

ID No.	K3008
Project Title	Analysis of the spread and transmissibility of highly pathogenic avian influenza H7N9 viruses exhaled from ferrets
Principal Investigator	Hualan Chen (Prof., Harbin Veterinary Research Institute (HVRI), Chinese Academy of Agricultural Sciences (CAAS))
Project Members IMSUT Host Researcher Members	<p>Yoshihiro Kawaoka (Prof., IMSUT)</p> <p>Chengjun Li (Prof., HVRI, CAAS)</p> <p>Gongxun Zhong (Research Scientist, HVRI, CAAS)</p> <p>Wenli Gu (PhD Student, HVRI, CAAS)</p> <p>Zhiyuan Qu (PhD Student, HVRI, CAAS)</p> <p>Xingtian Kong (PhD Student, HVRI, CAAS)</p> <p>Fei Meng (PhD Student, HVRI, CAAS)</p> <p>Wenjun Shi (PhD Student, HVRI, CAAS)</p> <p>Gabriele Neumann (Research Prof., Univ. of Wisconsin- Madison)</p> <p>Masato Hatta (Research Associated Prof., Univ. of Wisconsin-Madison)</p> <p>Masaki Imai (Associate Prof., IMSUT)</p> <p>Tokiko Watanabe (Project Associate Prof., IMSUT)</p> <p>Kiyoko Iwatsuki-Horimoto (Assistant Prof., IMSUT)</p> <p>Maki Kiso (Project Assistant Prof., IMSUT)</p> <p>Mutsumi Ito (Technical Specialist, IMSUT)</p>
Report	<p>Influenza viruses are transmitted by direct or indirect contact, droplets, and aerosols. Coughing and sneezing produce both droplets and aerosols; however, the properties and infectivity of the viruses in exhaled breath have not been extensively studied. In animal models, some subtypes are transmissible, whereas other subtypes are not. In this study, we compared the properties of viruses released in the exhaled breath from H1N1pdm and H5N1 virus-infected ferrets. We found that seasonal H1N1pdm-infected animals exhaled transmissible viruses with differing antigenicity. The amount of virus exhaled by the H5N1-infected ferrets was drastically less than that exhaled by the H1N1pdm-infected ferrets and there were fewer amino acid variations among the exhaled viruses. This may explain, in part, why H5N1 virus has not become a pandemic virus. Our findings indicate that seasonal influenza H1N1pdm spreads more readily among mammals due to the release of many viruses with diverse antigenicity. These results are important for proper control of influenza viruses.</p>