

Bats and pangolins in Southeast Asia harbor SARS-CoV-2-related coronaviruses, reveals new study

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While the World Health Organization (WHO) continues its mission to Wuhan investigating the origin and early transmission of SARS-CoV-2,

a new study led by scientists from Duke-NUS Medical School, Singapore, and Chulalongkorn University, Thailand, shows that SARS-CoV-2-related coronaviruses (SC2r-CoVs) are circulating in animals as far away as Thailand. The study, published in *Nature Communications* today, reported that high levels of neutralizing antibodies against the virus were present in both bats and pangolins found in the Southeast Asian country. The study further indicates that more SC2r-CoVs are likely to be discovered in the region. Southeast Asia with its large and diverse bat populations may be a more likely hotspot for such viruses.

"This is an important discovery in the search for the origin of SARS-CoV-2, which was made possible by rapid application of cutting-edge technology through transparent international collaboration," said Dr. Supaporn Wacharapluesadee, from Thai Red Cross Emerging Infectious Diseases Health Science Centre, Faculty of Medicine, Chulalongkorn University, Bangkok Thailand.

In the study, the team examined *Rhinolophus* bats in a Thai cave. SARS-CoV-2 neutralizing antibodies were detected in bats of the same colony and in a pangolin at a wildlife checkpoint in Southern Thailand.

"Our study extended the geographic distribution of genetically diverse SARS-CoV-2-related coronaviruses from Japan and China to Thailand over a 4,800-km range. Cross-border surveillance is urgently needed to find the immediate progenitor [virus](#) of SARS-CoV-2," said Dr. Chee Wah Tan, Senior Research Fellow with Duke-NUS' Emerging Infectious Diseases (EID) program and co-author of this study.

The team conducted serological investigations using the SARS-CoV-2 surrogate virus neutralization test (sVNT) developed at Duke-NUS in early 2020.

"Our study demonstrates that our SARS-CoV-2 surrogate virus

neutralization test, developed mainly for determining neutralizing antibodies in humans to monitor vaccine efficacy and detect past infections, can also be critical for tracing the animal origin and animal-human spillover events," said Professor Wang Linfa from Duke-NUS' EID program and corresponding author of this study.

Prof Wang's team invented the sVNT assay, trade named cPass, which has been granted Emergency Use Authorisation by the US FDA to determine SARS-CoV-2-neutralizing antibodies in human sera, due to its good performance concordance with live virus-based assays.

"Studies like this are crucial in furthering our understanding of the many SARS-CoV-2-related viruses that exist in the wild. This work is also timely as investigations into the origins of SARS-CoV-2 are ongoing and may provide further leads on the origin of this outbreak. Such studies also play a key role in helping us be better prepared against future pandemics as they provide a more detailed map of zoonotic threats, " said Prof Patrick Casey, Senior Vice Dean for Research at Duke-NUS.

More information: Wacharapluesadee, S et al. Evidence for SARS-CoV-2 related coronaviruses circulating in bats and pangolins in Southeast Asia. *Nat Commun* 12, 972 (2021).
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