Supplementary Information

A Timer-Actuated, Immunoassay Cassette for Detecting Molecular Markers in Oral Fluids

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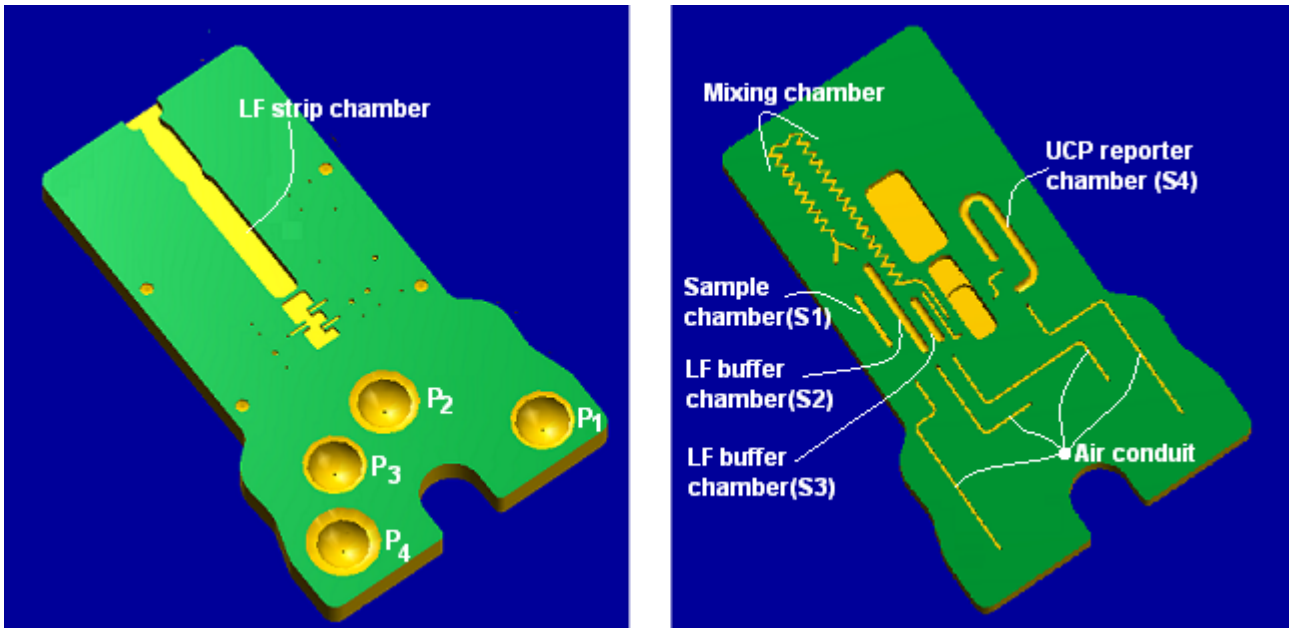
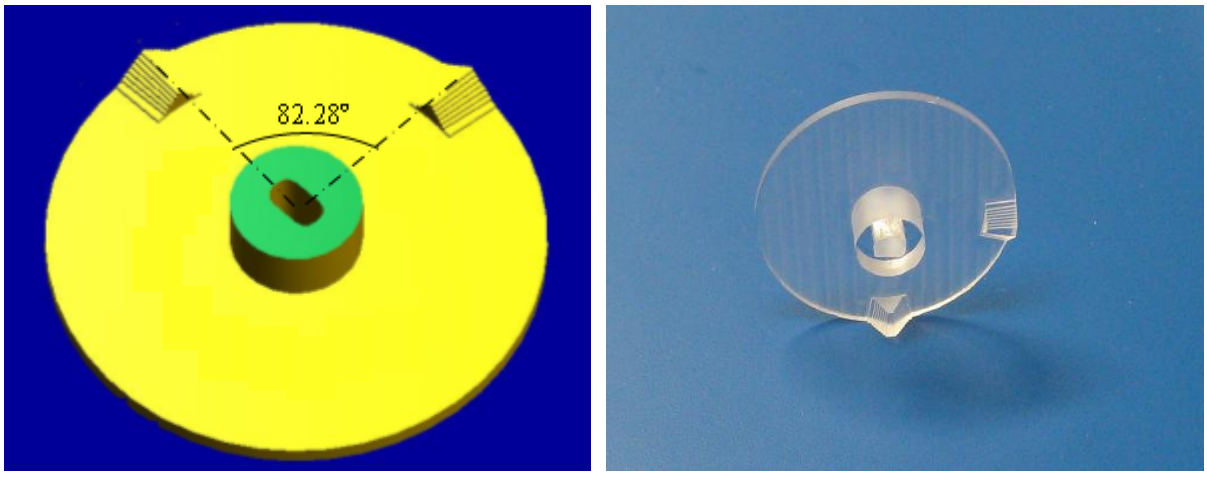


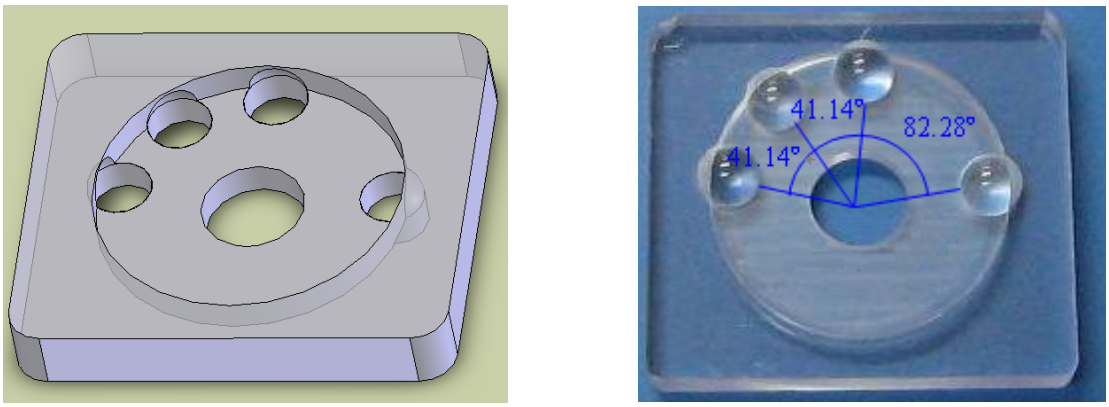
(**A**) (**B**)

Fig. S1: CAD rendering of the polycarbonate, microfluidic chip. (A) Top surface: the diameters of pouches P_1, P_2, P_3 and P_4 are, respectively, 11mm, 11.5mm, 11mm, and 12mm. (B) Bottom surface with the storage chambers and the mixing, zig-zag conduit.



(A) (B)

Fig. S2: The actuating disc of the timer-based actuator. (A) Three-dimensional CAD rendering. (B) A photograph of the actuating disk..



(A) **(B)**

Fig. S3: The ball-holding cage of the timer actuator. (A) A CAD rendering of the cage. (B) A photograph of the actual cage with the balls.

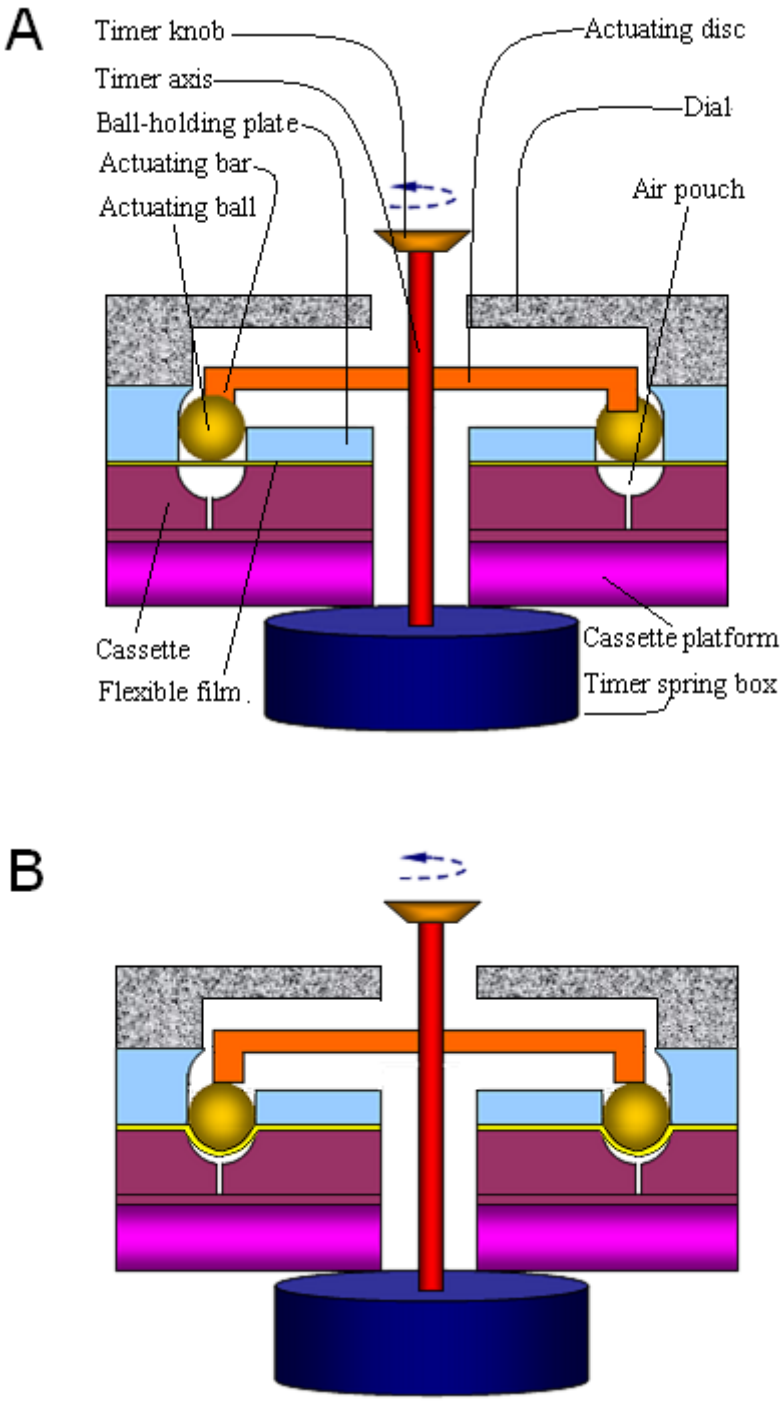


Fig. S4: The actuating mechanism of the timer-based actuator. (A) The position of the actuator prior to the actuation. After the knob is turned clockwise and the timer is set, the self-contained immunoassay cassette is inserted into the cassette bay of the actuator and the actuating disc rotates counter-clockwise. (B) The actuator actuating two pouches, P_1 and P_2, (Fig. 1 in the manuscript) concurrently to facilitate simultaneous discharge of the sample and buffer from chambers S1 and S2 and mixing.

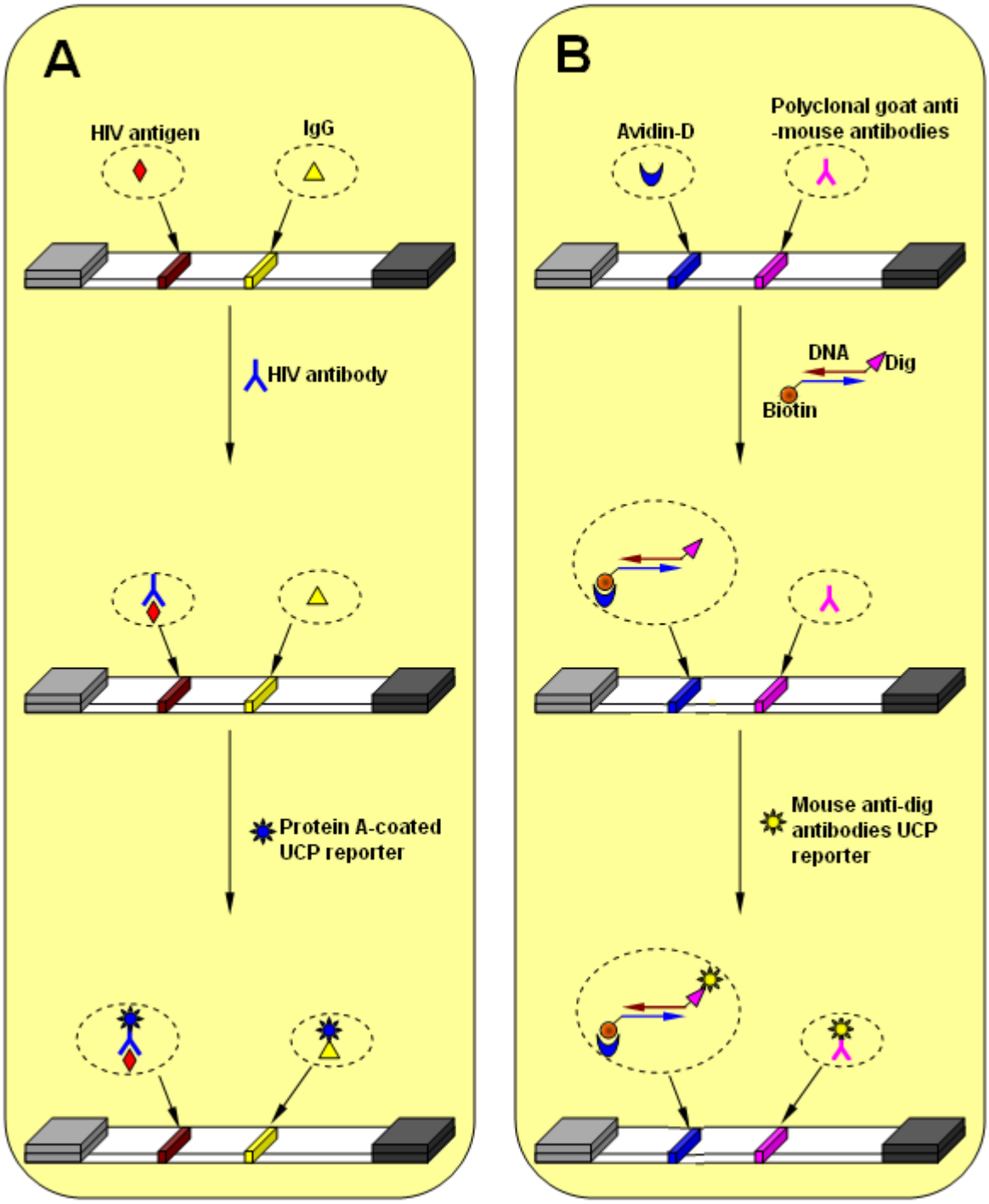


Fig. S5: A schematic of the UCP-LF based immunoassay. (A) HIV antibody test. (B) Haptenized DNA test.