Final Report
COVID-19/Microbrush Production Swabs

Quantigen BioSciences (Quantigen) evaluated the absorption/elution characteristics of Microbrush swabs. Specifically, the characteristics of these swabs were evaluated using inactivated COVID-19 virus (purchased from the American Type Culture Collection (ATCC, Manassas, VA)) and the CDC's Viral Transport Media (VTM) (prepared at Quantigen). Defined concentrations of COVID-19 virus were absorbed, followed by elution into the CDC's VTM. Eluted samples were subjected to RNA extraction and qPCR detection using Thermo Fisher Scientific's EUA kit (TaqPath COVID-19 Combo Kit).

Heat-inactivated SARS-CoV-2 (ATCC VR-1986HK) was purchased from the American Type Culture Collection. The virus concentration of the stock inactivated virus is 127,652 genomes per microliter. The virus was subjected to three serial 10-fold dilutions in PBS. The first ("Microbrush Swab High") and third ("Microbrush Swab Low") ten-fold dilutions were used in the experiment (i.e., 50 µL aliquots were absorbed onto each swab). The swabs were then transferred into 3 mL of VTM (prepared at Quantigen according to the CDC recipe). Next, duplicate 200 µL of each sample were extracted and tested by RT-qPCR using the Thermo Fisher COVID-19 EUA kit (TaqPath COVID-19 Combo Kit). Summary results are shown below. At both virus concentrations, the swabs performed similarly. These data show that Microbrush swabs appear to be fully compatible with collection, elution, and detection of COVID-19 using CDC-VTM and Thermo Fisher's COVID-19 EUA kit.

Study Summary

Swab Type	No. of Swabs	VTM/Virus Absorption Volume per Swab	Total Viruses per 50 µL VTM	VTM Elution Volume	Theoretical No. of Genomes per RT-qPCR	Ct values			
						MS2	N gene	ORF1ab	S gene
Microbrush	6	50 µL	638,250	3 mL	8,510	25.8 ± 0.3	26.6 ± 0.3	24.6 ± 0.3	25.0 ± 0.3
		50 µL	6,383	3 mL	85	25.9 ± 0.3	33.4 ± 0.6	31.5 ± 0.4	32.2 ± 0.4