



Current Understanding of Immune Response after COVID-19 Vaccination

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Message from the Guest Editors

Currently, the widely used mRNA and AAV vaccines against SARS-CoV-2 are based on the viral spike (S) protein that is required for its binding, fusion, and cell entry. Similar to the viral infection, the vaccines produce serum antibodies at early stages, and also induce long-lasting memory B- and T-cell responses in the recipients. As such, the vaccine-elicited immune response is impaired in older and immunosuppressed recipients, resulting in lower titers of antibodies and weaker protection. As for individuals, antibody titers peak within 3~5 weeks, and then start to decline, which varies depending on individuals. In addition, other immune responses also play important roles in preventing SARS-CoV-2 infection and limiting COVID-19 illness severity, although the mechanisms of their protection are less understood so far. Therefore, a higher antibody titer does not necessarily mean better protection. Compared to antibodies, immunogenicity is a more complex and better measurement of a vaccine. Understanding the complicated immune mechanisms after vaccination will provide valuable information for optimizing vaccine efficacies.





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