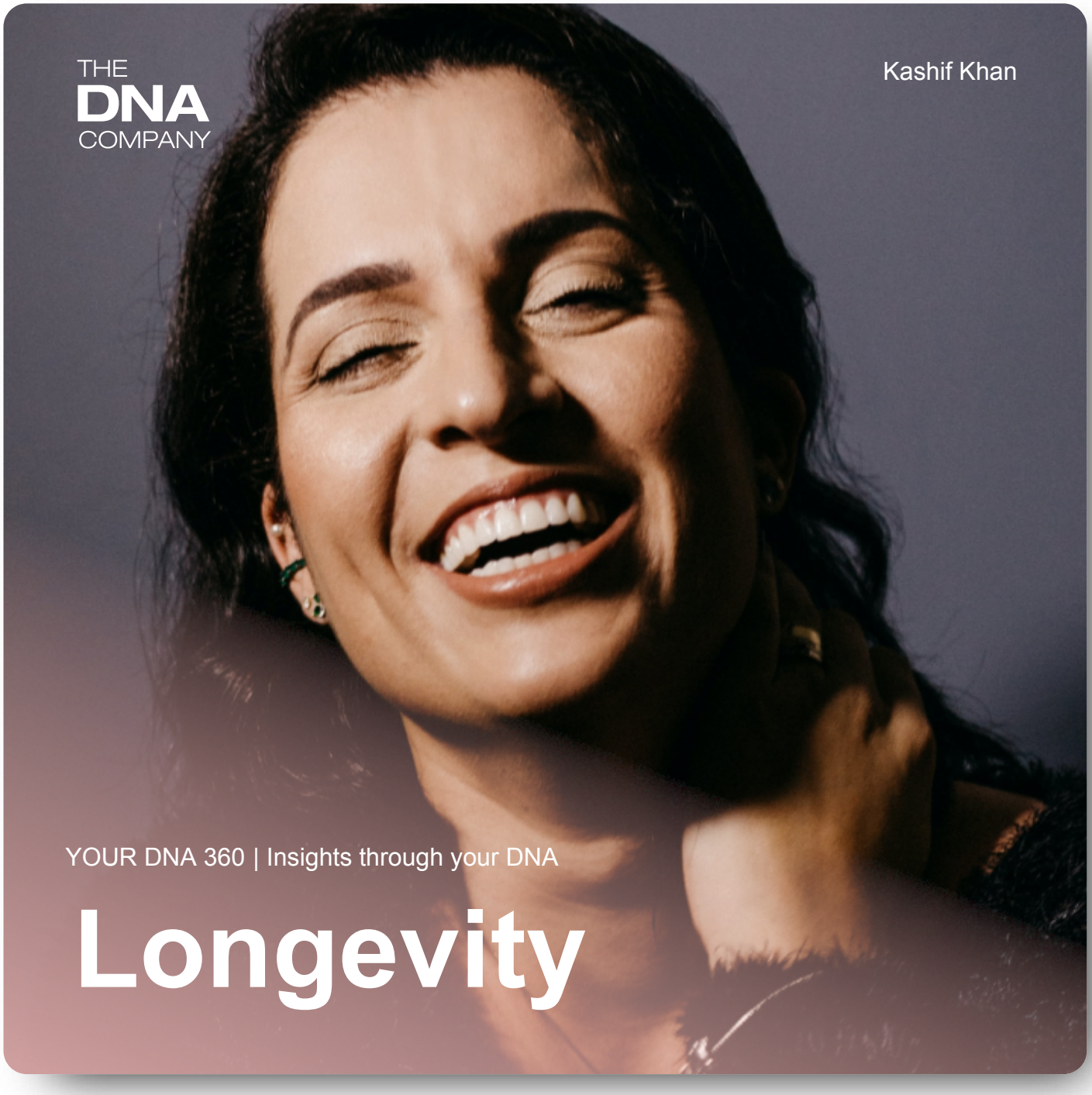
THE
DNA
COMPANY
Kashif Khan
YOUR DNA 360 | Insights through your DNA
Longevity

# Introduction

Ageing is a natural biological process that occurs in all living creatures. In humans, the speed at which you age depends on a number of internal and external factors, such as nutrition, lifestyle, physical and mental stress, the environment, and genetics. In fact, variations in your genes can influence how well you manage all the factors that ultimately influence your ageing process.

Modern science and technology has improved our ability to slow down, and in some cases, reverse the biological ageing process. However, the most efficient approach to achieving long-term longevity and healthspan is to personalize your approach based on your unique dietary, lifestyle, environmental, and genetic factors.

In this report, you'll learn about your ability to

- Access and improve the expression of your Longevity Gene
- Recover from physical exercise, infections, and lack of sleep
- Put on and retain lean muscle mass as you age
- Fight off free radicals that speed up the aging process
- Resist cognitive decline and maintain optimal brain health

- Ensure optimal bone health

With our personalized recommendations, you'll be fully equipped to start optimizing your longevity and elongating your healthspan.

# BRAIN

Your brain health is a big part of the overall ageing process. How do you ensure you keep your brain as sharp as possible for as long as possible? By understanding not only the physiological, but the mental and emotional aspects of your brain health that are influenced by your genes.

# ALZHEIMER'S, DEMENTIA, AND COGNITIVE IMPAIRMENT: THE APOE GENE

You carry the 3/3 version of your APOE gene. This is considered the normal profile for the APOE gene.

Your APOE gene plays an important role in the health of your brain. Variations in your APOE gene influence your risk for the deposit of amyloids, which are mutated proteins, in your brain. The increased presence of amyloids in your brain can increase your risk of cognitive disorders like Alzheimer's Disease, dementia, and mild cognitive impairment (MCI).

# INSULIN RESISTANCE

You carry the TT version of your TCF7L2 gene. This is the increased risk insulin response profile

You carry the TT version of your TCF7L2 gene. You carry an increased predisposition towards insulin resistance, which could lead to both Type II Diabetes and cognitive disorders like Alzheimer's or dementia. If you also carry the 3/4 or 4/4 version of the APOE gene, you need to be extra careful of your sugar, carbohydrate, and fat intake in your daily diet.

# BRAIN RECOMMENDATION

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**Our Top Recommendation:** While you have an otherwise normal APOE profile, your insulin resistance profile suggests you need to keep close attention on your diet to keep your risk of insulin resistance low. Insulin resistance has been clinically associated with an increased risk of brain-related health concerns such as dementia.

**Diet**

Carbohydrates are going to be a major focus for you. You'll need to be extra careful about your starch (pasta, rice, bread) and sugar consumption. Seek out low-carb or no-carb alternatives to starchy carbohydrates and stick to more complex carbohydrates such as sweet potatoes or broccoli. Aim to eat your carbohydrates during the morning and afternoon and skip them for dinner.

A healthy diet focuses on lots of leafy, green vegetables (think kale, swiss chard, and spinach) lean sources of proteins (fatty fish, turkey, minimal red meat consumption), healthy sources of fats (such as avocados or olives), and complex carbohydrates (like sweet potatoes or broccoli).

**Lifestyle**

Engage in brain-boosting activities such as learning and speaking in a foreign language or playing chess, sudoku, and other logic-based activities to keep your mind sharp throughout your life.

# STRESS, RESILIENCE, AND AGEING

Chronic stress is a major contributing factor to the ageing process. It is associated with an increased risk of developing obesity, heart disease, mental health disorders, and many other chronic diseases. Importantly, stress is a compounding factor. The older you get, the more stressors you accumulate at a faster rate than the stressors you eliminate.

A person’s resilience threshold, or the extent to which they can resist being influenced by stress, is strongly influenced by the versions of functional genes that they carry in their DNA.

# COMT

You carry the G/G version of your COMT gene. You approach stressful situations as a challenge to be overcome, and you don’t stop until you’ve completed the challenge.

Sometimes, stressful events can take up your brain space for a longer time than you would expect. Your COMT gene influences your ability to move in and out of an emotionally charged state by determining how long neurotransmitters like dopamine and noradrenaline stay active in your brain.

# ADRA2B

You carry the I/D version of your ADRA2B gene. You understand and relate to the emotional state of others, but that also means you're more likely to be influenced by their emotional states yourself. You may take on the stress of others, which could compound your own stressors.

Stress adds up over time, for some people more than others. Your ADRA2B gene influences how long you stay in an emotionally charged state (also known as the fight-or-flight response) by determining how long your noradrenaline receptor stays active and ready to bind to noradrenaline.

# 5HTTLPR

You carry the S/S version of your 5HTTLPR gene. You're more likely to become irritated when things aren't going the way you want them too. You're obsessive over details, and that can consume most of your time. You're more susceptible to the compounding effects of stress over time.

Sometimes, things that normally don't stress other people out can end up stressing you out. Your 5HTTLPR gene influences your body's relationship with serotonin, the neurotransmitter responsible for keeping you in a calm and focused state

# STRESS RECOMMENDATION

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**Diet**

**Top Foods to reduce stress: Green tea, fermented foods, and Swiss chard**

Food may play an important role in helping you manage, mitigate, or reduce your overall stress response. However, it also carries the possibility of becoming a coping mechanism, which can lead to bad habits and an increased risk of cognitive decline.

**Top Recommendation:** Identify your favorite comfort foods, then focus on creating healthier alternatives to satisfy your craving during stressful moments.

For example, if mac & cheese if your thing, choose to make butternut squash mac and cheese instead. For ice cream lovers, buy a vitamix or powerful blender and start using frozen bananas as your ice-cream base instead.

**Build this Habit:** Have a cup of green tea in the evening as a night cap before you go to bed. If you are highly sensitive to caffeine, take it as a cup in the morning.

**Lifestyle**

Make a list of the top things that cause you stress. Common sources of stress include work, career, family relationships, financial problems, social situations, and body perception.

Once you've made a list, write down the why. Why does this problem cause you stress? Then write down what you can do about it to reduce your stress. If its financial problems, can you create an excel file to track your spending, or hire a financial advisor to manage your finances? If it's a specific relationship, is there a way for you to address the problem with that person in a respectful manner?

Once you have a list of what causes you stress, and what you can realistically do about it, write down the dates that you want to start implementing your action items. Pencil it in your calendar, make a reminder on your phone, or put a sticky note where you'll always see it.

# BODY

Your body is a biological machine that has an expected expiration date. Your dietary, lifestyle, and environmental choices influence that date in either a positive or negative manner. The extent to which those things impact your expiry date depends on the genes you carry in your DNA, and more importantly, what you do about it. Once you understand your genomic blueprint, you can identify the minor tweaks you need to make to your daily decisions to create a major positive shift in your body’s longevity.

# MUSCLE BUILDING AND RETENTION SUMMARY

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Your ability to build and retain lean muscle mass is strongly influenced by your hormone profile, which in turn is influenced by functional genes. Specifically, the ability of your cells to bind to and activate androgens, a class of sex hormones, can determine how quickly you're able to see results after starting an exercise protocol.

There are several important genes that can help you understand what your unique hormone profile looks like.

# MUSCLE BUILDING AND RETENTION

| FUNCTION | OUTCOME | YOUR GENOTYPE |
|---|---|---|
| Determines how quickly you make testosterone | You produce an increased amount of testosterone | CYP17A1: GG |
| Determines how quickly you get rid of testosterone | You get rid of testosterone faster than normal | UGT2B17 (copies): 2 |
| Determines how well androgens bind and activate in your cells | You activate and use testosterone very well | AR: CC |

# MUSCLE BUILDING AND RETENTION

Your overall muscle building and retention profile: Increased ability to put on muscle

Your genotype:

CYP17A1: GG

UGT2B17 (copies): 2

ANDROx: CC

# MUSCLE BUILDING AND RETENTION

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Muscle building will be easier for you than most other individuals.

Concentrate on compound exercises (bench press, squats, deadlifts) for maximum output through minimum input as a sustainable workout regimen

Ensure adequate rest and recovery between workouts

# BALDING AND HAIR THINNING

Your Risk of Hair Thinning and Balding: HIGH

Balding and hair thinning are outcomes associated with increased levels of androgens in your body. Higher androgen levels predispose your hair follicles to a shorter growth phase (known as anagen) and a longer resting phase (known as telogen). The longer your follicles remain in telogen, the less anchored your hair is to your scalp and the easier it is for your hair to fall out. As a result, androgen dominant individuals are at the greatest risk of experiencing balding and hair thinning.

Your Hormone Profile: ANDROGEN_DOMINANCE

# BALDING AND HAIR THINNING RECOMMENDATION

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**Diet Recommendations:**

Fenugreek is a spice used mostly in South East Asian cuisine that can also be consumed as a tea. It is a known blocker of DHT. Excess DHT levels are a strong contributing factor to hair thinning and male pattern balding.

**Try This Habit:** Buy a pack of fenugreek tea, place a tea bag in your cup, and place that cup next to your bedside table every morning so you remember to drink it.

Lycopene is a compound from the family of carotenoids that gives many fruits and vegetables their bright red color. It is a powerful antioxidant as well as a modulator of DHT levels. Lycopene can be found in high levels in tomatoes, watermelon, and pink grapefruit.

**Lifestyle Recommendations**

Avoid the excessive use of shampoo and other hair care products that can damage your hair. Stick to natural hair products and use them sparingly.

# GREYING HAIR

Greying hair is a natural part of the aging cycle. Pigment follicles in your hair die as you grow older, which leads to less and less colour in your hair. However, for some individuals greying hair can occur faster than normal. This is due to increased levels of hydrogen peroxide that are produced during the antioxidation process that occurs in your cells.

Two important genes control the two-part oxidation process. Your SOD2 gene creates the enzyme that converts harmful oxidants into hydrogen peroxide. Your GPX gene then produces the enzyme that converts hydrogen peroxide into water and diatomic oxygen. If you produce a lot of hydrogen peroxide but don’t convert it at an equal rate into water and oxygen, you’re more likely to have greying hair.

# GREYING HAIR

| FUNCTION | OUTCOME | YOUR GENOTYPE |
| --- | --- | --- |
| Determines how quickly you convert oxidants into hydrogen peroxide | You make hydrogen peroxide at a faster rate | SOD2: CC |
| Determines how quickly you convert hydrogen peroxide into water and oxygen | You neutralize hydrogen peroxide at a faster rate | GPX: CC |

# GREYING HAIR

Your risk of greying hair: HIGH

Your results suggest you have a HIGH likelihood of having greying or whitening of your hair occur earlier in life.

Your genotype:

SOD2: CC

GPX: CC

# GREYING HAIR RECOMMENDATION

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The key to reduce greying hair is to increase catalase and glutathione peroxidase, both of which break down hydrogen peroxide. Excessive hydrogen peroxide levels are what cause hair to grey and whiten over time.

**Lifestyle Recommendations**

Avoid smoking and alcohol use, both of which contribute significantly to oxidative stress by increasing the levels of oxidants in your body, most of which convert to hydrogen peroxide.

Exercise is one of the most effective ways to improve catalase and glutathione peroxidase levels. Ensure adequate levels of exercise throughout the week as well as adequate amounts of sleep so your body can rest, recover, and produce these enzymes more effectively!

**Try This Habit:** Building a regular exercise schedule can be challenging at first, so it helps to keep reminders about why its so important clearly visible throughout the day. Try changing your laptop or phone screen to a picture or words that keep your motivation up. Remember, starting a habit is always the hardest part, it gets easier from there!

**Diet Recommendations**

Cremini mushrooms, sweet potato, cacao, fatty fish, eggs, sesame, brazil nuts, and blueberries are examples of foods that boost catalase and glutathione peroxidase levels through the various compounds they carry.

In addition, you may want to supplement directly with glutathione precursors, such as N-acetyl cysteine (NAC), alpha lipoic acid, and selenium.

Check out our Detox Optimizer, which contains all these precursors.

# SKIN HEALTH

Your skin is the largest organ in your body. Like every organ, it is susceptible to damage over time. Certain genetic factors can increase your risk of health conditions associated with skin health.

# WRINKLES

Oxidative stress, which occurs when the body has an increased presence of oxidants (also known as free radicals), can cause the dermis, or inner layer of your skin, to become less elastic. Over time, this results in the appearance and prevalence of wrinkles in your skin. Oxidants can come from external sources, such as smoking, smog, or pollution, or internal sources, such as excessive cardiovascular exercise or estrogen metabolism.

Functional genes in your DNA determine how efficient your body is at removing oxidants before they can cause significant oxidative stress.

# WRINKLES

| FUNCTION | OUTCOME | YOUR GENOTYPE |
| --- | --- | --- |
| Influences your body's glutathionization process, which removes oxidants before they can cause harm | You have an average ability to get rid of oxidants via glutathionization | GSTT1: 1<br>GSTM1: 0<br>GSTP1: AA |
| Influences your body's ability to convert oxidants into hydrogen peroxide | You get rid of oxidants quickly via the SOD2 pathway | SOD2: CC |

# WRINKLES

Your likelihood of developing wrinkles: HIGH

You have a HIGH likelihood of developing wrinkles earlier on in life based on your genomic data.

Your genotype:

GSTT1 (copies): 1

GSTM1 (copies): 0

GSTP1: AA

SOD2: CC

# WRINKLES RECOMMENDATION

A sustainable long-term anti-wrinkle plan depends on making the right choices when it comes to battling oxidative stress

**Lifestyle recommendations**

Get enough sleep – We can’t stress this point enough, pun intended. Sleep is your most powerful anti-aging tool because all the important processes in your body, like glutathionization and antioxidation, happen frequently when you’re engaged in deep, restful sleep.

**Try this Habit** – Download a bedtime reminder on your phone that can lock your screen with a complicated password after a certain time at night so you’re not tempted to keep using it late into the night.

**Diet Recommendations**

Incorporate antioxidant-rich foods into your diet – Blueberries, cacao, matcha green tea, green peppers and goji berries are just some examples of superfoods chalked full of antioxidants and other stress-fighting compounds that can reduce your levels of oxidants in your body that contribute to oxidative stress.

# CELLULITE

Your Likelihood of Cellulite: LOW

Cellulite is the result of fat deposits that develop and are stored beneath the skin. The most common areas of cellulite development are the upper thighs, buttocks, arms, and abdomen. Cellulite occurs at a much higher rate in women than in men due to its association with estrogen. Because of its association with fat storage, an imbalance in estrogen levels can lead to excessive fat storage as a response. Individuals who are estrogen-dominant or estrogen-balanced tend to be most likely to see cellulite development.

Your Hormone Profile: ANDROGEN_DOMINANCE

# CELLULITE RECOMMENDATION

You’re less likely to develop cellulite based on your genomic results. If you still struggle with cellulite, talk to your local dermatologist or health care practitioner about regulatory-approved treatments that can address cellulite deposits.

Understand that in some cases, such as giving birth, cellulite becomes a natural side-effect and that’s okay. It may feel frustrating and overwhelming but you don’t want to overexert yourself in trying to lose those stretch marks or cellulite deposits at the expense of your mental health and sanity.

# BONE

Bone health is an integral aspect of optimal health and longevity. As the body ages, bone tissue naturally undergoes several changes in its composition, some of which can inevitably lead to bone health concerns such as osteoporosis. In some people, bone health deteriorates at a faster rate than normal. Factors such as obesity, smoking, alcohol consumption, gender and genetics play an important role in overall bone health and longevity.

# VITAMIN D

Your Vitamin D genes control your body's relationship with Vitamin D, which is arguably the most important compound related to bone health.

# VITAMIN D

| FUNCTION | OUTCOME | YOUR GENOTYPE |
|---|---|---|
| Determines how well you convert Vitamin D that you get from the sun into useable Vitamin D | You convert Vitamin D into a useable form very well | CYP2R1: AG |
| Determines how well you take useable Vitamin D to where it needs to go to be activated in your body | You transport Vitamin D throughout your body in an optimal manner | GC/VDBP: CC |
| Determines how well you bind to and activate useable Vitamin D in your cells | You don’t bind and activate your Vitamin D in an efficient manner. | VDR: CT |

# VITAMIN D

Beyond your Vitamin D, your hormone profile plays an equally important role in determining your bone health development at the onset of puberty and its potentially rapid decline as you get older. For both women and men, decline in sex hormone levels can contribute to an increased risk of osteoporosis later on in life.

# BONE RECOMMENDATION

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Based on your results, you're more likely to have chronic low Vitamin D levels, which could impact your overall bone health and longevity.

**Dietary Recommendations**

Incorporate Vitamin D fortified foods into your diet – If you can't consume dairy, eggs, or organ meats, then look for fortified foods with added Vitamin D, such as non-dairy beverages, oatmeal, and cereals

Talk to your practitioner about taking a daily vitamin D supplement – If you're vegan, you'll likely need to take a synthetic, algae-based, or culture-based form of Vitamin D3, as regular Vitamin D2 from plants and sunshine won't cut it for you

**Lifestyle Recommendations**

Get Outside often – Even if you can't convert Vitamin D effectively due to poor genetics, simply exposing your skin to the sun can activate several important processes in your body that contribute to improved mood and cellular function associated with increased Vitamin D levels.

**Try This Habit** – Whenever possible, take your virtual meetings outside on your porch, backyard,

or during a stroll when weather permits

# BIODEFENSE

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At The DNA Company, we define biodefense as your body’s unique ability to resist and address inflammation at the cellular level. Inflammation can occur due to infections, exposure to toxins, and poor dietary and lifestyle choices. Several genes and gene pathways influence cellular processes that are in charge of your anti-inflammatory capacity.

# BIODEFENSE RECOMMENDATION

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Your results suggest you could benefit from targeted improvement in important cellular processes that protect your body from infections, inflammation, and aging in general.

Vitamin B9 (Folate) and Vitamin B12 (cobalamin) are essential to an optimal methylation cycle. Incorporate high-folate foods like spinach, asparagus, and beets into your diet. Incorporate foods high in B12 such as organ meats, fatty fish, milk and eggs into your diet. If you’re a vegan, you’ll need to source a synthetic, cultured, or algae based form of Vitamin B12.

When considering supplementation, the most preferred form of both Vitamin B9 and Vitamin B12 is the adenosyl form. Adenosylfolate is also known as Folinic Acid.

Boosting your glutathione levels requires several strategies. First, increase your consumption of sulfur-rich foods, such as cruciferous vegetables like broccoli, as well as most animal proteins. Sulfur is a required component of glutathione production.

Secondly, add Vitamin C to your diet. Vitamin C does the job of scavenging oxidants, which allows

your body to stock up on glutathione for dealing with other toxins

Finally, add selenium-rich foods like clams or Brazil nuts to your diet. Selenium is another important component of the glutathionization process.

Antioxidant foods are your friend – Dark chocolate, matcha green tea, goji berries, blueberries, green peppers, and pecans are examples of foods high in antioxidants

**Try this habit** – Get into the habit of building meals that service multiple support systems at once. Combine folate rich foods with foods high in Vitamin C to provide a mega-boost to your body's defense systems. Sauté spinach with green peppers, add orange slices to your kale salad, or stir-fry chicken with broccoli.

**Lifestyle Recommendations**

**Sleep!** – You'll notice sleep is a recurring theme in our recommendations. So many of your body's healing, rest, and recovery processes occur when you enter a state of deep, rested sleep. Just as important as how many hours your sleep is when you actually fall asleep. 7 hours from 10pm – 5am is much more effective for the body than 7 hours from 2am – 9am.

# FOXO3

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The FOXO3 gene is commonly known as the longevity gene. Variations in this gene increase activity of FOXO3, which is considered the master control of anti-oxidation activity in your body. Carrying at least one G allele in your FOXO3 result greatly increases your potential for longevity. FOXO3 helps initiate DNA repair, kill off mutated or dying cells, respond quickly to inflammation, maintain healthy stem cell production, and attack infectious organisms.

**YOUR FOXO3 RESULT:** TG

**YOUR LONGEVITY LEVEL:** ADVANCED LONGEVITY

# GLUTATHIONIZATION

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When it comes to aging optimally, your body needs to be well-prepared to guard against attacks from toxins, chemicals, and infections.

Glutathionization is the process through which glutathione, the body's major antioxidant, breaks down toxins and transports them to the liver to be removed from the body. Common toxins include mold, smog, pollution, free radicals, estrogen metabolites, drug byproducts, and chemicals. Glutathionization is one of your body's major detoxification and anti-inflammatory processes.

Three genes, GSTT1, GSTM1, and GSTP1, control the efficiency with which your body conducts glutathionization.

# GLUTATHIONIZATION

| FUNCTION | OUTCOME | YOUR GENOTYPE |
|---|---|---|
| Determines your body's ability to deal with free radicals and recover from fatigue and lack of energy | You recover from fatigue and physical activity at an average rate | GSTT1: 1 |
| Determines your body's ability to deal with toxins, particularly in the gut and intestinal lining | You have a difficult time getting rid of toxins and chemicals that could impact your gut lining | GSTM1: 0 |
| Determines your body's ability to deal with chemicals, toxins, and heavy metals. Influences your risk of migraines, brain fog, and headaches due to toxin or chemical exposure. | You can resist the effects of chemicals, heavy metals, and toxins fairly well | GSTP1: AA |

# GLUTATHIONIZATION

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You carry an average glutathionization profile, which means you can address toxin and chemical exposure in an average manner. You may be susceptible to certain toxins and chemicals, and you probably need a good amount of time to rest and recover after heavy physical activity. If you don’t watch yourself, you could be more susceptible to fatigue, tiredness and lack of energy. Sometimes, viral or bacterial infections can hit you pretty hard and shut you down.

# METHYLATION

Like glutathionization, methylation is used by your body to remove toxins from your body. Methylation influences your body’s inflammatory response. Depending on the location that inflammation is occurring in your body, the symptoms you experience can be different. Some individuals experience debilitating migraines, others experience muscle and joint pain disorders such as arthritis, neuropathy and fibromyalgia, and some experience gut health disorders such as Crohn’s Disease or Irritable Bowel Syndrome (IBS).

Several genes influence your methylation cycle. It’s important to understand that it's not the result of any individual gene, but the overall efficiency of the cycle that influences how well your body can fight off debilitating chronic inflammation.

# METHYLATION

| | Description | | Your GENOTYPE ⓘ |
|---|---|---|---|
|  | Your MTHFR grade | **OPTIMAL** | MTHFR: CC |
|  | Your SHMT1 grade | **OPTIMAL** | SHMT1: GG |
|  | Your MTR grade | **SUBOPTIMAL** | MTR: AG |

# METHYLATION

| | Description | | Your GENOTYPE ⓘ |
|---|---|---|---|
|  | Your MTRR grade | **SUBOPTIMAL** | MTRR: GG |
|  | Your FUT2 grade | **SUBOPTIMAL** | FUT2: GG |

# METHYLATION

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You carry a suboptimal methylation cycle. You are more likely to have difficulty addressing chronic inflammation throughout your body. You are more likely to experience frequent symptoms such as chronic fatigue, migraines, increased infections, longer recovery times, or episodes of muscle and nerve pain.

# CONCLUSION

Aging optimally, increasing longevity, and extending your healthspan are critical aspects of optimal health and wellness. When you approach your health and wellness through the personalized approach of functional genomics, you are better equipped to achieve optimal health outcomes.

Are you ready to take the next step and build a personalized plan that includes digital, group, or personal coaching, dietary recommendations, lifestyle recommendations, and supplement recommendations based on your unique genomic profile?

Send us an email at clientcare@thednacompany.com to learn more about our personalized coaching programs