

# Scientists urge for investment now in highly potent vaccines to prevent the next pandemic

9 February 2021



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As new COVID-19 variants begin to throw vaccine efficacy in question, two leading scientists are calling for health agencies to invest in the development of vaccines that would be broadly effective against many different variants and strains of potential pandemic viruses.

In a commentary article published in the journal *Nature*, Dennis Burton, Ph.D., and Eric Topol, MD, of Scripps Research call for governments to provide significant funding support for rational vaccine design based on broadly neutralizing [antibodies](#).

Such antibodies provide broad-spectrum potency against viruses, a valuable characteristic that opens the door to vaccines that could provide immunity against the many variants that might evolve from a fast-mutating virus. They could also be used as drugs to prevent and treat infections.

Burton and Topol note that the rapid development

of effective vaccines against COVID-19 was possible due to certain properties of the SARS-CoV-2 virus—in particular, the spike protein on the virus's surface. But they warn that the virus driving the next [pandemic](#) may not provide such a ready target, which could substantially slow the process of developing a novel [vaccine](#).

"Even SARS-CoV-2 could be becoming more problematic for vaccines because of the emergence of new variants," they write. "We call for an alternative approach to pandemic preparedness."

Burton and Topol point to broadly neutralizing antibodies as a promising avenue for developing vaccines and therapies that might be readily adapted to newly emerged pandemic viruses or those that rapidly evolve to evade traditional vaccines.

"Such antibodies could be used as first-line drugs to prevent or treat viruses in a given family, including new lineages or strains that have not yet emerged," they write. "More importantly, they could be used to design vaccines against many members of a given family of viruses."

Of particularly concern for future pandemics are viruses that are "evasion-strong," meaning their biological characteristics make them challenging to treat with drugs or prevent with vaccines. The extreme example of this type of virus is HIV, which can stay in the body for years, hiding from the host's immune system.

Burton and his colleagues at Scripps Research and other organizations are currently developing vaccines based on broadly neutralizing antibodies in hopes of producing the world's first truly effective HIV vaccines.

They are also seeking to employ broadly neutralizing antibodies as therapies and vaccines against influenza, another evasive virus and prime contender for future pandemics.

"Such pan-virus vaccines could be made in advance and deployed before the next emerging infection becomes a pandemic," Burton and Topol write. "We call for an investment now in basic research leading to the stockpiling of broadly effective vaccines."

**More information:** Dennis R. Burton et al, Variant-proof vaccines—invest now for the next pandemic, *Nature* (2021). DOI: [10.1038/d41586-021-00340-4](https://doi.org/10.1038/d41586-021-00340-4)

Provided by The Scripps Research Institute

APA citation: Scientists urge for investment now in highly potent vaccines to prevent the next pandemic (2021, February 9) retrieved 12 October 2022 from <https://medicalxpress.com/news/2021-02-scientists-urge-investment-highly-potent.html>

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