

# Genetic Lifehacks

Learn. Experiment. Optimize.

Hello!

I'm focusing this week's newsletter on autoimmune diseases, which seems to be a topic that many people are dealing with right now.

Your immune system is always on the look out for foreign invaders (bacteria, viruses, etc). In doing so, your circulating immune cells need to know what is 'self', or which cells and proteins are part of your body. This allows the immune system to then attack and eliminate anything that is foreign.

When your immune system accidentally classifies one of your normal cellular proteins as 'foreign', anywhere that your immune system encounters that protein, it will respond and attack.

This is what happens in autoimmune diseases -- your own healthy cells are attacked by your immune system.

Autoimmune diseases are usually caused by an environmental trigger along with genetic susceptibility. Environmental triggers can be things like cigarette smoke, chemical pollutants, or even food-based proteins.

Additionally, viruses, bacterial infections, and vaccines are known triggers of autoimmune diseases. In fact, both COVID-19 infections and the COVID-19 vaccines are linked to increased incidence of several autoimmune diseases. [\[ref\]](#)[\[ref\]](#) Recently, headlines were made by a new study showing that the Epstein-Barr virus (which causes mono in teens) is a top trigger of multiple sclerosis.[\[ref\]](#)

Below is my latest article on alopecia areata, an autoimmune-like condition that causes sudden hair loss.

Gratefully yours,

Debbie

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***Did you know?***

If you find an interesting SNP in a research paper, you can use the [SNP Lookup Tool](#) to easily see your genotype.



[Latest article:](#)

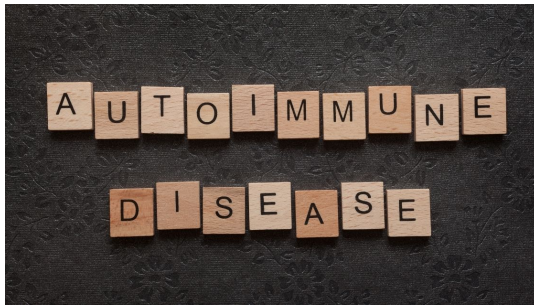
## **Alopecia Areata: Autoimmune Hair Loss and Genetics**

Alopecia areata is an autoimmune-like disease that causes sudden and rapid hair loss. Often it causes circular bald patches at random spots on the scalp. The lifetime risk for alopecia areata is ~2%, so you are not alone in this!

Here I'll explain the triggers of alopecia areata, why the hair falls out, genetic variants that increase susceptibility, and possible treatment options. As always, I'll include links to relevant recent research studies, so you can dig deeper if you want to.

[Read the full article](#)

## **Autoimmune Diseases and Genetic Susceptibility**



## **Autoimmune Diseases: Genetics plus Triggers**

This is an overview of different autoimmune diseases and the genetic variants that increase susceptibility to them.



## **PTPN22 and Autoimmune Diseases**

The body continually balances between fighting off dangerous pathogens and keeping the immune response in check. The PTPN22 gene plays a pivotal role in that balance, and genetic variants (SNPs) in PTPN22 increase your risk of autoimmune conditions such as vitiligo, alopecia, RA, type 1 diabetes, and autoimmune thyroid diseases.



## **Rheumatoid Arthritis Genes: Root Causes**

Rheumatoid arthritis (RA) is a form of joint pain that is caused by an autoimmune response. About 1% of the population deals with the pain of RA. This article explains RA, the different genes that increase susceptibility to RA, and possible solutions based on the genetic variants.



## **Genetics and Lupus: How your genes increase lupus risk**

Getting diagnosed with lupus can be a frustrating experience. It sometimes seems that there are more questions than answers with this autoimmune disease!

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## What I've Been Reading...

### 1) [How a nondescript box has been saving lives during the pandemic – and revealing the power of grassroots innovation](#)

Many infectious disease specialists and engineers have pointed out from the beginning of the pandemic that the best defense against an airborne virus is ventilation and filtration. This article covers the creation of the Corsi-Rosenthal box, a homemade air purification system designed to be inexpensive and easy to make.

### 2) [A unified genealogy of modern and ancient genomes](#) (The Conversation)

Researchers at Oxford have attempted to create a massive family tree, showing how modern people are related back to ancient homo sapiens. If you're interested in genealogy or ancient populations, this is an interesting article written by the researchers to explain the study to the layperson. There's even a video :-)

### 3) [Whole genome sequencing reveals host factors underlying critical Covid-19](#) (Nature)

A new research study published in Nature expands on what is known about the genetics of who gets really sick with Covid. Genes in the interferon signaling pathway are identified (again), as well as coagulation factors. The article is behind a paywall, but as soon as I get access to the full paper, I'll update my article on Covid genes. (Of course, this all may be a moot point with Omicron or other variants...)

### 4) [A conserved strategy for inducing appendage regeneration in moon jellyfish, Drosophila, and mice](#) (eLife)

This research study shows how altering a few nutrients (in this case, l-leucine and sucrose) can trigger tissue regeneration. The research was done in animals that don't normally regenerate appendages or limbs. But the researchers were able to prompt the regeneration of digits in mice and arms in jellyfish – through nutritional intervention. While we are a long way from regrowing an arm or leg, the new research is important in understanding how manipulation of diet during wound healing can make a big difference.

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North wind blowing, MT

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