Electronic Supplementary Information

PLGA nanofibers microfluidic device for highly efficient isolation and release of different phenotypic circulating tumor cells based on the dual aptamers

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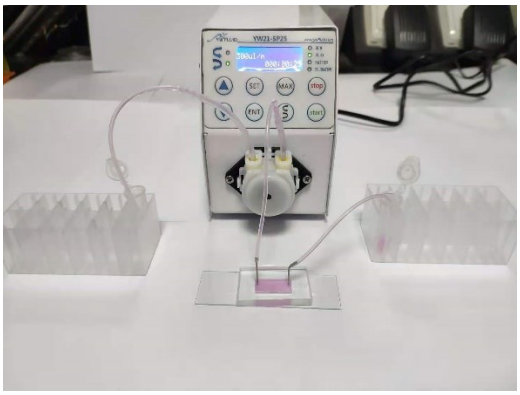

Fig. S1 The photograph of PLGA nanofibers-based microfluidic devices used for capturing cells with the help of peristaltic pump.

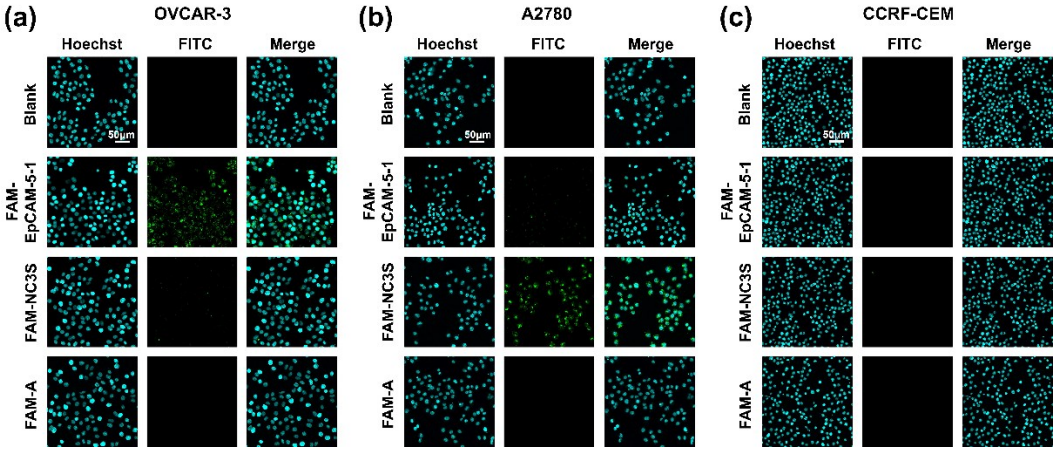

Fig. S2 Fluorescent images of OVCAR-3 (a), A2780 (b), and CCRF-CEM (c) cells incubated with FAM-modified EpCAM-5-1, NC3S, and 16A, respectively.

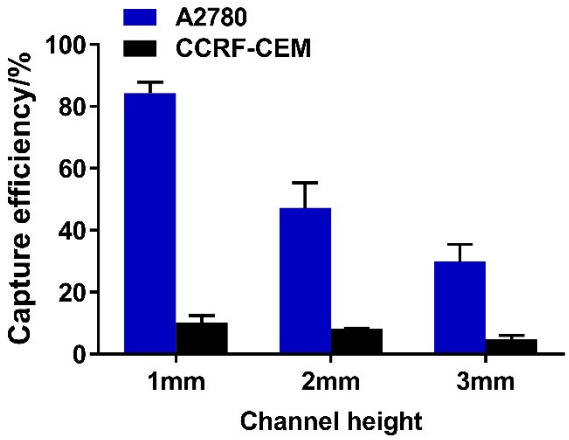

Fig. S3 The capture efficiencies of A2780 and CCRF-CEM cells using NC3S aptamer-modified PLGA nanofibers-based microfluidic devices with different channel height (the height of liquid flow).

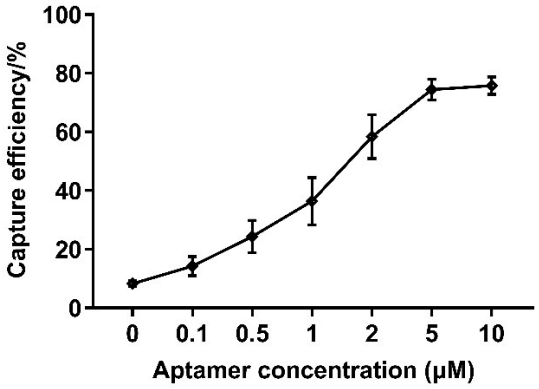

Fig. S4 The capture efficiencies of OVCAR-3 cells using EpCAM-5-1 aptamer-modified PLGA nanofibers-based microfluidic device at various aptamer concentrations.

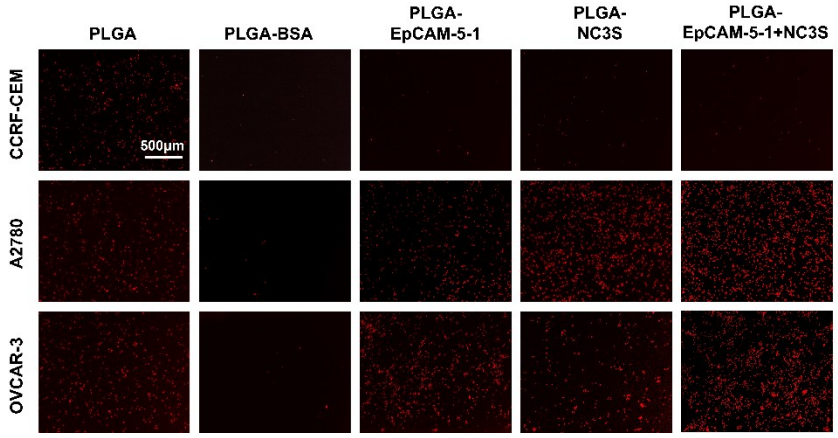

Fig. S5 The fluorescence images of three kinds of cancer cells captured on different modified PLGA nanofibers-based microfluidic devices. The capture efficiencies were shown in Fig. 4.

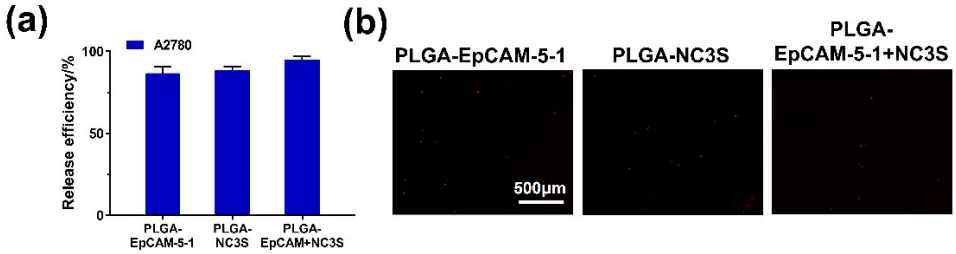

Fig. S6 (a) The release efficiency of captured A2780 cells on the EpCAM-5-1, NC3S, and dual aptamers-modified PLGA nanofibers-based microfluidic devices after adding corresponding aptamer complementary sequences. (b) A group of representative fluorescence microscope images of A2780 cells after releasing on the EpCAM-5-1,

NC3S, and dual aptamers-modified PLGA nanofibers-based microfluidic devices. A2780 cells were pre-stained by DiI dye (red).

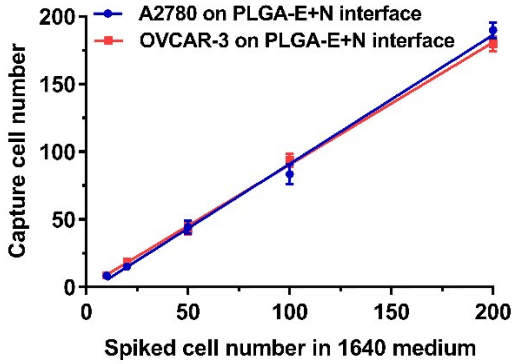

Fig. S7 The capture situation of spiked A2780 and OVCAR-3 cells on dual aptamers-modified PLGA nanofibers-based microfluidic devices in 1640 medium. PLGA-E+N: The PLGA nanofibers microfluidic device modified with aptamer EpCAM-5-1 and NC3S.

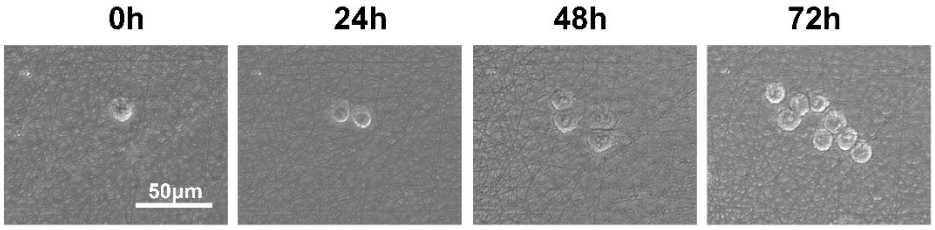

Fig. S8 In situ culture of a single captured A2780 cell on the dual aptamers-modified PLGA nanofibers-based microfluidic devices in DMEM medium with the supplement of 10% FBS and 1% penicillin-streptomycin at 37 °C.

Table S1 The basic and clinicopathological information of healthy volunteers and ovarian cancer patients.

Sample No.	Age	Gender	Histological types	FIGO stage	Surgery	Volume of blood (mL)	Number of CTCs
H1	25	Female	N/A	N/A	N/A	3	0
H2	33	Female	N/A	N/A	N/A	3	0
H3	54	Female	N/A	N/A	N/A	3	0
H4	27	Female	N/A	N/A	N/A	3	0
H5	32	Female	N/A	N/A	N/A	3	0
H6	35	Female	N/A	N/A	N/A	3	0
H7	21	Female	N/A	N/A	N/A	3	0

OC1	41	Female	Ovarian serous carcinoma	IIIC	Yes	3	6
OC2	54	Female	Ovarian serous carcinoma	IIC	Yes	3	2
OC3	60	Female	Ovarian serous carcinoma	IIIC	Yes	3	9
OC4	58	Female	Ovarian serous carcinoma	IV	Yes	3	13
OC5	50	Female	Ovarian serous carcinoma	IIIB	Yes	3	5
OC6	74	Female	Ovarian mucinous carcinoma	IIIC	Yes	3	8
OC7	38	Female	Ovarian mucinous carcinoma	IC	Yes	3	1