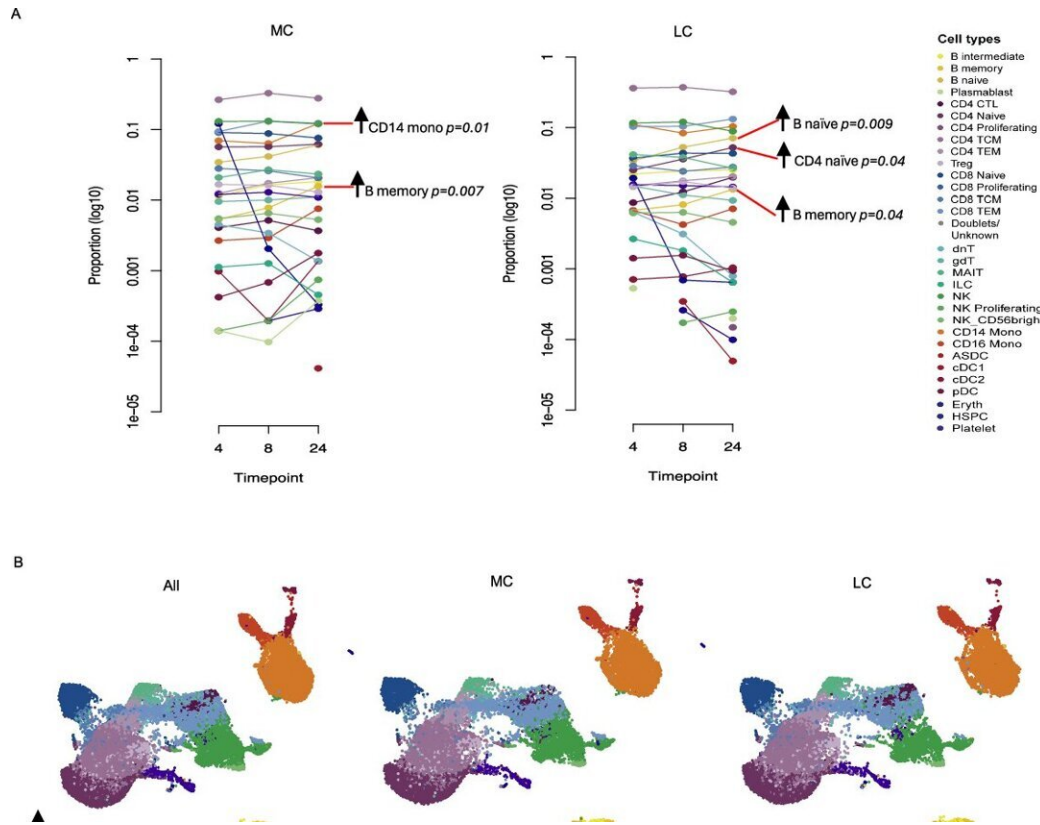


Long COVID patients show immunological improvement two years after infection

April 18 2024



Reconstitution of immune cell subsets at 24-months. Credit: *Nature Communications* (2024). DOI: 10.1038/s41467-024-47720-8

Biomarkers for long COVID that were present in patients at eight months have largely resolved by 24 months among a cohort of people

who contracted COVID-19 during Australia's first wave.

Jointly led by the Kirby Institute at UNSW Sydney and St Vincent's Hospital Sydney and [published](#) in *Nature Communications*, the research provides optimistic insights to suggest that long COVID abnormalities can resolve over time.

The [ADAPT study](#) followed people who contracted COVID-19 during Australia's first wave, as well as a matched [control group](#), for up to two years. It combines systematic self-reported health information collected from patients with detailed analysis of bloods specimens in the laboratory.

In January 2022, the Kirby Institute research team were the first globally to show that long COVID clinical symptoms were consistent with biomarkers showing a sustained inflammatory response at eight months following infection, providing a clear biological basis for the syndrome of long COVID.

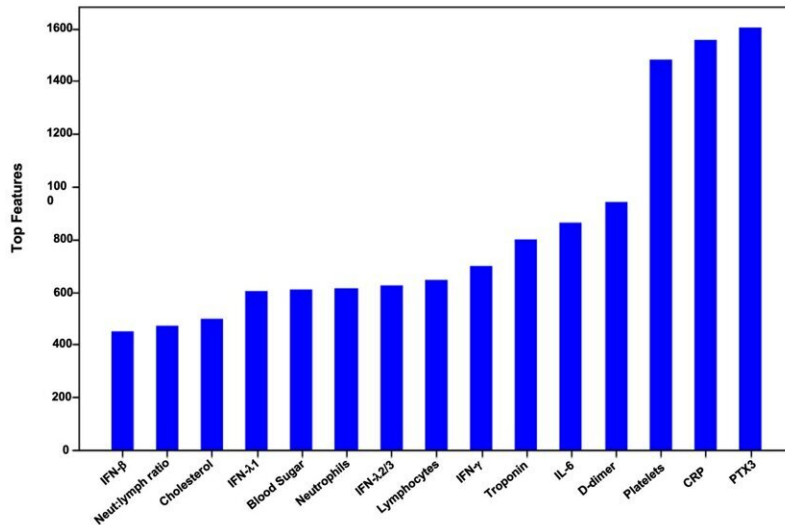
"Almost one and a half years later, we are pleased to see that among this same group, significant improvements were found in blood markers. For the majority of samples we analyzed in the laboratory, the biomarkers previously indicating abnormal immune function have resolved," says Dr. Chansavath Phetsouphanh, first author on the paper and Senior Lecturer at the Kirby Institute.

While the exact scale of the immunological improvements is difficult to quantify as immune function varies significantly from person to person, by 24 months there were no observable differences between the group with long COVID and the control group—whereas at eight months the two groups had marked differences.

Importantly, this trend in the laboratory data was also visible in the

patients' self-reported data, with 62% reporting improvements in health-related quality of life.

A



B

Number of features	Best features	Accuracy (CI)	F1 (CI)
2	PTX3, Platelets	0.71 (± 0.0074)	0.78 (± 0.0053)
3	PTX3, Platelets, CRP	0.73 (± 0.0072)	0.80 (± 0.0053)
15	All	0.78 (± 0.0064)	0.82 (± 0.0050)

Blood parameters associated with improvement in health-related quality of life at 24-months. A) frequency of features highly associated with recovery. B) Table summarizing accuracy and F1 score for top 2 and top 3 most highly associated features. C) Left-panel: 3-dimensional scatter plot of recovered vs unrecovered participant with concentration values of 3 markers (PTX3, CRP and platelets). Right-panel: 2D projections of PTX3 vs platelets (upper) and PTX3 vs. CRP (lower) with line representing the decision boundary. Credit: *Nature Communications* (2024). DOI: 10.1038/s41467-024-47720-8

"While this is very encouraging and a reason for optimism, there are still

around one third of patients who identify some ongoing impact on their quality of life," says Professor Gail Matthews from the Kirby Institute, lead investigator of ADAPT and Head of Infectious Diseases at St Vincent's Hospital.

"This is likely explained by the reality that patients may have a range of underlying causes for their long COVID symptoms, not all of which are driven by immunological abnormalities and some of which are likely to persist even when the immunological environment has largely returned to normal."

The ADAPT study is globally important as it is one of only a handful of studies that measure [clinical data](#), patient self-reported information and intense biological sampling consistently within the same cohort of people, over a prolonged period of time.

Professor Anthony Kelleher, Director of the Kirby Institute says that while the finding is encouraging, it is important to remember that this is just one cohort who experienced an early strain of COVID-19, and it is a group in which the initial COVID-19 infection was generally considered mild or moderate.

"Immunology is a complex science, and it is impossible to say for certain that outcomes in our unvaccinated clinical cohort will be true for vaccinated people or for people who may have been infected with a different strain of COVID-19.

"What we do know is that for most people with long COVID, both their symptoms and their biomarkers improve significantly over time, and this is a cause for optimism.

"Importantly, we will continue to undertake research to understand more about why some people don't improve, and what can be done for those

people."

More information: Chansavath Phetsouphanh et al, Improvement of immune dysregulation in individuals with long COVID at 24-months following SARS-CoV-2 infection, *Nature Communications* (2024). [DOI: 10.1038/s41467-024-47720-8](https://doi.org/10.1038/s41467-024-47720-8)

Provided by University of New South Wales

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