

## SUPPORTING INFORMATION

### **Multiplex paper-based colorimetric DNA sensor using pyrrolidinyI peptide nucleic acid-induced AgNPs aggregation for detecting MERS-CoV, MTB and HPV oligonucleotides**

Prinjaporn Teengam<sup>†</sup>, Weena Siangproh<sup>‡</sup>, Adisorn Tuantranont<sup>§</sup>, Tirayut Vilaivan<sup>||</sup>, Orawon Chailapakul<sup>#, ¶, \*</sup> and Charles S. Henry<sup>¥, \*</sup>

<sup>†</sup>*Program in Petrochemistry, Chulalongkorn University, Pathumwan, Bangkok, 10330, Thailand*

<sup>‡</sup>*Department of Chemistry, Faculty of Science, Srinakharinwirot University, Bangkok, 10110, Thailand*

<sup>§</sup>*Nanoelectronics and MEMS Laboratory, National Electronics and Computer Technology, Pathumthani, 12120, Thailand*

<sup>||</sup>*Organic Synthesis Research Unit, Department of Chemistry, Faculty of Science, Chulalongkorn University, Pathumwan, Bangkok, 10330, Thailand*

<sup>#</sup>*Electrochemistry and Optical Spectroscopy Research Unit, Department of Chemistry, Chulalongkorn University, Pathumwan, Bangkok, 10330, Thailand*

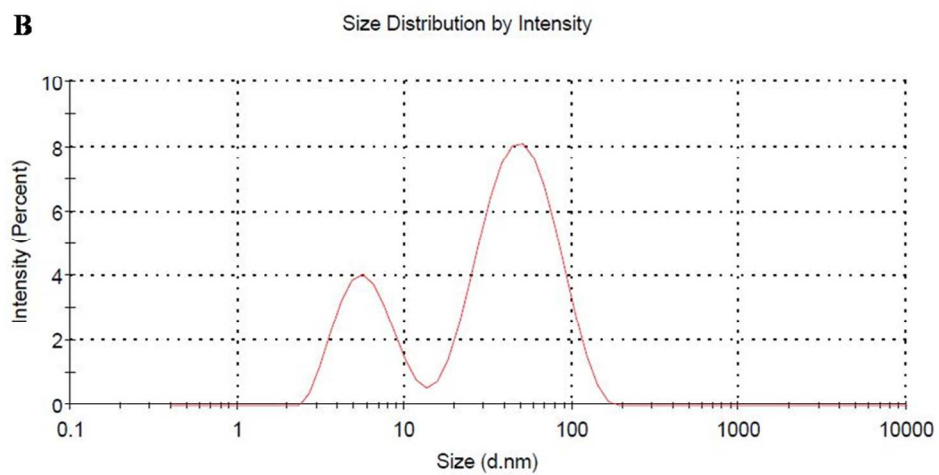
<sup>¶</sup>*National Center of Excellence for Petroleum, Petrochemicals, and Advanced Materials, Chulalongkorn University, Pathumwan, Bangkok, 10330, Thailand*

<sup>¥</sup>*Department of Chemistry, Colorado State University, Fort Collins, Colorado 80523*

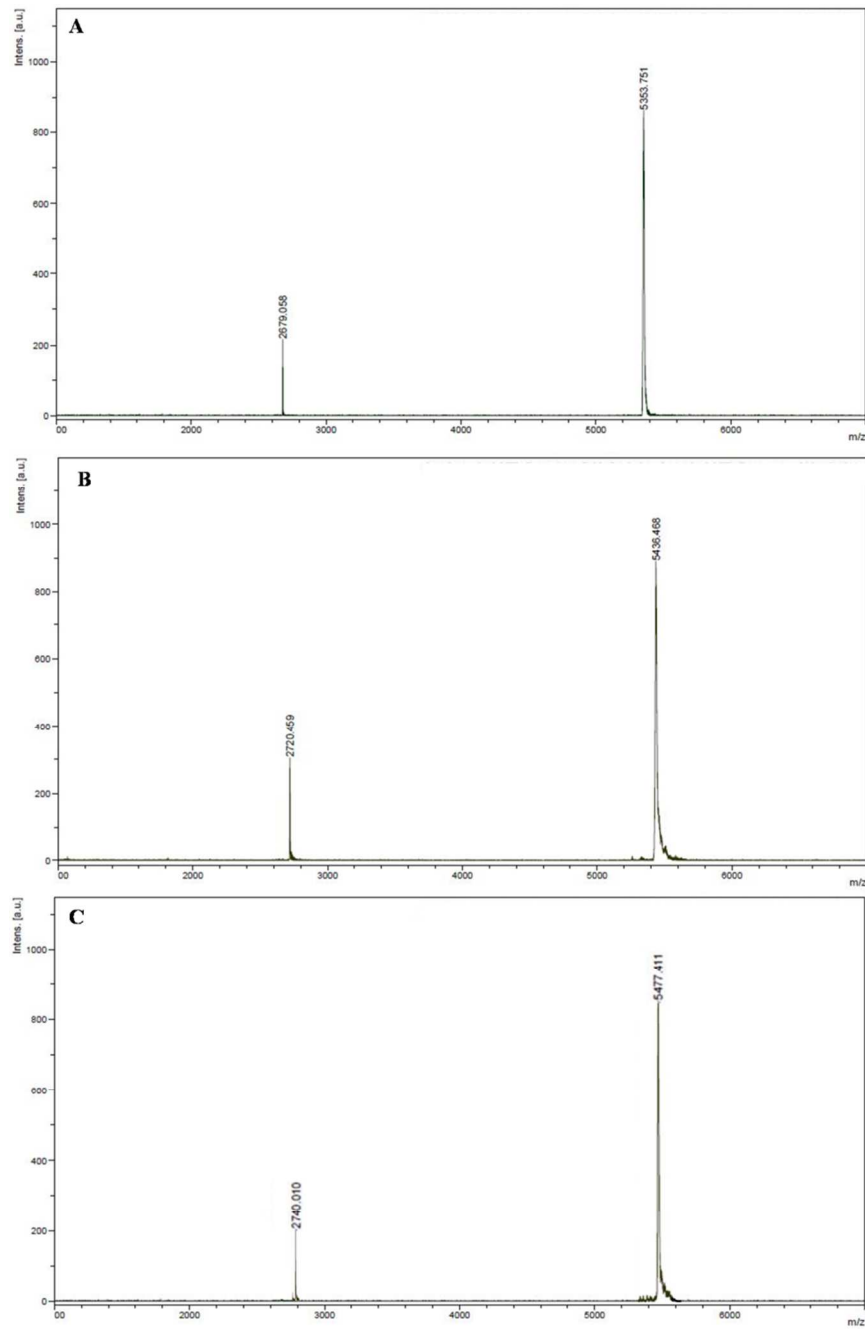
**A**



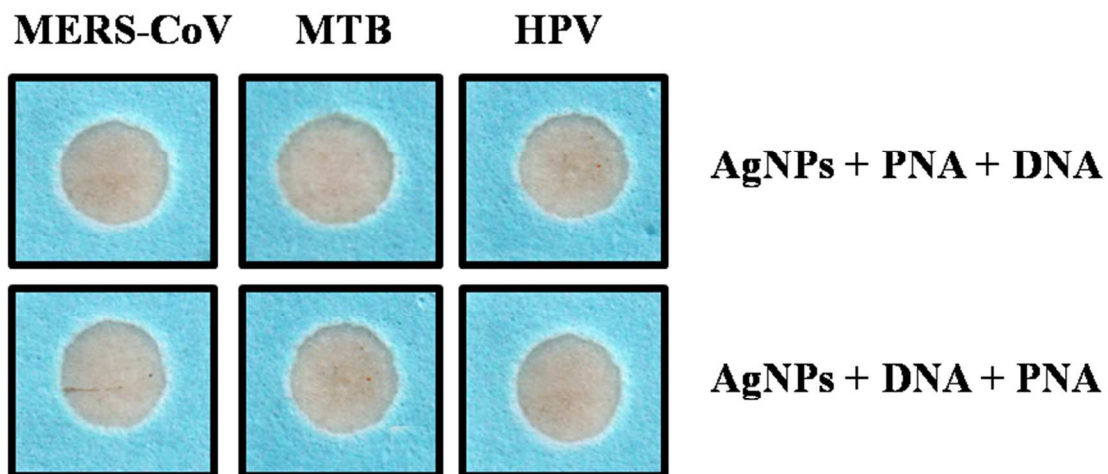
**B**



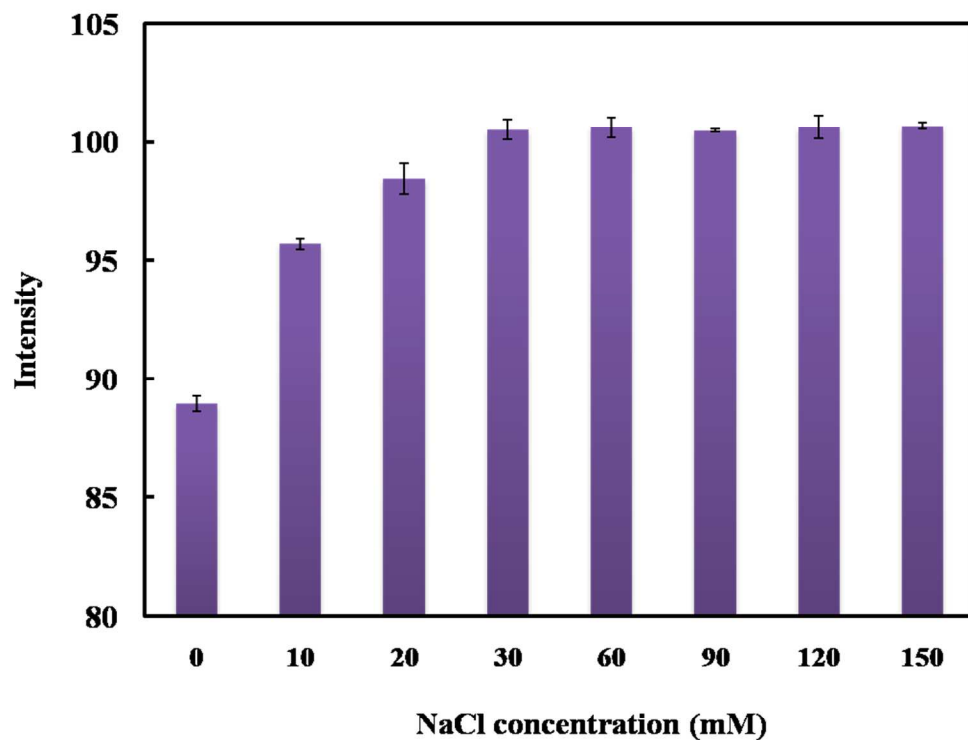
**Fig. S1.** (A) Photograph and (B) dynamic light scattering result of the synthesized AgNPs.



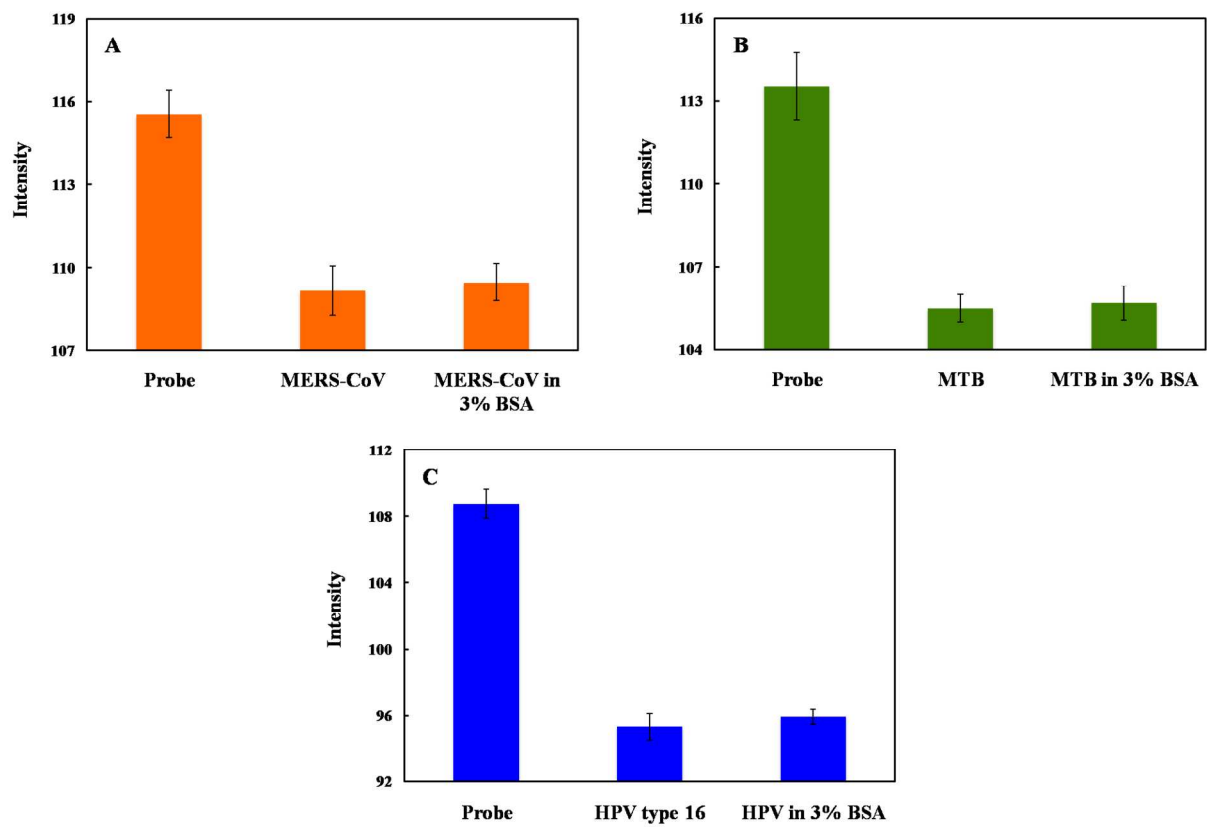
**Fig. S2.** MALDI-TOF mass spectra of (A) MERS-CoV (B) MTB and (C) HPV acpPNA probe.



**Fig. S3.** Photograph of visual color changes obtained from different sequence of adding probe and DNA target for the detection of MERS-CoV, MTB and HPV.



**Fig. S4.** The color intensity of citrate-stabilized AgNPs as a functions of NaCl concentrations.



**Fig. S5.** The color intensity of (A) MERS-CoV, (B) MTB and (C) HPV detection in the presence of BSA.