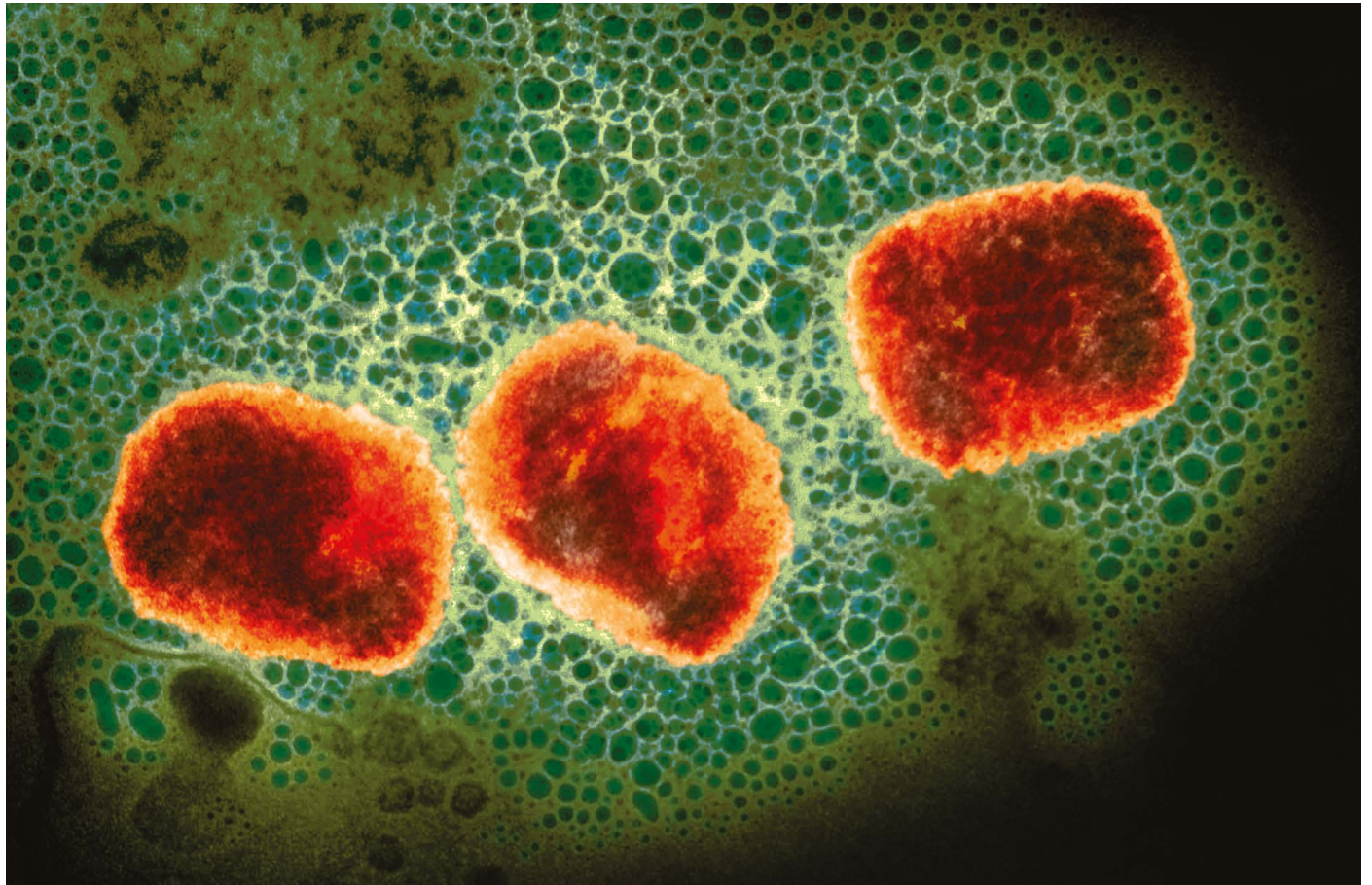


News in focus



Monkeypox virus particles (artificially coloured).

MONKEYPOX VIRUS: DANGEROUS STRAIN GAINS ABILITY TO SPREAD THROUGH SEX, DATA SUGGEST

A cluster of mpox cases in the Democratic Republic of the Congo sparks worries of a wider outbreak.

By Max Kozlov

A virulent strain of the monkeypox virus has gained the ability to spread through sexual contact, new data suggest. This has alarmed researchers, who fear a reprise of the worldwide mpox outbreak of 2022.

Evidence from past outbreaks indicates that this strain, called clade I, is more lethal than the separate strain that sparked the 2022 outbreak. Clade I has for decades caused small outbreaks, often limited to a few households

or communities, in Central Africa. Sexually acquired clade I infections had not been reported before last year.

But starting in late 2023, a clade I strain that seems to spread through sexual contact has caused a cluster of infections in a conflict-ridden region of the Democratic Republic of the Congo (DRC), in Central Africa. A preprint posted on 15 April reports that 241 suspected and 108 confirmed infections are connected to this outbreak (E. H. Vakaniaki *et al.* Preprint at medRxiv <https://doi.org/ms3d;2024>) – and testing capacity is limited, so there are probably

many more cases. Almost 30% of the confirmed infections were in sex workers.

Adding to the challenges, the region is facing a humanitarian crisis, and the DRC is contending with the aggressive spread of other diseases, such as cholera. The combination means there is a “substantial risk of outbreak escalation beyond the current area”, says Anne Rimoin, an epidemiologist at the University of California, Los Angeles, who has worked on mpox outbreaks in the DRC since 2002.

The monkeypox virus can cause painful, fluid-filled lesions on the skin and, in severe

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cases, death. (Although the disease was renamed mpox in 2022, the virus is still called monkeypox virus.) The virus persists in wild animals in several African countries, including the DRC, and occasionally spills over into people.

Unheeded warnings

The first large reported outbreak with human-to-human transmission occurred in 2017 in Nigeria and was caused by a strain called clade II, which is less virulent than clade I. The outbreak caused more than 200 confirmed and 500 suspected cases. At the time, researchers cautioned that the clade II strain might have adapted to spread through sexual contact.

Their warnings were not heeded; in 2022, a global outbreak driven, in part, by sexual contact prompted the World Health Organization (WHO) to declare it a public-health emergency. The outbreak, which is still ongoing, is caused by a clade II strain and has infected more than 95,000 people and killed more than 180.

Although mpox infections have waned globally since 2022, they have been trending upwards in the DRC: last year, the country reported more than 14,600 suspected infections and more than 650 deaths. In September, a new cluster of suspected clade I infections arose in the DRC's South Kivu province. This cluster is particularly concerning researchers because many infections have occurred in sex workers, suggesting that the virus has adapted to transmit readily through sexual contact.

This could lead to faster human-to-human spread, potentially with few symptoms, says Nicaise Ndemi, a virologist at the Africa Centres for Disease Control and Prevention who is based in Addis Ababa. "The DRC is surrounded by nine other countries – we're playing with fire here," he says.

Health officials are so concerned that representatives of the DRC and 11 nearby countries met last month to plan a response and to commit to stepping up virus surveillance. Only about 10% of the DRC's suspected mpox cases last year were tested, owing to limited testing capacity. Health officials "don't have a full picture of what's going on", Ndemi says.

Genetic analyses of the virus responsible for the outbreak uncovered mutations such as the absence of a large chunk of the virus's genome, which researchers have shown is a sign of adaptation (S. Monzón *et al. Nature Commun.* **15**, 3059; 2024). This has led the study's authors to give a new name to the strain circulating in the province: clade Ib.

Vaccines and treatment needed

Making matters more fraught, South Kivu borders Rwanda and Burundi and is grappling with "conflict, displacement, food insecurity and challenges in providing adequate humanitarian assistance", which "might represent fertile ground for further spread of mpox", the WHO

warned last year.

In 2022, many wealthy countries offered vaccines against smallpox, which also protect against mpox, to individuals at high risk of contracting the disease. But few vaccine doses have

"The DRC is surrounded by nine other countries – we're playing with fire here."

reached African countries, where the disease's toll has historically been highest.

While the DRC weighs up regulatory approval for these vaccines, the United States has committed to providing the DRC with enough doses to inoculate 25,000 people, and Japan has said it will also provide vaccines, says Rosamund Lewis, technical lead for mpox at the WHO. But a vaccination drive in the DRC would require

hundreds of thousands – if not millions – of doses to inoculate every individual at high risk of infection, she says.

It's not clear how much protection these vaccines will provide against clade I mpox, but Andrea McCollum, a poxvirus epidemiologist at the US Centers for Disease Control and Prevention in Atlanta, Georgia, says that data from animal studies are promising.

Researchers are also conducting a trial in the DRC of tecovirimat, an antiviral drug that is thought to be effective against the monkeypox virus. Results are expected in the next year, McCollum says.

The WHO and the CDC have helped to procure equipment that will allow for more rapid diagnosis of the disease in the DRC, especially in rural areas, Lewis says. She adds that the rapid mobilization of African health officials gives her hope that the outbreak can be controlled before the clade Ib strain starts spreading elsewhere.

ARE BEES SENTIENT? ANIMAL CONSCIOUSNESS NEEDS A RETHINK

Scientists declare that elements of consciousness are 'a realistic possibility' in reptiles, insects and molluscs.

By Mariana Lenharo

Crows, chimps and elephants: these and many other birds and mammals behave in ways that suggest they might be conscious. And the list does not end with vertebrates. Researchers are expanding their investigations of consciousness to a wider range of animals, including octopuses and even bees and flies.

Armed with such research, a coalition of scientists is calling for a rethink in the animal-human relationship. If there's "a realistic possibility" of "conscious experience in an animal, it is irresponsible to ignore that possibility in decisions affecting that animal", the researchers write in a document they call The New York Declaration on Animal Consciousness. Issued on 19 April during a meeting in New York City, the declaration also says that there is a "realistic possibility of conscious experience" in reptiles, fish, insects and other animals that have not always been considered to have inner lives, and "strong scientific support" for aspects of consciousness in birds and mammals.

As the evidence has accumulated, scientists have been "taking the topic seriously, not dismissing it out of hand as a crazy idea

in the way they might have in the past", says Jonathan Birch, a philosopher at the London School of Economics and Political Science and one of the authors of the declaration.

The document, which had around 40 signatories on day it was published, doesn't state that there are definitive answers about which species are conscious. "What it says, is there is sufficient evidence out there such that there's a realistic possibility of some kinds of conscious experiences in species even quite distinct from humans," says Anil Seth, director of the Centre for Consciousness Science at the University of Sussex near Brighton, UK, and one of the signatories. The authors hope that others will sign the declaration and that it will stimulate both more research into animal consciousness and more funding for the field.

Blurry line

The definition of consciousness is complex, but the group focuses on an aspect of consciousness called sentience, often defined as the capacity to have subjective experiences, says Birch. For an animal, such experiences would include smelling, tasting, hearing or touching the world around itself, as well as feeling fear, pleasure or pain – in essence, what it