

## 「New Hope for Vaccine Longevity: Study Reveals Immune memory to SARS-CoV-2 Lasts Up to 8 Months」

Updated 22 January, 2021. Cellspect Co., Ltd

How long people can fight off reinfection to the new coronavirus and what immune process is involved are key to predicting the dynamics of the pandemic. A new study from La Jolla Institute have revealed that most people who recover from Covid-19 have immune memory to protect against reinfection for at least eight months. [1] In this study which is published in the journal “Science”, researchers measured multiple components of the immune system, including circulating antibodies, memory B cells, helper T cells and killer T cells specific for SARS-CoV-2 in patients. This study is so far known as the largest study ever for any acute infection as all four components of immune memory have been measured. The new study helps clarify some concerning Covid-19 data from other labs, which showed a dramatic drop of Covid-19 neutralizing antibodies in the months following infection. Some feared that this decline in antibodies meant that the body wouldn't be equipped to defend itself against reinfection. [2]

The results of this study have very similar results to another study recently published in “Nature”, in which researchers in the United States and Switzerland conclude that the memory B cell response to SARS-CoV-2 may last up to 6 months after infection. They found that although titers of neutralizing antibody declined over time, memory B cells specific for the receptor-binding domain of SARS-CoV-2 spike protein persisted up to 6 months after infection. These memory B cells can even generate antibodies with increased neutralization potency and breadth. [3]

These two studies show consistent results with an earlier study published in “Science Immunology”. Memory B cells in patients increased rapidly after the onset of Covid-19 symptoms. Initially, these memory B cells mainly expressed IgM antibodies. With the passage of time, the proportion of IgG antibodies expressed in memory B cells increased significantly. This transition reflects the normal process of B cell maturation. Although the IgM antibodies originally produced by B cells can also neutralize the virus, their neutralizing effect is not necessarily the best. In the process of maturation, B cells will adjust the affinity of neutralizing antibodies and antigens through genetic mutations, and generate IgG antibodies with higher affinity to the antigen and stronger neutralizing ability. Moreover, the level of memory B cells, especially the memory B cells that produce IgG, remained stable more than 200 days after the onset of symptoms in this study. [4]

Some previous research has caused concern by showing that neutralizing antibodies can decline quickly after infection with SARS-CoV-2. But more recent studies have highlighted the role of other parts of the immune system in longer-term immunity. Notably, these studies tracked responses to natural

SARS-CoV-2 infection, not immune memory after vaccination. However, as memory responses are responsible for protection from reinfection, these studies provide great evidences for the longevity of protection afforded by vaccines. Researchers around the world will continue to analyze samples from Covid-19 patients in the future and to track their immune responses for longer period after the onset of symptoms.

#### Reference:

1. Jennifer M. Dan et al. 06 Jan 2021. "Immunological memory to SARS-CoV-2 assessed for up to 8 months after infection" *Science*. DOI:
2. 06 Jan 2021. "Protective immunity against SARS-CoV-2 could last eight months or more" *News Release*, La Jolla Institute for immunology.
3. Christian Gaebler et al. 06 Jan 2021. "Evolution of antibody immunity to SARS-CoV-2" *Nature*. doi: 10.1038/s41586-021-03207-w.
4. Gemma E. Hartley et al. 22 Dec 2020. "Rapid generation of durable B cell memory to SARS-CoV-2 spike and nucleocapsid proteins in COVID-19 and convalescence" *Science Immunology*. DOI: 10.1126/sciimmunol.abf8891.

#### Regarding the information on this website (disclaimer)

The information on this website represents the best information currently available to us and is given in good faith but without warranty. We are not responsible for any loss caused by using this website.

Please note that we may make changes to the information posted on this website without notice.

In addition, the operation of the website may be suspended or stopped.