



Report Summary

WELCOME

PHYSICAL

BEHAVIORAL

Hi DANIEL AL AMEEN, welcome to your discovery journey.

We invite you to learn what genetics have to do with your child. We give you a unique opportunity to explore an innovative and groundbreaking product developed for individuals seeking to learn more about the potential of their children.

UNDERSTANDING YOUR RESULTS:

The results reflect your children's genetic predisposition for certain behavioral and physical traits. The results describe their personal odds to have a certain trait, but do not reflect a deterministic destiny. The expression of a particular trait (phenotype) is influenced by their genetic makeup but also by environmental and lifestyle factors. By understanding their genetic makeup you can recognize the impact of environmental and lifestyle influences such as what they eat, what they drink, where they live, how they live and how active they are.



PHYSICAL

Your Physical Genetic Profile



BEHAVIORAL

Your Behavioral Genetic Profile

Speed: Slightly Below Average; Endurance: Above Average
Have a tendency towards Nearsightedness
Your Height Tendency: Below Average
Your Result: Tendency to be a Night Owl
Your Long Term Memory Capacity: Average

Tendency to be Non exploiter
Tendency to be an Error Repeater
Your Risk Taking tendency: Neutral
Tendency to be Seeker of Social Support

YOUR PHYSICAL GENE REPORT

TRAIT	GENE	GENOTYPE	RESULT
Sprinter / Endurance	ACTN3	T:T	Endurance
Near sightedness	RASGRF1	T:T	Higher Tendency
Height	SPAG17	T:C	Below Average
Early Bird	CLOCK	T:C	Night Owl
Memory	COMT	G:G	Typical

More

YOUR BEHAVIORAL GENE RESULT

TRAIT	GENE	GENOTYPE	RESULT
Learning Patterns	COMT	G:G	Non-Exploiter
Avoidance of Errors	ESR1	G:A	Error Repeater
Risk Taking	TPH2	T:T	Average Risk taking
Social Support	OXTR	G:A	Seeker of social support

More



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Discovery Journey / Physical / Physical

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GENETICS OF PHYSICAL TRAITS

Science's understanding of genes, and what they tell us about our bodies, has progressed immensely in recent decades.

All of our physical features are dictated by our genes, and these genetic traits are passed on to us from our parents in the form of 23 pairs of chromosomes. Genes determine whether your ear lobes are attached or detached and how big they are. Genes determine your height, the color of your hair and eyes, are you a sprinter? Will you be nearsighted, etc.

Physical traits are often described as either dominant or recessive -- that is, one allele is dominant over another, meaning that if both are present in a person's genome, the dominant allele will manifest itself in the form of a physical characteristic. However, some genes are co-dominant, meaning that they both will affect a physical trait.

YOUR RELATED GENES

The results in the table below give you a highlight summary of your genetic makeup for each trait that was tested. You are invited to explore the detailed explanation associated with each test result.

TRAIT	GENE	GENOTYPE	RESULT
Sprinter / Endurance	ACTN3	T:T	Endurance
Near sightedness	RASGRF1	T:T	Higher Tendency
Height	SPAG17	T:C	Below Average
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SPRINTER/ENDURANCE - WHAT DOES IT MEAN?

YOUR DNA RESULT - Your DNA test result indicates that your genetic makeup is closer to being an endurance runner than a sprinter.

ACTN3 the "Speed Gene" as it's been dubbed, makes fast twitch muscles twitch fast. Lacking the ACTN3 protein does not seem to have any harmful health effects, but does affect running ability. Scientists conclude that it is almost impossible for someone who lacks the ACTN3 protein to become an elite sprinter. Those of African ancestry have the lowest incidence of the mutation that prevents the muscles from firing. A study showed that 100% of elite female sprinters had the ACTN3 gene, compared to 80% of the general population. The Science of sprinting, hard work and training push elite athletes to the edge of their ability, but genetics also plays a key role in their ultimate performance.

Full Article:

<http://www.reuters.com/article/2012/07/31/oly-athl-m100m-package-genes-day-idUSL6E8IPO2K20120731>

YOUR RELATED GENES

When you find out your ACTN3 genotype, you can optimize your approach to athletic training and sports based on your natural advantage. You will know whether your genetics give you an advantage in power or endurance.

GENE	GENOTYPE	RESULT
ACTN3	T:T	Endurance



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GENETICS - WHAT SEPARATE ENDURANCE FROM SPRINTERS ATHLETES

According to Professor Kathryn North from the University of Sydney, a gene variation commonly found in endurance athletes most likely evolved as humans moved out of warm, food-rich environments to colder and harsher conditions, new research shows. The variant form of the gene ACTN3, commonly found in endurance athletes, is also associated with more efficient muscle metabolism. Authors conclude that ACTN3, the original “sprinters” gene, has evolved over millions of years to equip humans to cope with changing and more hostile environments. “There is a fascinating link between factors that influence survival in ancient humans and the factors that contribute to athletic abilities in modern man,” said Professor North.

Her discovery was that variations of the gene provided an important guide to whether an elite athlete has ability to be a power sprinter or an endurance performer. In its most common variation, which accounts for about 80% of the Australian population, ACTN3 encodes for a protein called alpha-actinin-3. This is the protein which is found only in fast-twitch muscle fibers and is responsible for the explosive bursts of power necessary for successful sprinters or track cyclists. Among elite power athletes the alpha-actinin-3 protein is nearly always present. Researchers developed a strain of mice that were completely deficient in alpha-actinin-3. They found the muscle metabolism of the mice without the actinin protein was more efficient: the mice were able to run, on average, 33 per cent further before reaching exhaustion than mice with the normal ACTN3 gene. To answer the question as to why the variation occurred they looked at DNA samples from 96 individuals from around the world. “Most Africans have alpha-actinin-3, it’s the normal ancestral state. But as you move into European and Asian populations there is a marked increase in the number of people without the protein. In some Asian populations that number reaches 40 per cent, or even higher in some isolated populations,” she said. She believes the switch to more efficient metabolism is likely to have occurred due to natural selection during the last Ice Age, when humans began moving out of the food-rich areas of Africa into colder, harsher environments.

Source: University of Sydney Those with the variant form of the gene, about 20% of the population, do not make the alpha-actinin-3 protein. Among elite endurance athletes – marathon runners and rowers – the variant form of the gene is more common.





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SIGHT - WHAT DOES IT MEAN?

YOUR DNA RESULT - *Your DNA test results indicate that you are more likely to suffer from myopia (nearsightedness) than to have no eye problems*

WHAT IS MYOPIA - WHAT CAUSES IT?

Myopia, also known as nearsightedness, is a common type of refractive error where close objects appear clearly, but distant objects appear blurry.

HOW DOES MYOPIA DEVELOP?

Myopia develops in eyes that focus images in front of the retina instead of on the retina, which results in blurred vision. This occurs when the eyeball becomes too long and prevents incoming light from focusing directly on the retina. It may also be caused by an abnormal shape of the cornea or lens.

WHO IS AT RISK FOR MYOPIA?

Myopia can affect both children and adults. The condition affects about 25 percent of Americans. Myopia is often diagnosed in children between 8 and 12 years of age and may worsen during the teen years. Little change may occur between ages 20 to 40, but sometimes myopia may worsen with age. People whose parents have myopia may be more likely to get the condition.

YOUR RELATED GENES

Certain genotypes are associated with the individual's tendency to suffer from Nearsightedness.

GENE	GENOTYPE	RESULT
RASGRF1	T:T	Higher Tendency



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HEIGHT - WHAT DOES IT MEAN?

YOUR DNA RESULT - Your DNA test results indicate that you are more likely to have a lower than average height

HEIGHT AND THE ROLE OF GENES: a person's height is determined primarily by genetic factors, as research shows that height basically is an inherited trait. Although health, nutrition, and whether a woman smokes during her pregnancy each can influence a child's growth rate, there are several different genes that determine height in the end. A mix of genes coded for bone development, growth hormones, and metabolic enzymes all play a part in normal growth and development.

HOW MUCH OF THE HUMAN HEIGHT IS DETERMINED BY GENETICS? How much variation (difference between individuals) in height is attributable to genetic effects and how much to nutritional effects? The short answer to this question is that about 60 to 80 percent of the difference in height between individuals is determined by genetic factors, whereas 20 to 40 percent can be attributed to environmental effects, mainly nutrition.

You may refer to the following article to learn more:

<http://www.scientificamerican.com/article.cfm?id=how-much-of-human-height>

Foods for Height and Growth – a healthy diet that includes a variety of foods helps ensure he reaches his full height potential. Foods High in Calcium, Foods High in Vitamin D, Foods High in Vitamin A, Foods High in Zinc.

For the full article follow this link:

<http://www.livestrong.com/article/317188-foods-for-height-growth/#ixzz2Cwe4jptg>

YOUR RELATED GENES

While some parents may worry that a child's short stature may be caused by an underlying health problem, doctors now are able to use DNA as a fairly accurate predictor of height.

GENE	GENOTYPE	RESULT
SPAG17	T:C	Below Average



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EARLY BIRD/NIGHT OWL - WHAT DOES IT MEAN?

YOUR DNA RESULT - Your DNA test results indicate a tendency to higher activity levels in the evening. Subject likely to prefer to go to sleep late at night, sleep fewer hours and encounter difficulty waking in the morning.

Living organisms evolved an internal biological clock, called the circadian rhythm, to help their bodies adapt to the daily cycle of day and night (light and dark) as the Earth rotates every 24 hours.

Circadian rhythms are controlled by "clock genes" that code for clock proteins. The levels of these proteins rise and fall in rhythmic patterns. These oscillating biochemical signals control various functions, including when we sleep and rest, and when we are awake and active. Other biological functions that are controlled also include: body temperature, heart activity, hormone secretion, blood pressure, oxygen consumption, metabolism, and many other functions.

The human circadian rhythm is not exactly 24 hours — it's actually 10 to 20 minutes longer. Other species have circadian rhythms ranging from 22 to 28 hours.

"Clock genes" are sets of instructions that code for clock proteins. The genes and proteins interact with each other to produce daily fluctuations in protein levels.

The morningness–eveningness questionnaire (MEQ) is a self–assessment questionnaire developed in 1976. Its main purpose is to measure whether a person's biological clock produces peak alertness in the morning, in the evening, or in between. It was used as the main assessment tool in the genetic research for biological clock.

YOUR RELATED GENES

Evening Preference (Internal Clock) Gene polymorphisms in the mammalian biological clock system influencing individual sleep and activity rhythms.

GENE	GENOTYPE	RESULT
CLOCK	T:C	Night Owl



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MEMORY - WHAT DOES IT MEAN?

YOUR DNA RESULT - Your DNA test result indicates that you are not genetically predisposed to have an above average, long term verbal memory.

Memory Key Terms

- > **Memory:** Active system that stores, organizes, alters, and recovers (retrieves) information
- > **Encoding:** Converting information into a useable form of Storage: Holding this information in memory
- > **Retrieval:** Taking memories out of storage
- > **Long-Term Memory (LTM):** Storing information relatively permanently – Stored on basis of meaning and importance. Long-term memory refers to the continuing storage of information. This information is largely outside of our awareness, but can be called into working memory to be used when needed. Some of this information is fairly easy to recall, while other memories are much more difficult to access.
- > **Short Term memory: (STM)** Second stage of memory; stores small amounts of information briefly; very sensitive to interruption or interference. Short-term memory, also known as primary or active memory, is the information we are currently aware of or thinking about. The information found in short term memory comes from paying attention to sensory memories.
- > **Memory Span:** STM is limited to holding seven (plus or minus two) information bits at once

You may refer to the following articles to learn more:

Things that mess with your memory:

<http://www.wndu.com/mmm/headlines/Brain-Drain-Things-that-mess-with-your-memory--170740526.html>

10 Surprising Things That Affect Memory:

http://www.forbes.com/2008/08/04/aging-memory-health-forbeslife-cx_avd_o8o4health_slide.html

YOUR RELATED GENES

In studies specific genotypes have performed better on measures of verbal IQ and working memory. There was a significant effect only on verbal inhibition, such that better verbal inhibition was associated with higher dopamine availability.

GENE	GENOTYPE	RESULT
COMT	G:G	Typical



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AVOIDANCE OF ERRORS

RISK TAKING

SOCIAL SUPPORT

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Behavioral genetics is the field of study that examines the role of genetics in animal (including human) behavior. Often associated with the "nature versus nurture" debate, behavioral genetics is highly interdisciplinary, involving contributions from biology, genetics, psychology, and statistics. MyDNA is an innovative and exciting project. We help people answer fundamental questions about the role of genetics in their daily lives and provide knowledge about the genetic sources of behavior. By offering affordable testing that reveals personality traits such as novelty seeking, risk avoidance tendency and other cognitive abilities, we create a compelling offering for parents and individuals who seek to learn more about themselves or their loved ones.

YOUR RELATED GENES

The results in the table below give you a highlight summary of your genetic makeup for each trait that was tested. You are invited to explore the detailed explanation associated with each test result.

AFFECTING AREA	GENE	GENOTYPE	RESULT
Learning Patterns	COMT	G:G	Non-Exploiter
Avoidance of Errors	ESR1	G:A	Error Repeater
Risk Taking	TPH2	T:T	Average Risk taking
Social Support	OXTR	G:A	Seeker of social support



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LEARNING PATTERNS - WHAT DOES IT MEAN?

YOUR RESULT - Your DNA test results show a tendency toward being Non Exploiter. This implies that your learning patterns are flexible based upon the circumstances. However, under uncertainty of the potential outcome, you are less likely to become an explorer (risk taker), and tend to be more motivated to avoid negative outcomes.

Learning is the trade-off between exploration and exploitation. Some people are motivated by exploitation, meaning – learning from previously made decision that yielded a positive outcome in the past. On the other hand, others make their decisions by assessing which choices produce a better outcome, a pattern termed exploration.

According to the latest behavioral genetics research people defined as Exploiters tend to:

- > At times, rely on other behavioral (such as fear) drivers to act
- > Be less adventurous
- > Have a strong fear of failure
- > Be reluctant to try the unknown
- > Play safe
- > Be positive learners – seek positive outcomes to progress
- > Learn from mistakes and not repeat them
- > Prefer to stick to old habits

Although learning to fear a potentially dangerous situation is important, it is equally important to be able to modify this fear when new information is available, or use this fear to motivate adaptive action that diminishes the potential threat.

What determines the impact of failure?

For full article click here:

<http://www.washingtonpost.com/blogs/answer-sheet/wp/2012/10/04/do-kids-really-learn-from-failure-why-conventional-wisdom-may-be-wrong>

Learning From Failure Quotes:

"Anyone who has never made a mistake has never tried anything new."

Albert Einstein

"Failure will never overtake me if my determination to succeed is strong enough." – Og Mandino

"Success is going from failure to failure without losing your enthusiasm." Abraham Lincoln

YOUR RELATED GENES

Some people are motivated by exploitation, meaning – learning from previously made decision that yielded a positive outcome in the past. On the other hand, others make their decisions by assessing which choices produce a better outcome, a pattern termed exploration.

GENE	GENOTYPE	RESULT
COMT	G:G	Non-Exploiter



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AVOIDANCE OF ERRORS - WHAT DOES IT MEAN?

YOUR RESULT - Your DNA test results indicate that you may be less efficient in avoiding errors

Latest behavioral genetics research on Error Repeaters show they tend to be: More addictive More compulsive Better at learning languages

We often get angry with ourselves because we are unable to learn from certain experiences. Many times we've made a wrong decision and found its consequences unfavorable. We blame ourselves, but the cause does not always lie in our thinking. Our choices may indeed be influenced by social and cultural factors, but they are subject to genetic factors. Dopamine receptors in our brain are responsible for remembering our wrong choices, which in turn enable us to make better decisions when we encounter a similar situation again. In short they help us avoid errors and a deficiency in these receptors may cause us to repeat our errors again and again.

CAN WE LEARN FROM OUR ERRORS? If errors are so ubiquitous, maybe it makes more sense to train people to deal with errors, rather than to try to flush out every possible error. There are limits to this approach; in general, the more complex the task, the more important it is to focus on error management rather than just avoiding errors.

YOUR RELATED GENES

Some genotypes were reported as predictive of avoidance-based decisions.

GENE	GENOTYPE	RESULT
DRD2	A:A	Error Repeater



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RISK TAKING - WHAT DOES IT MEAN?

YOUR RESULT - There is no significant finding about your genetic tendency for risk taking.

Risk-taking also refers to the tendency to engage in behaviors that may be harmful or dangerous in order to achieve an outcome that can be perceived as positive. Driving fast or engaging in substance abuse would be examples of risk-taking behavior. They may bring about feelings of instant gratification; however, they can also put the risk taker at risk for serious harm. Risk taking however is sanctioned, welcomed and even deemed necessary in certain environments and under certain conditions during different stages of life.

Risk taking refers to the willingness to accept a possible negative outcome in order to potentially achieve a desirable outcome, and typically involves assessing the relative probability of winning or losing against the values of the outcomes Risk Taking breakdown by society. 45% Risk Aversive (Actively avoid risks) 15% Risk Takers (Actively seek risks) 40% Neutral (Weight up the risks per action) Risk-taking refers to the tendency to engage in behaviors that may be harmful or dangerous in order to achieve an outcome that can be perceived as positive. Driving fast or engaging in substance abuse would be examples of risk-taking behavior. They may bring about feelings of instant gratification; however, they can also put the risk taker at risk for serious harm.

According to the latest behavioral genetics research people defined as Risk Seekers tend to:

- > Be more independent
- > Be more decisive
- > Take charge more
- > Be more motivated
- > Be more change orientated
- > Be more impulsive
- > Be more aggressive
- > Be less sensitive
- > Be easily upset

Being able to change our focus in order to confront and overcome a fear trains us to be able to control and manage our emotional states in other areas of our lives.

YOUR RELATED GENES

Certain genotypes are associated with the individual's tendency to take a risk when choosing between a smaller but more certain outcome' and a larger, less probable one.

GENE	GENOTYPE	RESULT
TPH2	T:T	Average Risk taking



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SOCIAL SUPPORT - WHAT DOES IT MEAN?

YOUR RESULT - Your DNA test results indicate a tendency to be more likely to seek emotional support in times of stress

A person's dispositional tendency to trust others can be considered a personality trait and as such is one of the strongest predictors of subjective well-being. It has been argued that trust increases subjective well-being because it enhances the quality of one's interpersonal relationships, and happy people are skilled at fostering good relationships. According to the latest behavioral genetics research Social Support Seekers tend to :

- > Respond well to support in stressful situations
- > Trust others more
- > Use support as a buffer
- > Be more emotionally intelligent
- > Be more sensitive parents
- > Be more empathetic parents
- > Be less lonely

Emotional support seeking is a common response to stress that is influenced by both genetic factors and culture. Previous studies have shown association between the oxytocin receptor gene and emotional support seeking. Moreover, it has been known for some time that behavioral expression of certain genotypes tends to be influenced by social norms and conventions.

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YOUR RELATED GENES

Culture is a system of beliefs, institutions, and practices that govern norms and patterns of behaviors, including emotional support seeking. Recent studies have identified a connection between OXTR and social behavior phenotypes in humans.

GENE	GENOTYPE	RESULT
OXTR	G:A	Seeker of social support

