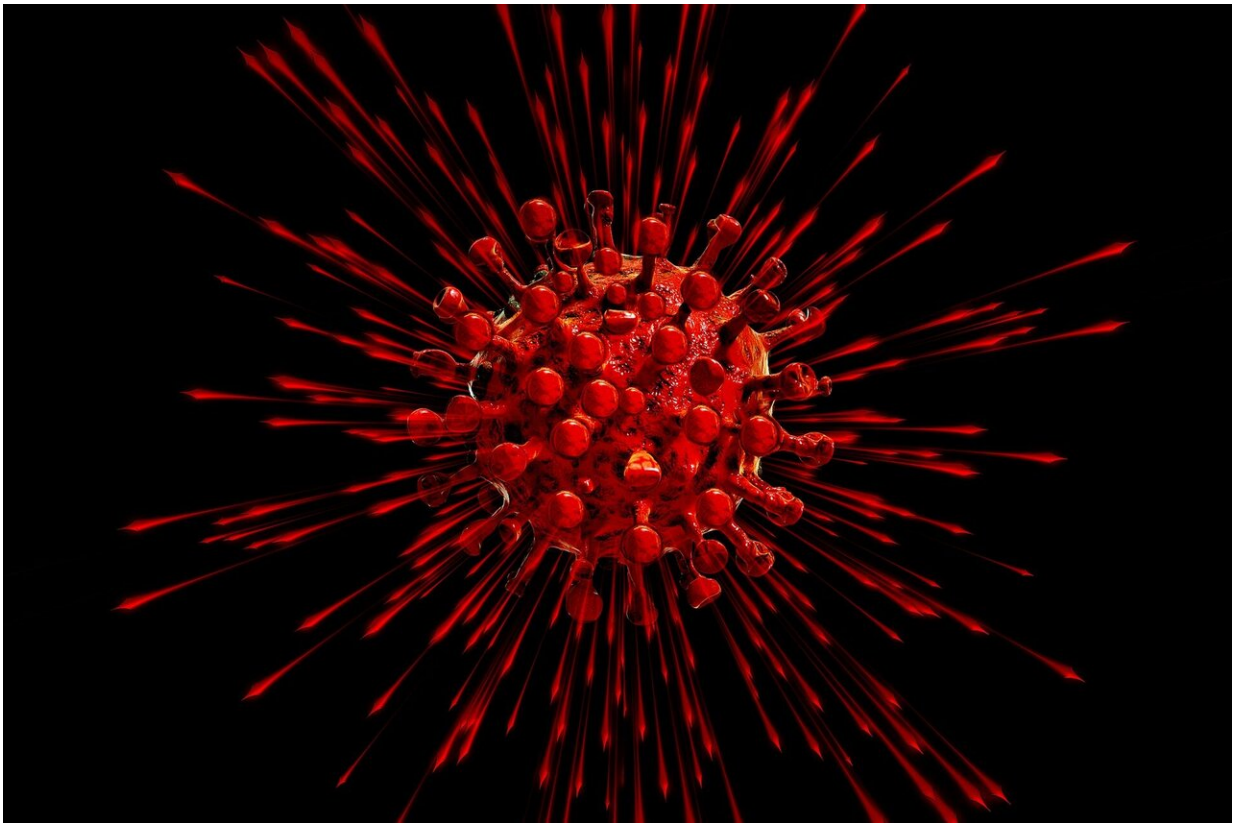
Can salivary glands infected with COVID-19 increase risk for relapse or reinfection?

October 27 2021



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University of Utah Health scientists are leading an effort to determine if salivary glands infected with the virus that causes COVID-19 could diminish a person's long-term immunity to the disease after being

immunized or after recovering from the illness.

The investigation, supported by a two-year grant from the National Institutes of Health, will explore whether salivary glands that have SARS-CoV-2 can lessen the body's ability to make antibodies that would protect it against reinfection by the virus.

Viruses like SARS-CoV-2 are commonly found in salivary glands. How SARS-CoV-2 gets there, though, is still a mystery. Typically, viruses can enter the salivary glands through the moist inner lining of the oral cavity, called mucosa, or travel there via the bloodstream, says Melodie Weller, Ph.D., an assistant professor of dentistry who is leading the new study.

Like some other parts of the body, the salivary glands have what is known as "immune privilege," meaning that even though they are infected, the immune system may not effectively clear pathogens within the glands. As a result, the salivary glands can be a lingering repository for viruses such as SARS-CoV-2 and other viruses.

Proteins that we are exposed to in our digestive tract can trigger what is called "oral tolerance." As a result, our immune system won't produce antibodies to these proteins, such as those in the foods that we eat, Weller says. However, because viruses contain proteins, they too may be overlooked by the immune system in the gastrointestinal tract.

"If viral proteins are released into the saliva—and we swallow a lot of saliva every day—then they may have the capacity to decrease our ability to make antibodies," Weller says. "That can have an impact on how long immunity will last. So, the better we can understand the role of SARS-CoV-2 in the salivary glands, the better we'll understand how reinfection and breakthrough infections after immunization are occurring during this pandemic."

The researchers suspect that SARS-CoV-2 released from the salivary glands may inhibit the production of antibodies—and, as a result, increase the risk of relapse or reinfection. They also could limit the long-term effectiveness of vaccines.

Weller and colleagues are testing this hypothesis in mice, expressing SARS-CoV-2 viral proteins in the salivary glands. They plan to vaccinate these animals to see how they respond.

"If they're getting viral protein exposure in the gut through swallowing saliva, then we will likely see a decrease in immunity or a decrease in the duration of the immune response," Weller says.

Provided by University of Utah Health Sciences