

IS IT IN YOUR GENES?

With a bit of your saliva, you can discover how your DNA is driving your mood, metabolism, workouts and more. Heather Ingarfield took one of the genetic tests to see if it's possible to follow your genome to a happier, healthier life

I WON'T LIE, I WAS SCEPTICAL.

I'm not an easy believer of things – you won't catch me reading my horoscope, dodging ladders in my path or letting someone read my chakras. I need hard facts. So when I had the opportunity to swab the inside of my mouth, hand over a detailed map to every cell in my body, send it away and be sent reports on how my unique genetic code is affecting my mood, gym sessions, diet and life expectancy, I had to give it a try. The idea of being meticulously analysed at the most basal level was both daunting and intriguing. But this wasn't my mom telling me to stop eating the whole packet of chips. This was science.

'DNA testing can provide precise and customised guidance, which can lead to substantial improvements in a person's health status based on individualised care,' says Jessica Pieterse, lead dietitian at SA's premier genetic testing lab, DNALysis. 'The tests are scientific and evidence-based. They provide information that is unique to how you function. Optimising your lifestyle according to your make-up can decrease disease risks, optimise weight management, enhance body functioning and improve quality of life.'

My swabs went off to DNALysis and my recommendations presented by Jessica. What was surprising to me, though, was

that I actually followed them. And I am not alone. Research has shown that people are significantly more likely to make health changes based on genetic test results than on general medical advice.

Am I going to stop going for annual check-ups? No ways. But I am going to keep exercising at the same intensity, avoid coffee in the late afternoon, stretch more often and pop omega tablets daily...

So, How Does It All Work?

What happens in the lab may be more complicated than heart surgery, but from my side, it couldn't have been easier. A box arrived from DNALysis, containing a swab in a plastic vile and an information card. After rubbing the swab on the inside of my mouth for 60 seconds and filling in my details, I packed up the box and sent it off with the courier. Once in the hands of the technicians at DNALysis, my sample went through a process called Polymerase Chain Reaction (PCR), which copies the DNA of my genes many times over, so that they can generate sufficient quantities to analyse the genetic material. Certain changes (called polymorphisms) in my genes are then studied in detail – these specific polymorphisms are linked to a person's response to diet, exercise, general health and mental health.

Your detailed results are then sent back to you by an accredited healthcare practitioner in a user-friendly report. I spoke to Jessica, who discussed my results with me, and I asked her to explain a glutathione S-transferases from a catechol-O-methyl transferase... (Just kidding, it's not nearly that scary.)

DID YOU KNOW?

As humans, more than 90% of our genes are the same; for the rest, variations occur – and it's this subset that has been associated with certain diseases or traits.

Exercise

As a real fitness fanatic, I was all ears when chatting about my exercise genes with Jessica. She explained that every person has an inclination towards either strength training or endurance training – or a 50/50 combination

of each, like me. Based on the DNALysis report, I should focus on aerobic, endurance training and strength, as well as speed and power training, to gain the best results. This means that I'm likely to benefit from including long-duration, moderate-intensity exercises, along with short-duration, high-intensity exercises, into my training programme. So more 5 km runs? Excellent.

Along with this, the report tells you just how many hours a week you should be training. They do this in a conversion called MET hours

(see below for much more on this interesting concept). I need to clock in 20 MET hours in a week, and after I did all my calculations, I was maxing out at around 53 hours a week.

Fantastic news for my fitness goals and waistline, but bad news for the next little gem of genetic information I gleaned: I'm likely to have a higher than average risk of developing a soft-tissue injury. This means that I need to be careful, ensure that my training volumes and intensities are appropriate and do regular injury-prevention conditioning exercises (stretching, ahem).

Seeing this written down on very official-looking paper made me realise that on those days when I don't feel so strong or energetic, I need to listen to my body and rest instead. Since I've started practising this trick, my training days are much more fruitful and productive – and my body bounces back faster.

What's Your MET?

METs (Metabolic Equivalent of Tasks) are a way to measure how much energy you burn during a physical activity – every activity, from watching TV to going for a run, has a MET value. The more vigorous the activity, the higher the MET value: Weightlifting and boxing carry 6 points, circuit training is 8 points, rowing is 8.5, running at 12.8 km/hr is 13.5 points, for example. You then multiply these points by the time (in hours) that you were sweating away.

For example, If you rowed for 2 hours (8.5 × 2 = 17), ran for 30 minutes at a pace of 8 km/hr (8 × .5 = 4) and played two hours of golf (4.5 × 2 = 9), then your weekly MET hours score will be 30 (17 + 4 + 9).



YOUR TURN?

DNAlysis offers these tests all around SA. Contact admin@dnalysis.co.za or 011 268 0268 for your test.



Health

When it came to the general health part of the review, I had clammy hands. Was Jessica going to tell me that I had a likelihood of developing cancer? Or that the random scraggly grey hairs popping up on my head would soon turn into a full crop of silver? No, it's not that kind of test. DNAlysis focuses on a few key areas: Lipid Metabolism (cholesterol), Methylation (DNA repair), Oxidative Stress, Detoxification, Inflammation, Bone Health and Insulin Sensitivity. These are rated on a priority scale. For me, the two highest priority areas were inflammation and oxidative stress.

Inflammation is an immune response and an essential step in tissue healing. The release of certain inflammatory substances is controlled by genes that govern inflammation. However, when these genes are not 'switched off', the inflammatory response continues, which can lead to a number of common disorders, such as obesity, heart disease, arthritis and inflammatory bowel

disease. Jessica's advice for this? Besides taking care of my body when exercising and not throwing around weights heavier than my car, I need to take omega and fish oil supplements. For someone who spends hours in the supplement section at Clicks, it was such a relief to know which ones were crucial for me, specifically.

The second part of the general health analysis was all about food responsiveness, and in particular: polyunsaturated fat (PUFA) metabolism, caffeine and salt sensitivity, lactose intolerance, and iron overload. My weakness? Caffeine. I am a slow metaboliser of caffeine, Jessica told me, because I possess the C allele gene. This means that a cup of Joe will last in my system longer than normal, possibly affecting my sleep and increasing my risk of heart disease. Cut out coffee? Not going to happen. But be aware of chugging back my fourth cup in a morning? That's more like it. **FL**

MIND

The DNAlysis tests on your mental health home in on genetic variations linked to changes in key biological areas that affect your mind. Any weaknesses in these areas, together with environmental factors, increase the risk of developing disorders related to mental health. Genes are tested for specific biological areas (like inflammation, stress response and lipid metabolism), and your results determine how it affects your likelihood of developing neuro-degenerative disorders, your mood regulation, and addictive behaviour. It's the most complicated section of the analysis and it's pretty daunting wading through all the jargon. But thankfully, the DNAlysis team breaks it down nicely into easy-to-understand summaries. For me (and this seems to be a trend in my results), inflammation was a red flag. The presence of genes 1L-1A, 1L-1B or 1L-1RN means that I have a more active inflammatory response, which can be linked to increased risk of developing chronic, low-grade inflammation. What do I do with this information? Well, include omega-3 fatty acids, ginger and phytonutrient-rich foods in my diet. Then my results moved on to something that, although it has scary names like COMT Val158Met and Val158Val, is completely fascinating and unlocks the answers to why people develop addictions. Dopamine is a neurotransmitter synthesised in the brain and responsible for regulating reward and pleasure. Anything that affects dopamine production may increase your chances of developing an addictive behaviour disorder. When a genotype called COMT GG pops up in the results, it means that the dopamine levels might be choked, breaking down the pathway in the reward and pleasure circuitry. The good news? Good nutrition can help keep those dopamine levels up.

HOW MUCH DOES THIS COST?

The costs vary depending on how many tests you want. At DNAlysis, they offer seven different tests that address varying areas. It can cost between R1 890-R7 060.



What Is The Mediterranean Diet?

Originating from (yes, you guessed it) the Mediterranean region of the world, it's a way of eating that focuses on fresh produce (fruit, veggies, wholegrain cereals, legumes, tree nuts, seeds and olives), fish, seafood, eggs, poultry and low-fat dairy products. If you want a big old steak or a bottle of wine, that's also fine, but keep it to a minimum. It doesn't wipe out any food groups, you can eat carbs (hallelujah!) and cheese.

that causes this predisposition for the cookie jar. The Medi diet is not loaded with high-sugar foods, but rather natural sugar from fruit – thus not feeding into my Oreo addiction.

my fill of good fats easily.

The second reason is my likelihood to snack. Once I got over my amazement that genetic testing can tell you whether you'll smash a box of crackers before dinner, Jessica explained that some individuals have an increased tendency to snack more often because of a lack of satiety (fullness) feelings. As a way to counteract this, I have to not skip meals, reach for healthy snacks, and ensure that my meals are loaded with filling legumes, veg and high-fibre carbs.

Lastly, I have a sweet tooth. My chocolate-a-day habit told me as much, but I also have a gene



Diet

I was waiting to be told that gluten, carbs, dairy and anything delicious had to go, and that my diet should comprise kale and tomatoes and almond-milk-rooibos-lattes only. Actually, I was recommended one of the most balanced and inclusive eating plans: The Mediterranean diet. Why is this the chosen one for me? Well, for three main reasons:

The presence of the gene PPARG means that in order for me to keep a healthy body weight, I need to chow down on PUFAs (polyunsaturated fats) from fatty fish such as salmon, pilchards, sardines and mackerel, as well as MUFAs (monounsaturated fats like nuts and olive products), and avoid saturated fat like the plague (that's anything processed, basically, and fats from animal sources such as chicken skin, steak fat, butter, cream). The Medi diet is all about fish and grains, so I would get

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