MaxGen LABS

MaxCannabinoid

Client Name:	John Doe	Sample Date:	12/19/2019
Client DOB:	5/7/2018	Report Date:	10/20/2020
Vial Number:	Sample Report	MaxGen PTID#:	P99
Client Sex:	Male	CLIA Certification:	01D2098265
Referring Account:	MaxGen Labs		

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Disclaimer: This test was developed by MaxGen Labs and has not been approved by the FDA. It is not intended to diagnose, treat, cure or prevent disease. This test should be considered for educational purposes only. Do not make decisions about your health without discussing it with a licensed practitioner. The information contained within the report does not consider other genetic variations or environmental factors that might contribute to someone's phenotype or symptoms.

This test does not analyze all variations within a gene that someone might carry. The rs#'s contained within the report were picked from scientific literature, multiple physician collaborations, and clinical observation by MaxGen Labs and are subject to change at any time.

Basic Genetics & Information

Nutrigenomics: The study of how genetic expression is influenced by nutrition. Small variations in genetic structure may require specific nutritional support that is unique to each individual. Genetic testing provides insight to this need.

Genes: Transferred from parent to offspring, genes are the basic unit of heredity. Genes are found on chromosomes and are made up of DNA. Each person has two copies of a gene, one from each parent. Genes are named for the protein they create or the function they have, often being simplified into abbreviations (example: MTHFR – short for methylenetetrahydrofolate reductase).

DNA: Deoxyribonucleic Acid, or DNA, is a molecule within a gene that contains the instructions an organism needs to grow, function, and reproduce. It is the carrier of all genetic information and is made up of chemical base pairs: adenine (A), thymine (T), cytosine (C), guanine (G). The order of sequence determines the information needed to maintain life.

Single Nucleotide Polymorphism (SNPs): A variation in base pair sequencing that may alter the function of a gene. Nutrigenomic testing looks at these variations to determine how a gene may function. Each combination of base pairs may alter the function of a gene in different ways. The variations are described as:

Wild Type – most commonly found pairing in nature; no variation
Heterozygous – one variant copy from a parent; one non-variant copy from a parent
Homozygous – two variant copies, one from each parent

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THC Metabolism

Every person has minor variations in how they metabolize, or break down, substances in the body. These variations can influence the speed at which you breakdown substances. In this section we look at genetic variants that may play a role in how you metabolize THC, the psychoactive substance within cannabis.

Some people may experience the effects from cannabis use longer than others. This should be taken into consideration with using THC containing cannabis products. In these individuals, it may require less-than-average dosing to achieve the desired response from cannabis products. Some individuals will be more likely to pass a THC drug test from these variants. Consult a licensed physician before consuming cannabis products or modifying any medical protocol.

Duration of THC Impact

You metabolize THC slower than the average person. This variant prolongs the effects ("high") of THC. You may need less THC to experience the effects.

Drug Testing

Your genetic profile suggests that you have an average chance of passing a drug test.

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Paranoia & Psychosis

In some people, cannabis can increase the risk of adverse emotional symptoms, or psychosis. Psychosis is defined as a disconnection from reality. One may start to believe something is occurring that is not actually true. Individuals who are at risk of psychosis or paranoia with cannabis use, should use cannabis products with caution. Low THC or THC-free cannabis products might be a safer option for some individuals. Consult a licensed physician before consuming cannabis products or modifying any medical protocol.

Psychosis Risks

You are likely to experience mild psychosis or paranoia with THC use. Consider products with a higher CBD:THC ratio.

Schizotypal Score

You should have a normal shizotypy score with cannabis cannabis use.

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Memory & Attention

Cannabis containing products affect everyone differently. One common complaint is that cannabis use impairs memory and attentiveness. The genes in the section can provide insight into whether or not the use of cannabis products will affect problem solving skills, attention, and memory. Disclaimer: The use of THC in people under the age of 25 has been known to alter neural pathways, specifically as it pertains to memory and focus; however, it may not be purely age-dependent. Please consult a licensed physician when determining if cannabis is an appropriate therapeutic agent.

Problem Solving

Your genetic profile suggests that you may impede your problem solving skills if you use THC. Consider THC-free products if you notice a decline in abilities.

Attention

You may experience a moderately decreased attention span when using cannabis. If you notice a change, consider THC-free products.

Memory Loss

Your genetic profile suggests you have a moderate risk of experiencing memory loss with cannabis use. If this occurs, stop using THC products. Consider CBD-only products.

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Mental Effects

Cannabis contains psychoactive chemicals that can change the way you think and act. Some people report feeling impulsive, which can make decision making difficult on a daily basis. Others notice the constant desire for more cannabis due to the impact on the reward cascade in the brain.

Symptoms of depression, anxiety, and happiness are also reported among cannabis users. In this section we look at certain genes that are associated with some of these feelings with cannabis use. Please consult a physician before using cannabis, especially if you suffer from any of these symptoms.

Reward Pathway

THC should not affect the reward areas of your brain.

Impulse Control

You may experience impulsive thoughts with cannabis use. Consider THC-free products or increased CBD:THC ratios.

Happiness

Your genetic profile is associated with happiness and euphoria with cannabis use.

Depression

Your genetic profile suggests that you should not feel depression with cannabis use.

Dependence Risk

Your have an average risk of developing dependency on cannabis.

Anxiety

Your genetic profile is not associated with cannabis-induced anxiety.

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Physical Effects

Cannabis use has an impact on a variety of physical responses in the body. From heart rate variability to muscle control, each bodily system may be affected. This section looks at some of the more common physical effects of cannabis use.

Motor Control

Your genetic profile suggests that cannabis may interfere with motor control. Use caution when operating motor vehicles or machinary that require fine motor control.

Sleep Response

You may have difficulty sleeping while using cannabis. Avoid THC use at bed time. If you require a form of THC use, consider Indica strains of cannabis. Consider higher CBD:THC ratios.

Brain Volume

You do not have an increased risk for lowered brain volume (hippocampus) with heavy cannabis use.

Brain Volume (Attention Area)

Your genetic profile suggests that cannabis use will not affect brain volume in the area responsible for attention.

Heart Rate Response

You may have a lower heart rate 15 minutes after cannabis use.

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Cravings & Withdrawal

Your genes may control how much you crave cannabis, what your withdrawal response may be, and how often you are prone to using it. Please be aware that these are things well within your control. Consult with a licensed physician is your feel your need for cannabis is concerning.

Cannabis Cravings

You have an average response to craving cannabis.

Cannabis Withdrawal

Your genetic profile suggests you will have an average withdrawal experience when stopping cannabis use.

General Cannabis Use

Your genetic profile suggests you are less likely to over-use cannabis.

DSM-5 Cannabis Use Disorder

You have a mild risk of developing Cannabis Use Disorder. Consider THC-free products or higher CBD:THC ratios.

High School Usage

Individuals with your genotype have reported less frequent cannabis use while transitioning out of high school.

Generalized Lifetime Usage

You are less likely to use cannabis over the course of your life.

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Other Conditions & Cannabis Use

There are multiple conditions that have a genetic link. Some of these conditions may also respond to specific cannabis use. In this section, we look at your genetic propensity for these conditions and whether or not cannabis use would be a good option for you should therapeutic intervention be required. Please consult with your physician if you are concerned about these conditions.

ADHD

Your genetic profile is associated with a higher prevalance of ADHD. Use caution with THC-containing products, as the effects may increase ADHD symptoms.

PTSD

Your genetic profile is not associated with PTSD.

Depression

Your genetic profile is not associated with generalized depression.

Sleep Quality

Your genetic profile is not associated with generalized sleep disturbances.

Pain Tolerance

Your genetic profile is associated with a normal pain tolerance.
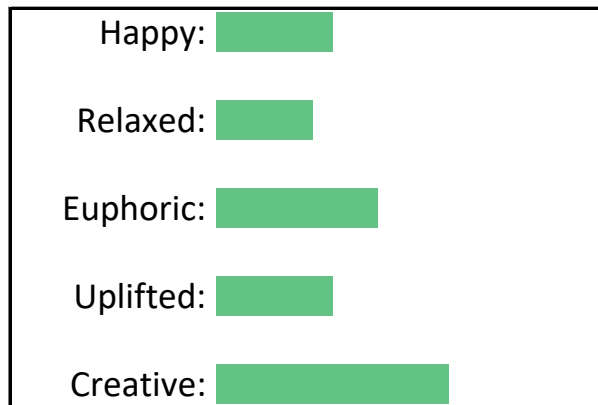
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Optimal Strain Choices

Different strains of cannabis can have different emotional effects. A common cannabis app called Leafly rates the emotional properties of different strains into the following sections; Happiness, Relaxing, Euphoric, Uplifting, and Creative properties. In this section, we try to predict a cannabis strain profile that should be optimal for you. You can download the leafly app from the app store on your phone.

Your Optimal Cannabis Profile

Happy:
Relaxed:
Euphoric:
Uplifted:
Creative:

GENE	% Pop.	Result	Client	Minor	Description
THC Metabolism					
ABCB1	A=0.395	++ Homozygous	AA	A	normal plasma THC levels
ABCB1	A=0.395	++ Homozygous	AA	A	longer high
CYP2C9	C=0.0485	-- Wild Type	AA	C	normal duration of THC effects
CYP2C9	C=0.0485	-- Wild Type	AA	C	normal likelihood to pass THC test
CYP2C9	C=0.0485	-- Wild Type	AA	C	normal THC metabolism rate
Memory & Attention					
COMT	A=0.3692	++ Homozygous	AA	A	normal risk of THC induced memory and attention impairment.
DRD2	A=0.2296	-- Wild Type	CC	A	normal working memory accuracy
intragenic	C=0.2392	-- Wild Type	TT	C	reduced working memory performance with cannabis use
PTGS2	G=0.1979	-- Wild Type	CC	G	normal dorsolateral prefrontal cortical response with marijuana use
AKT1	T=0.4259	-- Wild Type	CC	T	lower attention with cannabis use.
CNR1	C=0.0899	-- Wild Type	TT	C	normal attention with marijuana use
CNR1	C=0.0899	-- Wild Type	TT	C	normal problem solving with marijuana misuse
AKT1	T=0.4259	-- Wild Type	CC	T	users slower and less accurate on Continuous Performance Test.
Paranoia & Cannabis Induced Psychosis					
DRD2	A=0.2296	-- Wild Type	CC	A	normal risk for for psychosis in the context of cannabis use
AKT1	T=0.4259	-- Wild Type	CC	T	higher risk for psychosis if homozygous with DRD2 homozygous.
ZNF804A	C=0.3045	-+ Heterozygous	CA	C	normal shizotypy scores with increased frequency of cannabis use
DRD2	A=0.2296	-- Wild Type	CC	A	normal risk of psychosis among cannabis users
AKT1	T=0.4259	-- Wild Type	CC	T	2-fold odds of being diagnosed with a psychotic disorder
Dependence					
intragenic (nove	A=0.0136	-- Wild Type	GG	A	normal risk of cannabis dependence (A allele is protective)
SLC35G1	G=0.0112	-- Wild Type	AA	G	normal risk of cannabis dependence compared to G carriers
PENK	A=0.3700	-+ Heterozygous	GA	A	higher risk of cannabis dependence
PENK	C=0.3307	-+ Heterozygous	CT	C	higher risk of cannabis dependence
NRG1	T=0.0797	-+ Heterozygous	CT	T	normal risk of cannabis dependence
FAAH	A=0.2616	-- Wild Type	CC	A	normal risk for cannabis dependence
CNR1	C=0.2704	-- Wild Type	TT	C	less likely to be in the frequent use trajectory group than in the declining (
ABCB1	A=0.395	++ Homozygous	AA	A	increased risk of cannabis dependence
FAAH	A=0.2616	-- Wild Type	CC	A	significantly reduced risk for being THC dependent
Cannabis Mental Effects					
DBH	T=0.2127	-+ Heterozygous	CT	C	increased cognitive impulsivity with marijuana use
FAAH	A=0.2616	-- Wild Type	CC	A	CC individuals reported increased happiness after smoking
N/A	C=0.0240	-- Wild Type	AA	C	normal relationship between cannabis use and major depression
FAAH	A=0.2616	-- Wild Type	CC	A	normal activity in reward-related areas of brain during cannabis use
HTR2B	T=0.1276	-- Wild Type	CC	T	normal level of cannabis related aggression
CNR1	C=0.1779	-- Wild Type	TT	C	normal activity in reward-related areas of brain during cannabis use
FAAH	A=0.2616	-- Wild Type	CC	A	normal activity in reward-related areas of brain during cannabis use
FAAH	A=0.2616	-- Wild Type	CC	A	normal anxiety risk.

Cannabis Physical Effects					
AKT1	T=0.3225	++ Homozygous	TT	T	increased psychomotor impairment associated with cannabis use
FAAH	A=0.2616	-- Wild Type	CC	A	normal sleep quality with cannabis use
FAAH	A=0.2616	-- Wild Type	CC	A	lower heart rate 15 minutes after smoking compared to A carriers
CNR1	C=0.1779	-- Wild Type	TT	C	normal risk for decreased brain volume with heavy cannabis use
AKT1	T=0.4259	-- Wild Type	CC	T	normal brain volume with cannabis use
Cravings & Withdrawl					
FAAH	A=0.2616	-- Wild Type	CC	A	normal increase in craving after abstinence
CNR1	C=0.1779	-- Wild Type	TT	C	normal levels of craving after 5 days abstinence
FAAH	A=0.2616	-- Wild Type	CC	A	normal withdrawal
CNR1	C=0.1779	-- Wild Type	TT	C	normal levels of withdrawal symptoms
Volume of Cannabis Use					
AKT1	T=0.4259	-- Wild Type	CC	T	associated with normal cannabis use.
FAAH	C=0.4541	++ Homozygous	CC	C	increased risk for DSM-5 CUD (cannabis use disorder)
FAAH	A=0.2616	-- Wild Type	CC	A	normal risk for DSM-5 CUD (cannabis use disorder)
	C=0.3998	-- Wild Type	TT	C	less likely to use cannabis frequently.
	A=0.3009	++ Homozygous	TT	T	associated with lifetime cannabis use
	G=0.1813	++ Homozygous	AA	A	associated with lifetime cannabis use
	T=0.1787	-- Wild Type	CC	T	normal
	A=0.3578	++ Homozygous	GG	G	associated with lifetime cannabis use
	C=0.1454	++ Homozygous	CC	C	associated with lifetime cannabis use
	T=0.4607	++ Homozygous	TT	T	associated with lifetime cannabis use
ZNF804A	C=0.3045	-+ Heterozygous	CA	C	no association with lifetime cannabis
BDNF	T=0.201	-+ Heterozygous	CT	T	less likely to have lifetime cannabis use
	C=0.3998	-- Wild Type	TT	C	normal risk for cannabis use during the transition out of high school
Non-Cannabis Related Genes					
CNR1	C=0.4902	++ Homozygous	CC	C	common variation in ADHD
CNR1	G=0.3141	++ Homozygous	GG	G	common variation in ADHD
CNR1	C=0.2704	-- Wild Type	TT	C	normal
CNR1	T=0.1294	-+ Heterozygous	CT	T	increased risk for PTSD
FAAH	A=0.2616	-- Wild Type	CC	A	normal depressive symptoms
FAAH	A=0.2616	-- Wild Type	CC	A	normal sleep quality
COMT	A=0.3692	++ Homozygous	AA	A	lower pain threshold.

Client: Your genotype.

Minor: The genotype that is found least in nature.

Wild Type: The genotype that is found most often in nature, this is reported as green. This isn't always ideal.

Homozygous: This means you tested for both copies of the minor type allele. This typically has more severe issues.

Heterozygous: This means you tested for one copy of the minor allele and one copy of the wild type allele.

Gene: This is the specific gene we are looking at for variations.

RS#: This is the specific variation within the gene. There are multiple locations within a gene for potential variations, all of which can indicate a different issue or severity.