Lab on a Chip

ARTICLE

A simple check valve for microfluidic point of care diagnostics

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Electronic supplementary information

Table S1—Primers and quenching probe used for QUASR RT-LAMP detection of WNV. The underlined nucleotide in the quenching probe is mismatched to the corresponding base in the FIP primer. ROX = 5' carboxy-X-rhodamine NHS ester modification; IBRQ = 3'-Iowa Black RQ quencher modification.

Primer Name	Genome position	Sequence	Source
WNV F3	1028-1046	TGGATTTGGTTCTCGAAGG	Parida et al., 2004 [15]
WNV B3	1228-1210	GGTCAGCACGTTTGTCATT	Parida et al., 2004 [15]
WNV FIP-ROX	1121-1100 (F1c)	ROX-TTGGCCGCCTCCATATTCATCA + TTTT +	Ball et al, 2016 [14]
(F1c + TTTT + F2)	1050-1069 (F2)	CAGCTGCGTGACTATCATGT	
WNV BIP	1144-1165 (B1)	TGCTATTTGGCTACCGTCAGCG + TTTT +	Parida et al., 2004 [15]
(B1c + TTTT + B2)	1208-1190 (B2c)	TGAGCTTCTCCCATGGTCG	
WNV LF	1093-1075	CATCGATGGTAGGCTTGTC	Parida et al., 2004 [15]
WNV LB	1169-1186	TCTCCACCAAAGCTGCGT	Parida et al., 2004 [15]
Quencher Name		Sequence	Source
WNV FIPc-10m	1112-1121	AGGCCGCCAA-IBRQ	Ball et al., 2016 [14]

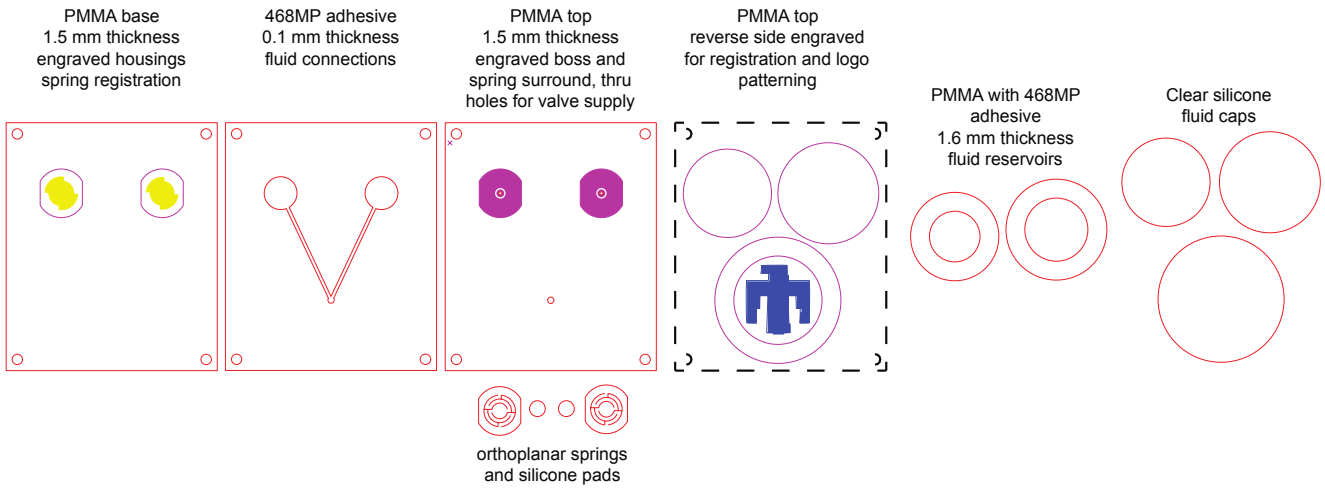

Fig. S1—Schematic for staged reagent delivery device shown in Figure 4A. Solid lines indicate cutting. Shaded areas indicate engraving. Dashed lines indicate that a piece was flipped over for further laser engraving or cutting. Cutting and engraving power correspond to the color used—red is a thru cut, yellow is a deeper feature, and magenta is a surface etch or cut. Features are arranged from left to right in the order of assembly.

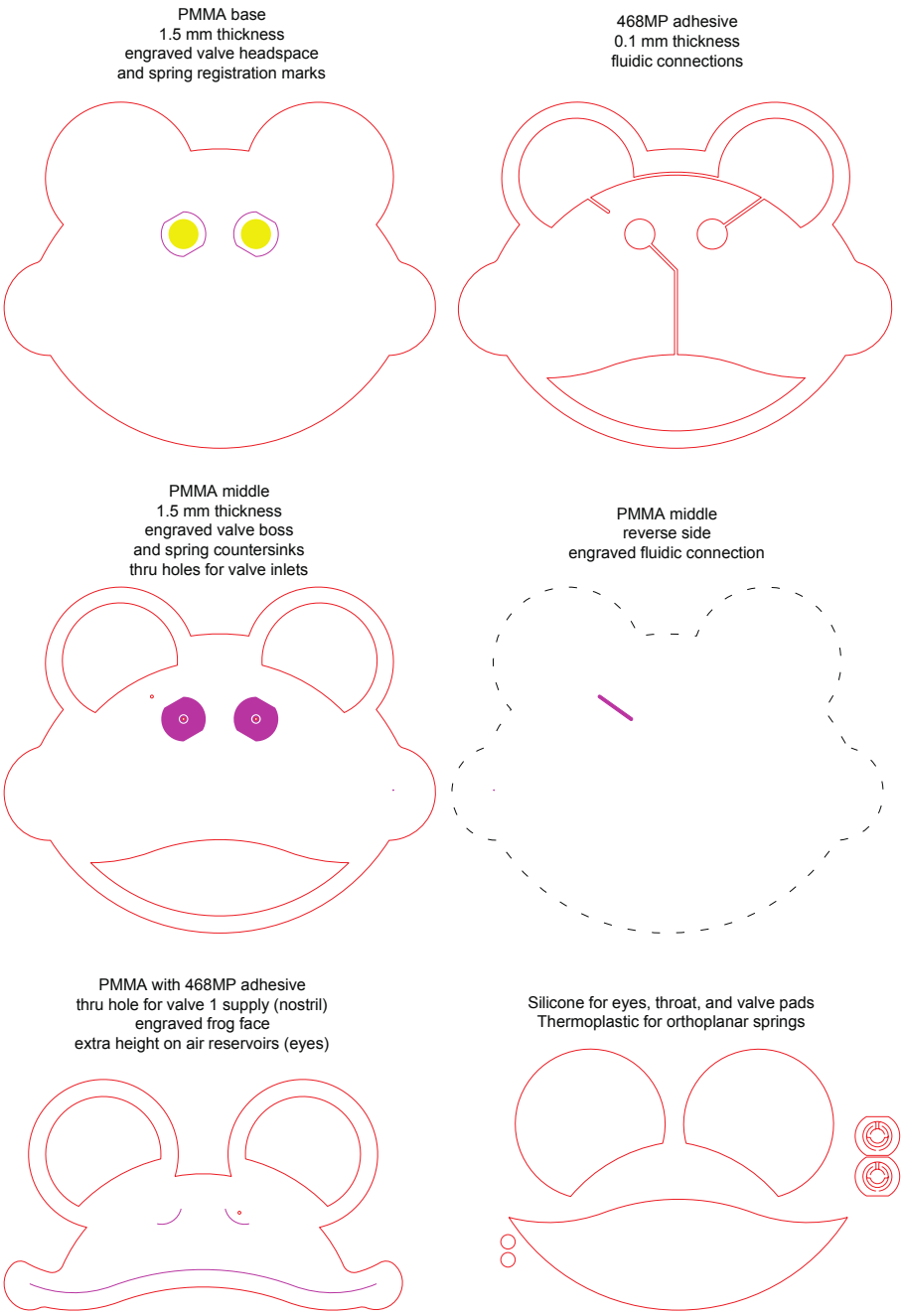

Figure S2—Schematic for fluid (air) pumping device, or microfluidic frog, shown in Figure 4B. Solid lines indicate cutting. Shaded areas indicate engraving. Dashed lines indicate that a piece was flipped over for further laser engraving or cutting. Cutting and engraving power correspond to the color used—red is a thru cut, yellow is a deeper feature, and magenta is a surface etch or cut. Features are arranged from left to right in the order of assembly.

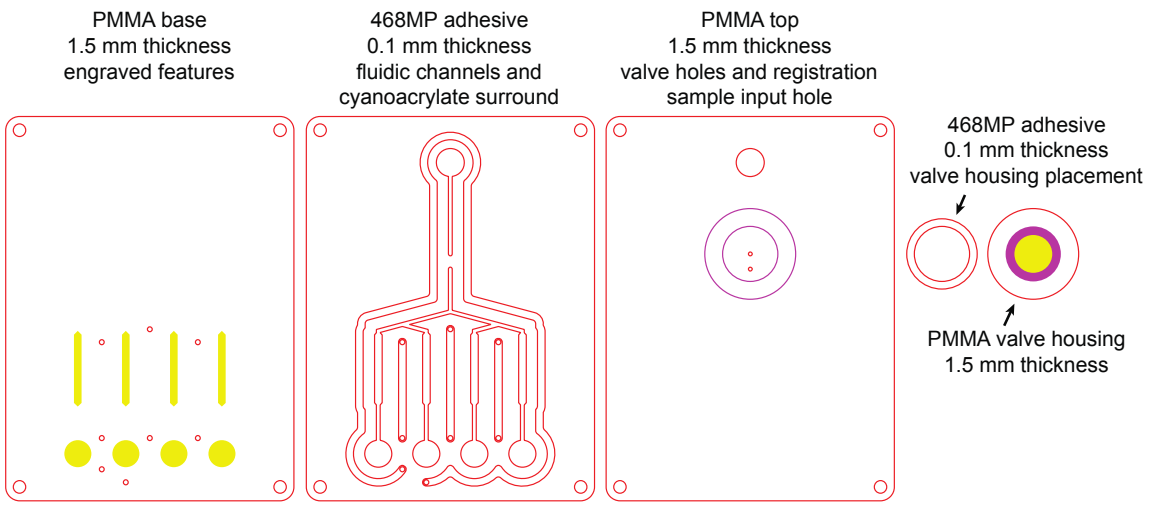

Figure S3— Schematic for RT-LAMP chip, shown in Figure 5A-C. Solid lines indicate cutting. Shaded areas indicate engraving. Cutting and engraving power correspond to the color used—red is a thru cut, yellow is a deeper feature, and magenta is a surface etch or cut. Features are arranged from left to right in the order of assembly. Lase cut valve spring not shown on this schematic, but is equivalent to springs in the main article. Cast 10A durometer silicone was used for the elastomer disc.

Movies 1 (staged delivery) and 2 (pumping microfluidic frog) also uploaded as ESI.