SelfDecode™

Dopamine (Functional)

Biohacker Report

REPORT CATEGORIES

MENTAL HEALTH

COGNITION

Sample Client

Report date: 15 January 2026

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Table of Contents

DISCLAIMER

This report does not diagnose this or any other health conditions. Please talk to a healthcare professional if this condition runs in your family, you think you might have this condition, or you have any concerns about your results.

Personal information

NAME

Sample Client

SEX AT BIRTH

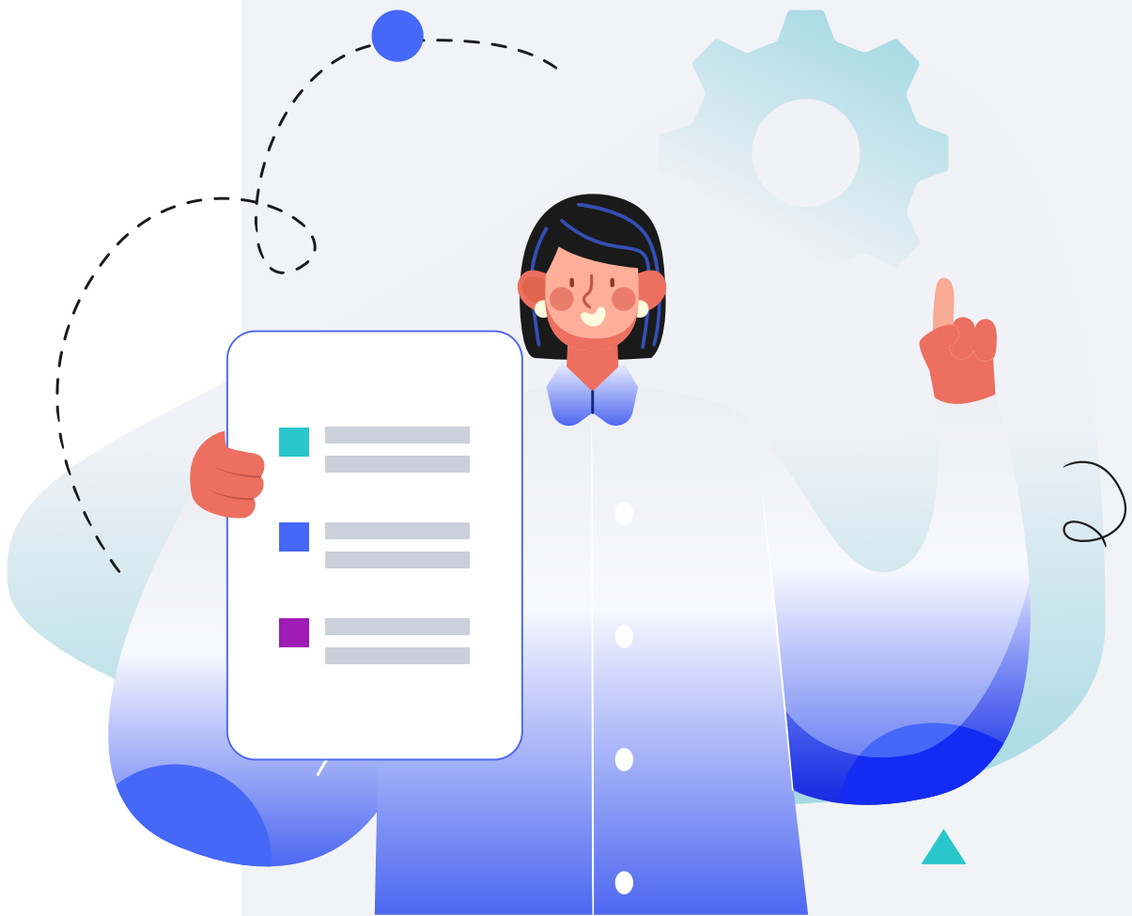
Male

HEIGHT

5ft 5" 165cm

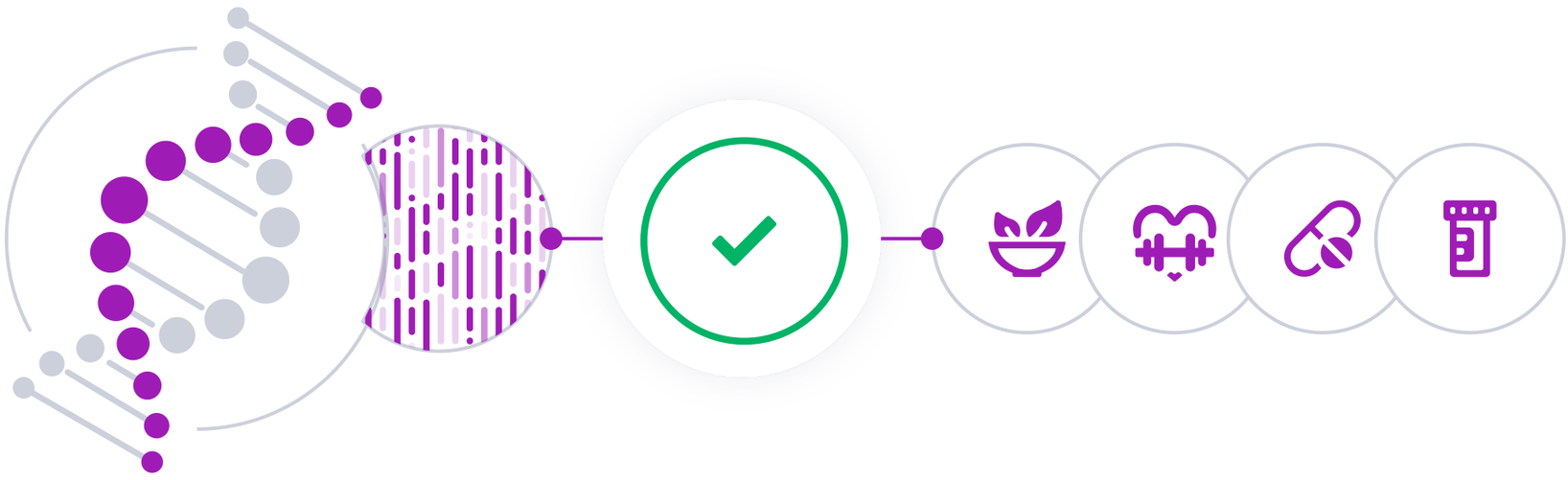
WEIGHT

137lb 62kg



How this works

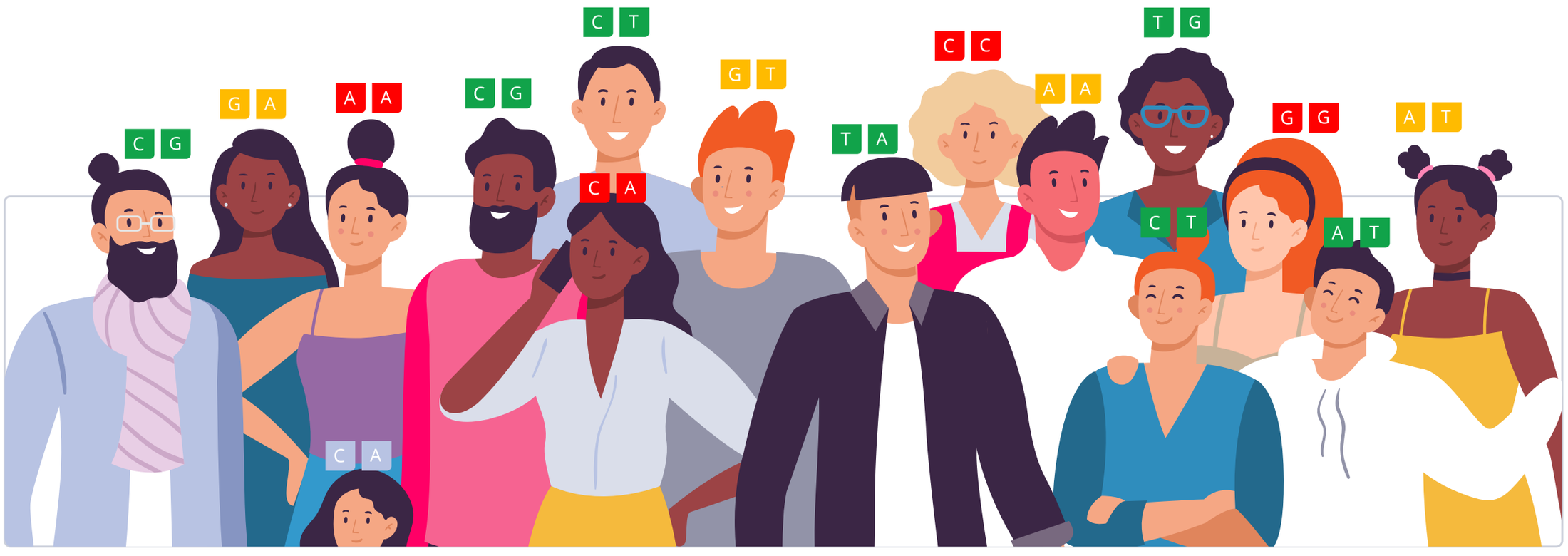
Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.



Similarly, our Trait Reports look at how your DNA influences your traits.

Your DNA is like an instruction manual — it contains a lot of information.
You can think of it as a blueprint for your body.

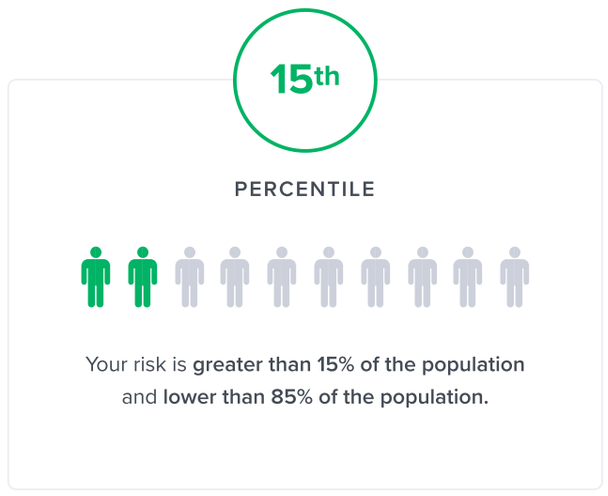
Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



We use artificial intelligence and machine learning to analyze all this information. We then summarize your results as a risk score or display it on a gauge.

When we give a risk score, the risk icon tells you if you are at a higher or lower risk compared to other people:

In total, we analyze up to 83 million genetic variants.



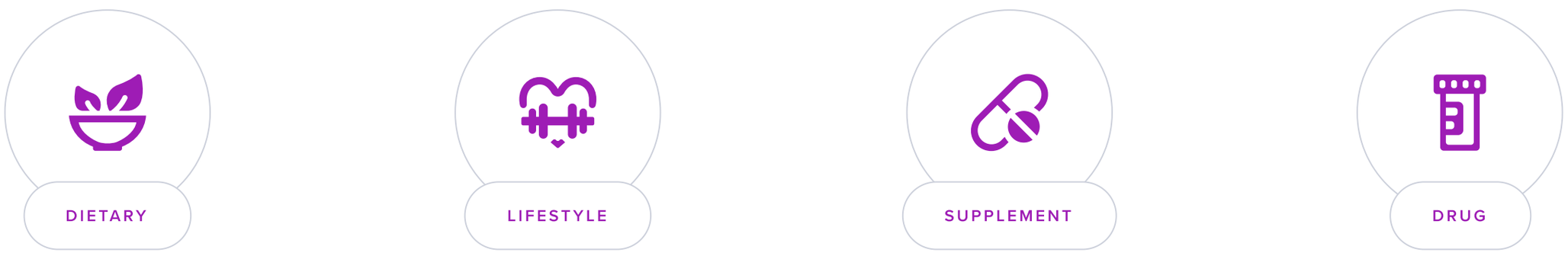
Genotype color info: AA You don't have any risk alleles | AA You have 1 risk allele | AA You have 2 risk alleles

Your risk is also displayed as a percentile. This will tell you how your risks compare to our sample population. The lower your percentile number, the lower your risk. The "50th percentile" would be an average risk.

Similarly, the gauge tells you your relative risk score compared to our sample population, or it indicates a specific trait or haplotype you are more likely to have based on your genetic variants.

When applicable, we also list top evidence-based recommendations that may help lower your risk. The focus is on recommendations that may be of benefit to you, based on your genetics.

Our recommendations come in four categories: lifestyle, diet, supplements and drugs.
The following icons tell you which category a recommendation falls into:



Our team of scientists also ranks each recommendation.
We rank based on impact and the strength of evidence in the medical literature.

Impact shows how strongly a recommendation will affect your health in a certain area.
Evidence is how much scientific support there is for the recommendation. Rankings are from 1 to 5 (low to high):

Impact

Impact scores range from 1-5. These scores reflect how much of an effect each recommendation can have. An impact score of 5 predicts the biggest effect.

When a recommendation affects something we can measure, we use those measurements to assign the impact score. For example, a recommendation that decreases cholesterol by 20% will have a higher impact score than one that decreases it by 5%.

Some recommendations affect things that we cannot directly measure, like stress or mood. For these, the impact score is based on how well they work relative to other recommendations and standard treatments. The best ones get the highest scores.

If there is a lot of research that shows a recommendation works especially well for your genotype, the impact score gets increased.

Recommendation Evidence

5 / 5

Recommendations that are considered effective and generally recommended by experts and medical bodies.

4 / 5

Recommendations that are considered likely effective and that have multiple independent meta-analyses and a great many studies supporting them.

3 / 5

Recommendations that are considered possibly effective and have many studies supporting them

2 / 5

Recommendations that have insufficient evidence, with two or several clinical trials supporting them, or many studies but with ambiguous results.

1 / 5

Recommendations that have insufficient evidence, with a single clinical trial, or with many studies most of which didn't find support for the recommendation.

0 / 5

No evidence in humans.

Genotype-specific Evidence

High-quality

Direct evidence that a recommendation helps more in people with your gene variant (many clinical trials, afew large clinical trials, or a meta-analysis).

Medium-quality

Direct evidence that a recommendation helps more in people with your gene variant (a few clinical trials or one large clinical trial).

Low-quality

Direct evidence that a recommendation helps more in people with your gene variant (a single clinical trial or more trials with inconsistent results).

Indirect

A recommendation may help more in people with your gene variant because it targets a specific gene or protein affected by your variant (e.g., MTHFR, dopamine).

In theory

A recommendation may help more in people with your gene variant because it targets a specific mechanism affected by your variant (e.g., inflammation, oxidative stress).

Some things to keep in mind:

- Genetics doesn’t play a considerable role in a condition or a trait.
- There is not enough research available to estimate a genetic predisposition.
- There are technical limitations to estimating or presenting a genetic predisposition.
- The topic is sensitive, and a genetic predisposition should only be estimated and presented by a healthcare professional.

Introduction

Dopamine is a neurotransmitter, a chemical released by neurons (nerve cells) to send signals to other nerve cells. It is synthesized from the amino acid tyrosine in the neurons of the midbrain and is then stored in synaptic vesicles until released into the synaptic cleft [R, R].

Dopamine is involved in several key functions [R, R]:

- **Reward and motivation:** dopamine is best known for its role in the brain's reward system. It regulates feelings of pleasure and reward, which are critical for motivation. Dopamine release during rewarding activities encourages us to engage in those activities repeatedly.
- **Mood regulation:** dopamine levels influence various aspects of mood and are associated with emotions of elation and happiness.
- **Cognitive function:** adequate dopamine levels are essential for memory, attention, and problem-solving functions.
- **Motor control:** through its action in the basal ganglia, dopamine is essential for coordinating smooth and balanced muscle movement. Deficiencies in dopamine in these areas are linked to motor control disorders such as Parkinson's disease.

Conditions associated with low dopamine levels include [R, R]:

- Depression and other mental disorders
- Attention disorders (such as ADHD)
- Parkinson's disease

The following are the signs and symptoms of some conditions that can be accompanied by low dopamine [R, R, R]:

- Low motivation
- Fatigue
- Weight gain
- Increased appetite
- Low libido
- Higher prolactin
- Anhedonia (lack of pleasure)
- Memory problems
- “Brain fog”
- Introverted personality
- Lowered ability to form romantic attachments

Dopamine Genetics

Dopamine Receptors

Dopamine needs to bind to a receptor to cause an action. There are 5 dopamine receptors in the body, encoded by the *DRD1-DRD5* genes:

The most abundant receptor is DRD1, found in several brain regions such as the neostriatum, basolateral amygdala, cerebral cortex, hypothalamus, and thalamus. This receptor is involved in neuronal growth and behavior, mediates some behavioral responses such as addictions, controls cognitive aspects such as working memory, and modulates DRD2-mediated events. It also stimulates adenylate cyclase [R, R, R].

The 'G' allele of **rs686** reduces *DRD1* expression. This allele has been associated with [R]:

- Increased risk of nicotine dependence [R, R]
- Increased risk of bipolar disorder [R]
- Increased risk of sleep bruxism [R]
- Worse depressive symptoms [R]
- Decreased risk of opioid dependence [R, R]
- Decreased risk of alcohol dependence [R]
- Decreased risk of schizophrenia [R]
- Decreased risk of visual hallucinations in Parkinson's disease patients [R]
- Lower aggression levels in people with traumatic brain injury [R]

Another *DRD1* polymorphism is **rs5326**. Its 'T' allele may decrease dopamine levels in certain brain areas and has been associated with [R]:

- Increased risk of heroin addiction [R]
- Increased risk of schizophrenia [R]
- Increased risk of OCD [R]
- Increased risk of heroin dependence [R]
- Poorer cognition and worse strategic planning [R]

Finally, the 'C' allele of **rs4532** decreases *DRD1* expression and has been associated with [R, R]:

- Increased risk of treatment-resistant schizophrenia [R]

TYPICAL ACTIVITY

Predisposed to typical dopamine activity based on 35 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
DBH	rs1611115	CC
DBH	rs1108580	GG
SLC6A3	rs27048	TT
SLC18A2	rs363387	TT
PDZD8	rs363227	CC
DRD1	rs686	GA
SFXN1	rs5326	CT
DRD1	rs4532	CT
ANKK1	rs1800497	GA
CDHR5	rs1800955	TC
DTNBP1	rs760761	AG
DTNBP1	rs2619522	CA
DTNBP1	rs1018381	AG
DTNBP1	rs2619528	TC
COMT	rs4680	AG
MAOA	rs6323	G
MAOA	rs1137070	T
MAOB	rs3027452	G
MAOB	rs2283729	G
MAOB	rs1799836	T
DBH	rs2519152	CT
SLC6A3	rs2550948	CT
PDZD8	rs363324	GA
PDZD8	rs363371	AG
TH	rs6356	CC
SLC6A3	rs6347	TT
DRD3	rs6280	TT
DRD2	rs6277	GG
SLC18A2	rs363276	CC
DBH	rs2873804	CC
LPCAT1	rs27072	CC
DBH	rs2519154	TT

- Worse behavioral and cognitive symptoms in people with ADHD [R]
- Increased risk of hypertension [R]
- Better response accuracy in complex tasks [R]
- Decreased risk of paranoid schizophrenia (in Chinese) [R]
- Decreased risk of autism [R]

The functions of DRD2 are complex. They depend on the brain region and the position of receptors on brain cells. For the most part, these receptors are *inhibitory,* which means they prevent excessive dopamine release. By controlling dopamine functions in the brain, D2 receptors play a role in:

- Social interactions [R, R, R]
- Motivation and reward [R, R]
- Novelty seeking [R]
- Substance dependence [R, R]
- Cognitive function [R, R]

The most studied variant is **rs1800497**, also known as Taq1A. Interestingly, this variant is found in another gene, *ANKK1*, which controls the activity of *DRD2.* This allele is linked to a **30%** lower number of D2 receptors in brain regions responsible for **motivation and reward**. People with this allele may not get enough pleasure from ordinary rewarding activities. This can make them **seek more pleasure** from alcohol, high-calorie foods, drugs, and other addictive substances and behaviors [R, R, R].

Another variant, 'A' at **rs6277**, may decrease DRD2 receptor affinity in the striatum. This variant has been associated with [R]:

- Increased risk of stuttering [R]
- Decreased cognitive ability in older adults [R]
- Decreased risk of schizophrenia (in Caucasians) [R]
- Improved rule-based learning [R]
- Improved working memory [R]

Finally, the 'C' allele of **rs1801028** has been associated with:

- Increased risk of schizophrenia [R, R]
- Worse response to risperidone in schizophrenia patients [R]

The DRD3 receptor is located in the limbic areas of the brain, which are associated with cognitive, emotional, and endocrine functions. It has a higher affinity for dopamine

GENE	SNP	GENOTYPE
DRD2	rs1801028	GG
CLPTM1L	rs11564750	GG
DBH	rs1076150	CC
DTNBP1	rs1011313	CC

The number of "risk" variants in this table doesn't necessarily reflect your overall result.

than DRD2 and its expression is stimulated by this neurotransmitter. The receptor is a target for drugs that treat schizophrenia, drug addiction, and Parkinson's disease. Its activation induces sleepiness [R, R, R, R, R, R].

The 'T' allele of **rs6280** (Ser9Gly) has been associated with chronic fatigue syndrome, an illness characterized by prolonged low energy. This variant may increase the sensitivity or production of dopamine receptor D3, which may result in excessive fatigue when activated by dopamine [R].

The DRD4 receptor is responsible for neuronal signaling in the limbic system, a brain area that regulates emotion and complex behavior. It is linked to many neurological and psychiatric conditions including schizophrenia and bipolar disorder, ADHD, addictive behaviors, Parkinson's disease, autonomic nervous system dysfunction, the personality trait of novelty seeking, and eating disorders such as anorexia nervosa [R, R].

The best-researched *DRD4* polymorphism is **rs1800955**. Its 'C' allele increases DRD4 expression by 40% and has been associated with [R]:

- Increased novelty seeking [R]
- Increased extraversion [R]
- Increased risk-taking behavior [R]
- Greater positive affect [R]
- Decreased risk of heroin dependence [R]
- Decreased risk of attention deficit [R]
- Decreased risk of concussion [R]
- Decreased risk of paranoid symptoms in people with methamphetamine use disorder [R]
- Increased likelihood of smoking [R, R]

Dopamine Production and Breakdown

Just as there are many different types of receptors that dopamine can bind to influence neural activity throughout the brain, there are many genes involved in the synthesis of this neurotransmitter, as well as in breaking it down when it's no longer needed.

The *TH* gene encodes an enzyme called tyrosine hydroxylase, which is the rate-limiting step in dopamine production. Specifically, it is involved in converting tyrosine into dopamine [R].

Its best-characterized polymorphism is **rs6356**, whose minor 'T' allele may increase enzyme activity. This variant has been associated with:

- Increased risk of late-onset Parkinson's disease [R]
- Increased risk of schizophrenia [R]
- Increased risk of migraines [R]
- Increased risk of cognitive and attentive impulsivity in maltreated children [R]
- Increased risk of hypertension [R]

The *DTNBP1* gene encodes a protein called dysbindin and involved in the control of dopamine synthesis. Lower *DTNBP1* expression has been shown to influence overall dopamine regulation, with lower dysbindin being associated with a large decrease in dopamine [R, R, R].

The following *DTNBP1* alleles have been associated with lower dopamine levels, leading to lower attention capacity and poorer executive control [R, R, R, R]:

- 'A' of **rs760761**
- 'C' of **rs2619522**
- 'A' of **rs1018381**
- 'T' of **rs1011313**
- 'T' of **rs2619528**

The *COMT* gene helps make an enzyme called *catechol-O-methyltransferase* (COMT) that breaks down dopamine and other neurotransmitters [R, R, R].

One common variant of the *COMT* gene, **rs4680**, may affect COMT enzyme activity. Some people call rs4680 the "worrier or warrior" variant. The "G" allele is linked to a higher COMT enzyme activity. People with two copies of this allele (GG) have been nicknamed the "warriors." They break down stress-related chemical messengers more quickly. This may help improve their performance under stress [R, R].

The *MAOA* gene codes for *monoamine oxidase*, an enzyme that helps break down dopamine and other chemical messengers [R].

There are multiple *MAOA* variants affecting enzyme activity. While low-activity variants lead to increased levels of the monoamine neurotransmitters dopamine, serotonin, and norepinephrine, variants with high activity decrease them. Among them, two of the most well-researched ones are **rs6323** and **rs1137070**. Their minor alleles ("G" and "T",

respectively) encode MAOA proteins with higher activity [R].

The first low-activity variants described were associated with increased aggressiveness, which earned *MAOA* the nickname “the Warrior gene.” This received high media coverage and raised the ethical question of whether carriers of certain variants should be held fully responsible for their actions. In some cases, it even resulted in sentence reductions [R, R, R, R]!

The *MAOB* gene codes for monoamine oxidase B, an enzyme that helps break down compounds such as dopamine and phenylethylamine [R].

A higher amount of monoamine oxidase B implies lower monoamine levels (due to increased breakdown), and vice versa. *MAOB* variants with increased activity have been associated with chronic fatigue syndrome. The main variants associated with this condition are [R, R]:

- ‘G’ at **rs3027452**
- ‘G’ at **rs2283729**
- ‘T’ at **rs1799836**

The *DBH* gene codes for dopamine beta-hydroxylase, an enzyme that converts dopamine to norepinephrine in the brain [R].

The best-characterized *DBH* polymorphism is **rs1611115**. Its ‘T’ allele may decrease DBH production, resulting in higher dopamine and lower norepinephrine levels. This allele has been associated with [R]:

- Increased neuroticism, novelty seeking, impulsivity, and aggression [R]
- Decreased conscientiousness [R]
- Increased risk of adult ADHD [R]
- Decreased risk of migraines but more frequent migraine-related side effects [R]

Another variant leading to lower DHB levels, ‘A’ at **rs1108580**, has been associated with [R]:

- Increased risk of ADHD [R, R]
- Increased risk of schizophrenia [R]
- Decreased risk of alcohol dependence [R]

The following, less well-researched variants have also been associated with lower DHB levels and increased risk of ADHD:

- 'T' of **rs2519154** [R, R]
- 'C' of **rs2873804** [R, R]
- 'T' of **rs2519152** [R, R, R]
- 'C' of **rs1076150** [R, R]

Dopamine Transporters

After neurotransmitters are released by brain cells, they have to be brought back into the neuron so that they can be "re-used" again. The "helper molecules" that help bring neurotransmitters back into neurons are called transporters. They have a significant effect on neurotransmitter levels and activity throughout the brain.

The *SLC6A3* gene encodes a dopamine transporter called DAT1 that transports this neurotransmitter into brain cells. Mutations of this gene are associated with autism and ADHD [R].

Variants that increase the density of the dopamine transporter in certain regions of the brain have been associated with an increased risk of ADHD, as well as increased impulsivity and inattention in individuals with ADHD. These include [R, R, R, R]:

- 'T' at **rs6347**
- 'G' at **rs11564750**
- 'C' at **rs27072**
- 'T' at **rs2550948**
- 'C' at **rs27048**

The *SLC18A2* ('*solute carrier family 18 member 2*') gene encodes a protein called VMAT2 ('vesicular monoamine transporter 2). VMAT2 is mainly located in neurons, where it acts as a pump for the release of neurotransmitters such as dopamine [R, R].

Several *SLC18A2* polymorphisms resulting in decreased VMAT2 levels have been associated with different mental health issues. These include:

- The 'T' allele of **rs363276**: associated with an increased risk of PTSD [R, R].
- The 'T' allele of **rs363387**: associated with an increased risk of alcohol and nicotine dependence, as well as with poorer inhibitory control [R, R, R].
- The 'G' allele of **rs363324**: associated with an increased risk of Parkinson's disease [R, R].

- The ‘C’ allele of **rs363227**: associated with an increased risk of methamphetamine use disorder but a decreased risk of psychotic disorders [R, R].
- The ‘G’ allele of **rs363371**: associated with an increased risk of Parkinson’s disease and schizophrenia but a decreased risk of ALS [R, R, R, R].

Your Recommendations

Your recommendations are prioritized according to the likelihood of it having an impact for you based on your genetics, along with the amount of scientific evidence supporting the recommendation.

You'll likely find common healthy recommendations at the top of the list because they are often the most impactful and most researched.

		DOSAGE
1	L-Tyrosine	500 mg
2	Deep Brain Stimulation	
3	DLPA	500 mg
4	Dietary L-Tyrosine	
5	Mucuna Pruriens	300 mg
6	L-Phenylalanine	

1

L-Tyrosine

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take 500-2000 mg of L-Tyrosine supplement daily, preferably 30 minutes before meals or snacks. This can be taken in one dose or divided into two doses throughout the day. Continue this supplementation daily for a duration of at least a few weeks to assess its effects on your body.

TYPICAL STARTING DOSE

500 mg

Description

L-tyrosine is an amino acid used by the body to produce important neurotransmitters and hormones. It may help improve cognitive function, stress response, and overall mood regulation.

Tyrosine is a non-essential amino acid. This means that our bodies can make it from other amino acids like phenylalanine. We can also get tyrosine from **protein-rich foods**, such as [R, R]:

- Red meat and poultry
- Dairy, especially cheese
- Legumes (e.g., soybeans and beans)
- Fish
- Nuts
- Eggs

Tyrosine can also be taken as a supplement. People often use it to maintain mental performance during demanding and stressful tasks [R, R, R].

How it helps

L-Tyrosine supplementation aids in the synthesis of dopamine, particularly beneficial for individuals with low dopamine levels, enhancing cognitive function and mood regulation. This mechanism may lead to improved mental alertness and emotional stability in those affected.

2

Deep Brain Stimulation

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Deep brain stimulation is a medical procedure performed by healthcare professionals. It involves surgical implantation of electrodes into specific areas of the brain, connected to a pulse generator placed under the skin in the chest. The device settings are adjusted by a doctor to optimize patient outcomes.

Description

Deep brain stimulation (DBS) is a medical procedure that can help alleviate symptoms of certain neurological conditions, such as Parkinson's disease and essential tremor. It involves the implantation of electrodes in the brain and can significantly improve motor control and overall quality of life for some patients with these conditions.

How it helps

Deep brain stimulation (DBS) modulates abnormal electrical activity in the brain regions associated with dopamine regulation, leading to improved motor function and reduction of Parkinson's disease symptoms such as tremors and rigidity. This targeted approach enhances overall quality of life for patients by attaining better control over their movements.

3

DLPA

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take DLPA (D,L-phenylalanine) as a dietary supplement with a glass of water, typically in dosages between 500 to 1,500 mg per day, usually in the morning. This can be adjusted based on personal tolerance or professional advice but should not exceed the recommended upper limit without consulting a healthcare provider. It is often taken in divided doses (e.g., twice daily) and can be used for several weeks to months, depending on the specific health goals and response.

TYPICAL STARTING DOSE

500 mg

Description

DLPA is an amino acid supplement that may have potential antidepressant effects. It is sometimes used as a natural remedy for mood support and emotional well-being.

How it helps

DLPA may enhance mood and emotional well-being by supporting the production of neurotransmitters related to dopamine function. Its potential antidepressant properties can be particularly beneficial for individuals experiencing dopamine deficiency.

4

Dietary L-Tyrosine

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate foods high in L-Tyrosine such as chicken, turkey, fish, dairy products, almonds, avocados, bananas, and soy products into your daily diet. Aim for a balanced intake spread across your meals rather than consuming high amounts in a single meal.

Description

L-tyrosine is an amino acid that supports the production of important neurotransmitters, such as dopamine and norepinephrine, which can help improve mood and mental alertness.

How it helps

Incorporating dietary L-Tyrosine aids in the synthesis of dopamine, a neurotransmitter essential for regulating mood and cognitive functions. This can lead to improved mood and mental clarity, particularly in individuals with dopamine-related deficits.

5

Mucuna Pruriens

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take 300 to 500 mg of standardized Mucuna pruriens extract once daily, preferably with water. For consistent benefits, consider taking it at the same time each day.

TYPICAL STARTING DOSE

300 mg

Description

Mucuna pruriens is a tropical legume known for its seeds, which contain L-dopa, a precursor to dopamine. It is used in traditional medicine for its potential to support mood, cognitive function, and overall well-being.

Mucuna pruriens is an edible legume native to China and India. It is also known as cowhage or the “velvet bean” [R].

An important compound in *Mucuna pruriens* is *L-DOPA*, which helps make the chemical messenger dopamine. Extracts of *Mucuna pruriens* may support fertility and protect the nerves [R].

How it helps

Mucuna pruriens enhances dopamine levels by providing L-DOPA, which is converted into dopamine within the brain. This can improve mood, cognitive function, and overall well-being in individuals with low dopamine conditions.

6

L-Phenylalanine

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate foods high in l-phenylalanine into your diet daily. This includes lean meats, fish, eggs, dairy products, soy products, and certain nuts and seeds like almonds and pumpkin seeds.

Description

L-phenylalanine is an amino acid used by the body to produce important neurotransmitters and proteins. It plays a role in mood regulation, cognitive function, and overall neurological health.

L-phenylalanine is a building block for proteins, hormones, and chemical messengers. It plays an important role in brain function, thyroid function, and skin health.

L-phenylalanine is found in foods like [R, R, R, R, R, R]:

- Meat
- Nuts
- Wheat
- Soy

It can also be taken as a supplement.

How it helps

L-Phenylalanine aids in the synthesis of dopamine, a key neurotransmitter involved in mood regulation and cognitive processes. By increasing dopamine levels, it may improve mood and enhance mental clarity, which is beneficial for managing functional dopamine-related conditions.