



dnaresilience

Welcome

Sample Report

to your DNA Resilience report

Date of birth:

Date reported:

Sample number: DNA123

Referring practitioner:

DNA Resilience provides valuable insights into how you can learn to thrive under adverse conditions, using personalised diet, nutraceutical, exercise and lifestyle recommendations to boost your resilience potential and improve your health outcomes



Health performance



Cognitive function



Moods and emotional state

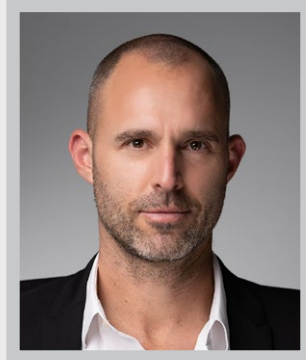


Manage diet and lifestyle



Manage stress

Thoughts on DNA Resilience...



“Choosing DNA Resilience is the first step in your journey towards the realisation of your fullest potential. It means you are consciously deciding on a course of action to successfully adapt to change and overcome the obstacles around you.”

So many factors underpin our resilience, including life experiences, the people who guide and support us and our genetic make-up. The influence of genetics in our intellect, emotional responses and behaviours is significant, and driven largely by seven major neurochemicals or hormones. By understanding this complex set of interconnected biological and physiological factors, and supporting the delicate balance between the various parts, we are able to bring to the fore the best version of ourselves. This translates into operating at an enhanced level of adaptability, creativity, motivation, focus, attention, memory, learning, confidence, persistence and optimism. It also means functioning at a significant level of emotional stability, regardless of the circumstances.

This performance panel explores some of the most widely researched genetic factors that influence these primary neurochemical systems and is able to highlight areas of strength and potential hurdles. Regardless of your genetic resilience score, you can excel and in many instances it is those weaknesses that ultimately become an acquired strength. This is a journey where gene–environment interactions and gene–gene relationships shape various realities, and the team of highly skilled practitioners I have put together will help you unlock the giant that lives within each of you.



Richard Sutton

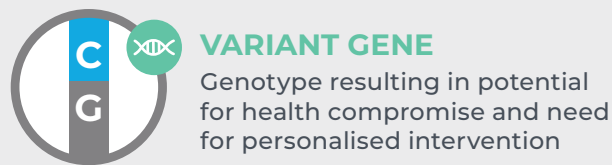
Author: 'The Stress Code: From Surviving to Thriving' and 'StressProof - The Game Plan'

Genetics and personalised medicine

Genes are segments of DNA that contain the instructions your body needs to make each of the many thousands of proteins required for life. Each gene is comprised of thousands of combinations of “letters” (called bases) which make up your genetic code. The code gives the instructions to make the proteins required for proper development and function.

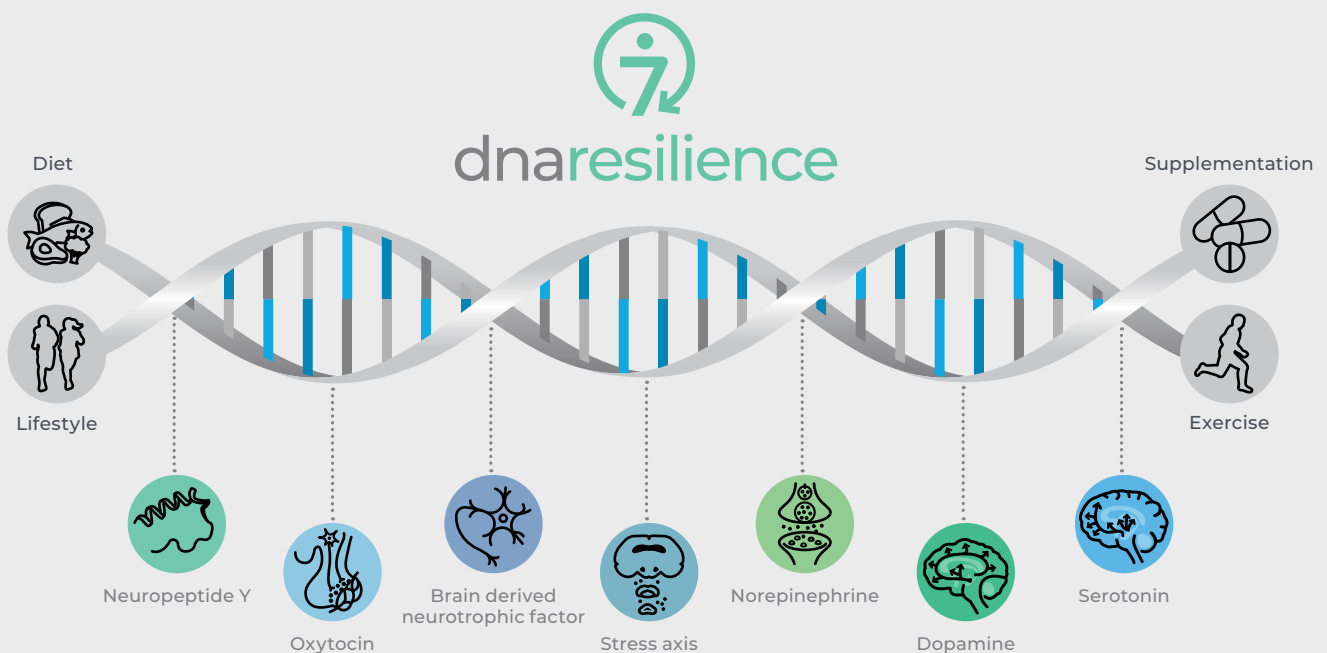
Genetic variations can affect the expression of a gene, thereby affecting metabolic processes that are important for maintaining cellular health and how we respond to environmental interventions such as diet, lifestyle, supplements, and medication.

Knowledge of these genetic variations offers unparalleled insight into your biological systems, allowing your healthcare practitioner to recommend precise interventions aimed at helping you reach your goals and achieve optimal health.



Personalised medicine and resilience

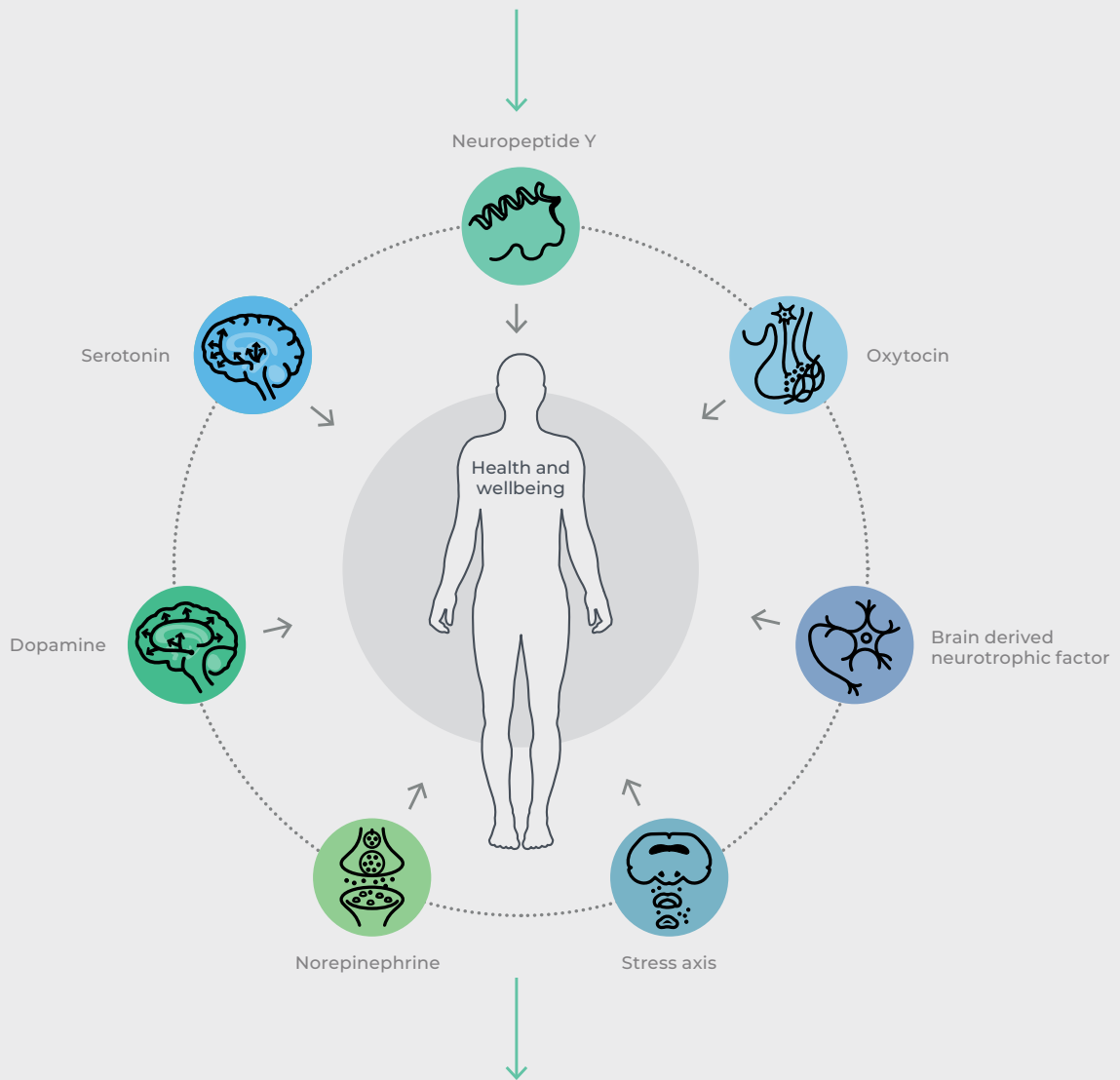
Resilience is the ability to recover quickly from a crisis. Research shows that resilience is highly heritable, meaning there is a strong genetic component to one’s baseline resilience and it is how we interact with our environment that determines our ability to thrive under adverse conditions. This report considers the seven molecular areas that underpin our resilience, and provides valuable insight into how you can optimise these areas and boost your resilience using personalised diet, nutraceutical, exercise and lifestyle recommendations.



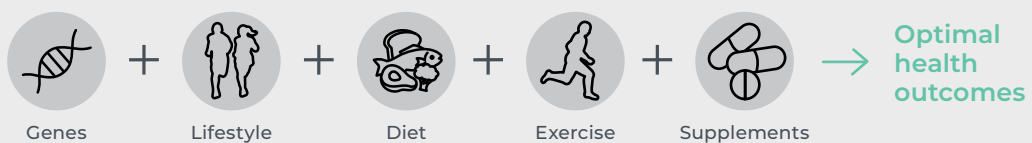
Improving resilience outcomes

DNA Resilience offers insight into the seven molecular areas of resilience in order to help identify strengths and hurdles, as well as recommending personalised interventions which can help you to improve your resilience outcomes and health performance.

DNA RESILIENCE CAN IDENTIFY STRENGTHS AND HURDLES, AND IMPROVE HEALTH PERFORMANCE.










To improve your resilience score and overall health performance: identify and implement targeted interventions



Result summary

The seven molecular pathways of resilience

The graphs below indicate the extent to which these seven molecular pathways contribute to your own resilience. All of these areas can be strengthened and improved through environmental triggers; pay particular attention to the “Low” and “moderate” results to improve resilience.

MOLECULAR AREA	SCORE
 Neuropeptide Y	
 Oxytocin	
 Brain derived neurotrophic factor	
 Stress axis	
 Norepinephrine	
 Dopamine	
 Serotonin	

Key areas that require support

If your genotype results are associated with possible weaknesses in key molecular areas that affect resilience outcomes, the molecular areas that require elevated support are indicated. Personalised recommendations for diet, supplementation, exercise and lifestyle, to support these areas, are summarised below.

DIET**SUPPLEMENT****EXERCISE****LIFESTYLE**

Your results and recommendations



Neuropeptide Y



Your results

Your NPY contribution to resilience

Normal molecule

Altered molecule function due to a gene variant

GENE NAME	GENE VARIATION	RESULT	GENE IMPACT
NPY	-399 C>T	TT	



NPY molecule influence and your outcomes

NPY protects against stress induced depression, worry and anxiety, and helps one to perform better mentally and physically under pressure. It is involved in pain reduction by counteracting the primary stress hormones (cortisol and adrenaline), as well as lowering blood pressure, heart rate and inflammation under stressful and pressurised conditions. NPY decreases brain sensitivity to leptin, which then exerts an influence on obesity by creating new fat cells - thus promotes fat storage.

STRENGTHS



Those with the TT genotype have good protection against the negative effects of stress (i.e. anxiety and depression); perform well mentally and physically under pressure, and show good immune and hormonal regulation under stressful conditions.

HURDLES



You may struggle with weight control under periods of stress and high demands.



Oxytocin



Your results

Your Oxytocin contribution to resilience

Normal molecule

Altered molecule function due to a gene variant

GENE NAME	GENE VARIATION	RESULT	GENE IMPACT
OXTR	G>A	AG	



OXTR molecule influence and your outcomes

The oxytocin receptor is central in inhibiting the brain's primary fear and stress centre - the amygdala, and promotes courage, calmness, empathy, optimism, trust, self-belief and self esteem. It promotes anti-inflammatory and antioxidant activity and also lowers blood pressure and cortisol.

OXTR stimulates growth hormone and insulin-like-growth-factor (IGF-1), which helps with cell repair and growth. It also helps increase serotonin and BDNF, which promotes mood stability and adaptability.

STRENGTHS



Isolation and solitude do not seem to take the same toll on you as the GG genotype. This may be an advantage in this period of rolling lockdowns and social distancing.

HURDLES



Stress and protracted pressure can increase your risk of mood disorders such as depression and anxiety. There may be more difficulty in overcoming historic life traumas, and there is a higher risk of developing stress-related health issues.





Brain derived neurotrophic factor (BDNF)



Your results

Your BDNF contribution to resilience

Normal molecule

Altered molecule function due to a gene variant

GENE NAME	GENE VARIATION	RESULT	GENE IMPACT
BDNF	Val66Met	CC	



BDNF molecule influence and your outcomes

BDNF is involved in enhancing memory, augmenting reading and the retention of information, and facilitates creativity and innovation. It has a strong influence in cognitive ability and potential and offers protection against anxiety and depression.

STRENGTHS



Those with the CC genotype show good potential to cope with challenges and adversity, have strong protection against stress-related mental health compromise and exhibit a sound cognitive base.

HURDLES



Chronic stress can reduce BDNF production by up to 40%. Weight gain compromises BDNF production, and advancing age reduces production.



Stress axis

The stress axis plays a central role in the regulation of adrenal hormones. An increase in glucocorticoid levels in response to stressors is advantageous in enabling the body to restore homeostasis. However, if glucocorticoid levels remain chronically elevated due to exposure to chronic stress, this in turn increases risk for developing an impaired stress axis, which is a strong risk factor for inflammatory diseases. The stress axis score is comprised of the analysis of variants on two genes: FKBP5 and CRHR.



Your results

Your stress axis contribution to resilience

Normal molecule

Altered molecule function due to a gene variant

GENE NAME	GENE VARIATION	RESULT	GENE IMPACT
FKBP5	C>T	CT	
	A>C	AC	
CRHR	C>T	TT	
	G>T	TT	



Your FKBP5 molecule influence and outcomes

FKBP5 has a structural and functional effect on the brain's fear centre, and influences the overall stress responses (regulates or dysregulates). It sustains the stress axis (blocks down-regulation, influences the production of cortisol in response to stressful events, and influences emotional responses to stress. It has an influence in pain responses, and influences blood sugar levels and weight.

STRENGTHS



Those who carry the FKBP5 T and C variants can positively influence and alter the molecule in the long term through proactive measures.

HURDLES



Stressful events or conditions can be associated with worry and anxiety, low mood or depression, rigidity, and reduced adaptability, and raised systemic inflammation and immune disorders.





CRHR molecule influence and your outcomes

CRHR plays a critical role in the stress response (HPA axis) and its intensity; it amplifies the experience of stress, including the perception of fear. It influences emotional state and responses to stress, as well as cognition, especially memory and learning, and plays a role in immune behaviours within the digestive tract.

STRENGTHS



In CRHR TT genotype individuals, there is a higher likelihood for reduced perceptions of fear during stressful events, appropriate and proportional biological responses to stressful events, protection against depression and/or anxiety under demanding circumstances, and a good aptitude for learning and memory in stressful periods.

HURDLES



You may have an increased risk of inflammatory bowel disorders and irritable bowel syndrome (IBS). Poor lifestyle habits and childhood adversity and a previous history of trauma may compromise many of the strengths due to interactions in other areas influencing the HPA axis.





Norepinephrine



Your results

Your norepinephrine contribution to resilience

Normal molecule

Altered molecule function due to a gene variant

GENE NAME	GENE VARIATION	RESULT	GENE IMPACT
DBH	C>T	CC	



Norepinephrine molecule influence and your outcomes

DBH encodes the enzyme, dopamine beta (β)-hydroxylase, which converts dopamine to norepinephrine. It promotes focus and sustained attention, reduces the risk of stress-associated depression and anxiety, reduces aggression, and impulsiveness, and protects against neurosis.

STRENGTHS



Individuals with the CC genotype show strong emotional footing during challenging and demanding circumstances, good cognitive aptitude during stressful periods, and have a lower risk of stress-induced headaches and migraines as well as other physical symptoms.

HURDLES



Yeast, fungal or bacterial infections may offset this resilience advantage. If you are struggling with anxiety, depression, aggressive outbursts, neurosis, headaches, and poor attention, it may be worthwhile considering an Organix Acid Test available through Nordic Laboratories.



Dopamine

Dopamine is an excitatory neurotransmitter that is synthesized in the brain, and is responsible for modulating reward and pleasure. It is also essential for optimal cognitive function, as well as working memory. Dopamine is an important contributor to the generation of the stress response and coping responses, where environmental stressors, both physical and psychological, activate the brain dopaminergic circuits, which lead to acute and chronic changes in neuronal functions. The dopamine score is comprised of the analysis of variants on three genes: DRD2, DRD4 and COMT.



Your results

Your dopamine contribution to resilience

Normal molecule

Altered molecule function due to a gene variant

GENE NAME	GENE VARIATION	RESULT	GENE IMPACT
DRD2	Taq1A	TC	
DRD4	-521 T>C	CT	
COMT	Val158Met	GG	



DRD2 molecule influence and your outcomes

DRD2 encodes a receptor for dopamine. It plays a role in positively influencing sleep, promoting memory, and optimising learning, attention, focus, and intellectual agility, as well as emotional stability. It is central in motivation, and drives performance, especially in stressful situations. It also influences pain perception.

STRENGTHS



Those with the T variant are responsive to cognitive training and are motivated by positive rewards.

HURDLES



Stress may trigger the overconsumption of food. There is a greater inclination for cravings for sugars, carbohydrates, and fats. Significant traumas may be associated with PTSD. One may be impulsive and thrill-seeking and prone to novelty-seeking behaviour.





DRD4 molecule influence and your outcomes

DRD4 encodes a dopamine receptor, which has a major influence on dopamine levels within the brain. It regulates emotions and complex behaviours and has a strong resilience influence. It promotes cognition, augments memory and learning, enhances movement potential, and modulates overall neurochemical and hormonal balance.

STRENGTHS



Those with the C variant show exceptional resilience, good adaptability and mental agility, a lower prevalence of anger in response to stressful events, and are more able to forgive easily and completely.

HURDLES



No obvious hurdles exist currently.





COMT molecule influence and your outcomes

COMT encodes an enzyme responsible for the break-down of dopamine, apinephrine and norepinephrine. It is involved in promoting mood stability, adaptability, cognitive ability, and motivation and augments movement. It also plays a role in blood vessel, immune, and hormonal regulation.

STRENGTHS



In individuals with the GG genotype stress and adversity has the potential to bring out exceptional performance and capabilities due to the significant increase in dopamine. There may be good leadership and problem-solving ability during difficult and stressful periods. One may be more extroverted, exploratory, curious, agreeable, friendly, and conscientious.

HURDLES



One may experience lower dopamine levels (especially in the executive regions of the brain), which can negatively affect learning, attention and focus, motivation, and adaptability. Individuals with this genotype are typically unable to benefit from the practice of reframing and cognitive reappraisal.





Serotonin

Serotonin is primarily found in the gastrointestinal tract, as well as blood platelets, and the central nervous system (CNS) and is an important modulator of mood, contributing toward feelings of well-being and happiness. Low levels of serotonin are associated with mood disorders, including anxiety and depression. The serotonin score is comprised of the analysis of variants on four genes: TPH2, HTTLPR, HTR1A, and HTR2A.



Your results

Your serotonin contribution to resilience

Normal molecule

Altered molecule function due to a gene variant

GENE NAME	GENE VARIATION	RESULT	GENE IMPACT
TPH2	-844 G>T	GG	
HTTLPR	A>C	CC	
HTR1A	-1019 C>G	CG	
HTR2A	-1438 G>A	AA	



TPH2 molecule influence and your outcomes

TPH2 encodes an enzyme that is responsible for making serotonin in the brain. It promotes mood and emotional stability, enhanced planning & decision making, enhanced sensory gating (preventing irrelevant information from overwhelming the brain), and regulation of behaviour and impulsivity as well as cognitive function including concentration.

STRENGTHS



Those with the GG genotype may have elevated serotonin, good cognitive function and performance, the ability to learn and pick up new tasks fairly rapidly, and good decision-making capabilities. There is also an association with having fewer aggressive tendencies, being more sociable, good energy levels, and good recovery healing potential.

HURDLES



These individuals may be prone to stress-induced anxiety, with a higher likelihood of depression and developing panic disorders when compared to the T allele. This genotype leads to lower BDNF levels and gamma-aminobutyric acid (GABA) levels, a neurochemical responsible for promoting sleep, and reducing stress and anxiety.





HTTLPR molecule influence and your outcomes

HTTLPR encodes for the serotonin transporter (SERT), which is a protein that functions to transport serotonin. It promotes successful adaptation to stressful and demanding circumstances, memory and cognition, positively influences emotional stability and integrity, and is associated with regulating social behaviours. It also enables good connectivity and functionality within a region of the brain known as the visual-limbic subnetwork.

STRENGTHS



Those with the CC genotype may exhibit exceptional overall resilience, reduced emotional reactivity to stressful events, reduced risk of depression and anxiety in response to chronic stress and/or stressful events, good positivity and optimism, and good memory and cognition especially in demanding circumstances.

HURDLES



Oestrogen instability may adversely influence this gene's expression.





HTR1A molecule influence and your outcomes

This receptor promotes successful adaptation to stressful and demanding circumstances, and increased adaptability within the brain under stressful conditions (neuro-plasticity). It protects against and moderates aggressive behaviours, impulsivity, stress related depression, anxiety and panic disorders. It also positively influences several major hormones and biological systems including the vagus nerve (see stress axis), oxytocin, growth hormone, endorphins and adrenocorticotrophic hormone (ACTH), which plays a central role in the release of cortisol.

STRENGTHS



In individuals with the HTR1A G variant, this molecule can be positively influenced and altered in the long term through proactive measures.

HURDLES



Stressful events or conditions can be associated with the following; reduced resilience potential, risk of stress-related emotional disorders including depression, anxiety, aggression, compulsive behaviours, panic disorder, and eating disorders, a reduced ability to effectively regulate stress responses, neurochemical and hormonal disruptions, especially during stressful events, and reduced connectivity within key circuits of the brain.





HTR2A molecule influence and your outcomes

This serotonin receptor assists in successful adaptation of the brain to stressful and demanding circumstances, the formation of new brain cells (neurogenesis), enhances cognition, creativity and adaptability and learning, is instrumental in long term emotional integrity, and promotes openness. In an over expressed and activated state, it may cause anxiety, pessimism and depression.

STRENGTHS



Individuals who have the A variant may show exceptional potential for learning, good cognitive flexibility and overall cognitive/intellectual aptitude, a creative disposition, and the ongoing capacity to adapt (impacting overall resilience potential).

HURDLES



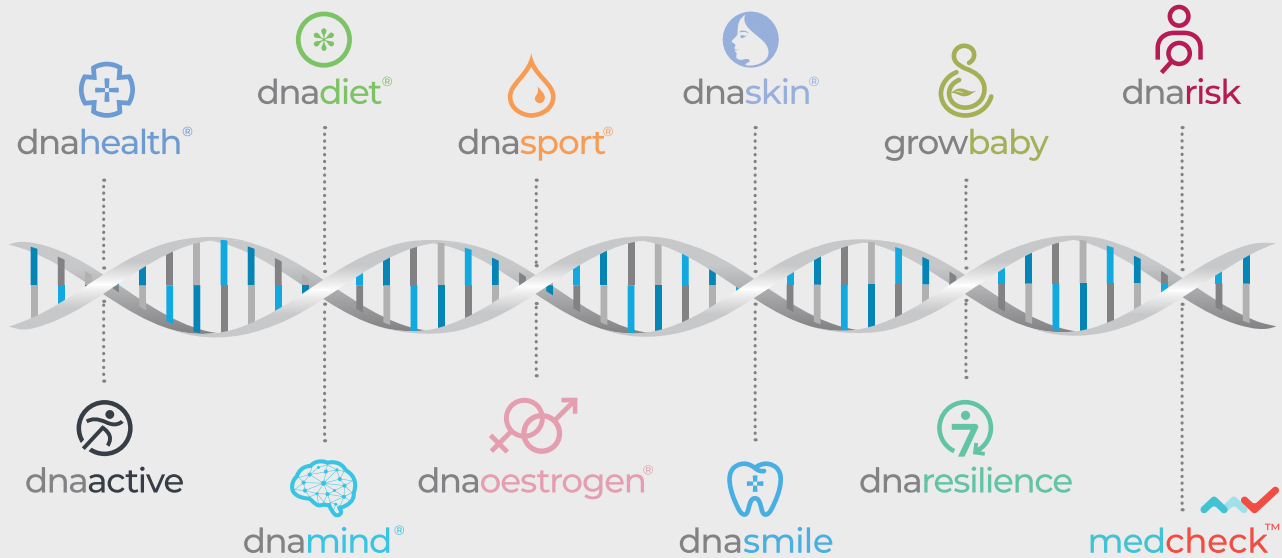
There is an increased risk of stress-related anxiety and depression, a higher propensity for stress-related neurosis and pessimism, and poor sleep patterns under stressful conditions. Carriers of the A variant may be prone to chronic fatigue and less sociable overall. They also exhibit reduced BDNF expression.

Note that many of the advantages in executive functionality may be overshadowed/offset by emotional instability and fatigue.



A lifetime of optimal health awaits you

Your genes do not change, which means our laboratories will only ever need one sample* from you. Throughout your life, as your health goals and priorities change, we can continue to provide valuable health insights from this single sample* to support your unique health journey.



*Requires finger prick blood spot sample collection

Our Commitment

DNAlysis Biotechnology is continuously developing new tests with the highest standards of scientific rigour. Our commitment to ensuring the ethical and appropriate use of genetic tests in practice means that gene variants are only included in panels once there is sound motivation for their clinical utility and their impact on health outcomes.

ADVANCED | **ACTIONABLE** | **APPROPRIATE**
technology | interventions | use in practice

From the laboratories of:

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Risks and Limitations:

DNAlysis Biotechnology has a laboratory with standard and effective procedures in place for handling samples and effective protocols in place to protect against technical and operational problems. However as with all laboratories, laboratory error can occur; examples include, but are not limited to, sample or DNA mislabelling or contamination, failure to obtain an interpretable report, or other operational laboratory errors. Occasionally due to circumstances beyond DNAlysis Biotechnology's control it may not be possible to obtain SNP specific results.

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