Electronic Supplementary Information

A RET-Supported Logic Gate Combinatorial Library to Enable Modeling and Implementation of Intelligent Logic Functions

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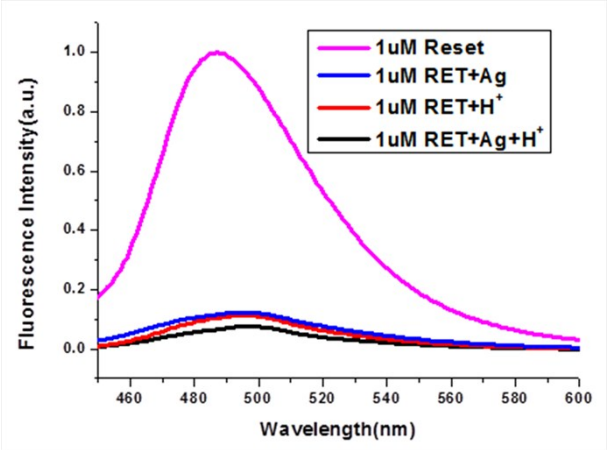


Figure S1. Fluorescent spectra of Reset system for NOR logic gate.

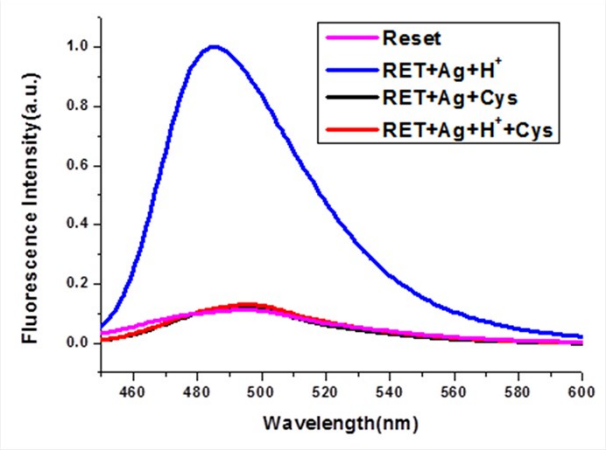
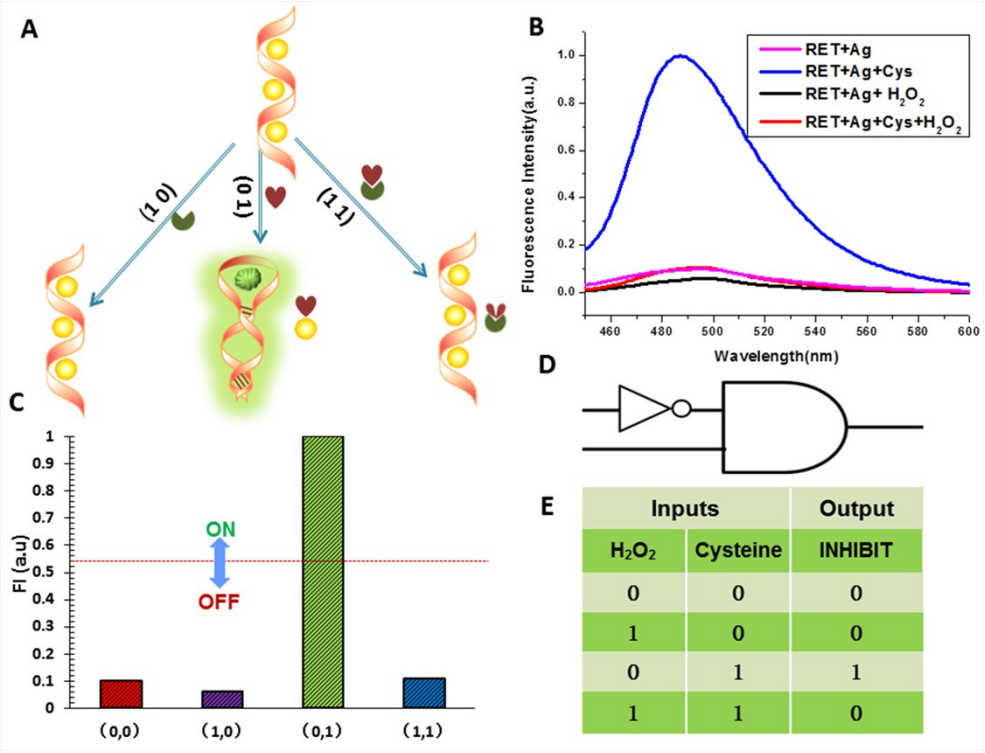


Figure S2. Fluorescent spectra of Reset system for INHIBIT logic gate.



Inputs		Output
H_2O_2	Cysteine	INHIBIT
0	0	0
1	0	0
0	1	1
1	1	0

Figure S3. The "INHIBIT" logic gate. (A) Diagram of the operational design of the "INHIBIT" gate with employing silver deposited RET as the initial state and cysteine, H_2O_2 as inputs; (B) fluorescent spectra of the INHIBIT gate with different combinations of the input; (C) Column diagram of the fluorescence intensities: The red dashed line shows the threshold (0.54); (D) Electronic equivalent circuitry; (E) Truth table of the INHIBIT gate.

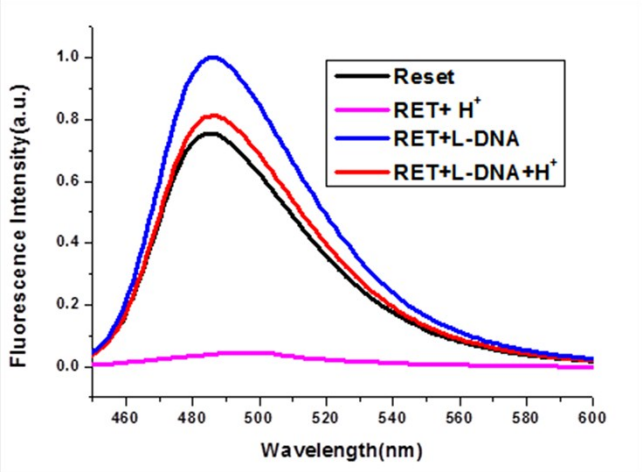
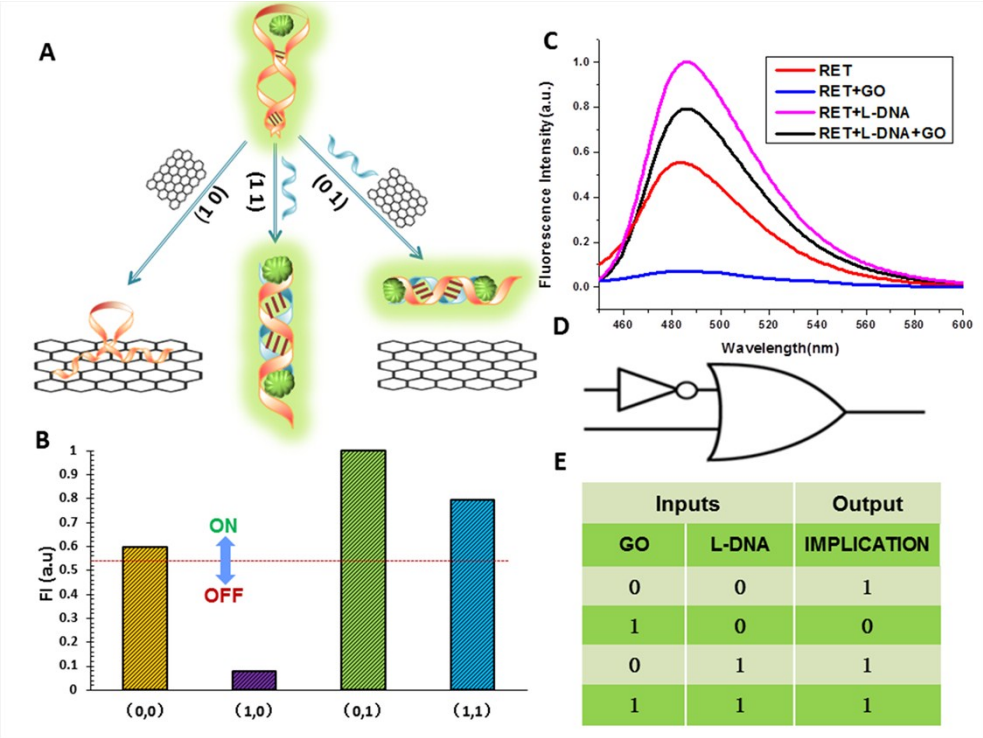
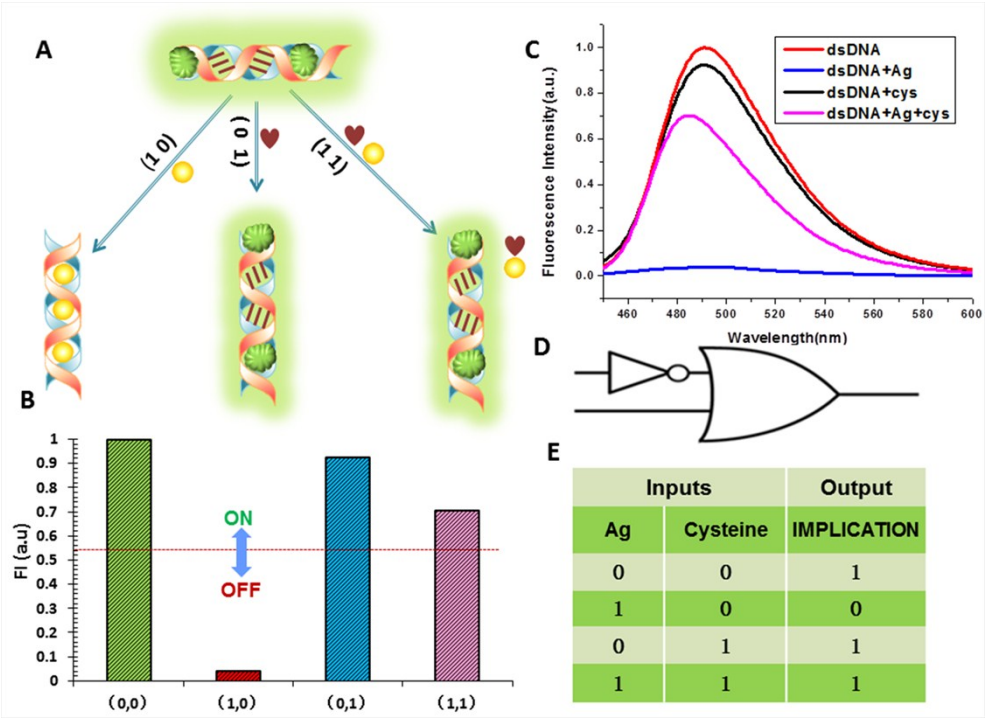


Figure S4. Fluorescent spectra of Reset system for IMPLICATION logic gate.



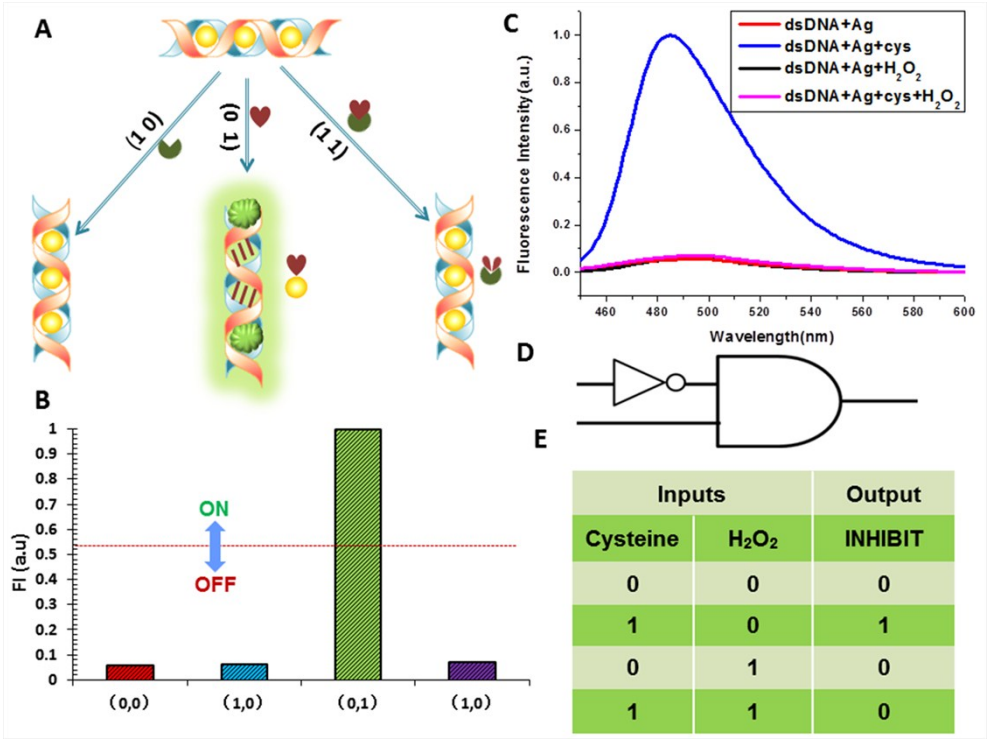
Inputs		Output
GO	L-DNA	IMPLICATION
0	0	1
1	0	0
0	1	1
1	1	1

Figure S5. The "IMPLICATION" logic gate. (A) Diagram of the operational design of the "IMPLICATION" gate with employing RET as the initial state and GO, L-DNA as inputs; (B) fluorescent spectra of the IMPLICATION gate with different combinations of the inputs; (C) Column diagram of the fluorescence intensities: The red dashed line shows the threshold (0.54); (D) Electronic equivalent circuitry; (E) Truth table of the IMPLICATION gate.



Inputs		Output
Ag	Cysteine	IMPLICATION
0	0	1
1	0	0
0	1	1
1	1	1

Figure S6. The "IMPLICATION" logic gate. (A) Diagram of the operational design of the "IMPLICATION" gate with employing dsDNA as the initial state and silver deposition, cysteine as inputs; (B) fluorescent spectra of the IMPLICATION gate with different combinations of the inputs; (C) Column diagram of the fluorescence intensities: The red dashed line shows the threshold (0.54); (D) Electronic equivalent circuitry; (E) Truth table of the IMPLICATION gate.



Inputs		Output
Cysteine	H_2O_2	INHIBIT
0	0	0
1	0	1
0	1	0
1	1	0

Figure S7. The "INHIBIT" logic gate. (A) Diagram of the operational design of the "INHIBIT" gate employed silver deposited dsDNA as the initial state and cysteine, H_2O_2 as inputs; (B) fluorescent spectra of the INHIBIT gate with different combinations of the input; (C) Column diagram of the fluorescence intensities: The red dashed line shows the threshold (0.54); (D) Electronic equivalent circuitry; (E) Truth table of the INHIBIT gate.

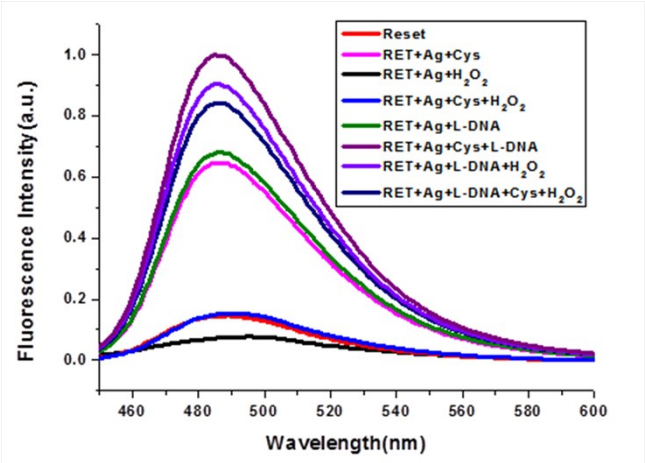


Figure S8. Fluorescent spectra of Reset system for the INHIBIT-OR gate.