

Monkeypox found to be evolving at a faster rate than expected

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A team of researchers at the National Institute of Health Doutor Ricardo Jorge in Portugal, working with a colleague at Lusófona University, also in Portugal, has found that the monkeypox virus has been evolving at a

faster rate than expected. In their paper published in the journal *Nature Medicine*, the researchers describe their genetic study of the virus collected from 15 samples.

Monkeypox is a double-stranded DNA virus from the same genus as smallpox, and it mostly infects people in Africa. Scientists have known of its existence since the 1950s. Despite its name, the virus is more commonly found in rodents than monkeys. Prior research has shown that there are two main varieties of monkeypox: West African and Congo Basin—the former is far less deadly and is the clade that has infected several thousand people outside Africa. Prior research has also shown that viruses like monkeypox typically only mutate once or twice in a given year.

In this new effort, the researchers collected samples from 15 patients and subjected them to [genetic analysis](#) to learn more about how quickly the virus is evolving. They found the virus has mutated at a rate six to 12 times as high as was expected. The researchers suggest the sudden accelerated rate of mutation in the virus may be a sign that the virus has developed a new way to infect people—currently, it is believed to move from person to person through close contact with open lesions, through body fluids or by airborne droplets.

In studying the mutations, the researchers found signs suggesting that some of the mutations may have been due to exposure to the [human immune system](#), most particularly enzymes of a type called APOBEC3—they kill viruses by inciting mistakes during copying of [genetic code](#). If some of the viruses survived such an attack and passed on their genes, they would have given [future generations](#) a leg up against the human immune system. And that could explain why the virus has been mutating more rapidly than expected. The researchers also note that the virus may have been circulating at low levels in human communities or spreading among animals in other countries. They also note that the

accelerated rate of evolution could be a response to the crackdown that ensued during the monkeypox outbreak in 2017.

More information: Joana Isidro et al, Phylogenomic characterization and signs of microevolution in the 2022 multi-country outbreak of monkeypox virus, *Nature Medicine* (2022). [DOI: 10.1038/s41591-022-01907-y](https://doi.org/10.1038/s41591-022-01907-y)

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