



Published Date: 2022-03-03 21:23:11 CET

Subject: PRO/AH/EDR> COVID-19 update (63): animal, Canada, wild deer

Archive Number: 20220303.8701773

CORONAVIRUS DISEASE 2019 UPDATE (63): ANIMAL, CANADA, WILD DEER

A ProMED-mail post

<http://www.promedmail.org>

ProMED-mail is a program of the

International Society for Infectious Diseases

<http://www.isid.org>

Date: Fri 25 Feb 2022

Source: bioRxiv [preprint, edited]

<https://www.biorxiv.org/content/10.1101/2022.02.22.481551v1>

Citation: Pickering B, Lung O, Maguire F, et al. Highly divergent white-tailed deer SARS-CoV-2 with potential deer-to-human transmission. bioRxiv 2022.02.22.481551; [preprint, not peer reviewed]

Abstract

Wildlife reservoirs of SARS-CoV-2 can lead to viral adaptation and spillback from wildlife to humans. In North America, there is evidence of spillover of SARS-CoV-2 from humans to white-tailed deer, but no evidence of transmission from deer to humans. Through a multidisciplinary research collaboration for SARS-CoV-2 surveillance in Canadian wildlife, we identified a new and highly divergent lineage of SARS-CoV-2. This lineage has 76 consensus mutations including 37 previously associated with non-human animal hosts, 23 of which were not previously reported in deer. There were also mutational signatures of host adaptation under neutral selection. Phylogenetic analysis revealed an epidemiologically linked human case from the same geographic region and sampling period. Together, our findings represent the 1st evidence of a highly divergent lineage of SARS-CoV-2 in white-tailed deer and of deer-to-human transmission.

--
Communicated by:

Mary Marshall

<mjm2020@googlemail.com>

[White-tailed deer (*Odocoileus virginianus*) is the cervid most widely distributed east of the Rocky Mountains. The ACE2 receptor (where SARS-CoV-2 binds to enter the cell) of white-tailed deer is very similar to that of humans, and it was experimentally proven that after intranasal inoculation, deer become infected by SARS-CoV-2, shed the virus, and transmit it to non-inoculated contact deer. Later on, many wild white-tailed deer populations across USA and Canada were found infected at high prevalences with several SARS-CoV-2 variants. These consistent findings strongly suggest that following the introduction of

06.03.22, 20:22

Promed Post - ProMED-mail

SARS-CoV-2 from humans, transmission is occurring among deer in the wild at a rate that makes deer populations a suitable compartment where the virus may be maintained and evolve, and then perhaps spill back to humans or other animals as a new variant.

This new evidence shows that viral evolution is taking place in white-tailed deer, and it also suggests spill-back may be occurring. The significance of this new variant to public health largely depends on its transmissibility and pathogenicity in humans, so surveillance and research efforts should prioritize the production of data relevant to those traits. - Mod.PMB

ProMED map:
United States: <https://promedmail.org/promed-post?place=8701773,106>

See Also

- COVID-19 update (43): animal, USA, wild deer, omicron 20220209.8701357
 - COVID-19 update (451): animal, USA, wild deer 20211230.8700589
 - COVID-19 update (413): animal, Canada, wild deer 20211202.8700020
 - COVID-19 update (373): animal, USA, wild deer, transmission 20211102.8699412
 - COVID-19 update (260): animal, USA, wild deer, exposure, RFI 20210729.8554149
 - COVID-19 update (20): animal, deer, experimental infection 2020
-
- COVID-19 update (536): animal, USA (UT) wild mink, 1st case 20201213.8015608
-pmb/ao/mpp



