**Emergence and divergence of influenza virus: A current perspective**

**Alexander Lai, Ph.D.**

**Division of Mathematics and Sciences/Biology**

**Kentucky State University**

Despite the availability of vaccines, influenza virus remains a public health threat. Influenza virus infects and results in respiratory diseases in a wide spectrum of species, including humans, horses, pigs, and recently, dogs and cats. A bona fide new virus, canine influenza virus A(H3N8), has emerged from equine influenza virus A(H3N8). Whereas interspecies transmission of influenza virus is not uncommon, CIV has expanded in host breeds and in geographic areas, and it has now fully adapted to its new host, the dog. Experimental infection of CIV (H3N8) in other species, such as feline, has indicated its potential for further interspecies transmission, hence providing a tool to study and to understand the mechanisms for the emergence of novel influenza virus. In addition, as waterfowl is the natural host for influenza virus, the mechanism for avian influenza viruses, such as H5N1 and H7N9, to emerge into human hosts remains to be fully elucidated. Identify the knowledge gaps and conducting the correct experiments are crucial in advancing our understanding of the mechanism, and hence a better way to mitigate the threat.