News explainer

uploaded to the popular GISAID data platform since January 2020. By contrast, researchers have uploaded about 1.6 million sequences of the influenza virus to GISAID's EpiFlu database since May 2008.

Still, Rambaut says, many questions remain about how SARS-CoV-2 is evolving, because sequencing is nearly absent in some parts of the world, and some countries with raging outbreaks are scaling back genomic surveillance.

Could Omicron's subvariants, such as BA.4, eventually receive Greek names?

Yes, although it hasn't happened yet. Some researchers argue that the Omicron subvariants currently fuelling surges, such as BA.4 and BA.2.12.1, deserve simpler names to aid communication with governments and the public at a time when regard for COVID-19 control measures, such as face masks, is waning. They also point out that unlike Delta's subvariants — which were not discussed much in the media — BA.4 and BA.2.12.1 can overcome immunity provided by earlier infections with other Omicron subvariants. This was unexpected, says Houriiyah Tegally, a bioinformatician at the Centre for Epidemic Response and Innovation in Stellenbosch, South Africa. "Everyone thought that only new variants would cause new waves, but now that we're seeing that Omicron can do it, maybe we should adapt the system of naming," she suggests.

But the WHO is so far resisting this idea. WHO virologist Lorenzo Subissi says that the capacity for immune evasion isn't wildly different between Omicron subvariants. He adds that the agency's assessment could change if future studies prove that an Omicron subvariant causes more severe disease than other Omicron varieties. The technical lead of the WHO's COVID-19 response, Maria Van Kerkhove, adds that the agency also doesn't recommend swapping a technical label for a Greek name in the hope of spurring leaders to take the ongoing pandemic more seriously. "This is already a scary virus, it is still killing huge numbers of people unnecessarily," she says, suggesting that world leaders should already be paying attention.

By Amy Maxmen

INDIGENOUS KNOWLEDGE REVEALS HISTORY OF FIRE-PRONE FOREST

Native American tribes help reconstruct tree density and fire history in the Klamath Mountains, California.

By Jude Coleman

Indigenous oral accounts have helped scientists to reconstruct a 3,000-year history of a large fire-prone forest in California. The results suggest that parts of the forest are denser than ever before, and are at risk of severe wildfires (C. A. Knight *et al. Proc. Natl Acad. Sci. USA* **119**, e2116264119; 2022). The research is part of a growing effort to combine Indigenous knowledge with other scientific data to improve understanding of ecosystems.

Wildfires are a substantial threat to Californian forests. Clarke Knight, a palaeo-ecosystem scientist at the US Geological Survey in Menlo Park, California, and her colleagues wanted to understand how Indigenous communities helped to shape the forest by managing this risk in the state's lush western Klamath Mountains. Specifically, they studied Indigenous peoples' use of cultural burning — small, controlled fires that keep biomass low and reduce the risk of more widespread burning.

"When I was a little kid, my grandmother used to burn around the house," says Rod Mendes, fire chief for the Yurok Tribe fire department, whose family is part of the Karuk Tribe of northern California. The Karuk and Yurok tribes have called the Klamath Mountains home for thousands of years.

DAVID HOFFMANN/ALAMY

Controlled fires can reduce wildfire risk.

To map the region's forest history, the team drew on historical accounts and oral histories from Karuk, Yurok and Hoopa Valley Tribe members collected by study co-author Frank Lake, a US Forest Service research ecologist in Arcata, California, and a Karuk descendant, as part of his PhD thesis in 2007. These accounts described the tribes' fire and land use. For instance, members lit small fires to keep trails clear; this also reduced the amount of vegetation, preventing expansion of wildfires from lightning strikes.

Knight says that it was important to collaborate with the tribes, given their knowledge of the region.

The researchers also analysed sediment cores collected near two low-elevation lakes in the Klamath Mountains that are culturally important to the tribes. Layers of pollen in the cores were used to infer the approximate tree density in the area at various times, and modelling helped to date the cores so they could be used to estimate how that density changed.

The team also measured charcoal in the cores' layers, which helped to map fluctuations in the amount of fire in the region. Burn scars on tree stumps pointed to specific instances of fire between 1700 and 1900. Because the stumps' rings serve as an ecological calendar, the researchers were able to compare periods of fire with corresponding tree-density data. They then pieced together how this density fluctuated with fire incidence. Although these empirical methods could not specifically confirm that the fires were lit by the tribes, patterns suggested when this was more probable.

Knight and her team show that the tree density in this region of Klamath Mountains started to increase as it was colonized, partly because the European settlers prevented Indigenous peoples from practising cultural burning. In the twentieth century, total fire suppression became a standard practice, and fires were extinguished or prevented — although controlled burns are currently used in forest management. The team reports that in some areas, the tree density is higher than it has been for thousands of years.

A dense forest isn't necessarily a healthy one, says Knight. Douglas firs (*Pseudotsuga menziesii*), which dominate the lowland Klamath forests, are less fire resilient and more prone to calamitous wildfires.