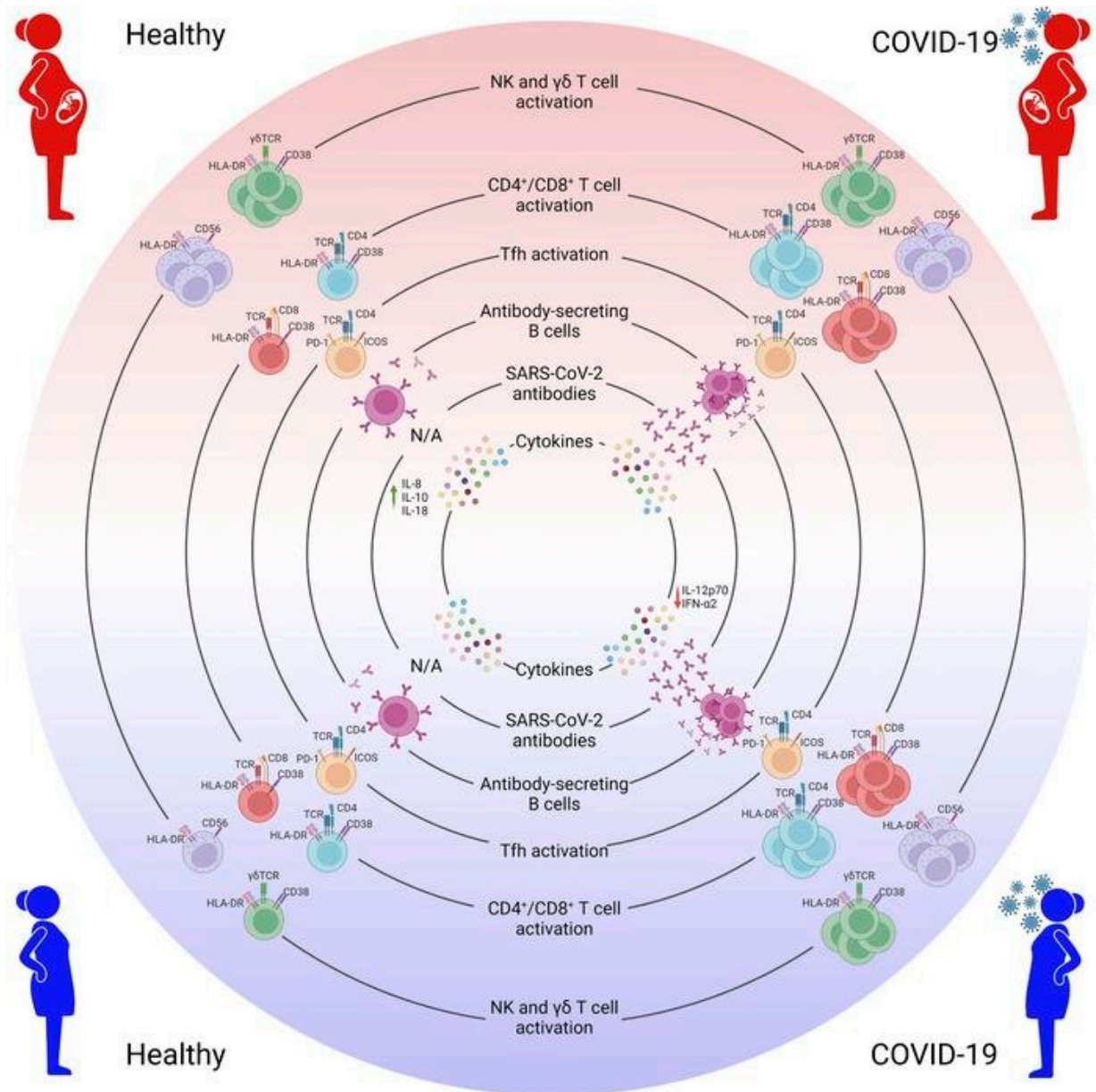


# Pregnant women show robust and variable immunity during COVID-19, study finds

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Graphical abstract. Credit: *JCI Insight* (2023). DOI: 10.1172/jci.insight.167157

While pregnant women are at greater risk of getting sick from COVID-19, little was known about how the immune system responds to the infection during pregnancy. New research from the Peter Doherty Institute for Infection and Immunity (Doherty Institute) has found that pregnant women display a strong immune response to SARS-CoV-2 infection, comparable to that of non-pregnant women.

Published in *JCI Insight*, the study looked at the immune responses to SARS-CoV-2 in unvaccinated pregnant and non-[pregnant women](#) and found similar levels of antibodies and T and B cell responses, responsible for long-term protection.

Lead author of the paper, University of Melbourne Ph.D. Candidate Jennifer Habel, said that the research deepens our understanding of COVID-19 immunity in pregnant individuals.

"Healthy pregnant [women](#) actually have an elevated innate cell response compared to non-pregnant women, and during acute SARS-CoV-2 infection, it doesn't increase any further, likely because it's already so high," Ms. Habel said.

"Non-pregnant women however have low levels of innate cell activation when they're healthy, which is normal, and this increases during acute infection."

Despite similarities in the immune responses between both groups, key differences were observed in the dynamics of innate immune cells at the first line of defense towards [viral infections](#).

The study included 68 participants during acute and recovering phases of COVID-19 infection, and measured 217 different immunological parameters, making it one of the most comprehensive analyses of immune features in SARS-CoV-2 infection and pregnancy to date.

Study co-senior author University of Melbourne Dr. Louise Rowntree, a researcher at the Doherty Institute, said the differences in the first line of defense in pregnant women may explain why some pregnant women get sicker during COVID-19.

"The pre-activated state observed in pregnant women means their [immune system](#) responds differently to the SARS-CoV-2 virus compared to non-pregnant women," Dr. Rowntree said. "We are still unsure whether these pre-activated innate cells are protective or detrimental to [disease progression](#), but further studies on correlates of COVID-19 severity during pregnancy will help us answer this."

Senior author of the study and Laboratory Head at the Doherty Institute, University of Melbourne's Professor Katherine Kedzierska, said that immunity to SARS-CoV-2 infection during pregnancy is greatly understudied.

"It is important to continue researching how the [immune response](#) to [infectious diseases](#) may differ during pregnancy, especially as pregnant women are a high-risk group for severe infection," Professor Kedzierska said.

"Our study makes a case for why vaccination of pregnant women should be considered a major advantage, as COVID-19 vaccines specifically aim to induce B and T cell responses. The responses we saw in our study were similar between pregnant and non-pregnant women, suggesting prior infection and vaccination should offer some level of protection against future infection."

**More information:** Jennifer R. Habel et al, Immune profiling of SARS-CoV-2 infection during pregnancy reveals NK cell and  $\gamma\delta$  T cell perturbations, *JCI Insight* (2023). [DOI: 10.1172/jci.insight.167157](https://doi.org/10.1172/jci.insight.167157)

Provided by The Peter Doherty Institute for Infection and Immunity

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