

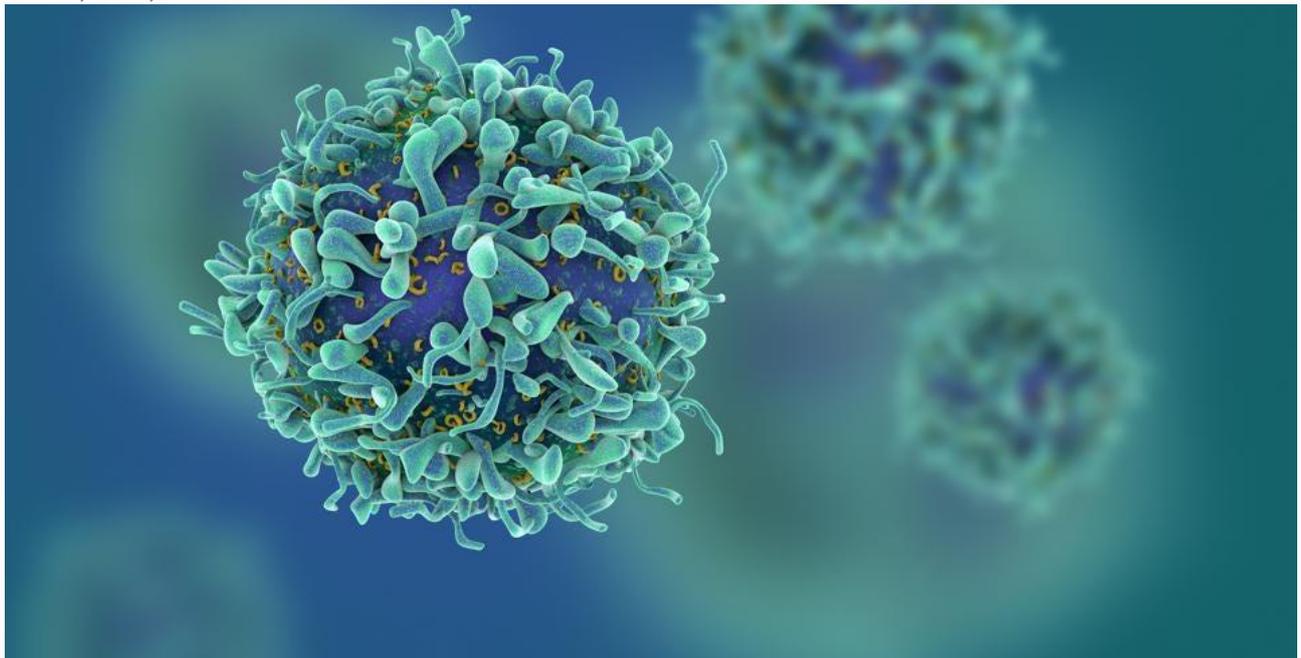
Forbes

New T Cell Antibody Treatment Improves Outcomes For Covid Patients

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CG render of T-cells in shallow depth of field GETTY

The need for effective Covid-19 drugs is ever-expanding. Hundreds of millions, if not billions, have been infected by SARS-CoV-2 throughout the pandemic. Even today, thousands continue to be infected in what many claim to be a post-

pandemic world. Antiviral drugs can prevent infection in those recently exposed to the virus and help those infected stave off the worst effects of Covid-19.

A new study by [Moreira *et al.*](#) suggests that the drug Foralumab, designed to treat multiple sclerosis and other neurodegenerative diseases, may do just that.

One of the most vital types of anti-Covid drugs is the monoclonal antibody treatment. Typically targeting the SARS-CoV-2 spike protein, these drugs neutralize the virus by binding to the portion of the virus that infects our cells, preventing further spread. However, these drugs are susceptible to virus mutation and may lose potency against more recent variants.

Foralumab does not bind the virus spike protein but rather the T cells of the immune system. T cells are immune modulators involved early and often during Covid-19 infection. They are heavily involved in immune memory and lasting immunity against the virus post-infection. However, they also cause symptomatic responses during infection through effector functions and cytokine reactions.

Developed by Tiziana Life Sciences during the pandemic, Foralumab was designed to treat patients suffering from multiple sclerosis, reducing inflammatory responses brought on by the immune system. It is one of the only T cell targeting monoclonal antibodies in clinical development, and [Moreira *et al.*](#) aimed to deduce whether its anti-inflammatory mechanisms worked against Covid-19 as well.

This study is derived from a [previous pilot study](#) of Foralumab. Patients were split into three cohorts: control, Foralumab, and Foralumab, in addition to dexamethasone. Over the two-week observation period, patients who received Foralumab or Foralumab/dexamethasone displayed more rapid clearance of lung infiltrates.

Foralumab patients showed a more substantial reduction of serum IL-6 and C-reactive protein, meaning the monoclonal antibody was well tolerated and may effectively treat immune hyperactivity.

How, then, does Foralumab work to impact T cells and improve the overall condition of a Covid patient? Moreira *et al.* followed their pilot study with a mechanism of action analysis for Foralumab.

Foralumab begins down and upregulating specific genes and proteins upon binding with activated host T cells. Many of these have little effect, if any, on Covid disease outcomes. Some, however, are crucial to the immune responses.

One such upregulated gene was GIMAP7. While little is known about this specific gene, as with many expressed genes in the human immune response, it is reportedly linked to T cell regulatory efficiency, meaning Foralumab upregulating this gene leads to a stronger immune response from the host, yielding more promising disease outcomes.

Numerous genes, proteins, and cytokine pathways are impacted by Foralumab; too many to mention in this article. Still, the culmination leads patients treated with Foralumab to more efficient lung clearance of the virus and higher levels of immune protection.

In all, Foralumab induces many factors that impact improved tissue remodeling, induction of immune cells, and restriction of effector function, improving disease outcomes while fighting the virus to full strength. These benefits are not limited to Covid-19 patients, as similar results were observed in patients with multiple sclerosis.

Discussion

Foralumab represents a novel approach to treating Covid-19 illness. While the drug does not prevent infection, it can lessen the impact of mild to moderate symptoms by regulating the T cell immune response. In conjunction with a spike-targeting monoclonal antibody, Foralumab could be a welcome addition to the anti-Covid toolkit.

The anti-CD3 monoclonal treatment effectively modulates the T cell inflammatory response by up or downregulating specific gene and protein expressions, resulting in less severe disease. This novel avenue should be further explored, as more drugs with similar mechanisms could prevent the deaths of thousands.

Original Link: <https://www.forbes.com/sites/williamhaseltine/2023/03/16/new-t-cell-antibody-treatment-improves-outcomes-for-covid-patients/?sh=4686b976670f>