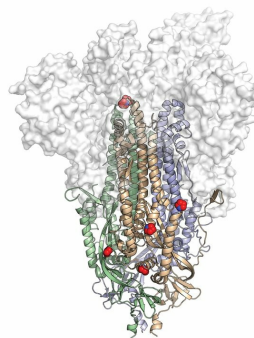


# Next Generation COVID-19 Vaccines

DISCOVERY ZONE, RESEARCH, MOLECULAR BIOSCIENCES, COVID-19, HEALTH

The first COVID-19 vaccines were approved for the general public last December, but several months later, most of the world's population still hasn't received an injection.

In early 2020, collaborators from the UT Austin lab of [Jason McLellan](#) and the NIH re-engineered a protein from the coronavirus that became a key element in vaccines developed by Pfizer/BioNTech, Moderna, Johnson & Johnson/Janssen and Novavax. McLellan and his team followed that blockbuster success with creating an improved version of the protein that could enable much faster production of COVID-19 vaccines worldwide.



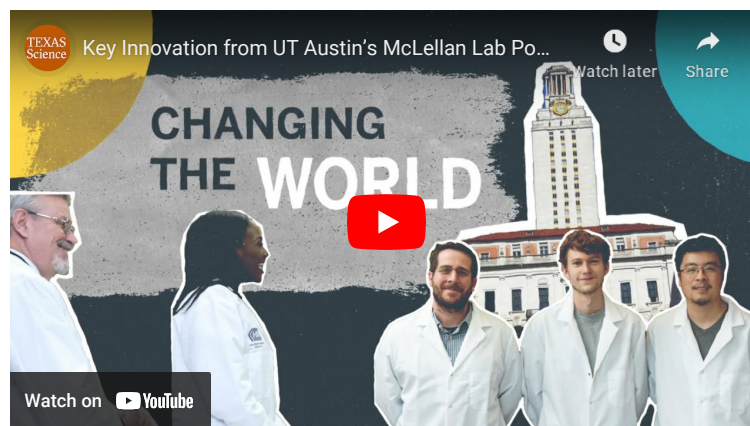
Most coronavirus vaccine candidates train the human immune system to recognize a key protein on the surface of the SARS-CoV-2 virus called the spike protein in order to fight infection. The researchers designed a new version of this protein (called HexaPro) that, when expressed in cells, produces up to 10 times more protein than that of the earlier synthetic spike protein in use in multiple COVID-19 vaccines.

"Depending on the type of vaccine, this improved version of the protein could reduce the size of each dose or speed up vaccine production," said McLellan, Welch Chair and associate professor in the Department of Molecular Biosciences, who published a paper on the work in *Science*, along with co-corresponding UT authors [Jennifer Maynard](#) and [Ilya Finkelstein](#). "Either way, it could mean more patients have access to vaccines faster."

Vaccine companies with different platform technologies will have the ability to test and further develop COVID vaccines that use HexaPro. A major philanthropic foundation also has contributed to the development of the technology in the interest of making vaccines accessible to people in developing countries.

"Four billion people living in developing countries need access to a vaccine, as all of us do," McLellan said.

[Read how years of basic research enabled McLellan's team to create the original stabilized spike protein in record time.](#)



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