

An Accumulation Pretreatment-free POCT Bio-chip for Visual and Sensitive ABO/Rh Blood Cell Typing

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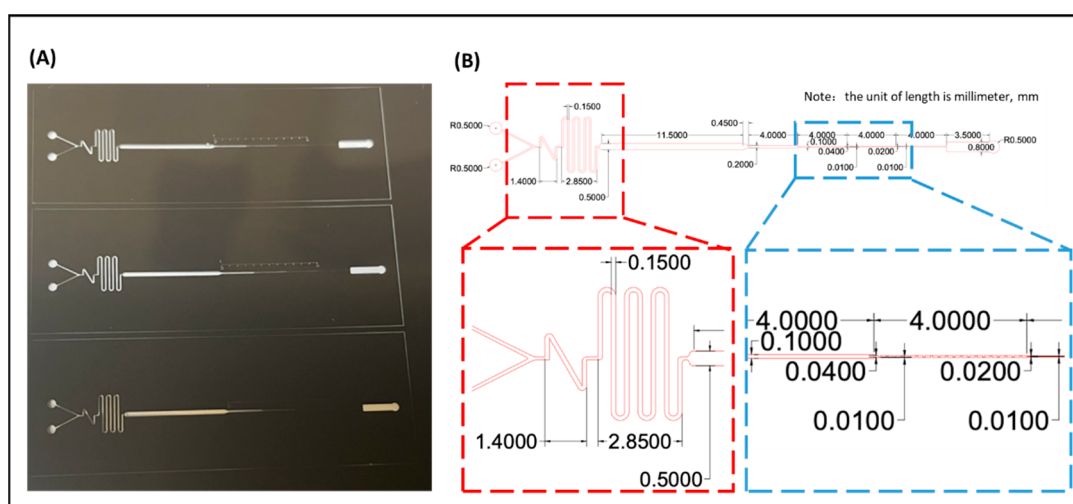


Figure S1. (A) Image of biochip lithography mask. (B) Biochip design dimensioning diagram.

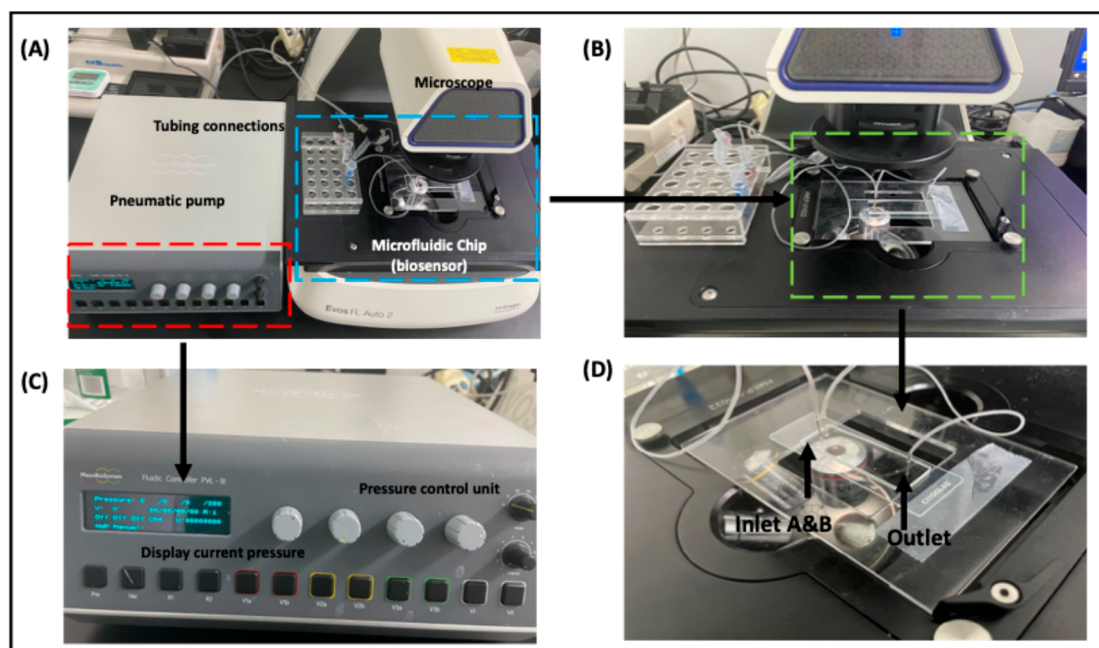


Figure S2. (A) Image of testing system of blood type biochip. (B) Tubing connection between biochip and pneumatic pump. (C) Display panel of pneumatic pump showing the negative pressure. (D) The image of biochip under working conditions.

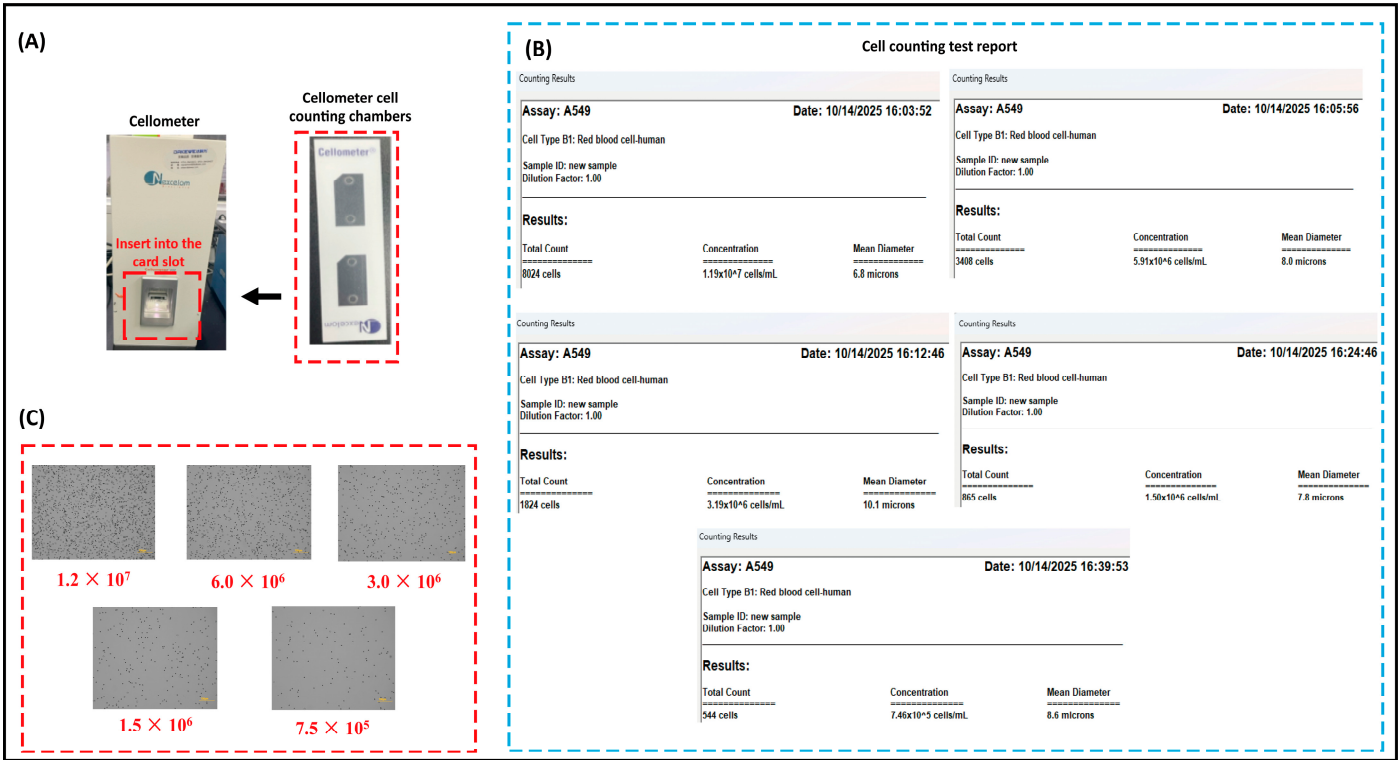


Figure S3. (A) Image of automatic cell counter and cell counting chamber. (B) Testing report of red blood cells (RBCs) obtained using the Cellometer K2 Cytometer. (C) Images showing different RBC concentrations.

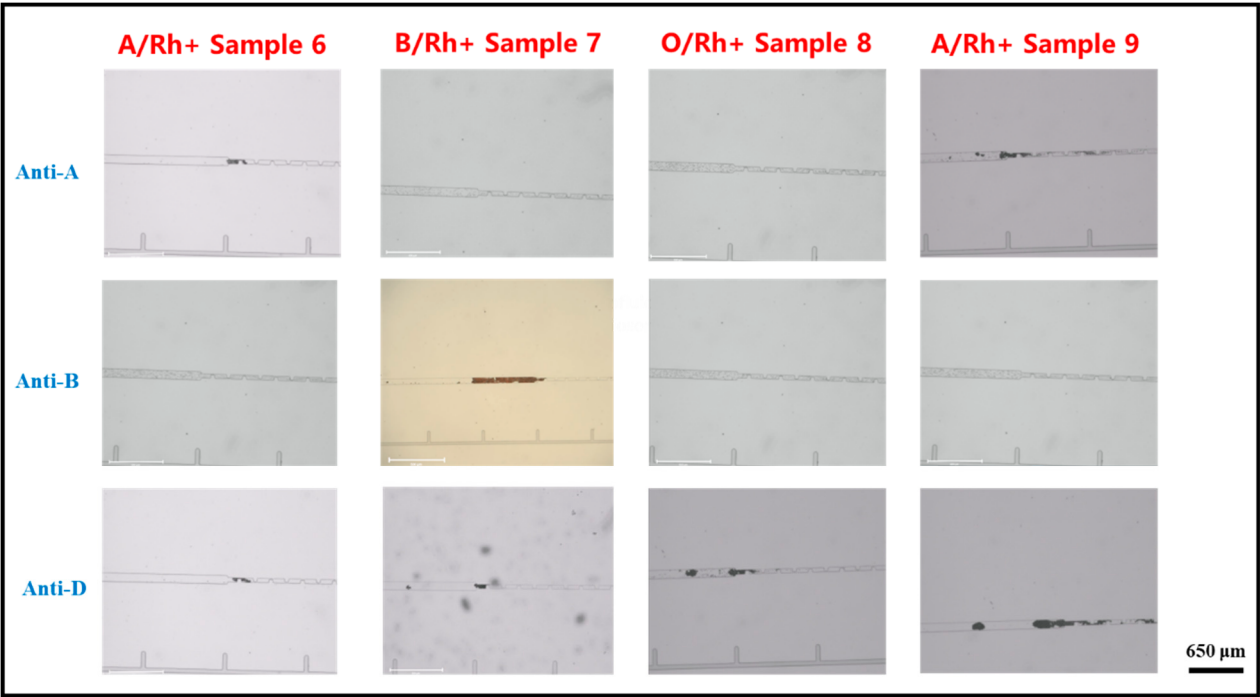


Figure S4. Testing results of clinical blood sample for blood typing.

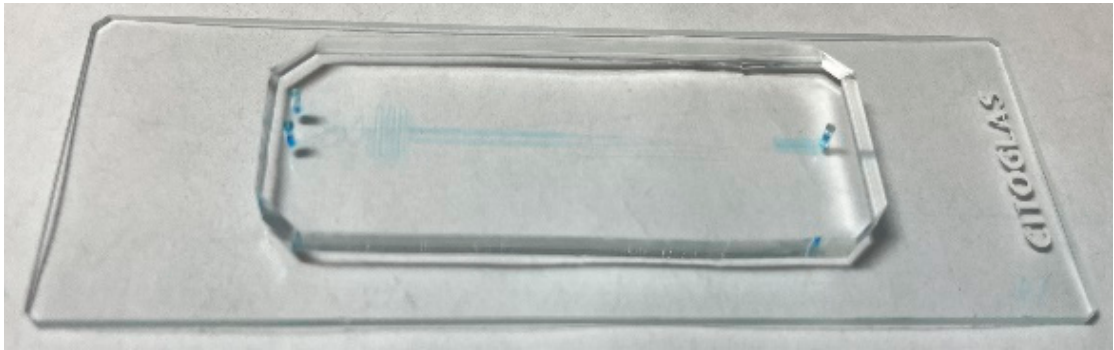


Figure S5. Image of biochip filled with colored dye.

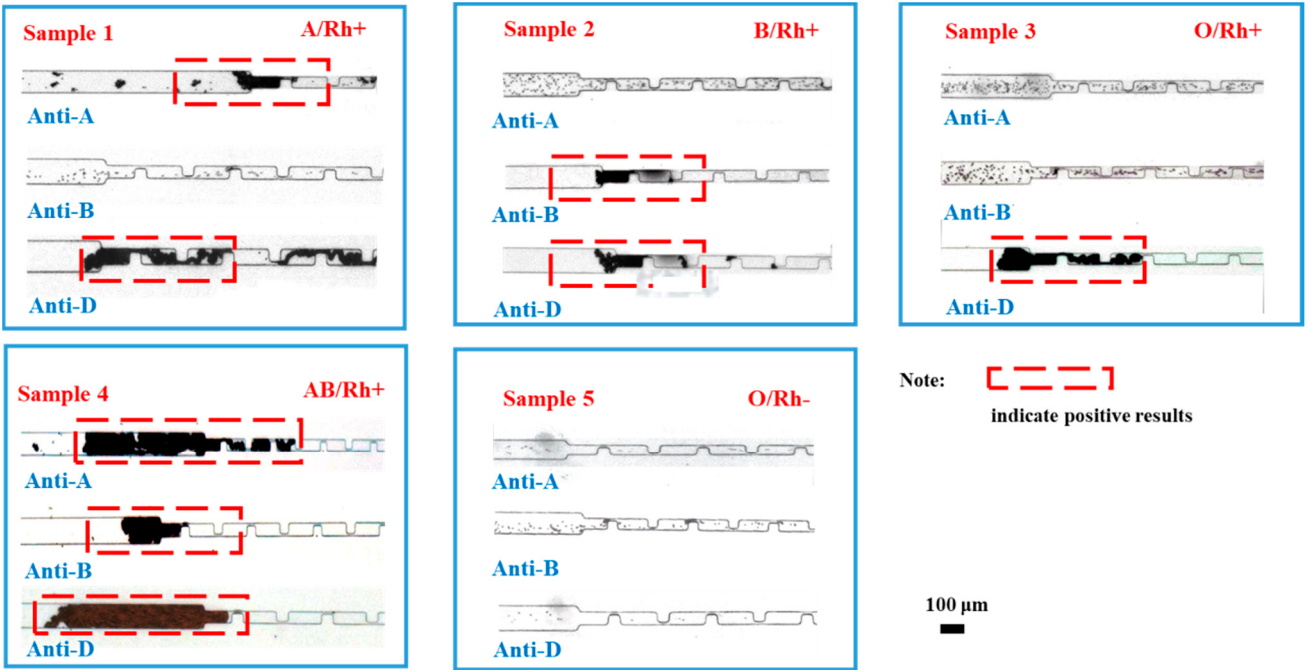


Figure S6. Testing results of clinical blood sample for blood typing.

Table S1. Comparison of blood typing results obtained using the developed microfluidic biochip and the classical gel column method.

Sample	Biochip method			micro-column gel			Result
	A	B	D	A	B	D	
1	+	-	+	+	-	+	A/Rh+
2	-	+	+	-	+	+	B/Rh+
3	-	-	+	-	-	+	O/Rh+
4	+	+	+	+	+	+	AB/Rh+
5	-	-	-	-	-	-	O/Rh-

Table S2. Comparison with existing POCT blood typing technologies.

Blood typing technologies	Cost	Detection time/min	Sample volume	LOD (cell/mL)	Accuracy rate/%	Reference
Paper-based assay	-	10	-	-	85%	[20]
LSPR biosensors assay	0.5\$	10–20	1 mL	4 × 10 ⁷	90%	[21]
Present method	0.2\$	5	10 μL	3 × 10 ⁶	Nearly 100%	