Another group of genes expressed in skin are called claudins. They are tight junction membrane proteins that form paracellular barriers and pores that determine tight junction permeability. Genetic variations in the AQP3 and CLDN1 genes can result in their diminished expression and reduced activity.

### YOUR GENETIC VARIANTS

There is no genetic variants (SNPs) associated with Scalp Hydration Impairment out of 3 that we are using for the determination of your predisposition for this trait.

### RECOMMENDATIONS

- ♥ Use good quality moisturizing shampoo and conditioner.
- ♥ Moisturize with hair and scalp masks.
- ♥ Exfoliate to remove dirt, oil and buildup formed on your scalp just as it does any other part of your skin.
- ♥ Drink plenty of water to hydrate from within.

## Scalp Irritability

Typical

higher than  
**22%**  
of the population

MY TOP GENETIC VARIANTS

rs17388568 rs1800795 rs1800797

9/9

MY TOTAL

### WHAT IS SCALP IRRITABILITY?

Scalp irritability (inflammation) is the result of a complex biological process where the cells in the scalp have a hyperactive response to allergens or toxins and produce inflammatory hormones called cytokines and chemokines. There are two types of inflammation: acute and chronic. Acute inflammation is a signal to the scalp to start the repair process after being exposed to triggering stimulus, such as germs or environmental toxins. It usually lasts 2-4 days (generally the amount of time required for wounds or infections to heal). When an inflammation is chronic and serves no purpose, it becomes destructive and can damage the scalp. There are a number of stimuli that induce chronic inflammation: overexposure to UV rays, stress, toxins (e.g. pollution, smoking, trauma, alcohol, immune reactions, infections etc.), pathogens, and foreign bodies (dirt and debris). Chronic inflammation contributes to overall scalp sensitivity, and susceptibility to infections. It can also be triggered by excess of free radicals. Genetic variations in several pro-inflammatory and anti-inflammatory cytokines genes are associated with higher risks of chronic scalp inflammation.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Scalp Irritability out of 9 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ Follow general advice prescribed to care for your hair and scalp.
- ♥ If your scalp skin has signs of inflammation, talk to specialist and trichologist.

## Scalp Pollution Defense Impairment

Elevated

higher than  
**90%**  
of the population

MY TOP GENETIC VARIANTS

rs1051740 rs1800566 rs2234922

**4/5**

MY TOTAL

### WHAT IS SCALP POLLUTION DEFENSE IMPAIRMENT?

Air pollution is the cause of increased signs of aging, inflammation and dull hair. The Chinese Dermatologist Association has found that those living in highly polluted areas (i.e. big cities) age 10 times faster than those who live in the countryside. Two important enzymes, EPHX1 and NQO1, protect our bodies from systemic absorption of highly reactive foreign chemicals (epoxides and quinones) from within the epidermis (most superficial layer of our skin). Biotransformation enzyme, EPHX1, plays a critical part in preventing the absorption of epoxides by catalyzing them into a less reactive, water-soluble form. Similarly, NQO1 converts coenzyme Q10 (ubiquinone) to its reduced form, ubiquinol, which then scavenges free radicals in the mitochondria and skin lipid membrane. Genetic variants in the EPHX1 gene cause epoxide hydrolase deficiency while SNPs in the NQO1 gene slow down production of ubiquinol. Individuals who have reduced levels of these two enzymes have significantly diminished defense from environmental toxins.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Scalp Pollution Defense Impairment out of 5 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ☛ Wash your hair and scalp to properly remove harmful toxins and microbes.
- ☛ Choose leave-in hair products and scalp treatments that contain anti-pollution agents.
- ☛ If you reside in a big city with increased levels of pollution, reduce exposure to these environmental pollutants (cigarette smoke, automobile emissions, benzene) by growing indoor plants that clean air.
- ☛ Invest in good air purifier.
- ☛ Spend more time in nearby parks or greenery.
- ☛ Supplement with ubiquinol (bioavailable form of coenzyme Q10), and antioxidants such as astaxanthin.

## Scalp Sensitivity to Sun

Typical

higher than  
**45%**  
of the population

MY TOP GENETIC VARIANTS

rs1015362 rs1126809 rs13181

**18/18**  
MY TOTAL

### WHAT IS SCALP SENSITIVITY TO SUN?

Sun protection should not just stop at the hairline. Your scalp - though it may be covered by hair - and your hair are both at risk of UVA/UVB damage. Humans vary over 1000-fold in their sensitivity to the harmful effects of ultraviolet radiation. Skin's sensitivity to sun have high genetic heritability. Several large-scale studies identified genetic variations that affect skin sensitivity and tendency to get sun burns. The main determinants of sensitivity to sun are skin pigmentation genes (ASIP, TYR, MC1R, and OCA2) that are also associated with poor tanning. In addition, skin DNA repair genes are strongly associated with tendency to sun burns, and increased risk of melanoma. Interestingly, the DNA repair genes (NTM, ERCC1) have no association in either direction with tanning ability. This implies that there is a pigmentation-independent mechanism underlying sunburn reaction.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Scalp Sensitivity to Sun out of 18 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ☛ Sunlight is drying and can lighten hair simply from exposure. Moreover, if your scalp is exposed, just like any other skin on the body, it is susceptible to skin cancer.
- ☛ It is therefore important to protect the scalp. Use chemical blockers (like avobenzene) or physical blockers (such as zinc oxide and titanium dioxide).
- ☛ Rub the sunscreen into scalp, and not just spray it on the roots.
- ☛ Antioxidants and plant-derived oils can prove helpful in protecting and calming the scalp and skin from the sun's harmful rays. You can also use oils and products that contain fatty acids as these can help with dryness associated with hair exposed to harsh sun conditions.

## Scalp Thinning (Fragile Skin)

Slightly Elevated

higher than  
**75%**  
of the population

### MY TOP GENETIC VARIANTS

rs1016835 rs2076300 rs2744379

**4/6**

MY TOTAL

### WHAT IS SCALP THINNING (FRAGILE SKIN)?

While scalp skin is some of the thickest skin of the body, scalp skin becomes thinner and more fragile with aging, and sun exposure. Genetics plays its role in accelerating thinning of the skin. Certain medications, such as long-term use of oral or topical corticosteroids, also can weaken the skin and blood vessels in the skin.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Scalp Thinning (Fragile Skin) out of 6 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ Follow general recommendations on how to protect your scalp skin.
- ♥ Avoid prolonged sun exposure. If you must be outside in the sun, wear a hat.
- ♥ Use moisturizing shampoo and conditioning treatments.
- ♥ Use a leave-in conditioner daily and a deep-conditioner or a thick hair mask once a week.
- ♥ Talk to specialist about the best product for your hair and scalp.

## Sebum Overproduction

Elevated

higher than  
**92%**  
of the population

### MY TOP GENETIC VARIANTS

rs10822184 rs4227 rs5934505

**5/5**  
MY TOTAL

### WHAT IS SEBUM OVERPRODUCTION?

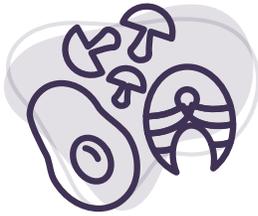
Sebum overproduction can be caused by an excess of a hormone called dihydrotestosterone (DHT). DHT is a metabolite of testosterone, and is responsible for triggering sebaceous glands to overproduce sebum. Several genetic variants associated with levels of DHT have been identified in large genome-wide association studies.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Sebum Overproduction out of 5 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ DHT may cause sebum overproduction. As with many functions of the human body, sebum production is a process that requires balance. Products with Salicylic acid are excellent in removing excess sebum.
- ♥ In some men the heightened sensitivity of scalp follicles to DHT excess sebum may lead to androgenic alopecia (AGA) which is different from alopecia areata (AA) induced by an autoimmune reaction.
- ♥ If you are experiencing hair loss, talk to specialist. Treatment with minoxidil, finasteride and spironolactone are used specifically for AGA related hair loss and work on reducing scalp tissue levels of DHT, and hence suppressing male pattern hair shedding.



The condition of your hair is an outward sign of inside health. The cells that make up your scalp and each strand of hair and require a regular supply of key nutrients. Eat the correct balance of the following nutrients including protein, healthy fats, vitamins and minerals to supply hair with all that it needs to remain shiny, lustrous and strong. People with certain genetic variations may have predispositions to imbalances in certain key vitamins and minerals that are very important for your hair appearance and general health overall.

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## Copper Deficiency

Typical

higher than  
**50%**  
of the population

MY TOP GENETIC VARIANTS

rs11204828 rs1175549 rs4528122

**4/6**

MY TOTAL

### WHAT IS COPPER DEFICIENCY?

Copper is another essential trace mineral that has a number of important functions in the human body. It is a co-factor in many oxidation-reduction reactions and it plays important role in health of blood vessels, nerves, immune system, bones, and connective tissues (hair, skin, nails, tendons, ligaments). It is integral for energy production, formation of collagen, iron absorption. Copper has been used by the ancient Egyptians to sterilize drinking water and wounds, and Hippocrates used copper for variety of disorders. Copper is now been added to skin-care products to reduce the appearance of fine lines, and boost skin elasticity. Severe copper deficiency is rare, and may be caused by malnutrition, disorders that impair nutrient absorption (Crohn's disease), some surgeries, and medications. Several genetic variants were associated with copper levels and they may contribute to copper imbalances that are linked to impaired immune function, contribute to anemia, and premature skin aging.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Copper Deficiency out of 6 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ Meet your daily copper intake requirements.
- ♥ Food sources: shellfish, including oysters, organ meats (kidneys, liver), whole grains, beans, nuts, avocado, potatoes. Dark leafy greens, black pepper, and yeast are also sources of copper in the diet. In addition, dried fruits, chocolate, cocoa are also rich with copper.
- ♥ People who take high amounts of zinc, iron, or vitamin C may need more copper.
- ♥ Copper supplements can interact with certain medications or cause copper toxicity, and even acute poisoning.
- ♥ Before you start taking copper supplementation, consult your doctor.

### REFERENCES

Read more about Copper Deficiency by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#) [Resource 4](#) [Resource 5](#)

## Iron Deficiency

Elevated

higher than  
**90%**  
of the population

### MY TOP GENETIC VARIANTS

rs1375515 rs228916 rs3811647

**17/17**  
MY TOTAL

### WHAT IS IRON DEFICIENCY?

Iron is an essential mineral that our bodies need for many functions. Iron is a key element in the metabolism of almost all living organisms. It is a part many proteins, including oxygen-carrying proteins, hemoglobin (found in red blood cells) and myoglobin (found in muscle cells). Iron is also an essential component of antioxidant enzymes and metabolizing enzymes (cytochromes). Absorption, transport and storage of iron are tightly regulated, as iron is both an essential and potentially toxic. Iron deficiency is the most common nutrient deficiency in the world. Symptoms of iron deficiency may include fatigue, rapid heart rate and palpitations. Iron deficiency may interfere with physical and athletic performance. Young children, women of childbearing age, as well as vegetarians and vegans, are at higher risk of iron deficiency.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Iron Deficiency out of 17 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- You may want to consider increasing your iron intake through iron-rich foods. However, be careful since too much iron is also bad for the body.
- Typically, iron deficiency is diagnosed through blood tests, so discuss with your doctor about the need for screening. Depending on the screening results, your doctor might recommend an oral iron supplement.
- There are two types of iron: heme iron from animal sources and non-heme iron from plant sources. Heme iron is absorbed more readily. Foods rich in heme iron include beef, poultry, liver, oysters, salmon, tuna. Good sources of non-heme iron include beans, fortified cereals, and dark leafy greens like spinach.
- If you are into strenuous physical activity, make sure your iron levels are within the norm.
- Do not take iron supplements without supervision of a healthcare professional as too much iron is harmful to the body. Excessive intake of iron supplements can impair zinc absorption, increase risk for vascular disease, liver problems and systemic iron overload.

### REFERENCES

Read more about Iron Deficiency by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#)

## Magnesium Deficiency

Slightly  
Elevated

higher than  
**82%**  
of the population

MY TOP GENETIC VARIANTS

rs11891 rs13146355 rs3925584

**10/11**  
MY TOTAL

### WHAT IS MAGNESIUM DEFICIENCY?

Magnesium is an essential mineral involved in numerous physiological pathways, including energy metabolism, nerve control, neurotransmitter release, and blood pressure regulation. Magnesium is an important electrolyte needed for proper muscle function, strong bones and good heart health. Magnesium imbalances have been linked to various complications such as muscle cramps, constipation, poor sleep, tension or migraine headaches, anxiety and depression, chronic fatigue and premenstrual syndrome. In a long term, magnesium deficiency has been associated with higher risk of osteoporosis, hypertension, cardiovascular disease, insulin sensitivity. Several genetic variants have been associated with magnesium levels: some variants contribute to lower levels of magnesium, while others are associated with higher magnesium.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Magnesium Deficiency out of 11 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ You may want to consider a slightly higher intake of magnesium than the recommended daily allowance through food sources.
- ♥ Foods rich in magnesium include: Nuts (brazil, almonds, cashews), seeds (pumpkin, sesame), avocados, oats and legumes are some of the best sources of magnesium. In addition, bananas and dark chocolate are rich in magnesium.
- ♥ If you are an athlete, and sweat a lot, or if you notice muscle cramps, weakness, or twitches, make sure your magnesium levels are adequate.
- ♥ Other signs of low magnesium include poor sleep, irritability, and headaches.
- ♥ Many diuretics, including caffeine, alcohol, as well prescription diuretic medicines, affect magnesium levels.
- ♥ If you consider taking magnesium supplementation, talk to your health care provider to discuss potential side effects, and to determine optimal dose.

### REFERENCES

Read more about Magnesium Deficiency by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#)

## Phytosterols Imbalance

Slightly  
Elevated

higher than  
**60%**  
of the population

MY TOP GENETIC VARIANTS

rs4245791 rs644234

**3/3**

MY TOTAL

### WHAT IS PHYTOSTEROLS IMBALANCE?

Phytosterols, often referred to as plant sterols, are naturally occurring compounds found in the cell membranes of plants. There are over 200 different phytosterols but the most common types are  $\beta$ -sitosterol, campesterol and stigmasterol. Structurally, they are similar to the cholesterol we make in our bodies. They are most well-known for their ability to reduce LDL ('bad' cholesterol), and can help reduce the risk of coronary heart disease (FDA-approved claim). Scientists have discovered phytosterols benefits for hair. They have antioxidant and anti-aging properties, reduce scalp inflammation. Several studies found that phytosterols help hair growth by blocking DHT. Levels of phytosterols have been found to be correlated with several genetic variations.

### YOUR GENETIC VARIANTS

These are 2 of the genetic variants (SNPs) associated with Phytosterols Imbalance out of 3 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ☛ Phytosterols are found in vegetable oils, nuts, legumes, whole grains, fruits and vegetables.
- ☛ Extracts of fruit of the saw palmetto or pumpkin seed oil are good sources of phytosterols.
- ☛ For an extra boost of shininess, and hair repair, try hair products with phytosterols.
- ☛ You may want to consider taking supplements that contain physterols, such as beta-sitosterol, campesterol, and stigmasterol.

## Selenium Deficiency

Typical

higher than  
**58%**  
of the population

### MY TOP GENETIC VARIANTS

rs2163813 rs234709 rs632057

**10/10**  
MY TOTAL

### WHAT IS SELENIUM DEFICIENCY?

Selenium (Se) is an essential trace mineral that plays important role in healthy functioning of reproductive and immune systems, and thyroid gland. Selenium is a powerful antioxidant, and it is a part of more than two dozen selenoproteins that act in synergy with vitamin C, vitamin E and glutathione. Selenium deficiencies in general population are more frequent in the areas with low levels of selenium in the soil. In the US, selenium concentrations in the soil are higher in Midwestern and Western States than in the South and Northeast. In the UK, according to several studies, many soils are deficient in selenium. Very low concentrations of selenium in some areas of China led to government-sponsored supplementation program. Individuals with selenium imbalances are more susceptible to physiological responses to stress. Research suggests that optimal selenium intake contributes to lower risk of age-related chronic diseases, longevity, and boosts fertility. Several genetic variations have been found to be associated with lower levels of selenium. Life-style factors that contribute to selenium imbalances include smoking, excessive alcohol consumption, stress, oral contraception, and auto-immune conditions (such as rheumatoid arthritis, lupus, celiac disease).

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Selenium Deficiency out of 10 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ Meet your daily needs by consuming foods high in selenium.
- ♥ The richest food sources of selenium are organ meats (calf's liver) and seafood, followed by muscle meats. Selenium is present in soil and therefore is most highly concentrated in plant-based foods grown in selenium-rich soil, including fruits, vegetables and breads. The selenium content of food is highly variable because it depends so heavily on soil conditions. Highly regarded sources of selenium include a variety of mushrooms (in particular crimini and shiitake mushrooms), and Brazil nuts.
- ♥ Selenium can be toxic at high levels.
- ♥ Consult healthcare practitioner if you consider taking selenium supplements.

### REFERENCES

Read more about Selenium Deficiency by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#) [Resource 4](#)

## Vitamin A (Carotene) Deficiency

Slightly  
Elevated

higher than  
**68%**  
of the population

MY TOP GENETIC VARIANTS

rs1527479

rs17263407

rs1761667

5/6

MY TOTAL

### WHAT IS VITAMIN A (CAROTENE) DEFICIENCY?

Vitamin A, the group of fat-soluble vitamins, is essential for immune system functioning, reproduction, healthy vision, maintenance of strong bones and teeth, red blood cell production, tissue repair and skin health. Vitamin A comes in two forms: biologically active form, retinol, and pro-vitamin Carotenoids (including alpha- and beta-carotenes) that are converted into retinol. Carotenoids are important antioxidants and anti-inflammatory agents, and have tremendous protective benefits for heart conditions, respiratory problems, elevated glucose levels, and various other ailments. Alpha and beta-carotenes contribute to skin and hair health. Humans cannot produce carotenoids themselves and therefore need it directly from food sources. Carotenoids come from plant sources. Carotenoid-rich foods are often, but not always, have orange, bright red, or yellow colors. In fact, the word carotene comes from the Latin word for carrot. Genetic variants in CD36 and SCARB1 genes have been linked to lower levels of beta-carotene.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Vitamin A (Carotene) Deficiency out of 6 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- You may need slightly extra intake of carotenoids compared to the average population.
- Vitamin A is included in most multivitamins, and the U.S. recommended dietary allowance (RDA) for adults is as follows: 900 micrograms daily (3,000 IU) for men and 700 micrograms daily (2,300 IU) for women; for pregnant women 19 years old and older, 770 micrograms daily (2,600 IU); and for lactating women 19 years old and older, 1,300 micrograms daily (4,300 IU). (Source: May Clinic).
- Best carotenoid-rich foods are sweet potatoes, carrots, broccoli, kale, spinach, pumpkin, collard greens, apricot, papaya, mango, peas, tomatoes, cheddar cheese and eggs.
- Carotenoids need to be consumed with a fat for the body to absorb them: cook carotenoid-containing vegetables in oil.
- Add carotenoid-rich skin- and hair-care products to your beauty regimen.
- If you consider taking carotenoid supplements, consult a registered dietitian or physician.

### REFERENCES

Read more about Vitamin A (Carotene) Deficiency by checking out the following articles:

[Resource 1](#)

[Resource 2](#)

[Resource 3](#)

## Vitamin A (Retinol) Deficiency

Typical

higher than  
**30%**  
of the population

MY TOP GENETIC VARIANTS

rs10882272 rs2241057 rs7501331

7/7

MY TOTAL

### WHAT IS VITAMIN A (RETINOL) DEFICIENCY?

Vitamin A, the group of fat-soluble vitamins, is essential for immune system functioning, reproduction, healthy vision, maintenance of strong bones and teeth, red blood cell production, tissue repair and skin health. Vitamin A comes in two forms: biologically active form, retinol, and pro-vitamin A carotenoids (including beta-carotene, lutein, lycopene) that need to be converted into retinol to be useful in the body. Carotenoids come from plant sources, while retinol comes from animal sources. Some specific immune, inflammatory, genetic, and reproductive-related benefits of vitamin A can only be obtained from the retinoid forms of the vitamin A. These retinoid forms can be especially important with respect to pregnancy and childbirth, infancy, childhood growth, and resistance to infectious disease. Plasma retinol levels do not decline until liver vitamin A sources are almost depleted and thus do not accurately reflect retinol imbalance. Studies show that variations in several key genes in retinol metabolism pathway impair the conversion of carotenoids to retinol, increase breakdown, or decrease absorption of retinoic acid, therefore affecting the levels of retinol.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Vitamin A (Retinol) Deficiency out of 7 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ☛ Make sure you meet your daily requirements for retinol from food sources.
- ☛ Best retinol-rich foods include animal liver, egg yolks, butter and heavy cream.
- ☛ If you are pregnant or nursing woman; or/and vegetarian/vegan, you need to make sure you are meeting your daily requirements for retinol.
- ☛ If you consider retinol supplementation, consult a doctor or a registered dietitian.

### REFERENCES

Read more about Vitamin A (Retinol) Deficiency by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#)

## Vitamin B12 Deficiency

Typical

higher than  
**60%**  
of the population

### MY TOP GENETIC VARIANTS

rs10515552 rs1801131 rs1801198

**13/15**  
MY TOTAL

### WHAT IS VITAMIN B12 DEFICIENCY?

Vitamin B12 (cobalamin) is required for normal functioning of brain, nervous and digestive systems, red blood cell formation. It is involved in DNA synthesis, fatty acid and amino acid metabolism. Vitamin B12 can be only manufactured by bacteria, and generally it can be found in animal food sources. Slight imbalances in vitamin B-12 can lead to anemia, fatigue, stomach inflammation, and affect nervous system. No toxic or adverse effects have been associated with large intakes of vitamin B12 from food or supplements in healthy people. Genetic variants in several genes, including FUT2, MTHFR, MTRR, TCN2, have been linked to levels of vitamin B12.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Vitamin B12 Deficiency out of 15 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- There is no need to change your dietary intake beyond generally recommended guidelines.
- Recommended dietary amounts (RDAs) are 2.4 micrograms daily for ages 14 years and older, 2.6 micrograms daily for pregnant females, and 2.8 micrograms daily for breastfeeding females. Those over 50 years of age should meet the RDA by eating foods reinforced with B12 or by taking a vitamin B12 supplement.
- Meet your daily nutrient intake requirements from the following food sources: liver, red meat, fish and shellfish, milk and dairy products, fortified soy, almond or rice beverages and products, fortified cereals, nutritional yeast and eggs

### REFERENCES

Read more about Vitamin B12 Deficiency by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#)

## Vitamin B6 Deficiency

Slightly Elevated

higher than  
**75%**  
of the population

### MY TOP GENETIC VARIANTS

rs1256335 rs1697421 rs1801133

**9/9**  
MY TOTAL

### WHAT IS VITAMIN B6 DEFICIENCY?

Vitamin B6 (and its derivative pyridoxal 5'-phosphate, PLP) are involved in numerous essential processes, including protein metabolism, normal functioning of immune and nervous systems, production of hemoglobin, and maintenance of normal levels of homocysteine. Vitamin B6 together with vitamin B2, B9 (folate) and choline, facilitates the methylation cycle which is fundamental to life. Even slight imbalances in vitamin B6 levels are linked to various conditions. Symptoms of a vitamin B6 imbalance include nerve inflammation, irritability, depression, dermatitis, cracked and sore lips, inflamed tongue and mouth, and confusion. Several studies identified genetic variants associated with lower levels of vitamin B6.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Vitamin B6 Deficiency out of 9 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- You may want to consider slightly higher than average vitamin B6 intake from food sources.
- Vitamin B6 is found in fortified cereals, 100% bran, legumes, meat, poultry, fish, liver, nuts and seeds, blackstrap molasses, bananas, peanut butter, many vegetables, and non-citrus fruit. Various common drugs, including non-steroid anti-inflammatory drugs such as ibuprofen and oral contraceptives, interfere with vitamin B6 metabolism.
- Other risk factors for vitamin B6 imbalances include high levels of homocysteine, cardiovascular problems, asthma, ADHD, cognitive decline.
- Consult a registered dietitian or physician if you are considering B6 supplementation.

### REFERENCES

Read more about Vitamin B6 Deficiency by checking out the following articles:

[Resource 1](#) [Resource 2](#)

## Vitamin B7 Deficiency

Typical

higher than  
**50%**  
of the population

MY TOP GENETIC VARIANTS

rs7651039

7/7

MY TOTAL

### WHAT IS VITAMIN B7 DEFICIENCY?

Vitamin B7 (or biotin) is required by all organisms. It is important for converting food into glucose, which is used to produce energy, producing fatty acids and amino acids. Biotin is essential for the normal function of the nervous system as well as the maintenance of normal skin and mucous membranes, activating metabolism in the hair roots and fingernail cells. Biotin must be obtained from the diet as it can be only synthesized by plants, bacteria, yeast and algae. Genetic variations in biotinidase enzyme are associated with lower levels of biotin. Symptoms of biotin imbalance include hair loss, brittle fingernails, fatigue, insomnia, depression.

### YOUR GENETIC VARIANTS

This is 1 genetic variant (SNP) associated with Vitamin B7 Deficiency out of 7 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ Meet your daily biotin intake requirements based on the daily recommended allowance.
- ♥ Foods such as egg yolk, liver, and whole-grain cereal are rich in biotin
- ♥ Risk factors for biotin imbalances include pregnancy and smoking.

### REFERENCES

Read more about Vitamin B7 Deficiency by checking out the following articles:

[Resource 1](#)

[Resource 2](#)

## Vitamin B9 Deficiency

Elevated

higher than  
**82%**  
of the population

MY TOP GENETIC VARIANTS

rs1256335 rs1801131 rs1801133

17/17

MY TOTAL

### WHAT IS VITAMIN B9 DEFICIENCY?

Vitamin B9 (folate) is essential for vital processes such as DNA synthesis, methylation, cell repair and maintenance, protein metabolism, and the formation of blood cells. It is really important for pregnant women, and women trying to conceive. Folic acid and folate are often used interchangeably, but folic acid is the type of folate found in vitamin supplements and fortified foods. Folate deficiencies are associated with anemia, elevated levels of homocysteine, pregnancy complications, increased risk of cardiovascular diseases.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Vitamin B9 Deficiency out of 17 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ You may want to consider a higher than average recommended intake to meet your daily requirements for folate from food sources.
- ♥ Good dietary sources of folate include: dark green vegetables like spinach, asparagus and broccoli, bananas, strawberries, oranges, tomato juice, legumes, nuts, cereals, organs meats like liver and kidneys.
- ♥ Some foods that are often fortified with folic acid include enriched breads, bagels, cereals, flours, cornmeal, pastas and rice.
- ♥ Common drugs, including nonsteroidal anti-inflammatory drugs (aspirin, ibuprofen), oral contraceptives, cholesterol lowering and blood pressure control medications may interfere with folate metabolism.
- ♥ If you are in doubt how to best supplement your folate, consult a registered dietitian or physician. If you are concerned about your MTHFR variants (rs1801133 and rs1801131), please read the provided references.

### REFERENCES

Read more about Vitamin B9 Deficiency by checking out the following articles:

[Resource 1](#)

[Resource 2](#)

[Resource 3](#)

[Resource 4](#)

## Vitamin C Deficiency

Typical

higher than  
**20%**  
of the population

MY TOP GENETIC VARIANTS

rs10063949 rs6133175

**6/11**  
MY TOTAL

### WHAT IS VITAMIN C DEFICIENCY?

Vitamin C (ascorbic acid) is a water-soluble compound that is critical in numerous vital processes. Vitamin C is essential for normal functioning of immune system, production of red blood cells, healthy connective tissues, blood vessels, bones, teeth, and gums. It is a powerful antioxidant, and it participates in iron absorption. While vitamin C deficiencies are rare in developed countries, higher blood levels of vitamin C has been linked to vitality, longevity, lower risk of death from all causes, including cardiovascular diseases and cancer. Vitamin C is commonly taken during winter months to help fight off colds. Humans cannot produce vitamin C and must get this essential vitamin on a daily basis. Scientific studies identified several genetic variations associated with lower levels of vitamin C. If you spend lots of time in the gym, consider boosting your vitamin C levels. People who suffer a lot from colds , as well as smokers, and heavy drinkers, would benefit from higher intake of vitamin C.

### YOUR GENETIC VARIANTS

These are 2 of the genetic variants (SNPs) associated with Vitamin C Deficiency out of 11 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- Meet your daily vitamin C requirements through foods.
- Vitamin C can be found in fruits such as oranges, grapefruits, cantaloupes, Kiwi, mango, papaya, pineapple, strawberries, raspberries, blueberries, cranberries and watermelon.
- Vegetables such as broccoli, Brussels sprouts, cauliflower, green and red peppers, spinach, cabbage, turnip greens, sweet and white potatoes, and tomatoes also have a high vitamin C content.

### REFERENCES

Read more about Vitamin C Deficiency by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#)

## Vitamin D Deficiency

Typical

higher than  
**38%**  
of the population

### MY TOP GENETIC VARIANTS

rs1007392 rs11234027 rs12800438

**13/13**  
MY TOTAL

### WHAT IS VITAMIN D DEFICIENCY?

Vitamin D is a fat-soluble vitamin that is critical to bone and muscle health, normal functioning of immune, endocrine and cardiovascular systems. Vitamin D can be synthesized in the skin upon exposure to sunlight: it is metabolized into active form and regulates hundreds of genes by binding to vitamin D receptor (VDR). There is a steady increase in cases of severe vitamin D deficiencies in developed countries, mainly due to sun protection measures. Other factors that contribute to vitamin D deficiency include environmental conditions (air pollution, geographical locations), as well as dark skin, being over 50, family history of osteoporosis, excessive weight, and genetics. Large-scale studies identified genetics variants in several genes (including the vitamin binding receptor, VDR; vitamin binding protein GC, and NAD coenzyme) that contribute to vitamin D deficiencies.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Vitamin D Deficiency out of 13 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ Meet your daily intake of Vitamin D based on the recommended daily allowance.
- ♥ Food rich in vitamin D include fatty fish such as tuna, mackerel, trout, herring, sardines, kipper, anchovies, or carp.
- ♥ Vitamin D can also be found in beef liver, cheese, egg yolks, and some mushrooms.
- ♥ Sun exposure (using proper precautions) is very important as vitamin D gets through the skin into our bodies. During sunny times, the body can make sufficient vitamin D with just a few minutes a day of midday sun exposure without sunscreen. It is recommended to get at least 15-30 minutes of unprotected sun exposure 2-4 times a week. Check your skin sun sensitivity reports assessing your potential risks of exposure to the UV radiation.
- ♥ An alternative to sun exposure is vitamin D supplementation under the supervision of health care provider.

### REFERENCES

Read more about Vitamin D Deficiency by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#) [Resource 4](#)

## Vitamin E Deficiency

Typical

higher than  
**18%**  
of the population

### MY TOP GENETIC VARIANTS

rs11057830 rs1527479 rs2108622

**12/12**  
MY TOTAL

### WHAT IS VITAMIN E DEFICIENCY?

Vitamin E is a fat-soluble nutrient that includes eight different naturally occurring compounds (four tocopherols and four tocotrienols). Vitamin E acts as an antioxidant, helping to protect cells from the damage caused by free radicals. It is required for normal functioning of immune system, blood vessels and many other organs in the body. Vitamin E reduces the risk of life-threatening blood clots. Studies showed that higher levels of vitamin E are beneficial for healthy cardiovascular system, prevention of cataracts, age-related macular degeneration and fatty liver disease. Vitamin E is sometimes used for improving physical endurance, increasing energy, reducing muscle damage after exercise, and improving muscle strength. Vitamin E is essential for healthy skin, as it has anti-inflammatory and photo-protective properties. Vitamin E imbalances are relatively common, and caused by diet that does not include sufficient amount of good fats, fat malabsorption disorders, and genetic variations.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Vitamin E Deficiency out of 12 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ Make sure you meet your daily requirements of vitamin E through food sources.
- ♥ Vitamin E can be found in vegetable oils, nuts, such as peanuts, hazelnuts, and, especially, almonds, seeds like sunflower seeds, avocados, whole grains, wheat germ, and to a lesser extent in green vegetables, such as spinach and broccoli.
- ♥ Topical application can supply skin with vitamin E forms that are not available from the diet.

### REFERENCES

Read more about Vitamin E Deficiency by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#) [Resource 4](#)

## Zinc Deficiency

Typical

higher than  
**28%**  
of the population

MY TOP GENETIC VARIANTS

rs1532423 rs17811680 rs4466998

9/9

MY TOTAL

### WHAT IS ZINC DEFICIENCY?

Zinc is an essential trace mineral that is needed for all forms of life. Zinc is required for many regulatory, catalytic, and structural processes in the body. It plays important role in healthy functioning of immune system, wound healing, cell division, and protein synthesis. Zinc is also needed for the senses of smell and taste. Zinc deficiency has been linked to impaired immune system function, increased colds and infections, diarrhea, loss of appetite, delayed wound healing, hair loss, taste abnormalities, and mental lethargy. Because zinc helps repair damaged tissues and heal wound, it is used in skin care products to treat acne and skin irritations. Several genetic variants have been associated with lower levels of zinc.

### YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Zinc Deficiency out of 9 that we are using to determine your predisposition for this trait.

### RECOMMENDATIONS

- ♥ Follow generally recommended guidelines for daily intake of zinc.
- ♥ High-protein foods contain high amounts of zinc. Shellfish, beef, pork, and lamb contain more zinc than fish. The dark meat of a chicken has more zinc than the light meat. Other good sources of zinc are seafood, nuts, seeds, whole grains, legumes, and yeast.
- ♥ Vegetarians and vegans are at greater risk for zinc deficiency, because the zinc from plant foods is four times more difficult to absorb than zinc from meats.
- ♥ Antibiotics as well as diuretics including caffeine and alcohol may interfere with zinc levels.

### REFERENCES

Read more about Zinc Deficiency by checking out the following articles:

[Resource 1](#)

[Resource 2](#)