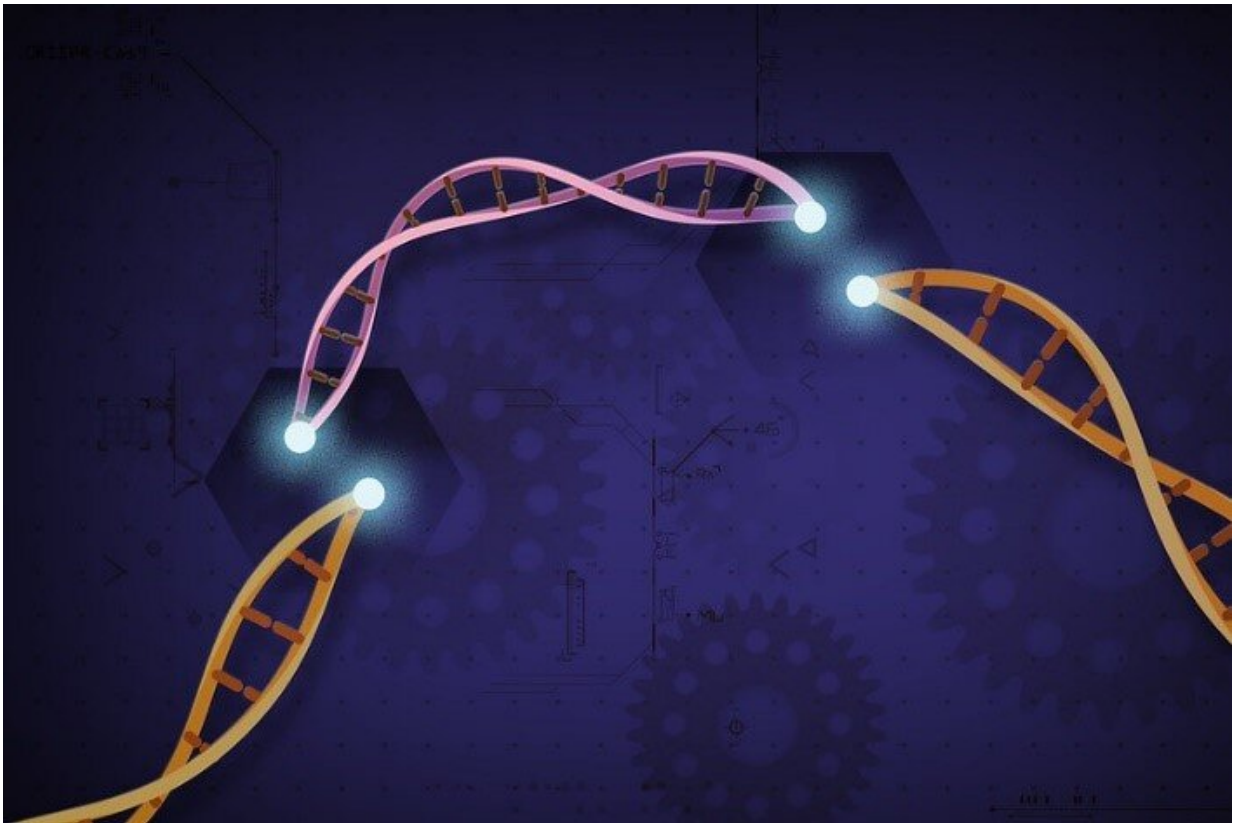


Researchers develop a fast, accurate, low-cost COVID-19 test

August 27 2020



Credit: NIH Image Gallery, 2018

A new low-cost diagnostic test for coronavirus disease 2019 (COVID-19) quickly delivers accurate results without the need for sophisticated equipment, according to a study published August 27 2020

in the open-access journal *PLOS Pathogens* by Teng Xu of the Vision Medicals Center for Infectious Diseases, Tieying Hou of the Guangdong Academy of Medical Sciences, Bing Gu of the Affiliated Hospital of Xuzhou Medical University, Jianwei Wang of the Chinese Academy of Medical Sciences and Peking Union Medical College, and colleagues.

The surging demand for rapid screening and identification of COVID-19 poses great diagnostic challenges. Metagenomic next-generation sequencing (mNGS) and reverse-transcription PCR (RT-PCR) have been the most commonly used molecular methods for diagnosing COVID-19, but each has its own limitations. For example, sequencing is costly and has a turnaround time of nearly one day, while RT-PCR requires specialized equipment and is difficult to deploy at a large scale. A lack of rapid and accurate molecular diagnostic tools has hampered efficient public health responses to the viral threat.

In the new study, the researchers developed an alternative COVID-19 test by leveraging CRISPR-based technology, which has been widely used in recent years for gene editing. The assay, named CRISPR-COVID, enables high-throughput detection of severe acute respiratory syndrome [coronavirus](#) 2 (SARS-CoV-2) - the virus that causes COVID-19. CRISPR-COVID delivers comparable sensitivity and specificity as mNGS within as short as 40 minutes. When produced at a large scale, the material cost of a CRISPR-COVID test could be less than 70 cents, suggesting that CRISPR-COVID is a competitive alternative not only technologically but also financially.

The authors note, "In this study, we developed an isothermal, CRISPR-based diagnostic for COVID-19 with near single-copy sensitivity." and "We demonstrated a CRISPR-based assay for COVID-19 that offered shorter turn-around time and great diagnostic value, even in under-resourced settings without the need of thermal cyclers."

More information: Hou T, Zeng W, Yang M, Chen W, Ren L, Ai J, et al. (2020) Development and evaluation of a rapid CRISPR-based diagnostic for COVID-19. *PLoS Pathog* 16(8): e1008705.

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