

THE
DNA
COMPANY

CASE STUDY

Genomic insights for adrenal fatigue and post-partum thyroid issues



Annie Cameron

Disclaimer: names have been changed for privacy reasons.

Any resemblance to actual persons is purely coincidental.

Case history

Subject: Annie Cameron (41 years old)

Background information

Annie is a stay-at-home mom with three kids. She wants to uncover the reason why she is struggling with adrenal fatigue and postpartum thyroid issues that return from time to time. She also has mild weight loss resistance and a history of tension headaches.

Prior to having her first child at 27, Annie was on oral contraception for 9 years. She had her second child when she was 30 and her third child at 32. She may have a hormonal imbalance that is contributing to her thyroid difficulties.

Fortunately, Annie has great foundational genes that will help her recover quickly from her health challenges once she has found the right treatment. She has an extremely rare FOXO3 gene that is shared by less than 5% of the population. This gene will likely give her a long life and keep her looking youthful as she ages. It's known as the longevity gene due to its ability to maintain healthy stem cell populations.

Annie doesn't need to be too concerned about cardiovascular health because she has an extremely resilient [endothelial lining](#). She also has an incredibly strong detox pathway that removes toxins quickly from her system.

Potential genetic problems

Overall, Annie has excellent genes. Nevertheless, she has a few genetic issues that might offer an explanation for her health challenges.

1. Suboptimal vitamin D genes

There are [three genes](#) that are responsible for making, transporting, and responding to vitamin D in the body, and Annie has suboptimal versions of all three of them. This puts her at a high risk of having insufficient vitamin D levels.

Since Annie lives in Canada, it's even more difficult for her to get the vitamin D she needs from the sun. As a result of her vitamin D system being significantly depleted, Annie's other hormonal systems such as her thyroid system and sex hormone system are negatively impacted as well.

2. High 4-hydroxyestrogen levels

Annie has the fast version of the CYP1B1 gene, which converts estrogen into 4-hydroxyestrogen. This is not ideal because 4-hydroxyestrogen is an inflammatory type of estrogen that can cause cramps, high clotting, breast tissue inflammation, weight gain, and, most importantly for Annie, thyroid dysfunction.

As an [androgen dominant female](#), Annie doesn't normally produce a lot of estrogen. However, the long period of time she spent taking oral birth control increased the amount of estrogen she was adding to her body. This created high levels of estrogen which in turn produced lots of inflammatory 4-hydroxyestrogen. Her body didn't produce any 4-hydroxyestrogen while she was pregnant, but the bumpy return to her normal cycle after giving birth likely threw her sex hormones out of balance again.

3. Poor response to trauma and stress

When it comes to handling trauma and stress, Annie does not have an optimal genetic profile. She has low [brain-derived neurotrophic factor \(BDNF\)](#) and the worst version of the [ADRA2B gene](#). This results in a heightened risk of developing post-traumatic stress disorder and a tendency to hold onto negative emotions longer than most people.

Annie also has the fast version of the [TPH gene](#), which is responsible for clearing serotonin from the body. Because her serotonin leaves her body quickly, Annie does not get the chance to benefit from the mood-balancing effects of serotonin. Combined with her BDNF and ADRA2B genetic results, this gene creates a neurochemical pathway that may be putting her sympathetic and parasympathetic systems out of balance, which can ultimately result in adrenal fatigue.

Treatment plan

Goals of treatment

This treatment plan is designed with Annie's health concerns in mind. It is meant to combat her thyroid issues, adrenal fatigue, and weight loss resistance. Since all of the aspects of treatment are low-risk and easy to implement, Annie should have no trouble following this plan.

The thyroid system is deeply connected to three other hormone systems in the body: the insulin system, the sex hormone system, and the vitamin D system. If any of these systems are off-kilter, the others are likely to be negatively impacted. This treatment plan takes into account all four of these hormone systems and strives to bring them all into balance.

Recommended treatment

1. Suboptimal vitamin D genes

Annie's suboptimal vitamin D profile is likely contributing to her thyroid issues and insulin resistance that has led to weight gain. In order to increase her vitamin D levels, Annie should follow a protocol that emphasizes foods with vitamin D3 such as egg yolks, red meat, liver, and oily fish. She should also take regular vitamin D supplements under the direction of a healthcare provider.

Once Annie has sufficient vitamin D, her other health concerns should be helped significantly. Her exceptional longevity, detoxification, and cardiovascular genes will play a role in allowing her to bounce back quickly from these health challenges now that the problematic hormone systems are taken care of.

2. High 4-hydroxyestrogen levels

Although Annie is not currently taking oral contraception, her previous usage combined with multiple pregnancies has thrown off her sex hormones due to high 4-hydroxyestrogen levels resulting from the added estrogen. She needs to bring her sex hormones into balance so that she doesn't suffer from the inflammatory results of 4-hydroxyestrogen, including thyroid dysfunction.

Annie can mitigate the harmful effects of 4-hydroxyestrogen by getting plenty of diindolylmethane (DIM), indole-3-carbinol (I3C), and sulforaphane, which are found in cruciferous vegetables like broccoli, kale, and cauliflower. She might also consider reducing her estrogen levels with the help of a medical provider so that excess estrogen is not converted into 4-hydroxyestrogen.

3. Poor response to trauma and stress

Since Annie has an increased risk of PTSD along with a genetic tendency to handle stress poorly, she would do well to take supplements to improve the neurochemicals and proteins, such as noradrenaline, dopamine, and BDNF, that regulate her mood and behavior. This should reduce the emotional stress on her body that is manifesting as adrenal fatigue.

Aside from vitamin D, Annie's supplement regimen should include magnesium, acetyl-L-carnitine, and vitamins B9 and B12. It's best for her to take magnesium L-threonate in the morning and magnesium glycinate in the evening. Vitamins B9 and B12 should be taken only once every three days to avoid the caffeinated feeling that results from combining them with vitamin D. Annie would also benefit from daily exercise to increase her BDNF levels.

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