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The following One Health “In Action” presentation [abstract] was presented at an historic joint American Society of Tropical Medicine and Hygiene/ Society of Veterinary Tropical Medicine One Health Symposium that was held November 21, 2009 at the American Society of Tropical Medicine and Hygiene (ASTMH) 58th Annual Meeting in Washington, D.C. (USA).

Concurrent Development Of Novel West Nile Vaccines For Humans And Equids: Application Of One Health Principles

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West Nile (WN) virus, introduced into North America in 1999, spread rapidly and had an alarming impact on wild, exotic captive, and domesticated animals (especially horses), as well as causing a human epidemic that swept the U.S. over several years. In 1999, work began in several laboratories on WN vaccines.

One such effort, at Acambis, utilized a platform technology for the concurrent development of a similar vaccine for humans and equids. This technology was based on a chimeric yellow fever (YF) 17D live vector, in which the prM-E genes of 17D virus were replaced with the corresponding genes of another flavivirus, in this case WN. Early experiments showed that YF 17D was an acceptable vector for both horses and primates, but that the chimeric vaccine elicited higher viremias in the latter. Thus the WN prM-E gene insert for the equid vaccine was not modified, whereas the sequence for the human vaccine was mutated at multiple virulence determinants to further attenuate the virus.

In 2001, Acambis entered into a collaborative research and license agreement with Intervet, a leading veterinary vaccines company, for development of the vaccine for equids. Trials sponsored by Intervet of the vaccine in horses led to USDA approval of the product (Prevenile®) in 2006. The vaccine was safe and >95% effective in preventing WN in equids after a single dose and provided long-lasting immunity.

The human vaccine (ChimeriVax™-WN) was tested in humans in Phase 1 and 2 clinical trials. The vaccine was well tolerated and 100% of subjects developed neutralizing antibodies to WN. The use of a common platform for concurrent development of innovative veterinary and human vaccines against the same pathogen, meeting the needs for control of the same emerging threat to humans, appears to be unprecedented and exemplifies the power of One Health.

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Dr. Monath manages the One Health Initiative Website with the One Health team of Laura H. Kahn, MD, MPH, MPP, Bruce Kaplan, DVM, Thomas P. Monath, MD and Jack Woodall, PhD. Dr. Monath has co-authored One Health publications in scientific journals, a book chapter [a pending book chapter] and a national newspaper Op-ed. He formerly served on the AVMA One Health Task Force, the One Health Joint Steering Committee, and the newly formed One Health Commission (USA).