Performance Evaluation of Puritan UniTranz-RT Universal Transport System for the Detection of Influenza A Virus
De’Ashia Lee¹, Lea Heberlein-Larson², Alberto van Olphen³, Cynthia Bucher¹, Andrew Cannons², and Susanne Crowe⁴

1 APHL/CDC Emerging Infectious Disease Laboratory Fellow, 2 Florida Department of Health-Bureau of Public Health Laboratories, Tampa, FL, 3 University of South Florida, Center for Biological Defense, Tampa, FL, and 4 Florida Department of Health-Bureau of Public Health Laboratories, Jacksonville, FL

Introduction
Puritan UniTranz-RT is intended for the collection and transport of clinical samples containing viruses, chlamydiae, mycoplasmas, and ureaplasmas from collection site to the testing laboratory. In this study, we evaluated how storage in Puritan UniTranz-RT affects the ability to detect Influenza A virus by qRT-PCR, comparing results obtained from samples extracted directly from virus stocks and those stored in Puritan UniTranz-RT. This study reports for the first time the effect that Puritan UniTranz-RT has on viral real-time PCR detection on samples applied to swabs and stored in Puritan UniTranz-RT for more than 48 hours.

Methods Overview
Seven ten-fold dilutions (10⁻¹, 10⁻², 10⁻³, 10⁻⁴, 10⁻⁵, 10⁻⁶, and 10⁻⁷) of stock Influenza A (A/California/04/2009(H1N1)) were prepared. The titer of the virus was 1x10⁵ TCID₅₀. Samples were applied to swabs, extracted, and then evaluated using the ABI 7500 Real-Time PCR system.

Results
We found that there was a statistical difference between CT values for samples applied to swabs and samples processed directly from stock. Our results indicate that storage in Puritan UniTranz-RT is advantageous for qRT-PCR detection when compared to samples not stored in Puritan UniTranz-RT.

Conclusion
These results indicate that prolonged storage in Puritan UniTranz-RT does not have a negative effect on virus detection. Future work will consider RT-PCR for the detection of additional influenza and respiratory viruses.

Discussion
We found that there was a significant difference between samples stored in Puritan UniTranz-RT and those stored in cell culture media. On average, the samples stored in Puritan UniTranz-RT yielded a lower CT value at each dilution. At lower concentrations, a CT value was able to be detected for viruses stored in Puritan UniTranz-RT more often than those stored in cell culture media. These results indicate that Puritan UniTranz-RT supports the virus in a way that allows it to be detected at lower concentrations over a longer period of time. Based on the results of this pilot study, Puritan UniTranz-RT is beneficial for the storage and detection of Influenza A Virus by qRT-PCR. Puritan UniTranz-RT appears to support the virus for up to 192 hours for detection by qRT-PCR. This study can be further built upon by the inclusion of additional respiratory viruses, more interval time points, and increasing the sample size of the virus.

Acknowledgements
Much thanks to Puritan Medical Products Co., LLC, BPHL, USF, and APHL/CDC EID Fellowship Program.