

## Metabolism Test for Charles

The easiest way to describe metabolism is the process within your body that converts food to energy; however, exactly how metabolism is regulated in our bodies is a complex interplay between hormones, genetics, activity level, diet, and sleep patterns. This test looked at three key hormones that are involved with metabolism: TSH, Testosterone, and Cortisol. TSH screens for issues with the thyroid gland, which influences basal metabolic rate. Testosterone screens for issues with the gonads (testicles or ovaries), which influences muscle and fat composition. Cortisol screens for issues with the adrenal gland, which helps regulate sugar storage and release for energy. Your results will contain your personal levels of TSH, Cortisol, Testosterone - abnormalities in any one of these three hormones will alert you to which organ may not be functioning normally and require further investigation to determine what may be happening.

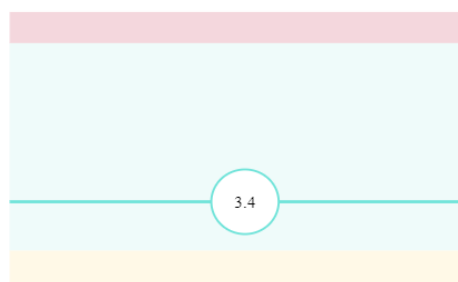
## Cortisol

Low  
( < 1.5 )

Normal  
( 1.5 to 9.6 )

High  
( > 9.6 )

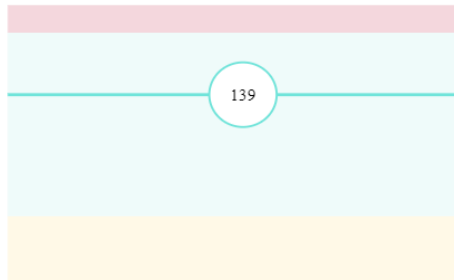
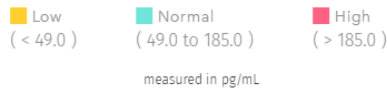
measured in ng/mL



Cortisol is made in our adrenal glands and is released in our bodies naturally each day. Cortisol affects energy levels by regulating the release of glucose as a main source of our body's fuel that helps keep us going during the day. Cortisol is also the body's main stress hormone. During acute stresses, there is a sudden release of cortisol to help the body with the immediate stress event. In this situation, cortisol's effects can be helpful, such as raising blood pressure to increase blood flow to muscles and away from the gut, and increasing blood sugar to supply energy. Long term stress can have negative effects on cortisol levels, resulting in too high and ultimately too low levels which may negatively affect almost all areas of our body.

The best way to maintain normal cortisol levels is to control stress in your life: maintain regular exercise, get enough sleep, and engage in de-stressing activities that help you calm down.

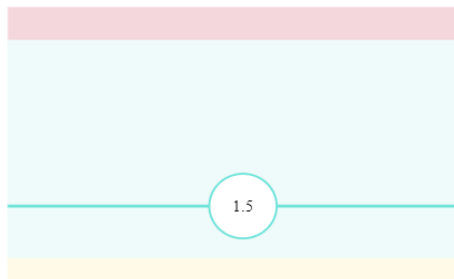
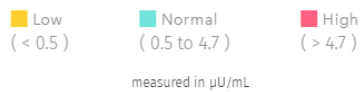
## Free Testosterone



Testosterone is the major androgenic hormone that is responsible for masculine secondary sexual characteristics, but it also plays a vital role in male fertility, body composition, mood, sleep, and libido. Having normal levels of total testosterone is not enough because symptoms associated with testosterone imbalances are more closely linked to levels of free testosterone.

Free testosterone naturally declines with age, but staying healthy at any age is important to keep you levels normal. Regular exercise that includes some type of weight lifting has been shown to help maintain testosterone levels. Maintaining a normal body weight is also crucial to normal testosterone production, as obesity is directly linked with lower testosterone levels. Excessive alcohol intake has been shown to decrease testosterone production. Maintaining a diet full of lean protein, low-fat dairy products, and high in vegetables also helps to maintain normal testosterone production.

## TSH



Thyroid Stimulating Hormone, TSH, is the hormone responsible for controlling hormone production by the thyroid gland. Thyroid hormones are essential to help maintain metabolism and energy levels. Too much or too little TSH can indicate a thyroid imbalance. Normal levels of TSH indicate that the regulatory mechanisms of the thyroid gland are appearing to be well balanced. Iodine is essential for the production of thyroid hormones, and while it is uncommon for individuals in the United States to have an iodine deficiency, it is important to note that our bodies can not make iodine and we need to have sources of it in our diet. The recommended daily allowance (RDA) for iodine is 150 micrograms (mcg) daily.

## Your Genetic Predisposition

Different parts of your genetic makeup tell us different things about you. That's why we've hand-selected specific parts of your DNA to test that will provide you with new and valuable genetic context to the bio-markers above.

Sequencing completed by  Helix

## 3 of the 4 genetic variants we tested increase your risk of elevated BMI

3

Increased Risk

1

Normal

Scientists have discovered that certain genetic variants are associated with increased BMI (Body Mass Index). This test evaluated four of these genetic variants and your results will tell you whether you have the version associated with increased BMI.

### Variants Tested

Increased Risk Normal

#### Body Mass Index Variant 1

The variant found in your genetic test may increase your risk of higher BMI.

**GG** is Your Genotype

GG - 6% ↓



AA

GA  
94%

This test looks for risk variants in the APOA2 gene. All other things being equal, studies have shown that individuals with certain variants tend to have a higher BMI (Body Mass Index), especially if their diet is high in saturated fats. Individuals at risk for higher BMI may consider limiting intake of saturated fats and placing a greater emphasis on healthy lifestyle choices. Variants in the APOA2 gene that are considered normal risk are G/A, A/G and A/A, while the variant considered to be at increased risk is G/G.

- Chromosome: 1
- Gene: APOA2
- SNP: rs5082

#### Body Mass Index Variant 2

The variant found in your genetic test may increase your risk of higher BMI.

**CC** is Your Genotype

CC - 5% ↓



TC  
35%

TT  
95%

This test looks for risk variants in the FTO gene which is considered to have some of the strongest links to an increased risk of obesity. All other things being equal, these variants increase the risk of a higher BMI (Body Mass Index). If you have one of these risk variants, you may consider placing a greater emphasis on healthy lifestyle choices. The variant in the FTO gene that is considered normal risk is T/T, while the variants considered to be at increased risk are C/C, C/T, and T/C.

- Chromosome: 16
- Gene: FTO
- SNP: rs1421085

### Body Mass Index Variant 3

The variant found in your genetic test does not increase your risk of higher BMI.

**TT** is Your Genotype

TT - 58% 



This test looks for risk variants in the MC4R gene. All other things being equal, these variants tend to increase the risk of a higher BMI (Body Mass Index). If you have one of these risk variants, you may consider placing a greater emphasis on healthy lifestyle choices. The variant in the MC4R gene that is considered normal risk is T/T, while the variants considered to be at increased risk are C/C, C/T, and T/C.

- Chromosome: 18
- Gene: MC4R
- SNP: rs17782313

### Body Mass Index Variant 4

The variant found in your genetic test may increase your risk of higher BMI.

**CG** is Your Genotype

CG - 13% 



This test looks for risk variants in the PPARG gene, also known as Pro12Ala, which is associated with fatty acid storage and glucose metabolism. Some studies show that those with these risk variants have less efficient breakdown of fatty acids and glucose regulation. All other things being equal, these variants increase the risk of a higher BMI (Body Mass Index) and glucose control. If you have one of these risk variants, you may consider placing more emphasis on healthy dietary choices. The variant in the PPARG gene that is considered normal risk is C/C, while the variants considered to be at increased risk are G/G, G/C, and C/G.

- Chromosome: 3
- Gene: PPARG
- SNP: rs1801282