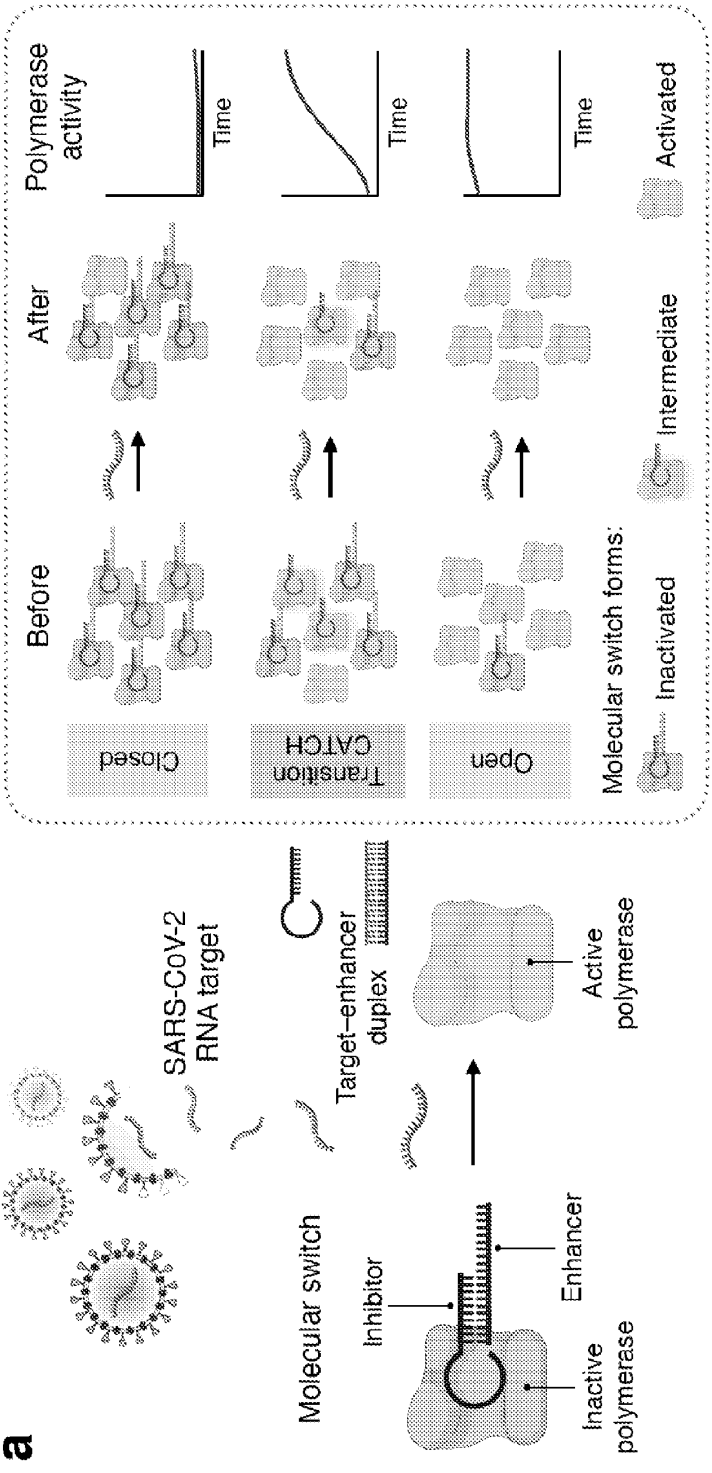


Figure 1



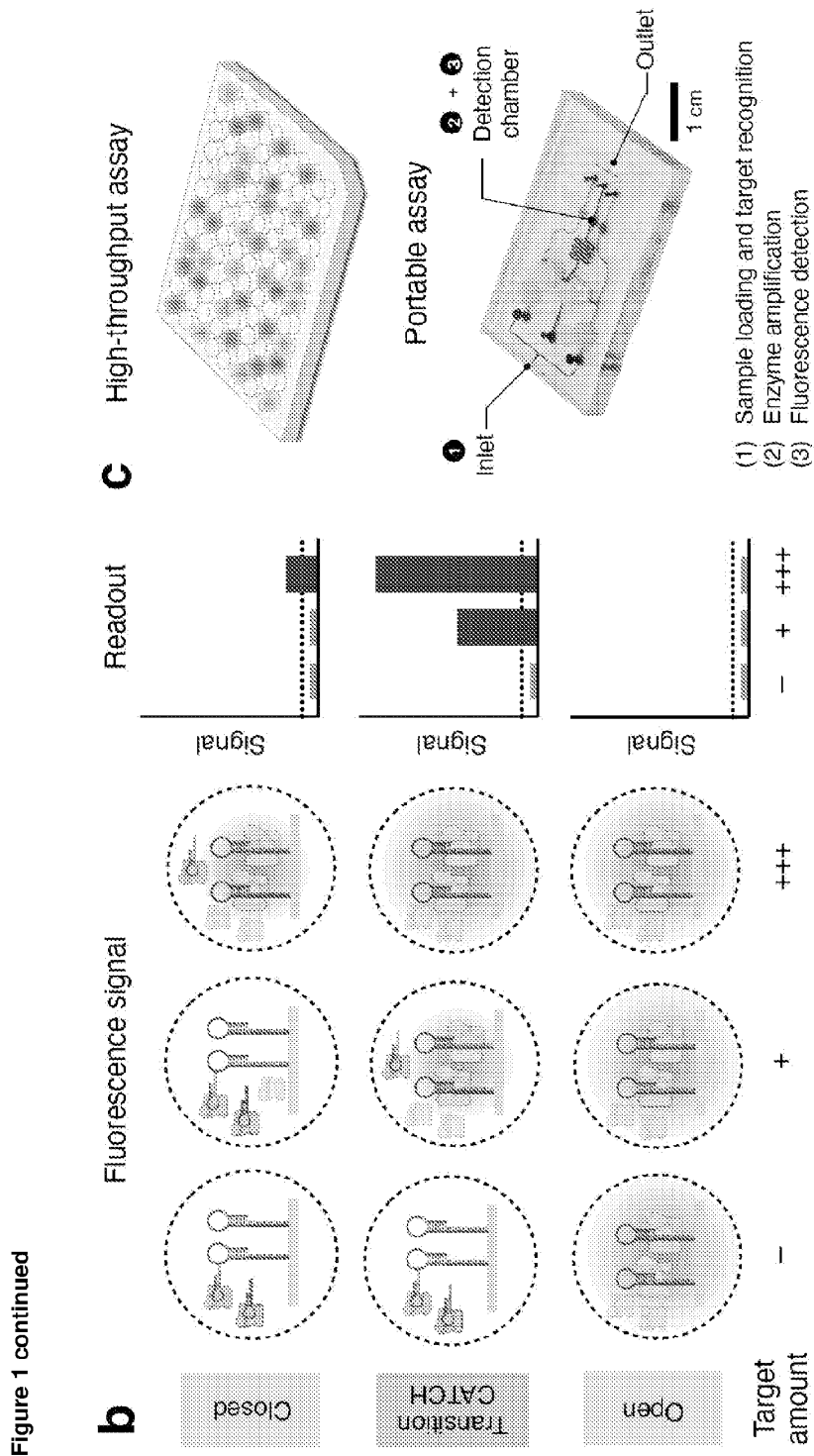


Figure 2

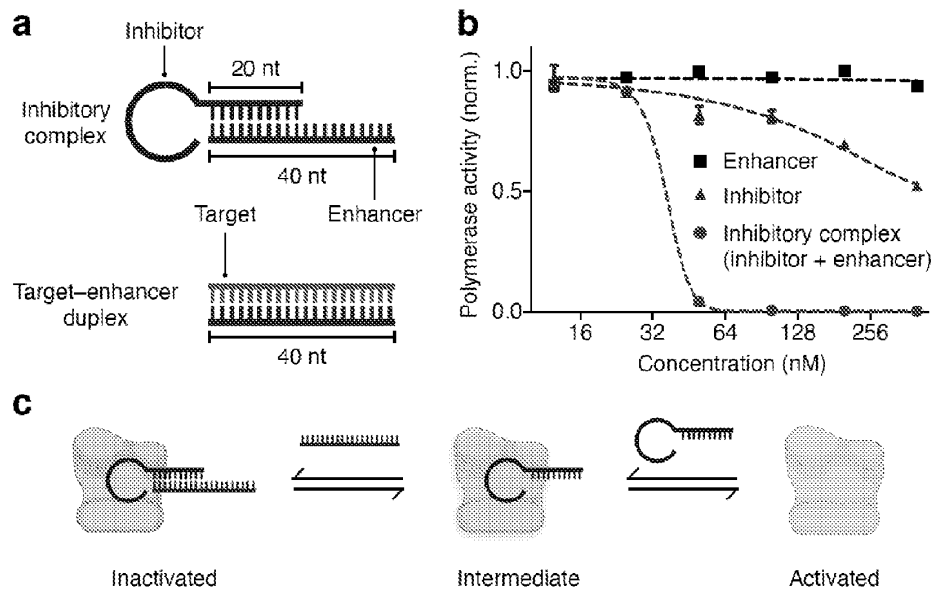


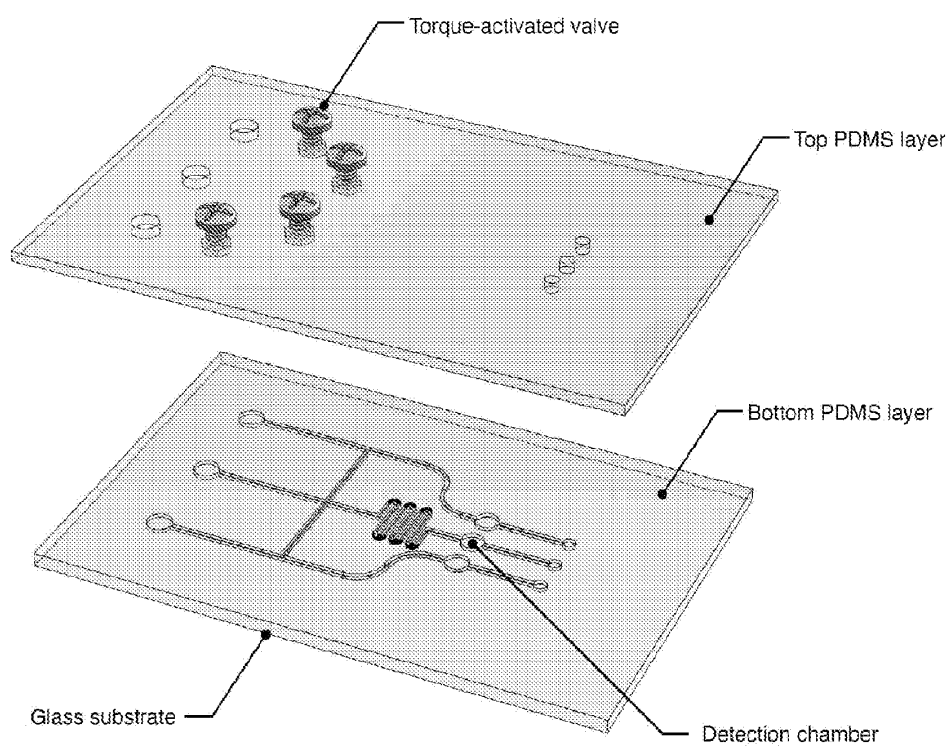
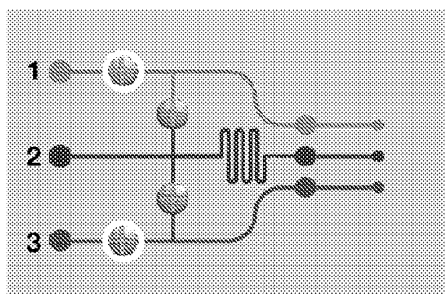
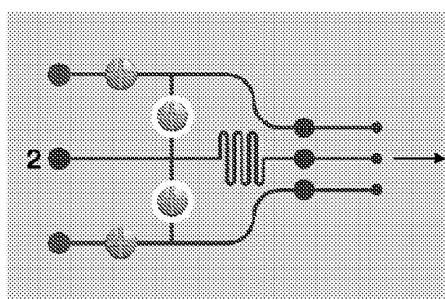
Figure 3

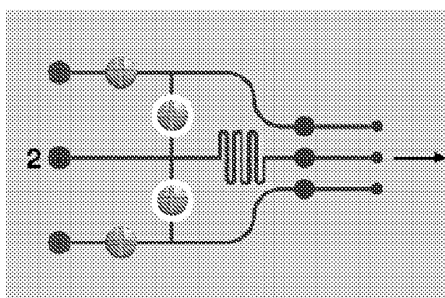
Figure 4

**Step 1: Sample loading and target recognition**

- Samples are introduced into the inlets, reconstituting the lyophilized reagents in the device.
- By opening the valves (white), samples flow into the detection chambers.

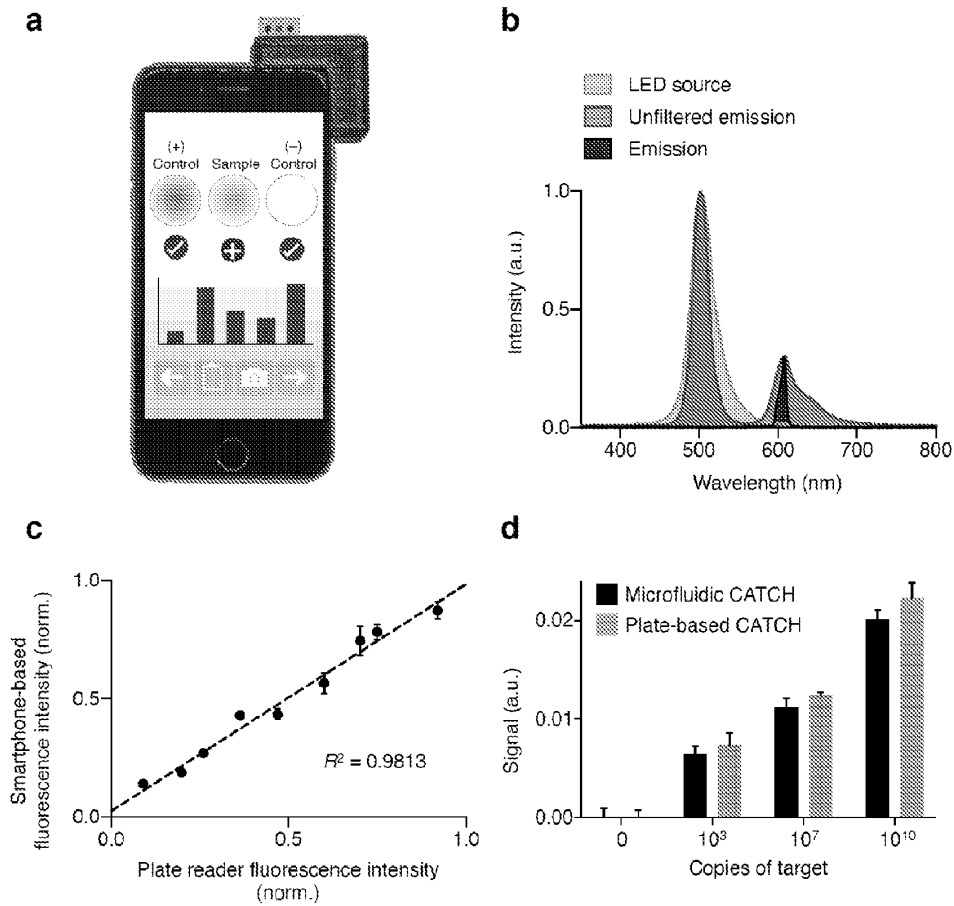
**Step 2: Enzymatic amplification**

- Excess reagent mixtures are removed via the waste outlet.
- By opening the valves (white), streptavidin-conjugated HRP is introduced through inlet 2.

**Step 3: Fluorescence detection**

- Unbound HRP is removed and HRP substrate is introduced through inlet 2 into the detection chambers by opening the valves (white).
- On-chip, smartphone-based fluorescence measurements are performed to detect HRP substrate development.

Figure 5



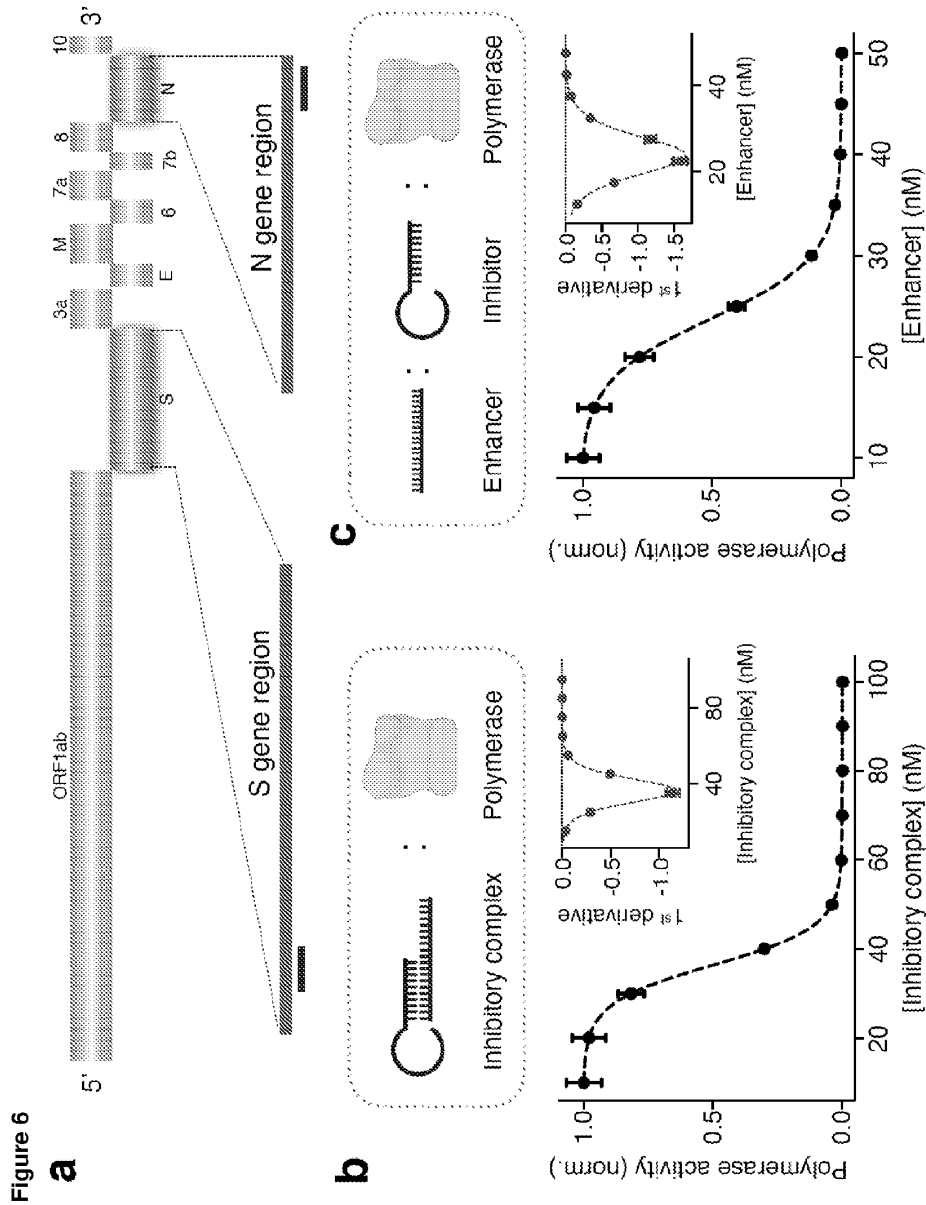


Figure 6 continued

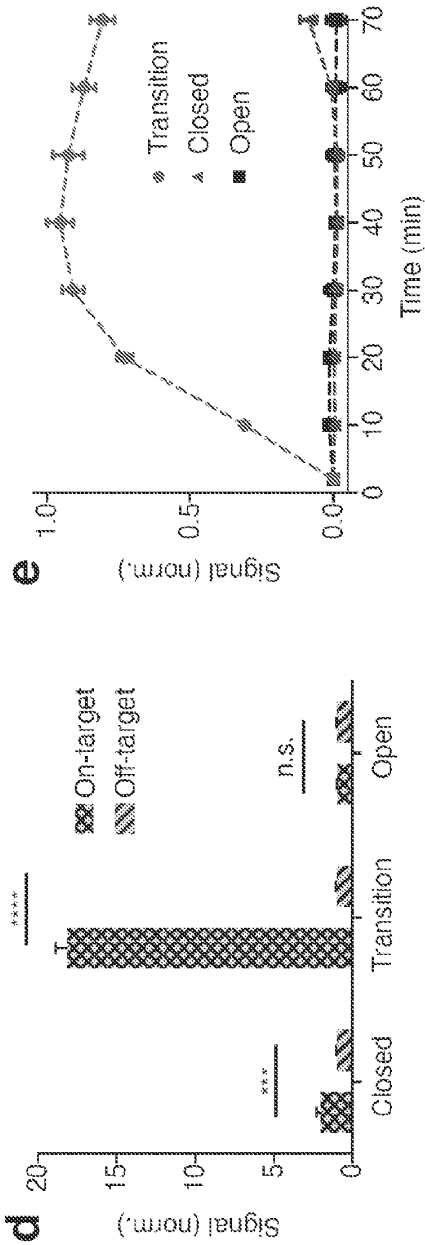


Figure 7

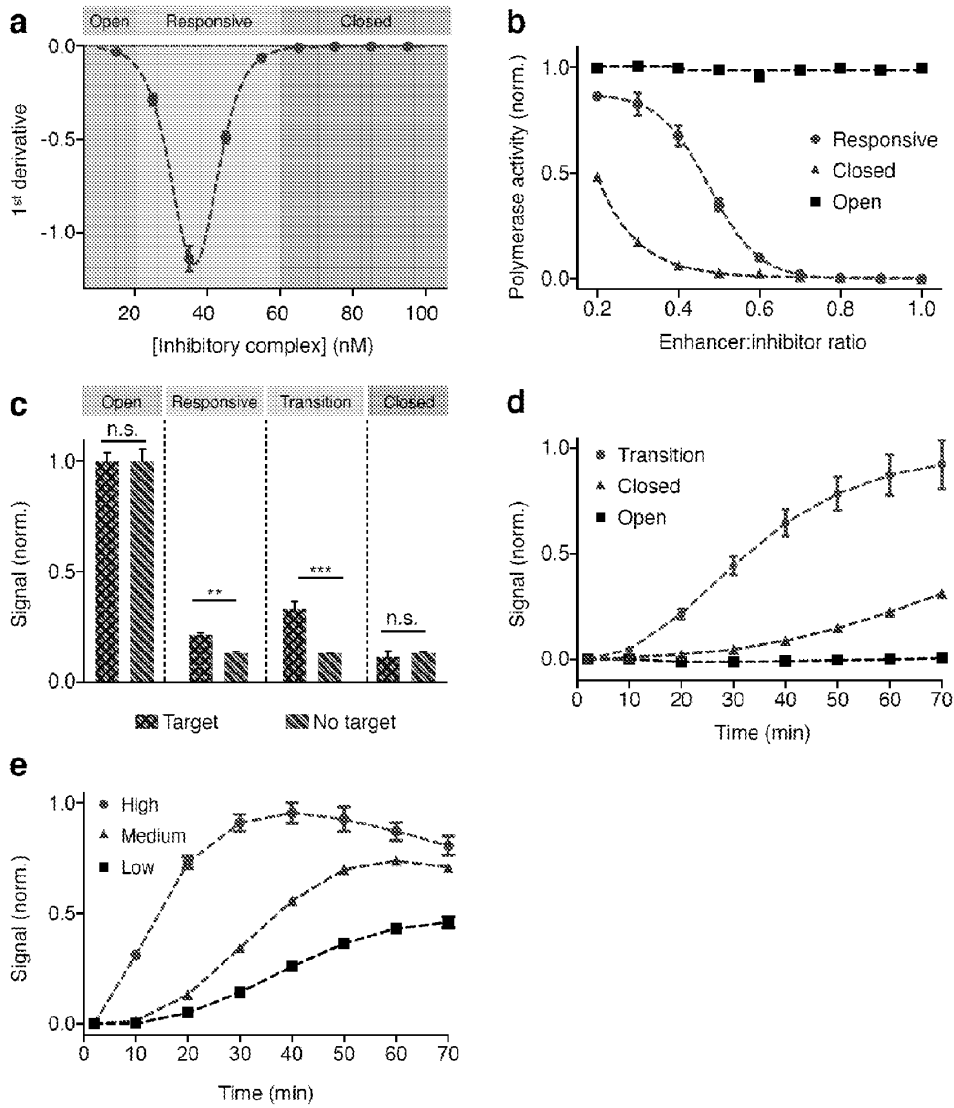


Figure 8

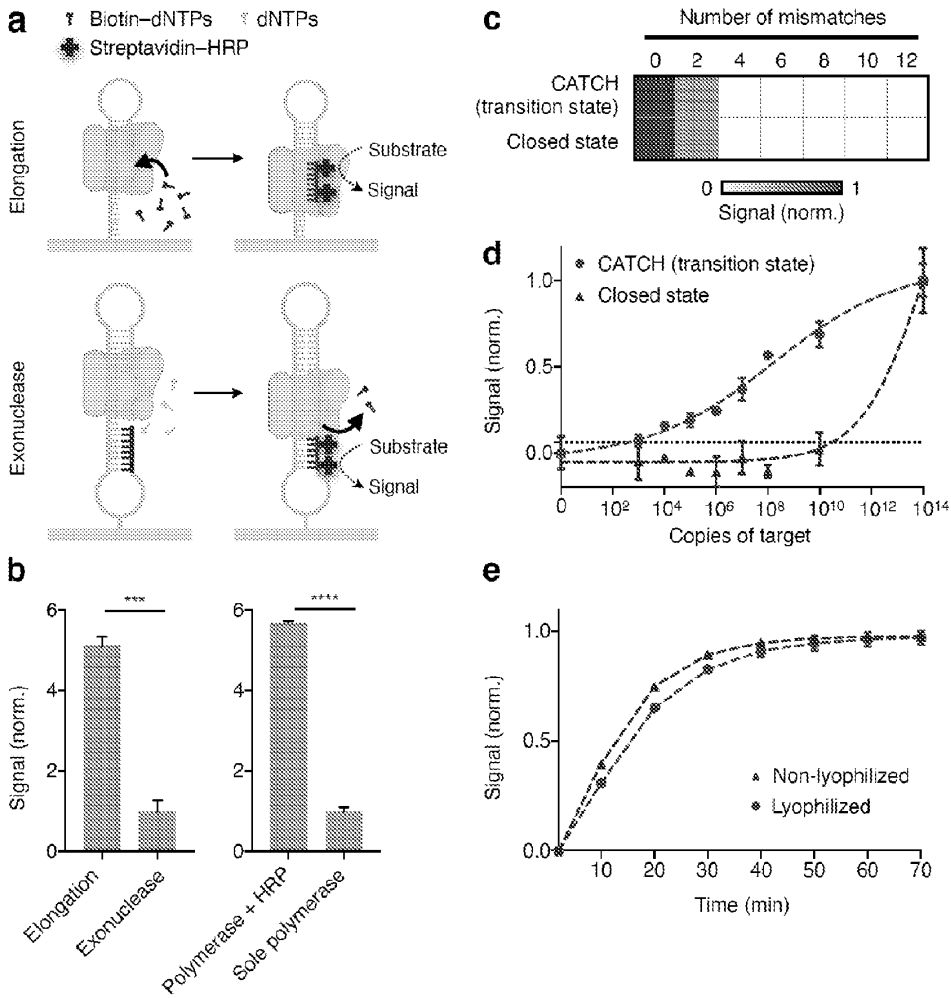


Figure 9

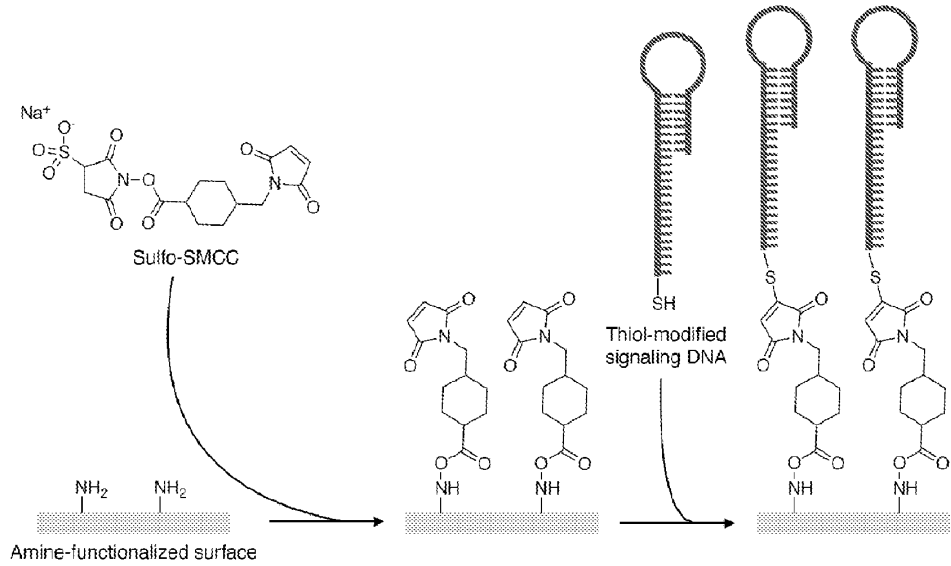


Figure 10

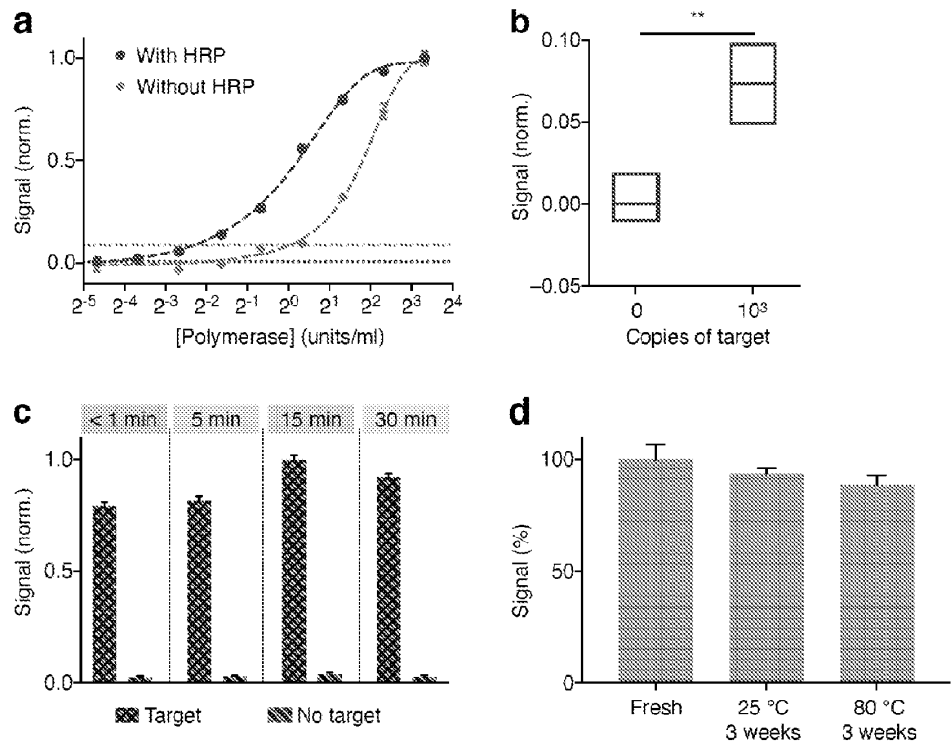


Figure 11

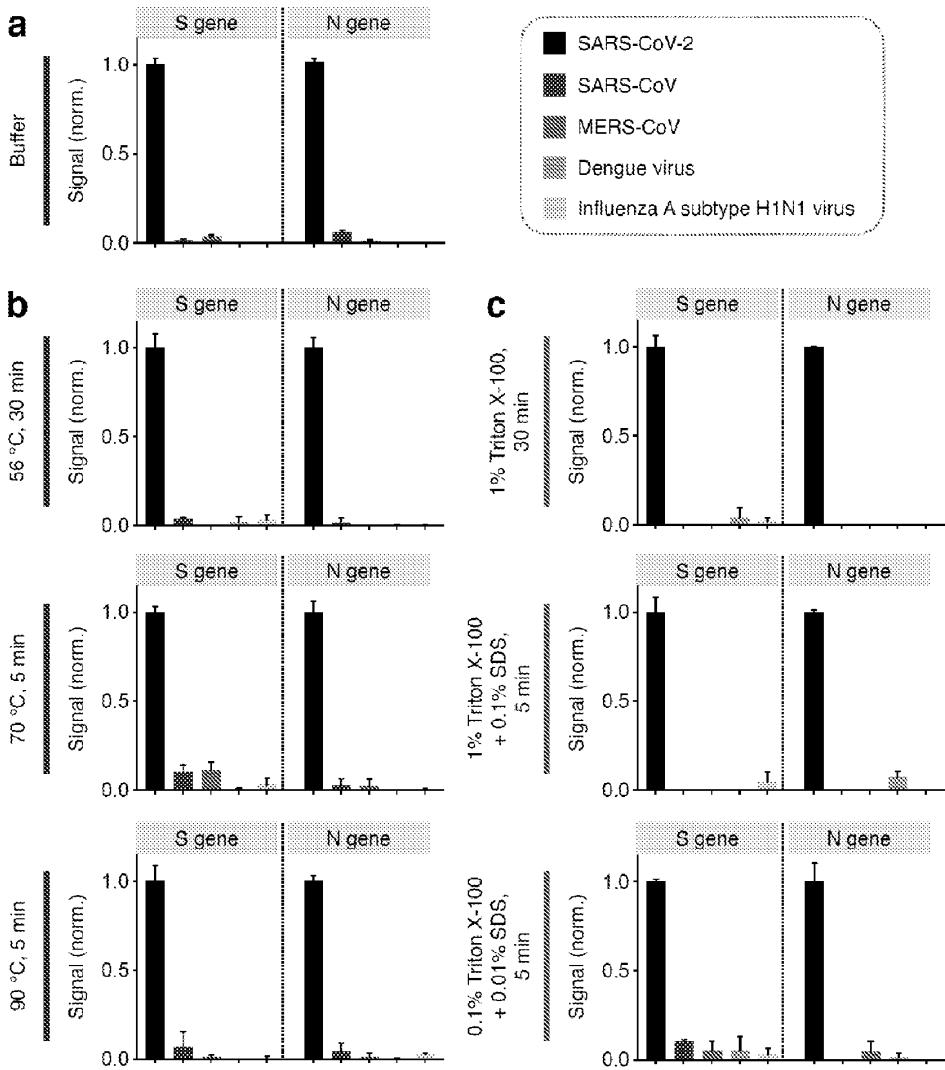


Figure 12

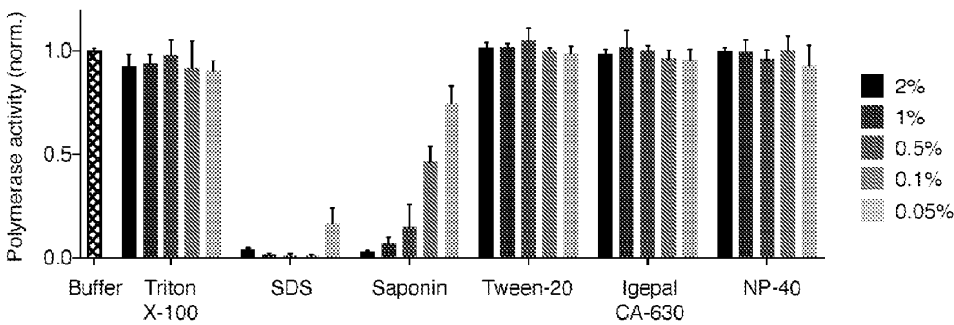


Figure 13

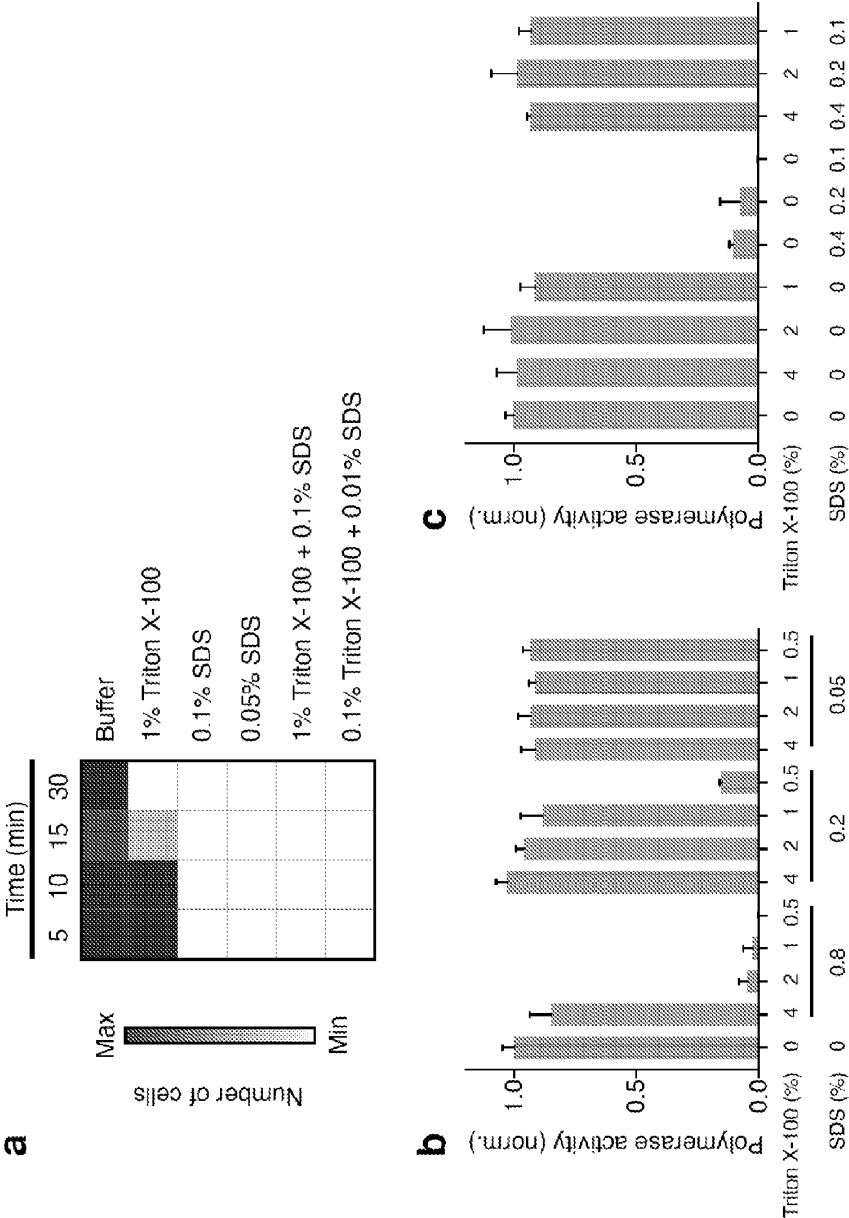


Figure 14

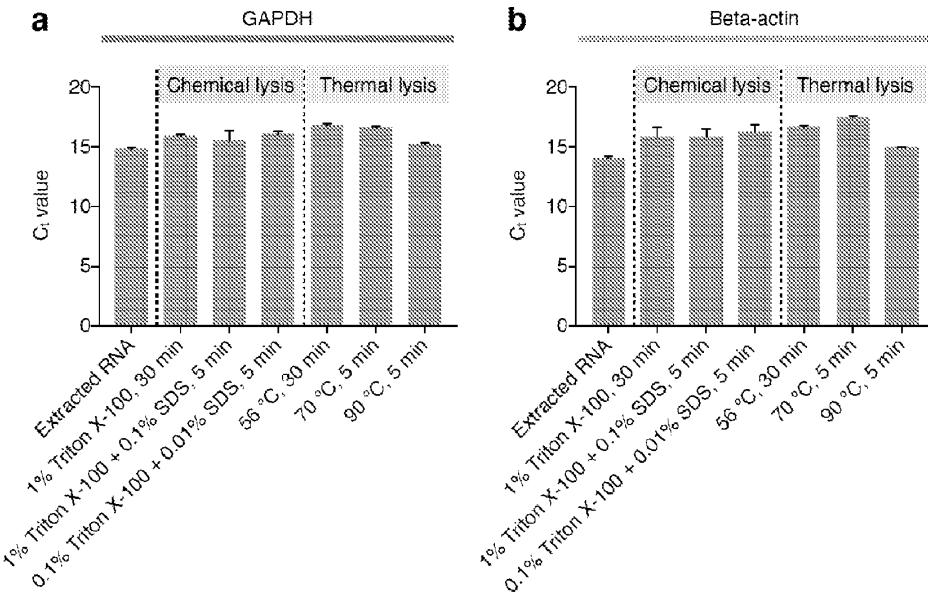


Figure 15

