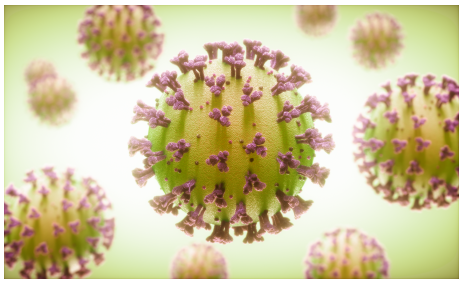

An antiviral polymer that enables nasal spray to protect against COVID

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Meet the Inventors

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Department

Chemistry

External Link(s)

- From the lab of Stephen Craig
- From the lab of Scott Danielsen

Unmet Need

Despite the availability of effective intramuscular vaccines, COVID continues to spread around the globe. Intramuscular shots do a good job of reducing disease severity and preventing hospitalization, but they are difficult to ship, store, and administer en masse. The intramuscular shot prompts an immune response that circulates neutralizing antibodies through the bloodstream, however it takes time for the antibodies to present at high enough levels in the nose and lungs to block COVID at the site of infection. In the time it takes antibodies to circulate, there is an opportunity for COVID to cause illness and spread. Intramuscular vaccines also require expensive shipping, storage, and must be administerd by needle, which can be issues for rural or low-resource areas. There is a need for a COVID antiviral that allows for easier distribution along with the ability to provide rapid protection in the mucosal tissue of the nose and respiratory tract.

Technology

Duke and MIT inventors have developed an antiviral polymer that is active against SARS-CoV-2. This polymer is intended to be used as an ingredient that can more effectively protect individuals from COVID, such as by formulating it into a nasal spray that can be taken before risk of exposure. Specifically, this is a mucin-mimetic associating brush polymer that includes an active SARS-CoV-2 inhibitor at the brush chain end. This has been demonstrated in cellular studies using real-time PCR and $TCID_{50}$ assays.

Advantages

- Can be formulated for applications such as a nose spray that offers protection from SARS-CoV-2
- Could replace the use of masks for certain situations or offer additional protection when used together
- Demonstrated effectiveness in simulated infectivity assays