

Supporting Information

A Cas13a-Microdroplet Platform for Amplification-Free Influenza A virus RNA Diagnostics

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Table S1. DNA and RNA sequences used in this study.

Name	Sequence (5'-3')
Influenza A virus Target RNA	UCUUUCUAUCAUCCCGUCAGGCCCCCUCAAAGCCGAGAU CGCGCAGAGACUGGAAAGUGU CUUUGCAGGAAAGAACACAGAU CUUGAGGCUCUCAUGGAAUGGCUAAAGACAAGACCAA UCUUGUCACCUCUGACUAAGGGAAUUUUAGGAUUUGUGUUCACGCUCACCGUGCCCAGU GAGCGAGGACUGCAGCGUAGACGCUUUGUCCAAAAUGCCCU
crRNA	UAAUACGACUCACUAUAGGGGAUUUAGACUACCCCCAAAAACGAAGGGGACUAAAAGCCAU UCCAUGAGAGCCUCAAGA
crRNA IVT Template	TCTTGAGGCTCTCATGGAATGGCTTTTAGTCCCCTTCGTTTTTGGGGTAGTCTAAATCCCCTATA GTGAGTCGTATTA
RNA Reporter	FAM-UUUUU-BHQ1
Capture Probe	NH2 C12-TTCCCATTTAGGGCATT
T7 Promoter	GAAATTAATACGACTCACTATAGGG
Influenza A virus - PCR-Forward primer	TAATACGACTCACTATAGGGTCTTTCTATCATCCCGTCA
Influenza A virus - PCR-Forward primer	TTCCCATTTAGGGCATT

ACCESSION	Subtype	Gene	Position of forward		Position of reverse primer	
			64	84	266	283
NC_007367	H3N2	M2	ACGT	TCTCTCTATCGTTCCATCA	GGC.....TCC	AAAATGCCCTAAATGGGAA
NC_004907	H9N2	M2	ATGT	TCTCTCTATCATCCCATCA	GGC.....TCCA	AAAATGCCCTAAATGGGAA
NC_026427	H7N9	M2	ACGT	TCTCTCTATCATCCCATCA	GGC.....TCCA	AAAACGCCCTAAATGGGAA
NC_026431	H1N1	M2	ACGT	TCTTCTATCATCCCGTCA	GGC.....TCCA	AAAATGCCCTAAATGGGAA
NC_002016	H1N1	M2	ACGT	TCTTCTATCATCCCGTCA	GGC.....TCCA	AAAATGCCCTAAATGGGAA
NC_007363	H5N1	M2	ACGT	TCTCTCTATCGTCCCGTCA	GGC.....TCCA	GAATGCCTAAATGGAAA
NC_007377	H2N2	M2	ACGT	TCTCTCTATCGTCCCGTCA	GGC.....TCCA	AAAATGCCCTAAATGGGAA

Figure S1. Alignment of the M2 gene sequences of different subtype of influenza A virus, the gene sequence of strains obtained from National Center for Biotechnology Information is shown in the figure. Highlighted are the primer sequences.

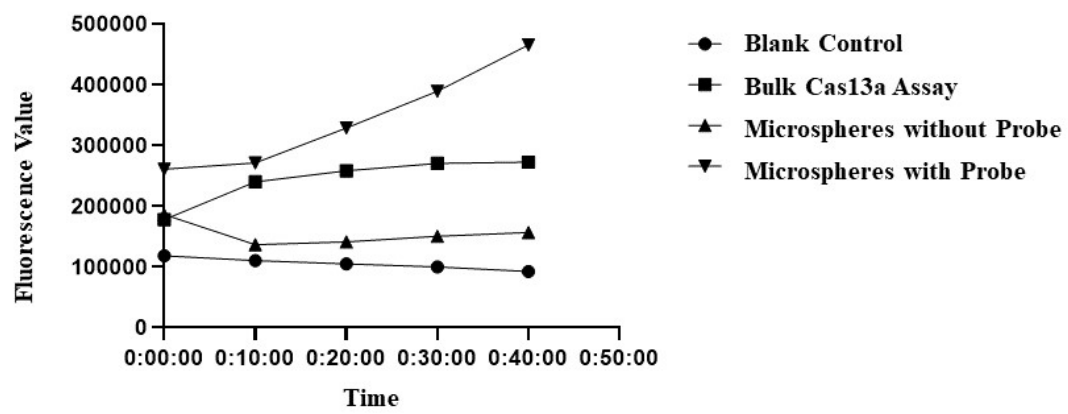
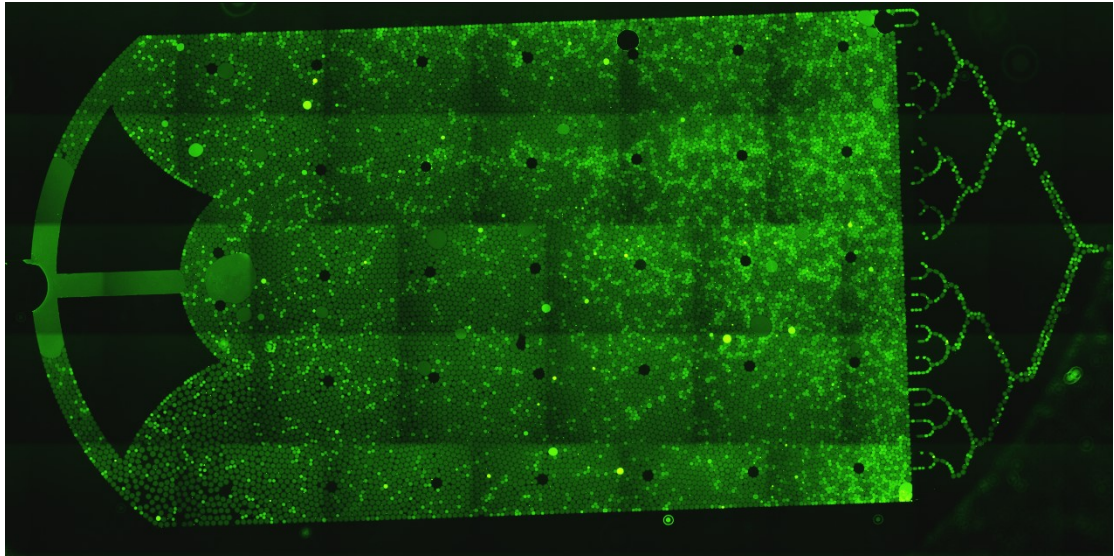


Figure S2. The fluorescence of bulk cas13a assay using the microsphere captured with target RNA.

A



B

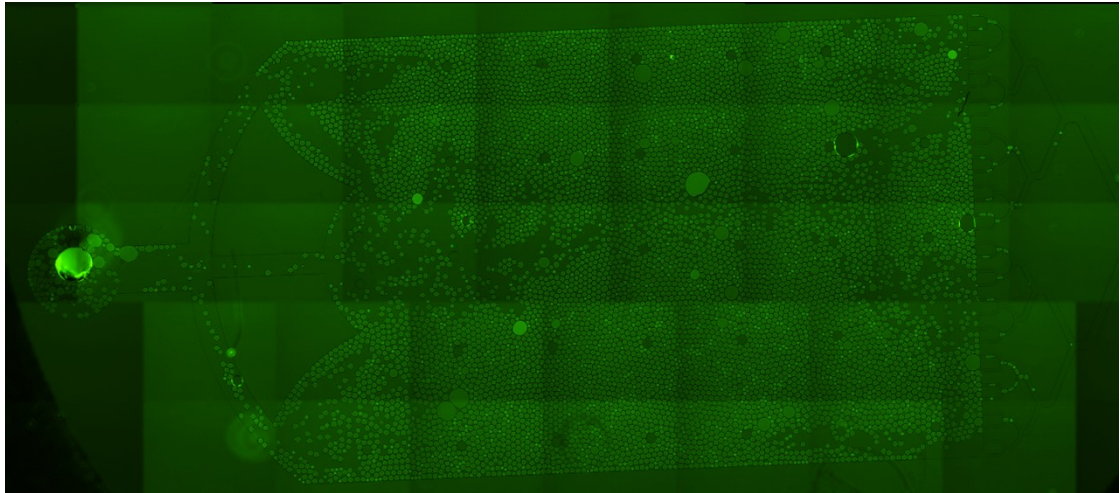


Figure S3. The mosaic fluorescence image of the whole chip with different concentrations of the target RNA. A. The representative fluorescence image for analysis. (10^4 copies/ $20\mu\text{L}$) B. The representative fluorescence image for analysis. (Blank Control)

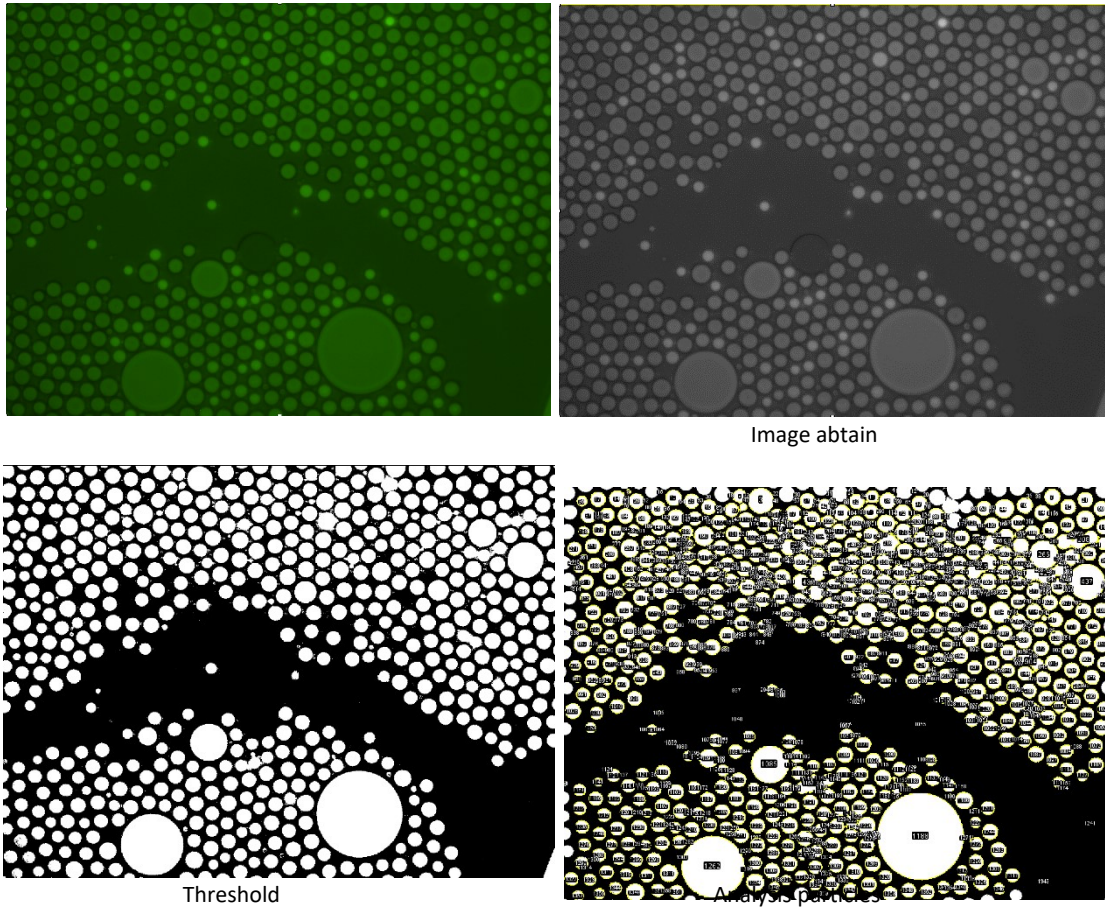


Figure S4. Image analysis and data extraction process of fluorescence image.

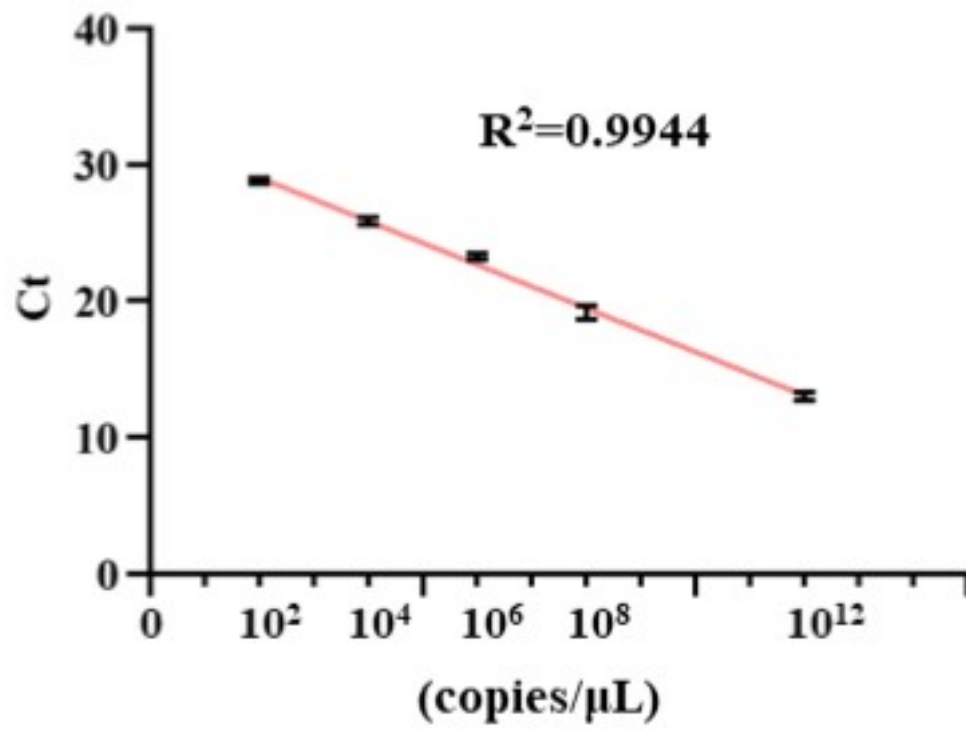


Figure S5: Quantification range of RT-qPCR

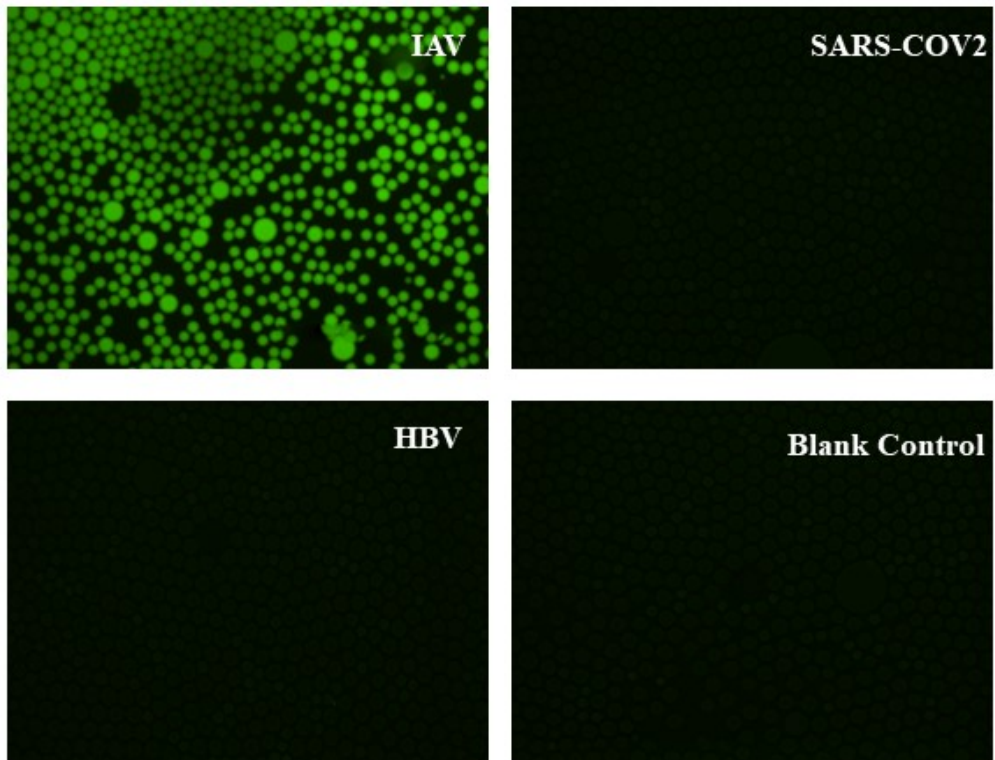


Figure S6. The specificity of this assay.