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A love letter to DNA

The Vitl Nutrition Team / 6 Sept 2022

Dear DNA,

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Oh DNA... you have been on this planet quite a while, haven't you? From bacteria to fungi, bananas to monkeys, to butterflies and humans, you exist in every single living thing. But why are you so important? Our Nutrition team is here to help shed some light on you and your fascinating application in modern life and nutritional interventions.

Your double helix structure, held together by complementary base pairs, was discovered in 1953 by Watson and Crick, and since 1990 you have been constantly researched by us, humans, in an attempt to identify, map and sequence you in our human cells. And what for? Because you hide invaluable information on an individual's health and medical needs that enable both the early prognosis and the development of precision interventions and treatments. Before we talk about the practical applications of a DNA test and how it can guide us towards healthier diet and lifestyle choices, we'll touch base on some key terms in genetics; variants, genotype, phenotype and traits! Are you ready to take a deep dive in your Genetics 101 course? If not, we won't judge, you can go straight to the section 'How can a DNA test help me live life better?'

Genotype; what are you?

Although 99.9% of our DNA is the same as any other human on the planet, that remaining 0.1% that varies from person to person is what makes us unique. These differences between each individual and their DNA are called variants. We inherit one variant from our mother's DNA and one from our father's DNA, and both variants together determine our genotype. Genotypes don't only determine our eye or hair colour, but also give precise instructions on how we respond to certain types of dietary, exercise and lifestyle choices which can have a huge impact on our overall wellbeing.

Does the environment have a say?

Absolutely! You, DNA, work very closely with the environment! And in genetics, when we say environment, we mean literally anything that happens outside our human cells' cores - where you are hidden! The environment has a great impact on the expression of DNA. One may be genetically predisposed to tan very easily, but if they never get exposed to sunlight, they will probably be much paler than someone who doesn't tan that easily, but spends all day in the sun! This is a very simple example, but it is useful to help us understand one core truth about genetics: that genes create the framework in which the environment acts to form the observable outcome. In other words, nature loads the gun, but nurture... pulls the trigger! Even if your genes predispose you to an increased risk of e.g. obesity, if you follow a healthy diet with the appropriate daily caloric intake, you will most likely never be obese - and vice versa. This is of great importance when we are talking about improving our health, as we now clearly see that making the appropriate dietary or lifestyle changes can strongly affect our outcome, aka phenotype, which is the set of observational characteristics one has when their genotype is interacting with the environment.

What are traits?

A trait is a distinct phenotypic characteristic of an individual. Traits can be determined by the genotype, environmental factors or a combination of both. Vitl's DNA Nutrition test examines 40+ traits, including how likely one is to have lower levels of certain nutrients, experience adverse effects from caffeine or alcohol consumption, or even how likely one is to benefit from certain nutrient supplementation to manage an unwanted effect, such as persistent tiredness or fatigue. But let's take a deeper look into how our DNA Nutrition test can help you kick start your journey towards a healthier you!

How can a DNA test help me live life better?

Imagine you're trying to lose weight – you may decide to start a new workout routine and try out a new diet. The problem is, what works for one person doesn't always work for the next. We often hear of lots of 'trendy' diets that swear to make you lose pounds like keto or paleo, but it's not guaranteed that those diets will work for you in the long term. Our DNA Nutrition test can help you determine your genetic predisposition to have an increased risk of experiencing the adverse effects of saturated fats. A high risk of this trait indicates that diets rich in saturated fats (like the keto diet which is rich in all types of fats!) may not be for you. A diet rich in unsaturated – good – fats, though, like the Mediterranean diet, may be more suitable to your body's needs. It can also check the type of exercise best suited to you, like strength or speed exercises, giving you insights on how to best schedule your training program to reach your optimum athletic performance.

How about vitamins and minerals?

Many don't realise that our genes affect how well we are able to absorb and metabolise nutrients from the food we eat, meaning some people have a higher risk of deficiencies, leading to long-term health implications, including tiredness and fatigue, sleep disturbances or predisposition to stress. Our DNA test can show whether you are likely to have lower levels of nutrients like iron, folate, omega 3 and 6, and vitamins D, E, A, C, B12 and B6. If you are found to require more of these nutrients, the next thing you need to check is whether you are getting enough of those from your diet.

If, for instance, you are predisposed to lower levels of omega-3, you may want to top up your diet with oily fish twice a week, add chia and flaxseeds to your morning porridge or lunch salads or consider taking omega-3 supplements – particularly if you are vegan or vegetarian.

Furthermore, our DNA Nutrition test checks the ability one has to convert folate (vitamin B9) to its active form MTHFR. If you are likely to have a lower conversion rate of folate, you may want to make sure that your supplements contain the active, methylated form of folate, and not its synthetic form, as the former is readily available to be utilised by your body, but the latter would need to be converted first.

Similarly, if you are likely to have lower levels of antioxidants like vitamin C, E or A you may want to consider dropping habits that deplete antioxidants in your system, like smoking or excessive drinking.

What else?

A DNA test can also help with day-to-day nutrition and wellbeing choices which, over time, build up and have a huge impact on our overall health and wellbeing. For example, those terrible hangovers might not just be a sign you drank too much last night, it could, in fact, be a sign that genetically, your body struggles to process alcohol, putting undue stress on your liver. Equally, you may think those trips to the coffee shop are having little effect on your health, but you may discover that your body thinks otherwise, and is, in fact, more vulnerable to stress caused by caffeine.

You might also want to check whether your optimum productivity phase is early in the morning or later in the afternoon. After all, back in the day, not all of our ancestors were waking up early; some would stay awake overnight to guard the rest! Understanding when you are most likely to perform better can help you adjust your creative hours accordingly and make your work more enjoyable! You will be surprised with how many people are actually 'night owls'.

Lastly, you may want to see whether you are more likely to experience the negative effects of sugar such as sudden and sharp increases and drops of glucose, which have a direct impact on your energy levels throughout the day. If you are found to be likely to have higher fasting glucose levels than others, you might benefit from choosing low glycaemic index carbs like fibre, fruit and vegetables and cut out processed snacks and drinks. This will have a positive impact on your energy levels as well, as blood glucose and energy are correlated!

What's the difference between a DNA test and a blood test?

With regards to comparing our DNA test vs our blood test, our DNA Nutrition Test looks at your genetic predisposition / likelihood to have certain physical characteristics. It is designed to find out how your unique genetic code might affect your body's natural responses to certain dietary and lifestyle choices and to help you use this information to make informed choices about how to better work with your genes. Your DNA is unchanging so it's just a one-off test that explores various predispositions or likelihoods, ranging from low uptake of Vitamin C to how your body metabolises caffeine and alcohol. Whilst your DNA is unchanging, the levels tested in our Vitamin Blood Test can change and there is a lot that can be done through nutrition and lifestyle to bring these to optimal levels. The Vitamin Blood Test analyses your current levels of a given vitamin / mineral, so this can change over time. If we look at the DNA test and the Vitamin Blood Test together, your DNA results may say that you are more prone to lower levels in certain vitamins but this does not necessarily mean that your levels will be low all the time, as you may be eating the right kinds of food or supplementing correctly. Similarly, if you have a low result from the Blood Test but not a natural predisposition to being low in a certain vitamin or mineral, then this can highlight potential areas of your diet and lifestyle that could be improved.

What specific traits does the DNA Nutrition Test analyse?

From a simple cheek swab, you can access key insights about your own genetic traits, including:

- Diet & Intolerance
- Appetite & binge eating
- Use of dietary saturated fats
- Alcohol flush
- Gluten intolerance
- Sweet tooth dental decay
- Sweet tooth tendency
- Colon transfer
- IBS and GERD
- Fructosuria
- Caffeine-induced anxiety
- Hair & Skin
- Skin antioxidant capacity
- Premature greying (men)
- Acne
- Eczema
- Fitness
- Glycolytic capacity in strength training
- Lipid & glucose metabolism in speed sports
- Fat vs muscle composition
- Pregnancy
- Omega 3 & 6 during pregnancy
- Vitamin B12 in pregnancy
- Pregnancy weight
- Folate during pregnancy
- Sleep & Energy

- Caffeine metabolism
- Sleep bruxism
- Sleep behaviour
- Sleep movements
- Vitamin Levels
- Vitamin A
- Omega 3 & 6
- Vitamin B12
- Vitamin D
- Vitamin B6
- Vitamin E
- Vitamin C
- Iron
- Folate

How does it work?

- Receive your at-home DNA testing kit through your letterbox
- Provide a saliva sample with the provided swab
- Pop your labelled sample in our pre-paid postage bag
- Sit tight and let our lab do the work!

When is the best time to take my test?

Any time of the day, just make sure you haven't eaten or drunk anything for an hour beforehand.

How long do I have to wait for my results?

It only takes our Illumina-certified laboratory 2 – 3 weeks to extract and analyse your DNA from your sample, which is around twice as fast as the other leading DNA testing brands.

What happens to my data?

All samples are completely anonymised from the lab and then we use the latest encryption technology so you never have to worry about your data. Any leftover genetic material is destroyed after analysis while data is securely stored using the highest available industry-standard protocols that are constantly kept up to date by our technology partners. This is so that we can update your reports with any new insights that become available. No health data is shared with third parties that are not required in order to provide the service and, as per GDPR guidelines, any data that we hold on you can be deleted at your request.

Can I get my raw DNA data?

Yep! Just get in touch at info@vitl.com and we'll be able to send it over.

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Nutrition Team**
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