

Korean War and the Origin of Herpes Simplex Virus 1 Strain KOS

Charles Grose

Virology Laboratory, Children's Hospital, University of Iowa, Iowa City, Iowa, USA

An unintended consequence of phylogenetics is that it provides answers to questions that investigators were unaware they needed to ask. Such is the case in the article about herpes simplex virus 1 (HSV-1) genomic diversity by Szpara et al. (1). They unexpectedly discovered in their dendrogram of 20 sequenced HSV genomes that the KOS strain presumed to be from the United States segregated with the Asian HSV strains. Those of us studying varicella-zoster virus (VZV) genomic diversity made similar surprising discoveries in our analyses of over 40 sequenced VZV genomes during the past decade. But we soon discovered that most VZV strains can be sorted into 5 clades, based loosely on the out-of-Africa model of human phylogeography (reviewed in reference 2).

In the current study of HSV-1 phylogenetics, the fact that the KOS strain has Asian attributes may seem odd at first glance. The KOS strain was just sequenced in its entirety in 2012 (GenBank accession number [JQ673480](#)) (3). But the strain was isolated decades earlier from Kendall Owen Smith (for whom the strain was named), a well-known American virologist and former faculty member at Baylor College of Medicine, Houston, TX, then at the National Institutes of Health, Bethesda, MD, and finally at the University of Texas Health Science Center, San Antonio, TX. It was at San Antonio that I first met K. O. Smith in 1976. We were members of the same microbiology department for 8 years. Even at that time, the KOS strain was called Kendall's virus by other faculty members. K. O. Smith had already made his signature observation that HSV-1 virions lost their infectivity when the envelope was removed (4). Because of his considerable HSV knowledge, he assisted me in designing early VZV research protocols (5).

K. O. Smith and I also discussed our experiences in the military since both of us had served in the U.S. Army. I spent 1 year in Vietnam, and K. O. Smith served a tour of duty in Korea during the Korean War (1950 to 1953). In the 1980s, many faculty mem-

bers at the Health Science Center at San Antonio had served previously in the armed forces and this information was even included within a separate section on all curricula vitae. In other words, knowledge of military service by faculty members was widely known at the time. In all likelihood, therefore, the origin of the KOS strain was Korea during the early 1950s. The HSV dendrogram is correct.

ACKNOWLEDGMENT

Research by C.G. is supported by NIH grant AI89716.

REFERENCES

1. Szpara ML, Gatherer D, Ochoa A, Greenbaum B, Dolan A, Bowden RJ, Enquist LW, Legendre M, Davison AJ. 2014. Evolution and diversity in human herpes simplex virus genomes. *J. Virol.* **88**:1209–1227. <http://dx.doi.org/10.1128/JVI.01987-13>.
2. Grose C. 2012. Pangaea and the out-of-Africa model of varicella-zoster virus evolution and phylogeography. *J. Virol.* **86**:9558–9565. <http://dx.doi.org/10.1128/JVI.00357-12>.
3. Macdonald SJ, Mostafa HH, Morrison LA, Davido DJ. 2012. Genome sequence of herpes simplex virus 1 strain KOS. *J. Virol.* **86**:6371–6372. <http://dx.doi.org/10.1128/JVI.00646-12>.
4. Smith KO. 1964. Relationship between the envelope and the infectivity of herpes simplex virus. *Proc. Soc. Exp. Biol. Med.* **115**:814–816. <http://dx.doi.org/10.3181/00379727-115-29045>.
5. Grose C, Friedrichs WE, Smith KO. 1981. Cryopreservation of varicella-zoster virions without loss of structural integrity or infectivity. *Intervirology* **15**:154–160. <http://dx.doi.org/10.1159/000149225>.

Published ahead of print 15 January 2014

Editor: R. M. Longnecker

Address correspondence to charles-grose@uiowa.edu.

Copyright © 2014, American Society for Microbiology. All Rights Reserved.

[doi:10.1128/JVI.00010-14](https://doi.org/10.1128/JVI.00010-14)