

Researchers develop saliva-based test to make COVID-19 easier to track

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LSU Professors Stephania Cormier, a respiratory immunologist, and Rebecca Christofferson, an emerging viruses expert, have developed a saliva-based test to help track COVID-19 in K-12 school children and

teachers in Baton Rouge, Louisiana. This initiative was recently mentioned at congressional hearings in Washington, D.C., where Assistant Secretary for Health at the Department of Health and Human Services Admiral Brett Giroir, MD, testified that such programs are part of the robust surveillance system needed to track COVID-19.

Last spring, Cormier and Christofferson set up the River Road Testing Lab at the LSU School of Veterinary Medicine to help take some of the testing burden off of local hospitals and help the state overcome many hurdles, including supply chain issues and turnaround times for [test](#) results, which have been common challenges nation-wide. Realizing how the discomfort of nasopharyngeal swabs deep inside the nose may prevent some people from seeking out, agreeing to, and/or repeating testing, Cormier began thinking of saliva as an alternative source for samples. Researchers across the country had begun preliminary investigations into saliva as an alternative, with several studies showing comparable test results for saliva and nasopharyngeal swabs.

"This is especially important for repeated testing for surveillance or research because it could decrease the number of people who drop out of a study," Christofferson said.

Nasopharyngeal swabs deep into the nasal cavity are considered the gold standard for many respiratory disease tests. Rarely, however, have they been used on the scale required to continuously test broad populations for something like COVID-19. When the current pandemic started, most established and federally approved testing methods in hospitals, clinics, and labs relied on nasopharyngeal swabs, which, other than the discomfort, come with a few additional caveats—the tests should be administered by [healthcare professionals](#), require a viral or universal transport medium (VTM or UTM) for storage and transport, and frequently make subjects sneeze or cough, which is one of the reasons healthcare workers need to wear full protective gear to take samples.

Saliva-based tests, meanwhile, come with less disadvantages.

For the LSU team, development of the saliva-based test involved not only optimizing the assay, or lab-based process, but also putting together an emergency use authorization and submitting it to the U.S. Food and Drug Administration, or FDA. As part of this, the researchers also had to validate their test and show that the results they were getting with saliva were qualitatively equal to using nasopharyngeal swabs.

"We found saliva-based tests to be as accurate as nasopharyngeal swabs," Christofferson said. "A positive result with a nasopharyngeal [swab](#) meant a positive result with saliva, and so on."

One of the biggest challenges in switching from nasopharyngeal swabs to saliva-based testing will involve a public education component.

"Snot," Christofferson said. "Snot is not saliva. We don't want people to just clear their sinuses and give us what's in there. We basically need you to drool into a tube—no snot. Also, bits of food in the sample is less than ideal."

"The mucus or snot interferes with the assay," Cormier explained. "It took a lot of back and forth with the protocol to get the samples we needed, but we did it."

LSU Professor Stephania Cormier is a respiratory immunologist with a joint position as the Wiener Chair Professor in the LSU Department of Biological Sciences and the LSU Pennington Biomedical Research Center. LSU Assistant Professor Rebecca Christofferson is an emerging viruses expert in the LSU School of Veterinary Medicine's Department of Pathobiological Sciences.

Provided by Louisiana State University

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