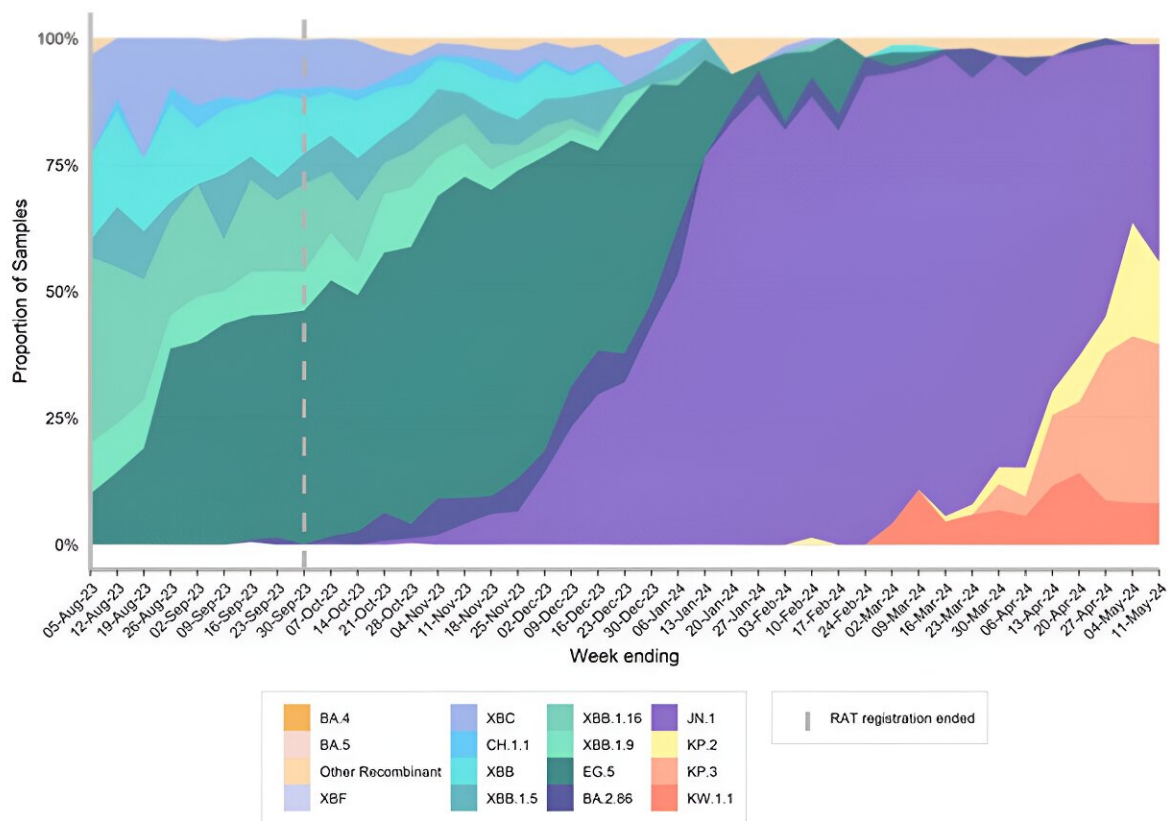


# As COVID cases rise again, what do I need to know about the new FLiRT variants?

May 25 2024, by Lara Herrero

Figure 9. Estimated distribution of COVID-19 sub-lineages in the community, 05 August 2023 to 14 May 2024\*.



The proportion of COVID cases caused by FLiRT subvariants is rising in NSW.  
Credit: [NSW Health](#)

We've now been living with [COVID](#) for well over four years. Although there's still much to learn about SARS-CoV-2 (the virus that causes COVID) at least one thing seems clear: it's here to stay.

From the original Wuhan variant, to delta, to omicron, and several others in between, the virus has continued to evolve.

New variants have driven repeated waves of infection and challenged doctors and scientists seeking to understand this changing virus' behavior.

Now, we are faced with a new group of variants, the so-called "FLiRT" variants, which appear to be contributing to [a rising wave](#) of COVID infections around Australia and elsewhere. So where have they come from, and are they cause for concern?

## **A descendant of omicron**

The FLiRT variants are a group of subvariants of [JN.1](#) from the omicron lineage.

JN.1 was detected in [August 2023](#) and declared [a variant of interest](#) by the World Health Organization in December 2023. By early 2024, it had become the most dominant variant in Australia and much of the rest of the world, driving large waves of infections.

As new variants emerge, scientists work hard to try to understand their potential impact. This includes sequencing their genes and assessing their potential to transmit, infect and cause disease.

In late 2023 scientists detected a range of subvariants of JN.1 [in wastewater](#) in the United States. Since then, these JN.1 subvariants, including KP.1.1, KP.2 and KP.3, have popped up and become more common around the world.

But why the name FLiRT? Sequencing of these subvariants revealed a number of new mutations in the virus' [spike protein](#), including [F456L](#), [V1104L](#) and [R346T](#). The name FLiRT was coined by combining the letters in these mutations.

The spike protein is a crucial protein on the surface of SARS-CoV-2 that gives the virus its spiky shape and which it uses to attach to our cells. Amino acids are the [basic building blocks](#) that combine together to form proteins and the spike protein is [1,273 amino acids long](#).

The numbers refer to the location of the mutations in the spike protein, while the letters designate the [amino acid mutation](#). So for example, F456L denotes a change from F (an amino acid called phenylalanine) to L (the amino acid leucine) at position 456.

## **What do we know about FLiRT's characteristics?**

The regions of the spike protein where the mutations have been found are important for two main reasons. The first is antibody binding, which influences the degree to which the [immune system](#) can recognize and neutralize the virus. The second is virus binding to host cells, which is required to cause infection.

These factors explain why some experts have suggested the FLiRT subvariants may be [more transmissible](#) than earlier COVID variants.

There are also very early suggestions the FLiRT subvariants could [evade immunity](#) from prior infections and vaccination better than the parental

JN.1 variant. However, this research is yet to be peer-reviewed (independently verified by other researchers).

In more [positive news](#), there's no evidence the FLiRT variants cause more severe disease than earlier variants. Still, that doesn't mean catching a COVID infection driven by FLiRT is risk-free.

Overall though, it's very early days in terms of published research on these new FLiRT subvariants. We will need peer-reviewed data to understand more about FLiRT's characteristics.

## The rise of FLiRT

In [the US](#), FLiRT has overtaken the original JN.1 [variant](#) as the dominant strain. The latest data from the US suggests the original JN.1 is making up less than 16% of cases.

While the FLiRT subvariants were detected in Australia more recently, they appear to be gaining traction. For example, [NSW Health data](#) up to mid May showed the proportion of KP.2 and KP.3 samples was continuing to increase.

In other parts of the world, such as the United Kingdom, the FLiRT subvariants are similarly [on the rise](#).

In Australia, as temperatures continue to drop, and we head into the winter months, respiratory viruses [commonly increase](#) in circulation and case numbers peak.

So it is anticipated that the number of COVID cases will rise. And with the FLiRT subvariants showing evidence of increased "fitness," meaning they present a stronger challenge against our body's immune defenses, it's possible they will soon take over as the dominant subvariants

circulating in Australia.

## How can I stay protected?

As the FLiRT variants are descended from omicron, the [current booster](#) on offer in Australia, against omicron XBB.1.5, is likely to offer substantial protection. Although it's not guaranteed to stop you becoming infected, COVID vaccines continue to provide strong protection against [severe disease](#). So if [you're eligible](#), consider getting a booster to protect yourself this winter.

SARS-CoV-2 is now [an endemic virus](#) meaning it will continue to circulate around the world. To do this, the virus mutates—usually only slightly—to survive.

The new FLiRT subvariants are excellent examples of this, where the virus mutates enough to continue to circulate and cause disease. So far there is no suggestion these subvariants are causing more severe illness. It's more likely they will cause people to catch COVID yet again.

While the information we have at this stage doesn't give us significant cause for concern about the FLiRT variants specifically, we are nonetheless facing [rising COVID infections](#) once more. And we know people who are older or vulnerable, for example due to medical conditions that compromise their immune system, continue to be at greater risk.

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