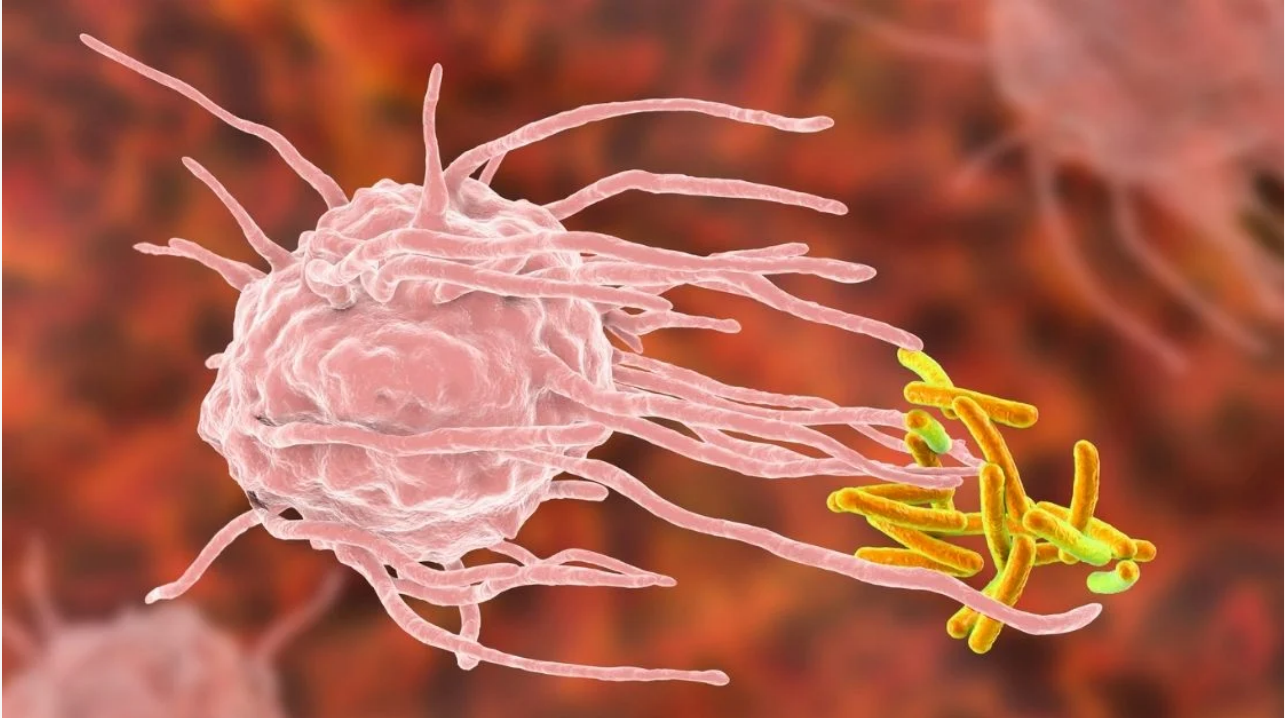


# Genetic Lifehacks

Learn. Experiment. Optimize.



## NLRP3 Inflammasome, Genetics, and Chronic Inflammation

Have you ever wondered what causes the body to create excess inflammation? At the root of the over-activation of inflammation for some people is NLRP3 inflammasome. This inflammasome is like an amplifier that cranks up the inflammatory response.

We will dig into the biology of the NLRP3 response as well as genetic variants that make people more susceptible to inflammatory chronic diseases.

### What is NLRP3 and how is the inflammatory response system activated?

NLRP3 (NOD-like receptor, pyrin domain-containing 3) is a lynchpin for the activation of the inflammasome, which is the part of the immune system responsible for activating the body's inflammatory response system.

Essentially, NLRP3 is **a danger-sensing protein**.

Inflammasomes are immune complexes that amplify the immune system response. The NLRP3 inflammasome is **activated by**:[\[ref\]](#)

- Pathogens (e.g. bacterial or viral infection)

- DNA replication errors in a cell (e.g. mutation that could cause cancer)
- Cellular damage, such as lysosomes breaking open, and mitochondrial dysfunction

Fighting off cancer and destroying bad microbes is *really important!* The inflammasome calls up the troops, amplifying the immune system response so that it is more powerful.

~ **Balance is key** ~

**Excessive NLRP3** inflammasome activation causes chronic inflammation and increases susceptibility to a whole host of chronic diseases:

- IBD
- rheumatoid arthritis
- cardiovascular disease
- Alzheimer's disease
- type 2 diabetes
- gout
- eye diseases and dry eyes[[ref.](#)]

[Read the full article...](#)

## What I've been reading:

### 1) [FDA officials asked to step down after contentious Alzheimer's drug approval](#)

This Ars Technica article explains some of the controversy associated with the FDA's approval of a \$56,000/year medication for Alzheimer's called aducanumab. While drugs are desperately needed for Alzheimer's, the recently approved drug didn't reverse cognitive decline in Alzheimer's patients. Instead, the trial endpoints were adjusted so that they could show efficacy in reducing amyloid-beta plaque. Newer research shows that reducing amyloid-beta plaque likely has no impact on Alzheimer's disease progression.

### 2) [Aspirin using was associated with slower cognitive decline in patients with Alzheimer's disease](#)

I found it ironic that the same week that the FDA approves a \$56K/year drug that doesn't slow cognitive decline, research is published showing that aspirin usage is associated with slower cognitive decline in Alzheimer's patients.

I'll let you guess which drug Medicare will end up paying for... A [Forbes article](#) addresses how aducanumab coverage by Medicare could cost more than \$100 billion annually, putting "inordinate pressure on Medicare's budget."

### 3) [Investors back a new era for mental health](#)

Interesting article about the IPO of a biotech company, ATAI, that is working on drug approval for psychedelics for mental health. The company is based in Berlin and backed by Peter Thiel.

**Genetic Lifehacks**

Cameron, MT

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