

THE
DNA
COMPANY

CASE STUDY

Genomic insights for families



Wright Family

Disclaimer: names have been changed for privacy reasons.

Any resemblance to actual persons is purely coincidental.

Case History

Subjects: Heather Wright, James Wright, Sarah Wright (2 years old), and Adam Wright (8 months old)

Background information

Heather and James are seeking preventative treatment ideas for their young children, Sarah and Adam, based on their genetic profiles. While neither parent has significant genetic issues, they want to uncover any potential problems while their kids are still young so they have plenty of time to implement a treatment plan that will help Sarah and Adam live a healthy, fulfilling life.

James and Heather are both endurance athletes. Their lifestyle combined with their genetic profile results in a lean physique that will most likely be passed down to their children, particularly if Sarah and Adam maintain a similarly athletic lifestyle.

Fortunately, cardiovascular health is not much of a concern for the Wrights. All of them have either an optimal (James) or normal (the other three) APOE gene, which means their bodies are able to manage cholesterol well and they're not at an increased risk for high blood cholesterol.

The Wrights also have an extremely resilient (Sarah), strong (Heather and Adam), or normal (James) [blood vessel lining](#). This means they are resistant to inflammation in the arteries and have a lower risk of heart disease and stroke. Sarah is especially resistant to blood vessel inflammation and damage.

Potential genetic problems

1. Androgen deficit - Sarah and Adam

All four of the Wrights have a genetic profile that clears androgens rapidly from their body. This means that they don't hold onto testosterone and dihydrotestosterone (DHT) for very long. Ideally, men and women should have balanced levels of testosterone and DHT.

For Sarah and Adam, this could mean that they aren't able to achieve muscle definition unless they focus on intense training. Their parents have not experienced the loss of muscle one would expect from their genetic profile because they are endurance athletes.

2. High 4-hydroxyestrogen levels - Sarah

Everyone in the Wright family is predisposed to have higher levels of 4-hydroxyestrogen, which can potentially cause female health concerns such as endometriosis, polycystic ovarian syndrome (PCOS), painful menstrual cycles, neuropathy, and fibromyalgia.

Because Sarah will be the one to experience menstruation, she is much more likely to be affected by the 4-hydroxyestrogen than Adam is, even though they both have the same variation of the CYP1B1 gene that produces 4-hydroxyestrogen. Sarah may experience inflammation during her menstrual cycle as a result of this gene variation.

Fortunately, Sarah's blood vessels are extremely protected from inflammation due to her blood vessel resilience discussed earlier. She may not experience as many problems from the 4-hydroxyestrogen as she would if she had a suboptimal blood vessel lining.

3. Suboptimal methylation - Adam

Adam has inherited suboptimal methylation genes from James, while Sarah has an optimal methylation system. The methylation genes determine the body's anti-inflammatory response to environmental toxins such as mold, pesticides, and viral and bacterial infections.

Since Adam does not have an ideal methylation system, he will likely be more vulnerable to inflammatory agents in his environment. He may also react negatively to vaccines and injections, experiencing more inflammation than those with an optimal methylation system.

4. Emotional imbalance - Adam

Brain-derived neurotrophic factor (BDNF) is an important protein that helps your neurons grow and form new connections. Having a suboptimal BDNF gene can lead to intense emotional reactions and other behavioral concerns.

Adam shares James's less than optimal BDNF gene variant, while Sarah has the ideal BDNF gene variant. This could make Adam more prone to emotional outbursts and imbalance.

Adam also has Heather's slow COMT gene, which can result in heightened anxiety due to the longer amount of time it takes to remove dopamine and noradrenaline from the brain. Sarah has James's faster COMT gene, which is the ideal version that produces a balanced emotional response.

Treatment Plan

Goals of treatment

This treatment plan is designed to mitigate the potential effects of Adam and Sarah's suboptimal genes. While their genetic profile does not automatically mean they will suffer from the problems listed above, it's best to be proactive so they can stay as healthy as possible throughout their lives.

Thankfully, Adam and Sarah do not have any gene variants that typically lead to life-threatening conditions. Therefore, the goal of this treatment plan is to give them the highest quality of life possible. The supplements and exercise regimen included in the treatment plan are extremely low-risk and easy to implement.

Recommended treatment

1. Androgen deficit - Sarah and Adam

Because both Sarah and Adam have a genetic androgen deficit, they would be wise to stimulate their cells to produce more androgen receptors. Once they have more androgen receptors, they will be able to maintain more balanced levels of testosterone and DHT.

The best type of exercise for the production of androgen receptors is resistance training. This consists of weightlifting and strength training exercises. If Adam and Sarah follow a consistent regimen of resistance training, their hormones will be more balanced. As a result, they will have muscle definition and improved overall health.

2. High 4-hydroxyestrogen levels - Sarah

With Sarah's genetic risk of female health concerns, it is necessary to take steps to manage her possible menstrual inflammation. Diindolylmethane (DIM) is a compound found naturally in cruciferous vegetables that can tame the harmful effects of 4-hydroxyestrogen, while black seed oil has been shown to block the enzyme that converts estrogen into 4-hydroxyestrogen.

If Sarah takes DIM supplements consistently, eats plenty of cruciferous vegetables such as broccoli, cauliflower, brussels sprouts, cabbage, and kale, and has a healthy amount of black seed oil, she will greatly reduce her risk of female health concerns and won't experience as much pain during her menstrual cycles.

3. Suboptimal methylation - Adam

Adam's suboptimal methylation genetic profile means he needs to be extra careful when it comes to environmental toxins. His family may want to consider checking their house for mold and throwing away any harsh household cleaners they might be using. Adam should also stay away from areas that have lots of pesticides such as parks, golf courses, and soccer fields.

In terms of diet, Adam may be more sensitive to food with preservatives and food that is past its prime. If Adam avoids environmental toxins and processed foods, he has a much better chance of dodging cellular inflammation and the harmful side effects that come with it.

4. Emotional imbalance - Adam

In order to increase his BDNF levels, Adam should exercise frequently and maintain a healthy diet. Foods high in DHA and AHA, including hemp seeds, nuts, flaxseed, chia seeds, seaweed, and fish, can increase BDNF levels. Magnesium and vitamin D rich foods such as lentils, beans, peas, oats, barley, avocados, bananas, salmon, and cashews are helpful as well.

Adam can also manage the possible anxiety caused by his COMT gene by practicing mindfulness meditation, developing sustainable hobbies, and taking adaptogens such as L-theanine, rhodiola, and ashwagandha. These habits will help give him a balanced emotional response to external stressors.

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