Supporting Information

Electrical and Label-Free Quantification of Exosomes with Reduced Graphene Oxide Field Effect Transistor Biosensor

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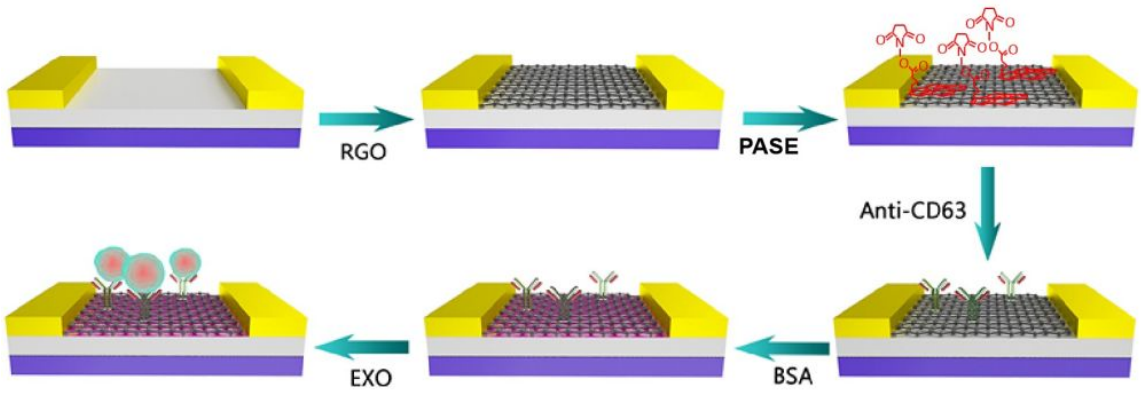

Figure S1. The schematic diagram of exosomes detection by CD63-modified FET biosensor.

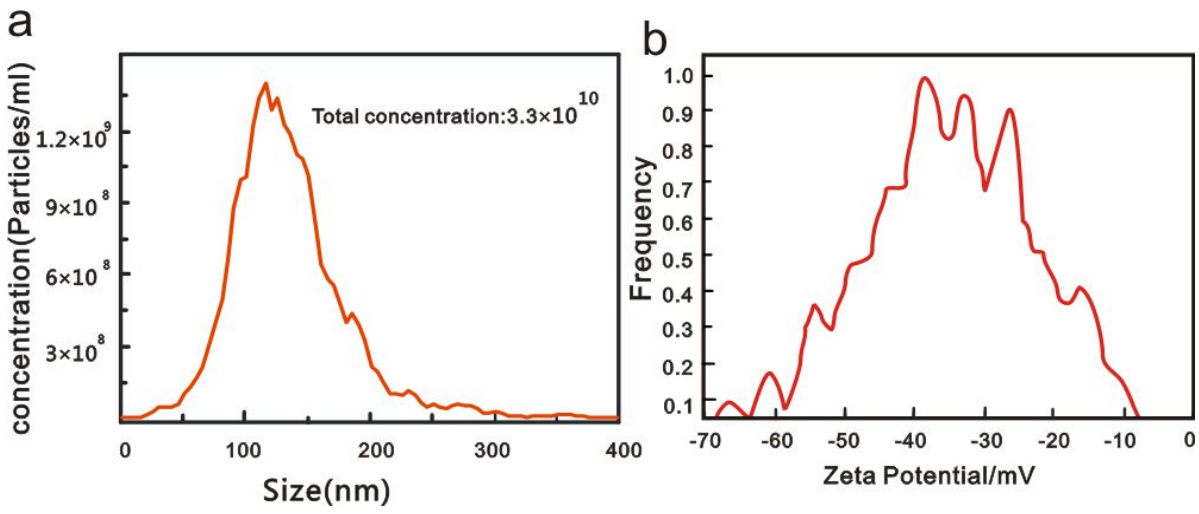

Figure S2. (a) The concentration range and particle size distribution of exosomes were assayed with nanoparticle tracking analysis system. The total concentration was calculated to be 3.3×10^{10} particles/mL. (b) Zeta potential distribution of exosome.

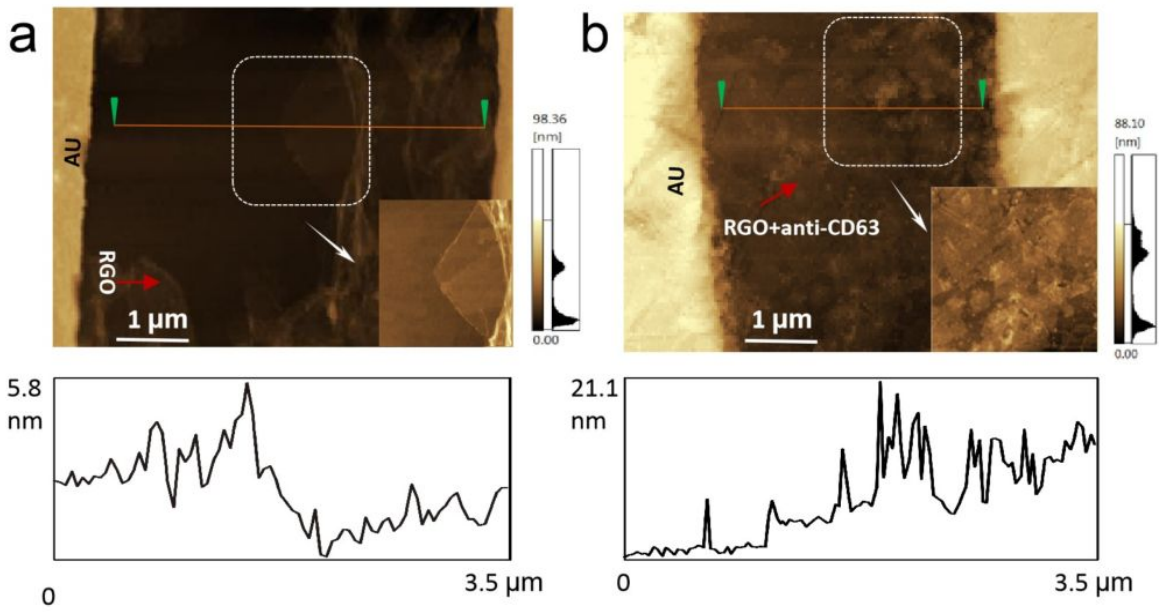

Figure S3. AFM imaging before and after anti-CD63 modification. (a) RGO modification. (b) Anti-CD63 functionalization on RGO surface.

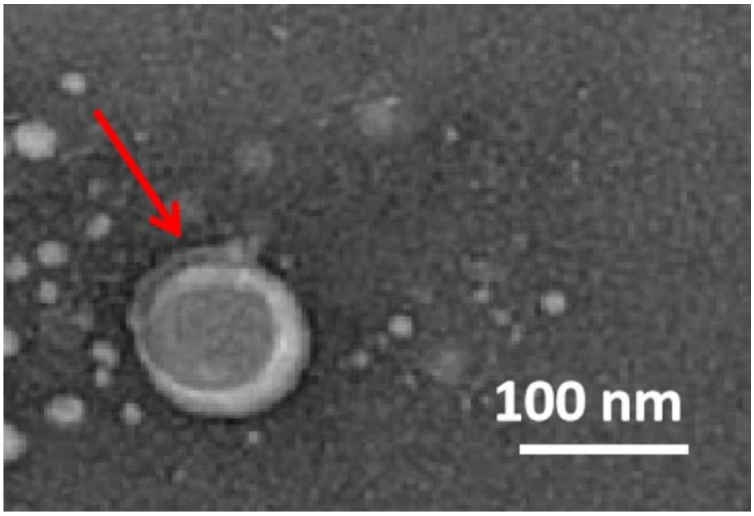

Figure S4. TEM image of exosome purified from serum with a size of approximately 100 nm in diameter.

Table 1. Comparison of different exosome detection techniques

No	Detection platform	Method	LOD(particles/μL)	Time	Ref
1	Electrochemistry	nanotetrahedron(NTH)-assisted aptasensor	20	30min	1
2		Electrochemical sandwich immunosensor	2×10^2	60min	2
3		Aptamerrecognitioninduced multi-DNA release and cyclic enzymatic amplification	70	~5 h	3
4		Aptamer-based electrochemical biosensor	10×10^3	~60 min	4
5	Fluorescence	Immuno-capture on GO/PDA nano interface and Fluorogenic ELISA	50	~60 min	5
6		Aptamer/Go captures exosomes and enzymatic amplification	1.6×10^2	~30 min	6
7	Optical	Single particle Interferometric Reflectance Imaging Sensor	3.94×10^6	＞12 h	7
8		Colorimetric aptasensor	5.2×10^5	~40 min	8
9	SPR	Antibody modified nano-plamsonic array	3×10^3	~60 min	9
10	**FET**	**Anti-CD63functionalized field effect transistor**	**33**	**~30 min**	**This work**

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