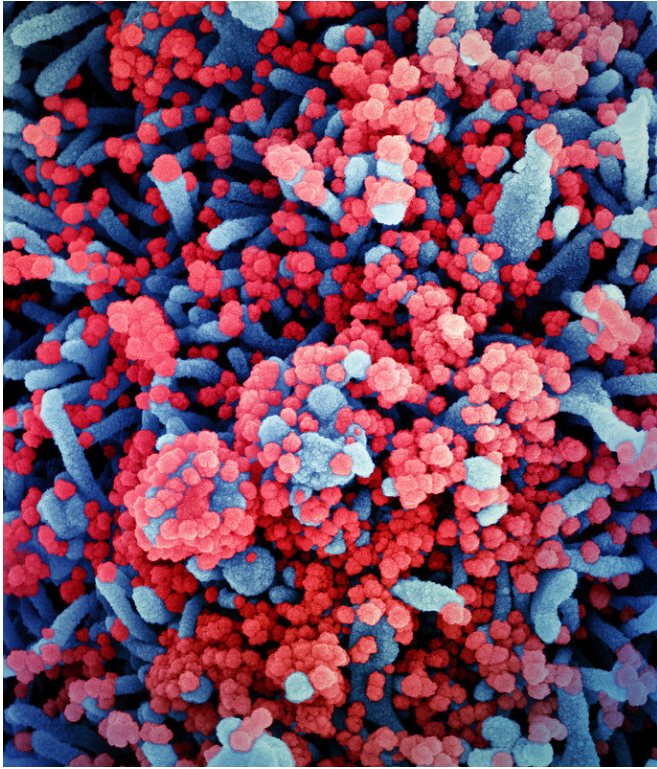


# What we know about South Africa's coronavirus variant

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Colorized scanning electron micrograph of a cell (blue) heavily infected with SARS-CoV-2 virus particles (red), isolated from a patient sample. Image captured at the NIAID Integrated Research Facility (IRF) in Fort Detrick, Maryland. Credit: NIAID

A new coronavirus variant discovered by South African scientists is fuelling a surge of infections nationwide and raising global concern.

Here is what we know about the variant, dubbed 501Y.V2:

## When was it discovered?

South African Health Minister Zweli Mkhize announced on December 18 that the government had advised the UN's World Health Organization

(WHO) of a new variant.

It was found by scientists led by the Kwazulu-Natal Research Innovation and Sequencing Platform (KRISP), which discovered that it had been dominating samples collected over the past two months.

The South African scientists also shared their findings with authorities in Britain, where a similar variant was spreading.

## Where did it come from?

Scientists stress that mutation in [virus strains](#) is an expected phenomenon—the microbe evolves in order to survive.

In an interview, KRISP bioinformatician Houriiyah Tegally said the variant may have come "from immunocompromised patients, whose [immune system](#) has a harder time suppressing infections."

"The virus replicates many more times in these patients and... that's how such a case of escape (to another human) can happen," she said, recalling the high numbers of immunocompromised patients in South Africa, with HIV or TB.

Peter Horby, professor of emerging [infectious diseases](#) at the University of Oxford, has also suggested immunosuppressed patients as a potential source for new [mutations](#).

## What makes the variant different?

The 501Y.V2 variant "has a number of mutations on its spike protein, which allows the virus to infect humans and also creates an immune response," Tegally said.

As a result, it "seems to be more transmissible"—but also "seems to be able to evade (antibodies) better".

Wendy Barclay, head of the department of infectious disease at Imperial College London, also said in December that changes on the spike protein "would make it easier for the virus to enter cells, and could biologically explain an increase in transmission."

The WHO has said that while the South African variant shares the 501Y mutation with the strain spreading in Britain, the two are distinct.

### **Is it more dangerous?**

On December 31, the WHO said it saw no clear evidence that the new variant by itself led to more severe disease or death.

On the other hand, as more people become infected by a more transmissible virus, more risk becoming seriously ill.

"Increased transmissibility eventually translates to a far higher incidence rate, and even with the same mortality, this means significant pressure on health systems," said Bruno Coignard, head of infectious diseases at France's health authority.

Tegally also warned: "This new lineage could also present a higher risk of reinfection... we are still waiting to see the data but it is a very real concern."—How widespread is it in South Africa?

To date, South Africa has reported a total of almost 33,600 deaths from more than 1.2 million cases.

In the past week, 133,294 new infections have been detected.

When the KRISP researchers first spotted the variant in October, "we saw it in 20 percent (of samples)," Tegally said, mounting as high as 80 percent more recently.

"We are waiting to sequence more of the January cases (and) would not be surprised if those samples are close to 90 percent or even more," Tegally said.

### **Will vaccines work against it?**

German vaccine maker BioNTech said last week that antibodies from people who have received the jab "effectively neutralise" virus with the key mutation found in Britain and South Africa.

Tegally cautioned about the limitations of this work, which was conducted in a laboratory.

The study "did not test... one of the mutations we have been worried about, so does not actually say whether its vaccine will work or not," she said.

"We are hopeful as vaccines are meant to be broad-ranged, but for now we just have to wait and see."

### **Should other countries be concerned?**

The South African variant has also been detected in Britain, Finland, France and Israel. Switzerland, Denmark and Britain have banned incoming travellers from South Africa.

But Health Minister Mkhize said last month that there was "no evidence" the South African variant was more dangerous than the British one, which has also spread abroad.

The WHO advocates a "risk-based approach" to international travel and countries should "regularly re-consider" bans and other measures.

"The response from the international community has been quite stigmatising. It is understandable, people are scared... but we should not fear," Tegally said, stressing the need for research.

More mutations may be occurring elsewhere in the world without people knowing, she noted.

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