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FAQ on bats and COVID-19 in Malaysia

What exactly is COVID-19? What's a coronavirus?

Coronaviruses are a large family of viruses, so named because they're shaped like a ball covered by protuberances that give it a crown-like appearance (from the Latin *corona* meaning crown). There are many coronaviruses in nature, which are found everywhere, in all kinds of animals (e.g. alpacas, birds, bats, camels, cats, civets, cows, hedgehogs, mice, etc.) including humans. Many coronaviruses are actually harmless to humans. However, some coronaviruses are harmful and can cause illnesses in humans which usually affect the respiratory system, and these illnesses range from mild to severe. The common cold, Middle East Respiratory Syndrome (MERS) and SARS (Severe Acute Respiratory Syndrome) are all caused by coronaviruses. COVID-19 is a respiratory disease caused by SARS-CoV-2, a new type of virus that was not previously identified or detected by scientists, hence why it's referred to as a "novel coronavirus".

Should I be worried about bats in Malaysia causing a COVID-19 outbreak? If there are bats living near me should they be tested?

NO. So far the SARS-CoV-2 virus (also referred to as nCoV-2019) has NOT actually been detected in bats, and it is NOT known to occur in Malaysian bats. There is NO EVIDENCE of similar viruses, MERS-like viruses, or SARS-like viruses in Malaysian fruit bats (Family: Pteropodidae; including flying foxes *Pteropus* spp.). Although viruses similar to SARS-CoV and the new SARS-CoV-2 has been detected in insectivorous bats (*Rhinolophus* spp.) in China, in Malaysia these bats live away from humans, and avoid contact with humans. Scientific research has not found evidence the virus that causes SARS jumped directly from bats to humans; civets were actually the vectors of the original SARS outbreak by transmitting the virus to humans due to the conditions found in wildlife markets, farms and restaurants, where such live animals and their meat were bred and sold. Even when bats are found near humans in houses, villages and urban areas, it's very rare for humans to catch a virus directly from bats; virus transmission requires direct physical contact such as a bite, scratch, or ingestion of bat bodily fluids. Bats carrying viruses in the wild, undisturbed by people, are a minimal threat to human health; humans have a statistically higher chance of catching diseases from domestic animals such as cats and dogs.

But scientists are saying that SARS-CoV-2 originated in bats?

No. So far there is NO EVIDENCE showing that the COVID-19 outbreak in humans was caused by bats. Scientists who study viruses and viral diseases (virologists) merely speculated that SARS-CoV-2 could have originated in bats, because the virus's genome is very similar (96% similarity, less than the similarity between humans and orang-utans) to another coronavirus (RaT13) found in one insectivorous bat species in China, and genome sequencing suggests that bats may be the original ancestral host for the coronavirus family. However, this does not mean that bats are the direct cause of modern coronavirus infections in humans. RaT13 and SARS-CoV-2 are separated by 40-70 years of evolution, and the spike protein in SARS-CoV-2 that allows it to infect humans is more similar to that of a pangolin coronavirus, not the bat coronavirus. While some scientists have hypothesised that SARS-CoV-2 may be a combination of the bat coronavirus with the pangolin coronavirus, this remains a theory, and it's still possible that other animals might be involved. Therefore, the original animal host of SARS-CoV-2 is still UNKNOWN, and many more animals still need to be sampled for such viruses.





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Indeed, so far there have been no cases of live bats in the wild transmitting harmful coronavirus diseases directly to humans. Usually, a different animal acts as an intermediate host to actually transmit the virus to humans (e.g. pangolins). And, even in cases where a coronavirus may have jumped from a bat to another animal before infecting humans, it is unknown exactly how far back in time this spillover event occurred. It may not have happened recently.

So what caused the COVID-19 outbreak?

Humans. At this point, nobody knows for sure how and why the outbreak happened. We still don't know how exactly the SARS-CoV-2 virus jumped from animals to humans. In fact, current available evidence has shown that the outbreak didn't even originate in the Wuhan market, as has been frequently claimed. The first few infections appear to have originated earlier outside the market, and the disease may have been brought to the market later by infected people. So while several research papers suggest theories, no solid evidence exists to pinpoint the cause and the origin of the outbreak; these are STILL UNKNOWN.

So the wildlife market isn't the problem? It's still OK to hunt and eat wildlife?

Consumption and trade of wild animals, including hunting and killing of wildlife, definitely cause viral spillover and zoonotic disease outbreaks affecting humans. This was the cause of the SARS outbreak, because different animals were brought into close contact with each other and their bodily fluids, in unsanitary conditions, which makes it easier for viruses and diseases to jump from one species to another. These conditions allow animals, that don't normally interact, to spread diseases to one another. So there's always a disease risk whenever humans come into contact with animals, or bring animals into contact with other animals, and wildlife markets are particularly high-risk situations. The best precaution is to avoid touching, killing, eating, or trading wild animals (e.g. flying foxes carry Nipah virus, so do you really want to risk infection by eating/hunting them?). Also avoid keeping wildlife as pets.

Such close contact can also happen when wildlife habitats are destroyed or reduced, and the rapid spread of viruses can be facilitated by industrial farming practices that put stressed animals into close physical contact with each other, even within the same species (e.g. in the case of Nipah virus in Malaysia). In Africa, when humans cleared a cave of bats, the bats returned later with much higher rates of Marburg virus infection, and research has already shown that culling actually accelerates the spread of infection rather than preventing it. Therefore, modern zoonotic spillovers and outbreaks are created by humans and human activities, not animals. It's not the wildlife that's at fault, it's people.

But can I catch COVID-19 or some other virus by eating/touching fruits that are bat-pollinated, such as durians?

No. Viruses cannot be transmitted in this way. These coronaviruses cannot grow in plants. Bats and durian trees have a unique co-evolutionary relationship, where the durian tree has been depending on bats for thousands of years to pollinate its flowers in order to produce healthy fruits. Humans have been consuming durian fruits, enjoying the results of this bat pollination process, for thousands of years without catching viruses from bats. Indeed, many plants need bat pollinators in order to successfully produce healthy fruits and reproduce, and therefore fruit bats play a very crucial role in maintaining healthy ecosystems. In general, you will not catch a virus from bats visiting any flowers/fruits in trees to feed, as long as you do not touch, disturb, or come into physical contact with





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the bats and their bodily fluids. If any physical contact occurs, wash up with water and soap as soon as possible. Do not pick up or eat fruits that have been partially eaten and dropped by bats.

What about researchers that are catching and handling bats? Could they cause outbreaks?

Scientists that study bats, such as those of us in Rimba's [Project Pteropus](#), follow health and safety guidelines which include getting appropriate vaccinations, and wearing suitable Personal Protective Equipment (PPE), such as gloves, to touch and handle bats. We do not catch or handle bats without getting relevant training, and prior approval and permits from the authorities. Thousands of scientists across the world catch and handle bats safely everyday.

If I have bats living near me or that come near me, how do I keep myself safe from viruses and diseases?

It's very simple and easy to co-exist safely with bats - if you leave bats alone and keep your distance from them, the risk of disease transmission is incredibly low. If you try to kill, disperse, or interact with bats, you could actually increase the risk of virus transmission. When animals are happy and calm they are less likely to transmit viruses, whereas the risk of virus transmission is higher when animals are stressed and panicked. Culling bats is never a solution for disease control, as research has shown that this is ineffective since it can actually increase the risk and speed of disease transmission. Follow these simple guidelines to co-exist safely with bats:

1. Avoid physical contact with bats – do not touch, catch, kill or eat them. If you are scratched or bitten by a bat, consult a doctor.
2. Avoid direct contact with bat bodily fluids e.g. faeces, urine, saliva – if contact occurs, wash off as soon as possible with water and soap.
3. Avoid eating or touching fruits that have been directly touched, eaten and dropped by bats.
4. Avoid standing under roosting or feeding bats – do not disturb or harass bats.
5. If bats are roosting in your house, consult an expert before trying to remove them.

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