

## New reovirus isolated

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CSIRO scientists have played a key role in discovering that bats are the likely host of a new virus that can cause a serious but apparently non-fatal respiratory tract illness in humans.

As reported today in the internationally renowned journal Proceedings of the National Academy of Sciences of the United States of America (PNAS), the discovery was made by a team from CSIRO Livestock Industries' Australian Animal Health Laboratory (AAHL) in Geelong, Victoria, and the National Public Health Laboratory in Selangor, Malaysia.

The new virus was named Melaka after the location in Malaysia where it was isolated in early 2006 from a human patient who showed signs of fever and acute respiratory illness. This is the only recorded case of the Melaka virus infecting a human. Melaka virus is a type of reovirus (Respiratory Enteric Orphan viruses) that was first isolated in humans in the early 1950s and so named because they were not associated with any known disease.

According to the leader of the CSIRO team, Dr Linfa Wang, although the symptoms were severe and persisted for four days, there is no evidence to suggest Melaka virus is fatal.

The scientists at AAHL used scientific techniques including virology, serology, electron microscopy and molecular biology to establish whether the virus was a reovirus and if so, to what species group it belonged.

“There are a number of different reovirus groups, however only two reoviruses have been isolated from bats in the past,” Dr Wang says.

In 1968, Nelson Bay reovirus was isolated from a fruit bat (*Pteropus poliocephalus*) in New South Wales, Australia while in 1999 another reovirus, Pulau virus, was isolated from fruit bats (*Pteropus hypomelanus*) on Tioman Island in Malaysia.

“Our research indicates Melaka virus is closely related to the two previously discovered bat-borne reoviruses, in particular Pulau virus,” Dr Wang says.

The paper, entitled A previously unknown reovirus of bat origin is associated with an acute respiratory disease in humans, identifies three significant discoveries including evidence suggesting Melaka virus can not only infect humans and cause disease, but can be transmitted from one person to another.

Retrospective research identified several other members in the same family developed similar symptoms approximately one week later and showed serological evidence of infection with the same virus. “The delay in symptom onset suggests human-to-human transmission took place,” Dr Wang says.

According to the leader of the Malaysian team, Dr Kaw Bing Chua, bats were examined as a host, not only because previous unknown viruses have been found to have originated in bats, but because epidemiological tracing revealed the family were exposed to a bat in the house one week prior to the patient showing clinical symptoms of the virus.

“Bats are known reservoir hosts of an increasing number of zoonotic viruses (animal viruses capable of also infecting people), but they rarely display clinical signs of infection,” Dr Wang says. “Although we have

not yet obtained direct experimental evidence that Melaka virus originated in bats, we suspect this is the case because not only were the family exposed to a bat, Melaka virus is also closely related to two other bat borne reoviruses - Pulau and Nelson Bay virus.”

AAHL plans to continue working closely with the group in the National Public Health Laboratory and other Malaysian scientists to identify how widely distributed the virus is and how many related viruses there are in the bat reovirus group.

“This type of groundbreaking discovery, the discovery of Melaka virus, is going to make future diagnoses of unknown viruses more accurate, as we can now add it to the list of new and emerging viruses,” Dr Wang says.

Source: CSIRO Australia

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