

## Supplementary information

Molecular Detection and Analysis of Exosomes Using Surface-Enhanced Raman Scattering Gold Nanorods and a Miniaturized Device

*Elyahb Allie Kwizera<sup>†,‡</sup>, Ryan O'Connor<sup>†,‡</sup>, Vojtech Vinduska<sup>†,‡</sup>, Melody Williams<sup>†</sup>, Elizabeth R. Butch<sup>‡</sup>, Scott E. Snyder<sup>‡</sup>, Xiang Chen<sup>‡</sup>, and Xiaohua Huang<sup>†,\*</sup>*

<sup>†</sup>Department of Chemistry, The University of Memphis, Memphis, TN 38152

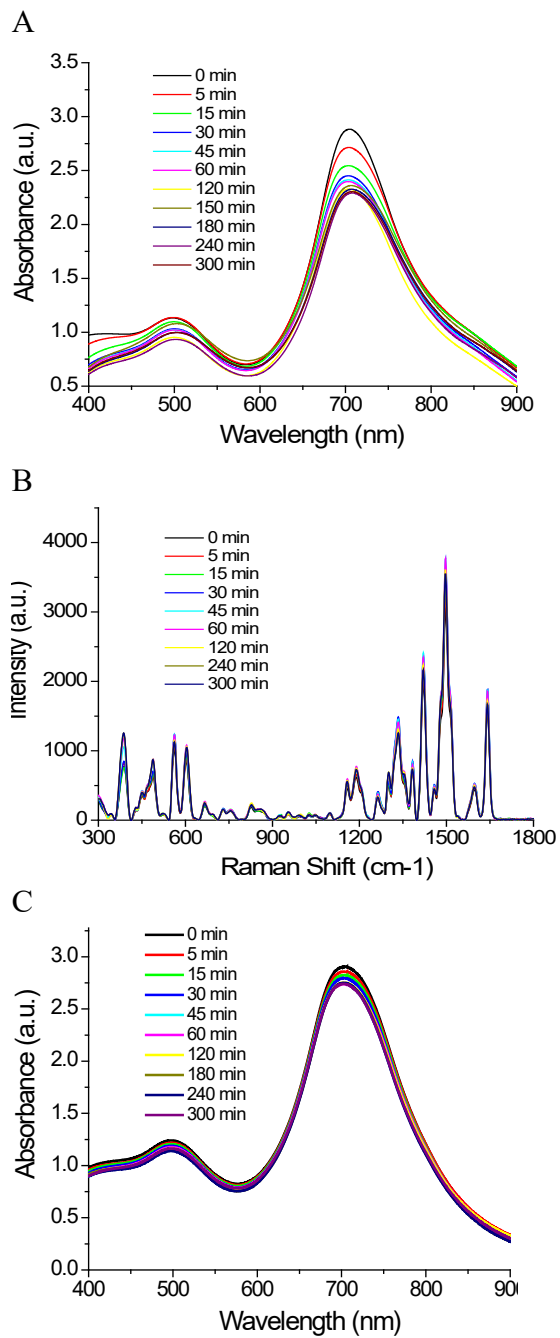
<sup>‡</sup>Diagnostics Imaging Department, St Jude Children's Research Hospital, Memphis, TN 38105

<sup>‡</sup>Department of Computational Biology, St Jude Children's Research Hospital, Memphis, TN 38105

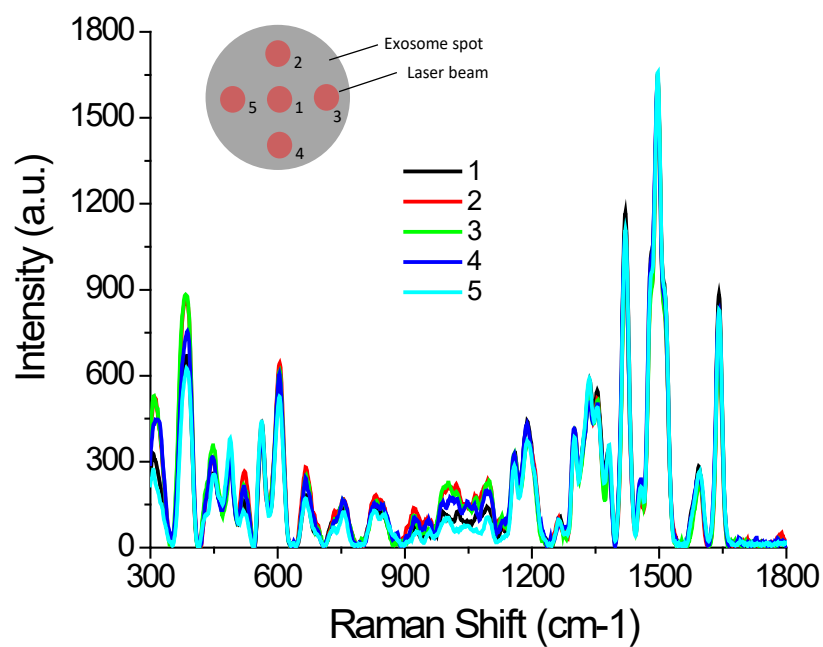
<sup>‡</sup> These authors contributed equally to this work

\*Corresponding Author. Email: [xhuang4@memphis.edu](mailto:xhuang4@memphis.edu). Phone: (901) 678 1728. Fax: (901) 678 3744

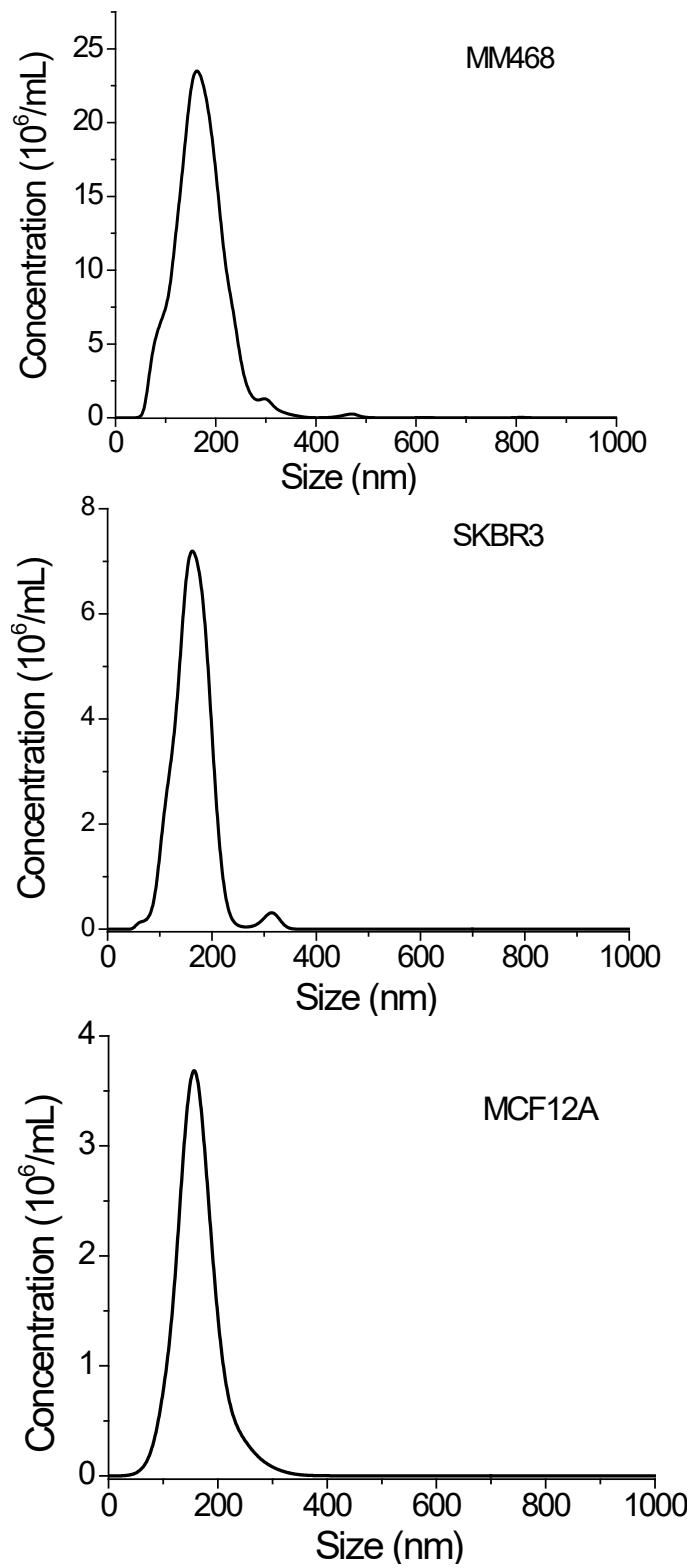
KEYWORDS. Exosome, detection, molecular profiling, cancer, surface enhanced Raman scattering, gold nanorod



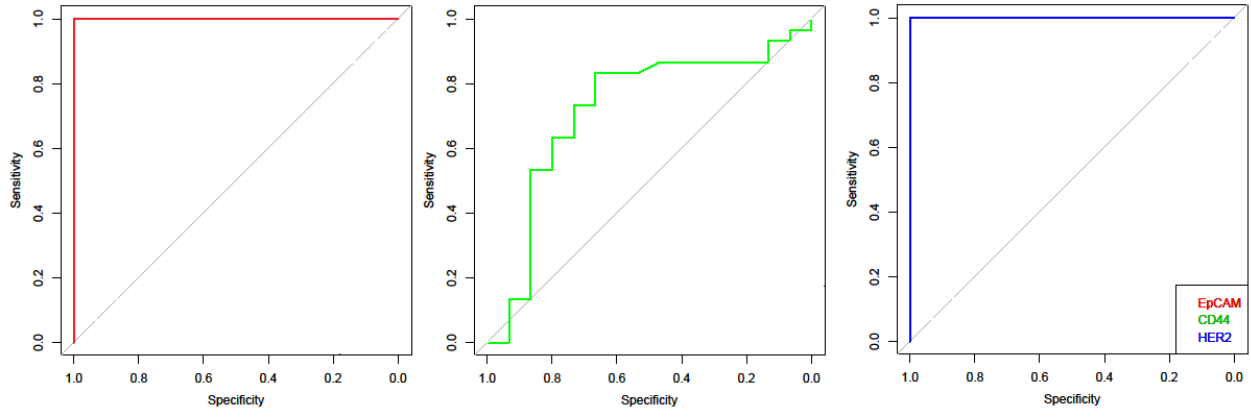
**Figure S1.** Absorption (A) and SERS spectra (B) of CTAB/QSY21/AuNRs in PBS at different time after preparation. (C) Absorption spectra of CTAB/AuNRs in PBS at different time after preparation.



**Figure S2.** SERS spectra from five different locations of the exosome spot. The laser beam was 200 μm in diameter and the exosome spot was 2 mm in diameter. Anti-CD63 antibodies were used as the targeting ligand to target exosomes derived from MM231 cells.  $\lambda = 785$  nm. Laser power: 50 mW. Acquisition time: 1s.



**Figure S3.** Size distributions of exosomes derived from MM468, SKBR3, and MCF12A cells characterized with NTA.



**Figure S4.** ROC curves generated based on patient profiling data in Figure 8 (main text).