



SARS-CoV-2 probably originated in bats, but how it passed to people is being investigated.

THE SCIENTISTS INVESTIGATING THE PANDEMIC'S ORIGINS

The World Health Organization will draw on a diverse team to examine a major mystery about SARS-CoV-2.

By Smriti Mallapaty

An epidemiologist who helped to tie the 2012 outbreak of Middle East respiratory syndrome (MERS) to camels; a food-safety officer who studies how pathogens spread in markets; and a veterinarian who found evidence linking the 2014 West Africa Ebola outbreak to bats roosting in a hollow tree. These researchers are among the team that the World Health Organization (WHO) has assembled to explore the origins of the coronavirus pandemic.

The investigation aims to find out how and when the virus SARS-CoV-2 first infected people. Strong evidence suggests that the coronavirus originated in bats, but its journey to people remains a mystery. Scientists say the team is highly qualified, but its task will be challenging.

“This is an excellent team with a lot of experience,” says Martin Beer, a virologist at the Federal Research Institute for Animal Health in Greifswald, Germany.

The group will be working with researchers in China and professionals from several other international agencies, and will start the search in Wuhan – the Chinese city where

SARS-CoV-2 was first identified – and expand across China and beyond.

The international group comes with a breadth of knowledge. Marion Koopmans is a virologist specializing in molecular epidemiology at the Erasmus University Medical Centre in Rotterdam, the Netherlands. She was on the team that found, in 2013, that dromedary camels were an intermediate host for the virus that causes MERS, which has killed more than 850 people. She has since worked with another team member – Elmoubasher Farag, an epidemiologist at the Ministry of Public Health in Doha – to test camels for MERS antibodies.

During the COVID-19 pandemic, Koopmans has tracked the rapid spread of SARS-CoV-2 in mink farms in Europe. Studies on the pandemic’s origin will need to explore the role of animals kept for fur and food, she says.

Koopmans says that the group is keeping an open mind about how the pandemic started and will not exclude any scenarios, including the unlikely one that SARS-CoV-2 accidentally escaped from a laboratory. Scientists have previously told *Nature* that the virus is likely to have passed from bats to humans, probably through an intermediate animal – but ruling out the lab scenario will be difficult. “Anything

is on the table,” says Koopmans.

Another member, Hung Nguyen, an environment and food-safety researcher at the International Livestock Research Institute in Nairobi, will contribute his knowledge on how pathogens spread in wet markets, similar to the Huanan seafood market in Wuhan, which many of the first people reported to have COVID-19 had visited. Nguyen has investigated how salmonella and other bacteria spread through smallholder farms, slaughterhouses and live-animal markets in his home country of Vietnam and across southeast Asia.

Also on the team is Peter Daszak, president of the non-profit research organization Ecohealth Alliance in New York City, who has spent more than a decade studying coronaviruses. He has worked closely with the Wuhan Institute of Virology (WIV) to test bats for coronaviruses with the potential to spill over into people.

“It is an honour to be part of this team,” says Daszak. “There hasn’t been a pandemic on this scale since the 1918 flu, and we’re still close enough to the origin to really find out more details about where it has come from.”

Another team member, Fabian Leendertz, a veterinary researcher at the Robert Koch Institute in Berlin, will bring his expertise in spillover events. In April 2014, Leendertz visited Meliandou village in Guinea, months after a two-year-old died of Ebola – the first person reported to be infected in West Africa.

Work by Leendertz, including interviews with locals and environmental sampling, suggests that the outbreak started in bats that lived in a hollow tree where the children used to play. The tree was burnt down days before his arrival and no Ebola virus was detected in nearby bats, which he says highlights the difficulties of finding an outbreak’s beginnings.

Considerable time has passed since the emergence of COVID-19, and many people have only mild or no symptoms, which will make it challenging to identify the first infected person, says Leendertz.

Other team members include researchers from Denmark, the United Kingdom, Australia, Russia and Japan.

Although the team members are highly qualified, eight out of ten are men and investigators from Europe dominate the group; none is from Africa or South America, says Angela Rasmussen, a virologist at Georgetown University, who is based in Seattle, Washington. “It could be more representative of the larger global scientific community,” she says.

She also says that Daszak’s ties to the WIV could raise a conflict of interest, given the unsubstantiated claims that the virus accidentally leaked from the lab.

Daszak says that he has been transparent about his work in China. The trust he has built with researchers there will help the team to gain a deeper understanding of the pandemic’s early days, he says.

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