

What causes Long COVID?



LONG COVID ESSENTIALS: A series by [The Sick Times](#) & [Long COVID Justice](#)

We don't know why some people recover from COVID-19 while others develop Long COVID.

Experts believe that there are many different biological processes going wrong that lead to symptoms. These biological mechanisms are connected, meaning that they can influence each other. Multiple mechanisms may be happening in the same person.

* **Viral persistence**

Usually, when people get sick, the immune system finds and destroys the viruses in the body. But SARS-CoV-2, the virus that causes COVID-19, is good at hiding. People with Long COVID may have reservoirs of hidden virus that's managed to evade the immune system. This is called [viral persistence](#), and it may cause Long COVID.

How would viral persistence cause symptoms?

The viruses might keep making copies of themselves and their proteins, damaging the body. If they hide out in organs the immune system can't easily reach, the viruses can continue causing damage.

In other cases, the viruses can put the immune system on high alert, causing damage in the body. In some people, certain types of immune cells are also depleted, which may make it more difficult for the body to fight off a persistent infection.

* **Immune dysfunction**

The initial SARS-CoV-2 infection could [disrupt the immune system](#). In that case, even though the immune system eliminates the virus, it could remain activated and treat some healthy cells like viruses.

In some cases, the immune cells could accidentally make antibodies that attack the body's healthy tissues. This is known as autoimmunity.



Other viruses like the Epstein-Barr virus (EBV), which were dormant (inactive), could [switch back on \(or reactivate\)](#) and [cause damage to the body](#).

* Other theories

Scientists are exploring many other pathways:

- Following COVID-19 cases, Long COVID may be caused by [organ damage](#) to the lungs, brain, heart, kidneys, and other organs.
- Symptoms like [fatigue and post-exertional malaise](#) might be caused by problems with the cells' power generators, [called mitochondria](#).
- Some people with Long COVID develop small blood clots [called microclots](#) that may cut off blood flow and nutrients to healthy organs.
- Infection could change the [gut microbiome](#), the trillions of usually-friendly microbes that help with digestion and immunity, contributing to various symptoms.

Figuring out how these biological pathways contribute to different symptoms is a step toward developing effective treatments for Long COVID. While there is evidence for all these pathways, scientists don't yet understand exactly how they work or how to fix them.

You can follow and share the latest research with your healthcare provider, which may improve your care. You can also [volunteer in research](#) to help develop better treatments.

* Resources

- [Long COVID major findings review paper](#) – *Nature Reviews Microbiology*
- [The immunology of Long COVID](#) – *Nature Reviews Immunology*
- [Long COVID mechanisms](#) - *eLife*
- [Blood donation & Long COVID](#) – *The Sick Times*
- [Autoimmunity and other possible causes](#) – *Yale Medicine*



FULL SERIES OF FACTSHEETS WITH LINKED RESOURCES + MORE:
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QUESTIONS? connect@s4hi.org

This series was designed by people living with Long COVID and associated diseases. Each resource sheet has been reviewed by patient and medical experts. This is an informational resource, not medical advice. Publication date: 12/13/2024.