

Commentary Commentaire

Seroconversion does not a reservoir host make: No scientific proof to date that dogs are a reservoir for Zika virus

Kenneth Kim

In today's world, in some cases for better and in others for worse, scientific information can be rapidly disseminated and made available for use, interpretation, and extrapolation by the non-scientific public (1). To address recent speculation in a PubMed citation that dogs may serve as a reservoir host for Zika virus (ZIKV), it should be made abundantly clear that to date there is no evidence to indicate that dogs a) are capable of transmitting ZIKV to humans, or b) are a reservoir host for ZIKV (2).

If extrapolation regarding zoonosis is going to be built on a single seroconverted dog from a group of dogs who may also show seroconversion to the cross-reactive human dengue virus, it should not be ignored that dogs are not a competent reservoir for several long-established arboviral flaviviruses including dengue, yellow fever, Japanese encephalitis, West Nile, and St. Louis encephalitis viruses (3). Humans and domestic animals are exposed to a wide range of infectious agents for which we and the animals are not susceptible host species. Seroconversion of an individual does not equate to fulfillment of the myriad biologic requirements that are necessary to establish competency as a reservoir host (4). Although there are always idiosyncratic cases in which an infectious agent is able to gain foothold in an aberrant host species (often associated with individual immune compromise), no such case of canine ZIKV infection exists (5).

To this day the course of human history does show abundant evidence — whether recorded from statesmen (6–8), scientists (9), or Nobel laureates (10), or whispered in homes — for the nobility, affection, and loyalty of man's best friend (11). Yet in the United States alone, over half a million dogs are euthanized annually (12) for no additional reason than overpopulation.

Until meaningful empirical evidence emerges that immunologically unmanipulated dogs can be susceptible to ZIKV, this kinder and already burdened species should be spared undue speculation.

References

1. Narayan P. Your pet may be a dengue carrier. *The Times of India*, May 31, 2012. Available from: <https://timesofindia.indiatimes.com/city/chennai/Your-pet-may-be-a-dengue-carrier/articleshow/13681168.cms> Last accessed October 18, 2017.
2. CDC. Zika and animals. 2016 [2016/08/05 2017/04/09]; Available from: <https://www.cdc.gov/zika/transmission/qa-animals.html> Last accessed October 18, 2017.
3. Go YY, Balasuriya UB, Lee CK. Zoonotic encephalitides caused by arboviruses: Transmission and epidemiology of alphaviruses and flaviviruses. *Clin Exp Vaccine Res* 2014;3:58–77.
4. Haydon DT, Cleaveland S, Taylor LH, Laurenson MK. Identifying reservoirs of infection: A conceptual and practical challenge. *Emerg Infect Dis* 2002;8:1468–1473.
5. Joob B, Wiwanitkit V. Immunological reactive rate to Zika virus in canine sera: A report from a tropical area and concern on pet, zoonosis and reservoir host. *Asian Pac J Trop Med* 2017;10:208–209.
6. Vest GG. *Eulogy of the dog*. *Cong Rec* 1870;101:S4823–4824.
7. Byron GG. *Epitaph to a dog*. Newstead Abbey, Nottinghamshire, UK, 1808.
8. Scott W. *The Talisman*. LaVergne, Tennessee: Lightning Source, Incorporated, 2005.
9. Darwin C. *The Origin of Species*. New York, New York: PF Collier & Son, 1909.
10. O'Neill E. *Blemie's Will: The Last Will and Testament of Silverdene Emblem O'Neill*. Toronto, Ontario: Nightshade Press, 1988.
11. Blanning T. *Frederick the Great: King of Prussia*. New York, New York: Random House Publishing Group, 2016.
12. ASPCA. Pet Statistics. [2017/04/09]; Available from: <https://www.aspc.org/animal-homelessness/shelter-intake-and-surrender/pet-statistics> Last accessed October 18, 2017.

SDx Histopathology, Carlsbad, California, USA.

Address all correspondence to Dr. Kenneth Kim; e-mail: sdxpath@gmail.com

Use of this article is limited to a single copy for personal study. Anyone interested in obtaining reprints should contact the CVMA office (hbroughton@cvma-acmv.org) for additional copies or permission to use this material elsewhere.