

## Supporting Information

### A portable and partitioned DNA hydrogel chip for multitarget detection

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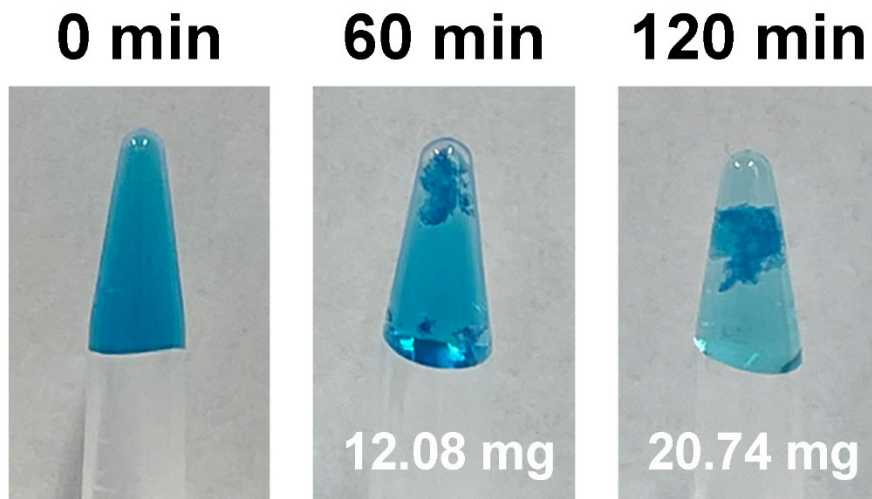
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<sup>#</sup>Yi Guo and Wenxing Li contributed equally to this work.

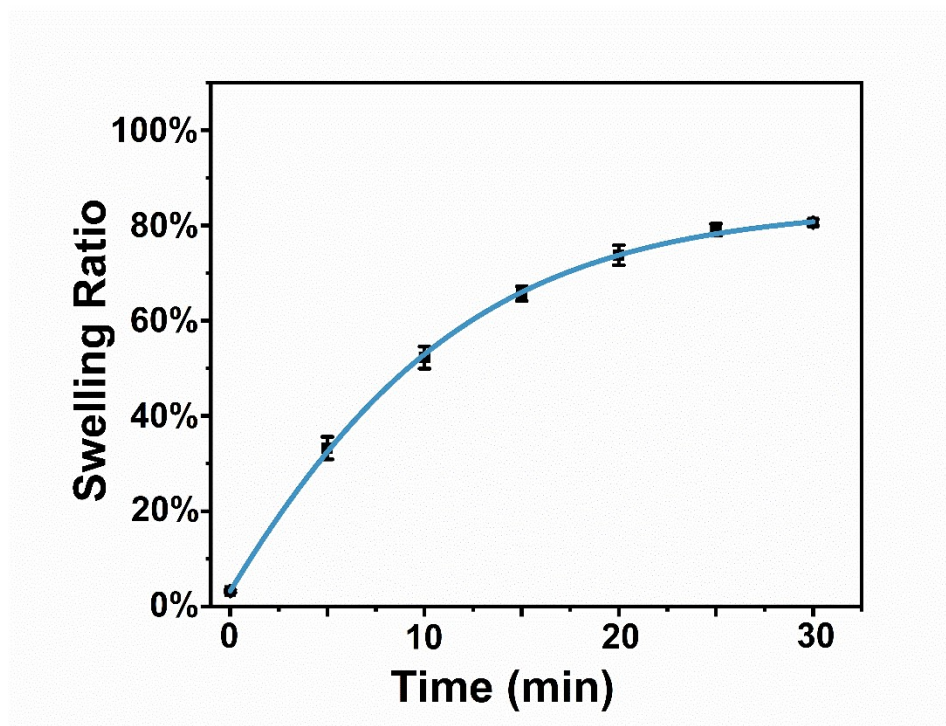
**Table S1.** Sequences of DNA oligonucleotides used in this work

oligonucleotide	Sequence (5'→3')
Circular DNA 1 (C1)	PO <sub>4</sub> -CTT CGC TCT GCA CTG CAT CGA AAA AAA ACC CAA CCC GCC CTA AAA AAA ACA GAG TCA AGA GGA GTG AGT AAA AAA AA
Circular DNA 2 (C2)	PO <sub>4</sub> -CGA TGC AGT GCA GAG CGA AGA AAA AAA ACA CCC AAG CAG GCA AAA AAA ACA GAG TCA AGA GGA GTG AGT AAA AAA AA
Circular DNA 3 (C3)	PO <sub>4</sub> -TCT CTA GCA GTC CCA CCC TCC AAC CAC CAA GCC TCA GCT ACA CGA ATT GCC GAA CGC ACG CGA TCC GCA TGT GGA AAA
Circular DNA 4 (C4)	PO <sub>4</sub> -GAG GGT GGG ACT GCT AGA GA GCA CTC ATA TTC CGA CGA CTG GCA CCG ATA AAA GAT CGC ATG TGG AAA A
Primer 1 (P1)	NH <sub>2</sub> -GCA GAG CGA AGT TTT TTT TAC TCA CTC C
Primer 2 (P2)	GCA CTG CAT CGT TTT TTT TAC TCA CTC C
Primer 3 (P3)	NH <sub>2</sub> -ACT GCT AGA GAT TTT CCA CAT GCG
Primer 4 (P4)	GTC CCA CCC TCT TTT CCA CAT GCG
Hairpin-ATP (H1)	FAM-CAC CTG <u>GGG GAG TAT TGC GGA GGA AGG</u> TTT TTT TTT TTT TTT TTT TTT TTT TTT TTT TTC CAG G(BHQ)TG TT- N <sub>3</sub>
Hairpin-IFN- $\gamma$ (H2)	Cy3- <u>GGG GTT GGT TGT GTT GGG TGT TGT GTT</u> TTT TTT TTT TTT TTT TTT TTT TTT TTT TTC A(BHQ)AC CCC-N <sub>3</sub>
Hairpin-ATP (w.o. aptamer)	FAM-CAC CTG GTT TTT TTT TTT TTT TTT TTT TTT TTT TTT TTT TTT TTT TTT TTT TTT TTC CAG GTG TT-N <sub>3</sub>
Hairpin-IFN- $\gamma$ (w.o. aptamer)	Cy3- AAA CCC CTTTTTTTTTTTTTTTTTTTTTTT TTT TTT TTT TTT TTT TTT TTT TTT TTT TTG GGG TTT-N <sub>3</sub>

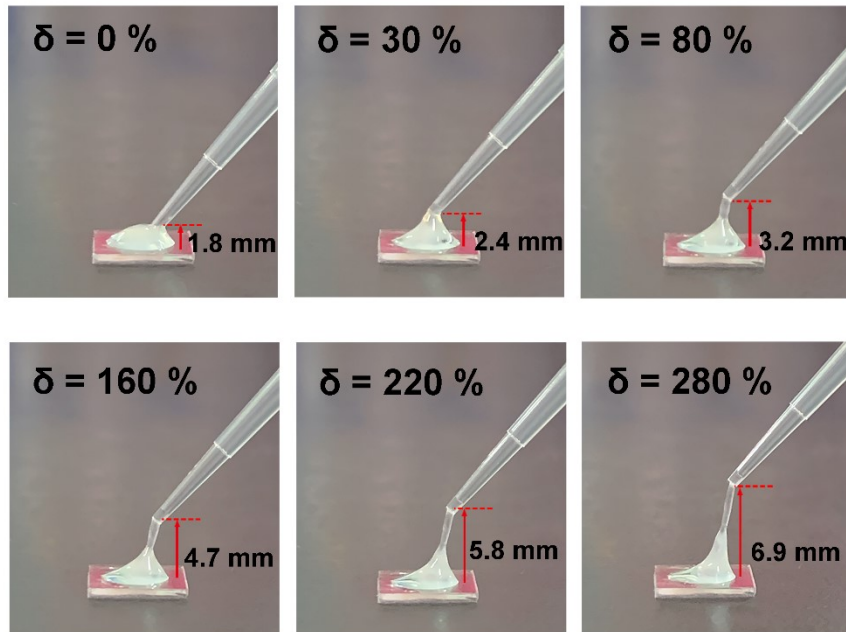
The underline indicates aptamer.



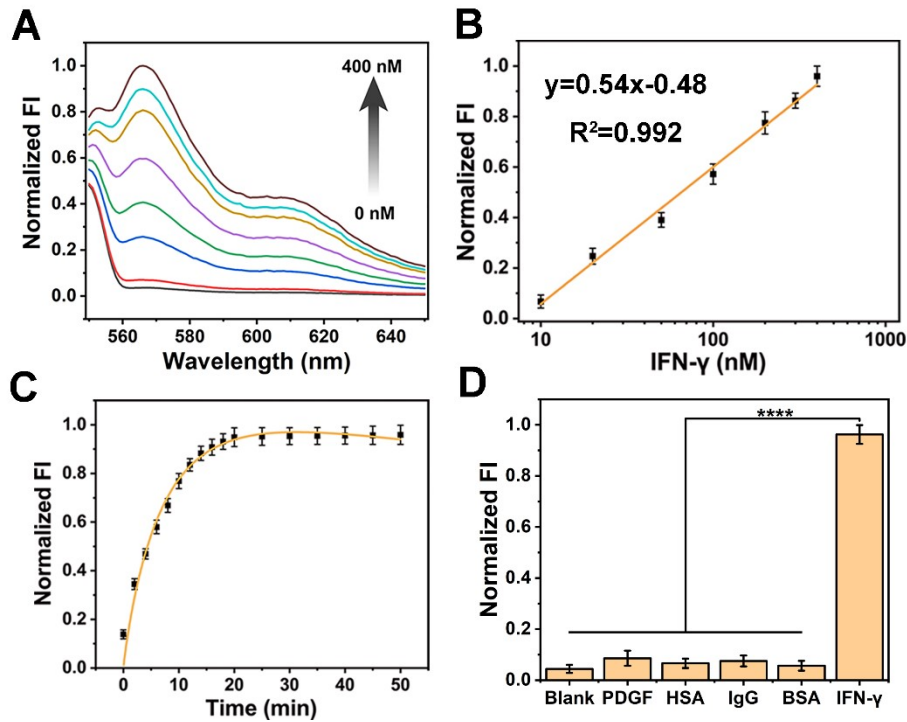
**Figure S1.** Quantitative characterization of DNA hydrogels. The DNA hydrogel (stained by methylene blue) was weighed by using an electronic balance.



**Figure S2.** Swelling properties of DNA hydrogels. The DNA hydrogel that swelled at different times was weighed by using an electronic balance. Error bars represent standard deviations from three replicates.



**Figure S3.** Tensile properties of hydrogels after drying and swelling.



**Figure S4.** Validation of interferon- $\gamma$  detection in solution. (A) Fluorescence spectra of different concentrations of IFN- $\gamma$ . (B) Linear fitting curves of fluorescent intensity in response to IFN- $\gamma$  (10-400 nM). The linear regression equation is  $y=0.54x-0.48$  ( $R^2=0.992$ ). (C) Kinetics of fluorescent hairpins in response to IFN- $\gamma$ . (D) Fluorescence histogram to verify hairpin specificity. Statistical significance was determined by two-tailed Student's t-test; \*\*\*\* $p < 0.0001$ . Error bars represent standard deviations from three replicates.