Electronic Supporting Information

(ESI)

A Light-up Fluorescence Assay for Tumor Cell Detection Based on Bifunctional Split Aptamers

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Table S1. All of the oligonucleotides used in this work.

Probe	**Sequence** (5'→3')
BFSA-a	ACGTCAGGTTGAGCTGAAGATCGTACCGTGAAGTTATTA GTCGTC
BFSA-b	GACGACGACACAGGATTAATA ACTACCTGACGT
3'-FAM-BFSA-b	GACGACGACACAGGATTAATA ACTACCTGACGT-FAM
ThT.2-2	GACGACGACACAGGATTAATCTTATTAGTCGTC
Random	FAM-N(52nt)
Helper1	AGTTATTA ATCCT
Helper2	T AGTTATTA ATCCT
Helper3	GT AGTTATTA ATCCT
Helper4	GGT AGTTATTA ATCCT
Helper5	AGGT AGTTATTA ATCCT
Helper6	AGGT AGTTATTA ATCCTG
SP2-6a	CCATCA GACACAGGAT TAACCT
SP2-6b	AGGTTA TGATGG
SP2-7a	A CCATCA GACACAGGAT TAACCT C
SP2-7b	G AGGTTA TGATGG T
SP2-8a	GA CCATCA GACACAGGAT TAACCT CA
SP2-8b	TG AGGTTA TGATGG TC
SP2-9a	CGA CCATCA GACACAGGAT TAACCT CAT
SP2-9b	ATG AGGTTA TGATGG TCG
SP2-10a	ACGA CCATCA GACACAGGAT TAACCT CATC
SP2-10b	GATG AGGTTA TGATGG TCGT
SP2-11a	CACGA CCATCA GACACAGGAT TAACCT CATCA
SP2-11b	TGATG AGGTTA TGATGG TCGTG

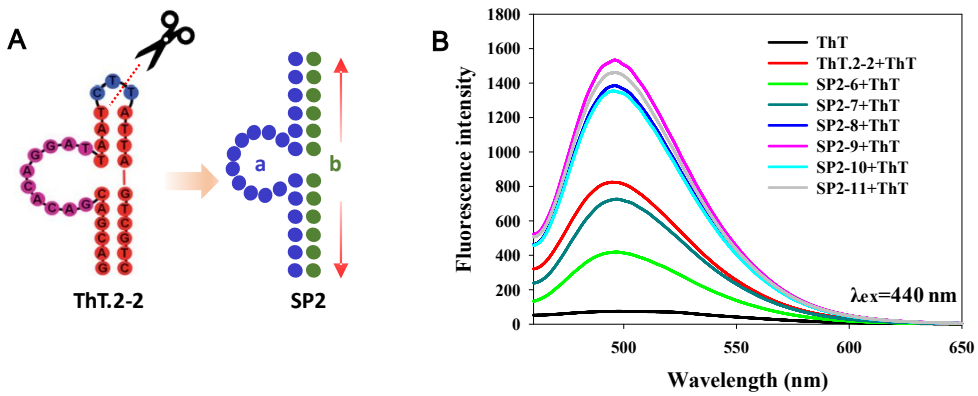

Figure S1. (A) Splitting strategy of ThT.2-2 to construct split aptamer SP2. The ThT.2-2 was cut into two fragments (SP2-a and SP2-b) from the red dotted line and the two stems of SP2 was gradually increased to 11 base pairs along the red arrows. (B) Investigation of binding ability of SP2 with different steam lengths to ThT by fluorescence spectra. SP2-6, SP2-7, SP2-8, SP2-9, SP2-10 and SP2-11 represent the two stems of SP2 with 6, 7, 8, 9, 10 and 11 pairs of complementary bases respectively. The red line represents the fluorescence spectrum of ThT incubated with ThT.2-2, the black line represents the fluorescence spectrum of ThT dissolved in binding buffer. The structure of split aptamer SP2 simulated by the NUPACK software (http://www.nupack.org/partition/new).

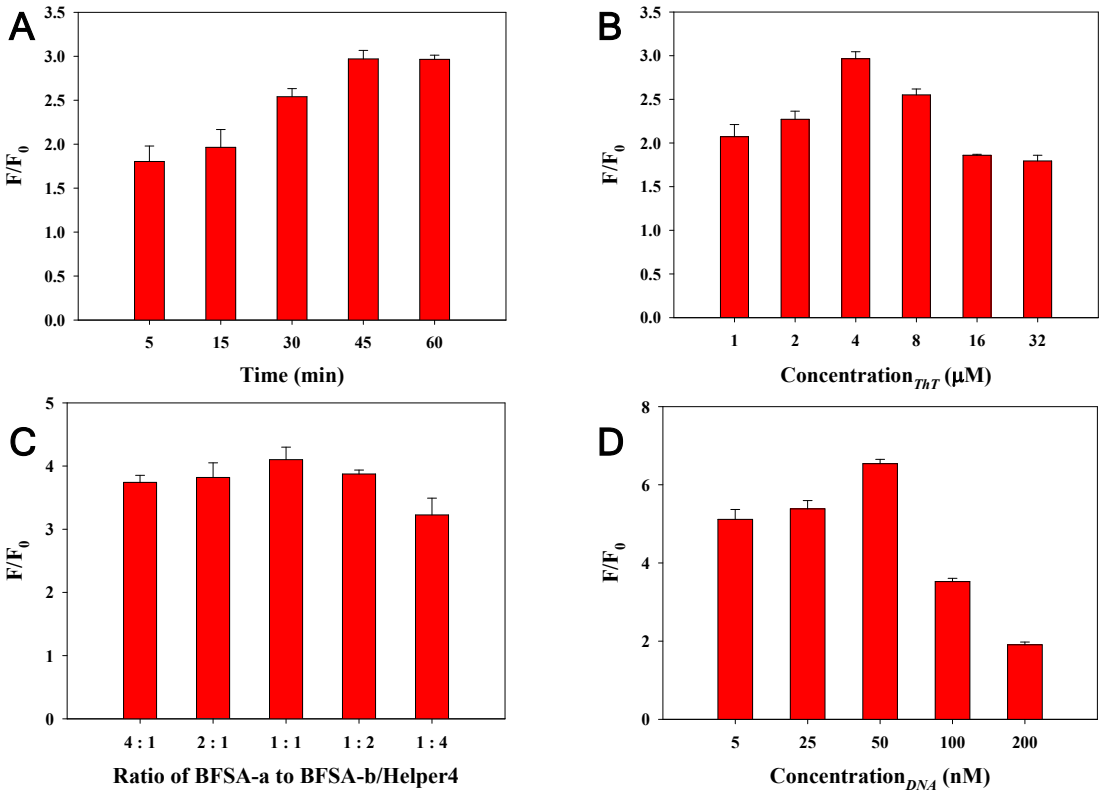

Figure S2. The effect of different experimental conditions for label-free detection of tumor cells using the light-up fluorescence probe. (A) Different incubation time, 5 μM ThT, probe ratio: 1:1, 100 nM probes. (B) Different concentration of ThT, incubation time: 45 min, probe ratio: 1:1, 100 nM probes. (C) Different probe ratio, incubation time: 45 min, 4 μM ThT, 100 nM probes. (D) Different probe concentration, incubation time: 45 min, 4 μM ThT, probe ratio: 1:1.