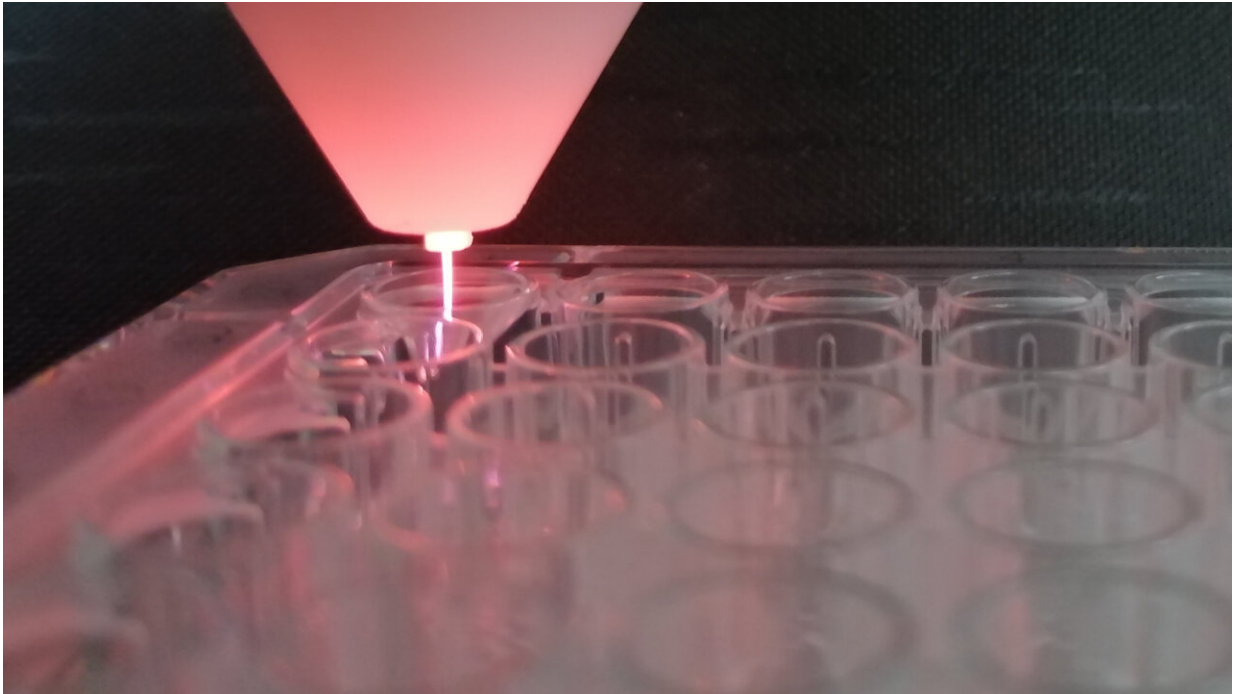


Cold physical plasma kills coronaviruses

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Prototype of the newly developed INP plasma jet for combating viruses Credit: INP

A Greifswald research team from the Center of Excellence ZIK plasmatis at the Leibniz Institute for Plasma Science and Technology e.V. (INP) was able to demonstrate for the first time in laboratory experiments the inactivation of coronaviruses by physical plasma. The new method promises innovative therapies for the current pandemic and other infectious diseases.

Physical plasma, the so-called fourth state of matter, has been finding its way into medicine for several years. Clinical successes are increasingly being recorded, particularly in the healing of chronic wounds. The effectiveness is based, among other things, on the ability of cold physical plasma to effectively kill pathogens and thus fight wound infection.

Prevention and control of infections have become more important as a result of the COVID-19 [pandemic](#). More than ever, new measures and approaches are needed to protect people and [health systems](#) from the consequences of the pandemic. Cold physical plasma can also play a role here. The effectiveness of plasma against a wide range of microorganisms, including multi-resistant pathogens, has been demonstrated many times. In contrast, there are comparatively few studies on the effectiveness against viruses.

In Greifswald, it has now been shown that the ability of viruses to penetrate cells is significantly reduced after contact with a newly developed plasma jet. In the specific experiment, hepatitis viruses from mice (MHV-A59-eGFP), which belong to the group of coronaviruses, were treated. The effect is due to [free radicals](#) that are formed in the plasma.

Prof. Dr. Thomas von Woedtke, head of plasma medicine at INP, says, "Our goal is a [plasma](#) device that can be used to combat viruses such as SARS-CoV-2 directly on the oral mucosa. The laboratory results are an important step in this direction. We were able to identify the mechanism of inactivation of the viruses. From this, a variety of new, innovative approaches for the therapy and prevention of pandemics and infections in general can be derived."

The study is published in *Free Radical Biology and Medicine*.

More information: Daniel M. Mrochen et al, Toxicity and virucidal

activity of a neon-driven micro plasma jet on eukaryotic cells and a coronavirus, *Free Radical Biology and Medicine* (2022). DOI: [10.1016/j.freeradbiomed.2022.08.026](https://doi.org/10.1016/j.freeradbiomed.2022.08.026)

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