

# BIOAEROSOL SAMPLING FOR AIRBORNE RESPIRATORY VIRUSES IN AN EXPERIMENTAL MEDICINE PIG HANDLING FACILITY, SINGAPORE

Mee Kian Poh<sup>1</sup>, Mengmeng Ma<sup>1</sup>, Thi Tham Nguyen<sup>1</sup>, Yvonne CF Su<sup>1</sup>, Edgar M Pena<sup>2</sup>, Bryan E Ogden<sup>2</sup>, Benjamin D Anderson<sup>3</sup> and Gregory C Gray<sup>1,3</sup>

<sup>1</sup>Program in Emerging Infectious Diseases, Duke-NUS Medical School, Singapore; <sup>2</sup>SingHealth Experimental Medicine Centre, Singapore Health Services Pte Ltd and National Large Animal Research Facility, Singapore; <sup>3</sup>Division of Infectious Disease, School of Medicine and Global Health Institute, Duke University, Durham, North Carolina, USA

**Abstract.** A number of recent reports have documented likely swine-to-human virus transmission in swine facilities. During the month of January 2016, weekly bioaerosol and pig oral secretion samplings were performed in a pig handling facility to assess the possible occupational exposure to swine influenza A virus and adenovirus. During the 4 weeks, a total of 35 specimens were collected from multiple pig pens within the animal facility. One bioaerosol sample and five pig oral secretion samples were found positive for porcine adenovirus and further sequencing data revealed two different porcine adenoviruses. None of the samples showed evidence for influenza A virus by molecular assays. While swine adenoviruses are not thought to infect man, their detections suggests that bioaerosol sampling may be a non-invasive approach to detecting emergent zoonotic pathogens in agricultural industries.

**Keywords:** respiratory virus, bioaerosol sampling, pig handling facility, molecular assay

---

Correspondence: Professor Gregory C Gray, Division of Infectious Diseases, Global Health Institute, and Nicholas School of the Environment, Duke University, DUMC Box 102359, Durham, NC 27710, USA.  
Tel: +1 919 684 1032  
E-mail: Gregory.gray@duke.edu.