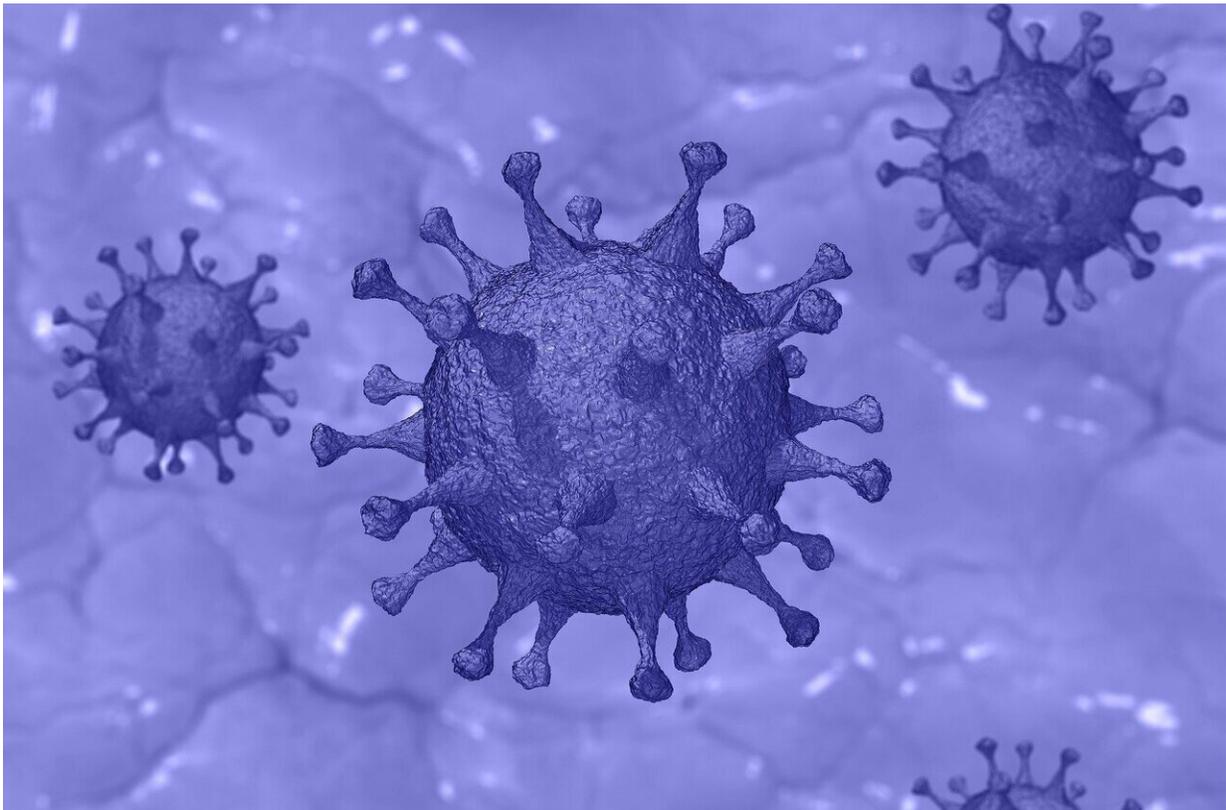


Mass screening method cuts COVID-19 testing costs

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Using a new mathematical approach to screen large groups for COVID-19 could be around 20 times cheaper than individual testing, a study suggests.

Applying a recently created algorithm to [test](#) multiple samples in one go reduces the total number of tests needed, lowering the cost of screening large populations for COVID-19, researchers say.

This novel approach will make it easier to spot outbreaks early on. Initial research shows it is highly effective at identifying positive cases when most of the population is negative.

Testing approach

A team of researchers, including the University's inaugural Higgs Chair of Theoretical Physics, Professor Neil Turok, developed the method—called the hypercube algorithm—and conducted the first field trials in Africa.

Tiny quantities taken from individual swabs were mixed to create combined samples and then tested. The team showed that a single positive case could still be detected even when mixed with 99 negative swab results.

If this initial test highlighted that the mixed [sample](#) contained positive cases, then researchers used the algorithm to design a further series of tests. This enabled them to pinpoint individual positive swab results within the combined sample, making it easy to identify people who are infected.

If the initial test results indicated that there were no positive cases in the mixed sample, then no follow-up action was needed.

Regular screening

The new method is best suited to regular screening of a

population—rather than testing individual patients—and may help to significantly lower testing costs, the team says.

So far, the method has been trialed in Rwanda, where it is being used to screen air passengers, and in South Africa, where it is being used to test a leading rugby team regularly.

The study was published in the journal *Nature*. It also involved researchers from the African Institute for Mathematical Sciences (AIMS) and the University of Rwanda.

"We hope our method will enable regular, cost-effective [screening](#) in multiple contexts. By doing so, it could be a game changer in helping us to overcome the COVID-19 pandemic," says Professor Neil Turok, School of Physics and Astronomy.

More information: Leon Mutesa et al. A pooled testing strategy for identifying SARS-CoV-2 at low prevalence, *Nature* (2020). [DOI: 10.1038/s41586-020-2885-5](https://doi.org/10.1038/s41586-020-2885-5)

Provided by University of Edinburgh

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