

New COVID-19 test could give results in under 1 hour

16 April 2020



Researchers say they've developed a low-cost swab test that can diagnose COVID-19 infections in about 45 minutes.

The CRISPR-based [test](#)—which uses gene-targeting technology and requires no specialized equipment—could help relieve testing backlogs in the United States as COVID-19 continues to spread, the scientists said.

The U.S. Food and Drug Administration has not approved the test, but clinical assessments are being conducted in an effort to fast-track approval. The test is described in a paper published April 16 in the journal *Nature Biotechnology*.

"The introduction and availability of CRISPR technology will accelerate deployment of the next generation of tests to diagnose COVID-19 infection," co-lead developer Dr. Charles Chiu said in a University of California, San Francisco news release. He is a professor of laboratory medicine at the university.

The new test—dubbed SARS-CoV-2 DETECTR—is among the first to use CRISPR gene-targeting technology to test for the presence of the novel coronavirus.

CRISPR can be modified to target any [genetic sequence](#), so test developers "programmed" it to zero in on two sequences in the genome of SARS-CoV-2, which causes COVID-19.

One sequence is common to all SARS-like coronaviruses, while the other is unique to SARS-CoV-2. Checking for both sequences ensures that the new test can distinguish between SARS-CoV-2 and closely related viruses, Chiu and his team explained.

Like other tests, this one can detect coronavirus in samples from respiratory swabs from patients. It provides results in about 45 minutes, compared with roughly four hours for widely used tests based on polymerase chain reaction (PCR) techniques.

The researchers said that another advantage of the new test is that it can be performed in virtually any lab, using off-the-shelf chemical agents and common equipment. PCR-based tests require specialized equipment, limiting them to well-equipped diagnostic labs.

The new test is also easy to interpret. Much like a store-bought [pregnancy test](#), dark lines appear on test strips to indicate the presence of coronavirus genes.

While the new test is slightly less sensitive than PCR-based tests, researchers said that's unlikely to have much impact in diagnosis because infected patients typically have high viral loads.

As they work to validate the [new test](#) for FDA approval, researchers are making tweaks so that it can be used in field testing at locations such as airports, schools and small clinics.

More information: CRISPR–Cas12-based detection of SARS-CoV-2, *Nature Biotechnology* (2020). DOI: [10.1038/s41587-020-0513-4](https://doi.org/10.1038/s41587-020-0513-4) , www.nature.com/articles/s41587-020-0513-4

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