

Supporting Information:

Patient-derived Airway Secretion Dissociation Technique to Isolate and Concentrate Immune cells using Closed-loop Inertial Microfluidics

Hyunryul Ryu¹, Kyungyong Choi^{1,2}, Yanyan Qu³, Taehong Kwon^{1,2}, Janet S. Lee^{3,5} and Jongyoon Han^{1,2,4}

¹Research Laboratory of Electronics,

²Department of Electrical Engineering and Computer Science,

⁴Department of Biological Engineering, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, MA 02139, USA

³Department of Medicine, and the ⁵Vascular Medicine Institute, University of Pittsburgh, NW628 Montefiore University Hospital, 3459 Fifth Avenue, Pittsburgh, PA 15213, USA

Corresponding authors

Jongyoon Han (jyhan@mit.edu)

Supplementary Figure S1. Photograph images of (A) 4-parallel spiral microfluidics (top) with fluidic adaptor (down), and (B) experimental setup for closed-loop operation.

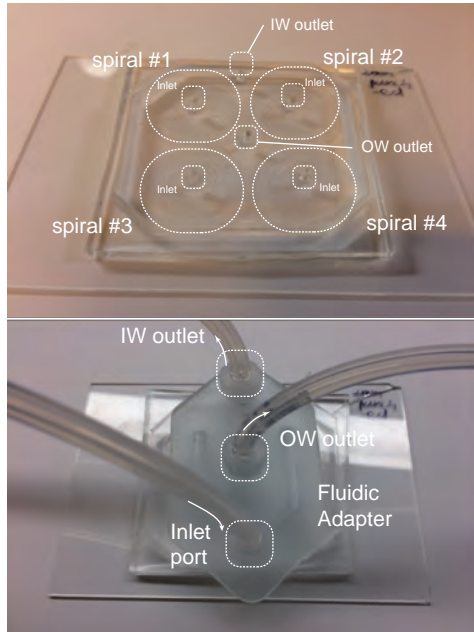
Supplementary Figure S2. (A) Photograph and (B) microscopic images of patient-derived airway secretions before and after the closed-loop separation.

Supplementary Figure S3. Flow cytometric comparison of resulting suspension by (A) closed-loop separation and (B) mucolytic (DTT) method.

Supplementary Figure S4. Comparison of closed-loop and mucolytic (DTT) separated PMNs with blood-borne neutrophils (A) without external stimulation and (B) with neutrophil elastase inhibitor.

Supplementary Figure S5. Photograph images of patient airway secretion samples used in NE release functional assays.

A



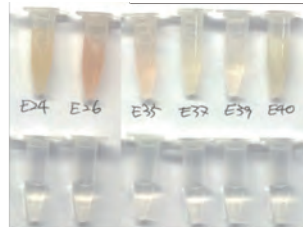
B



Supp. Figure S1

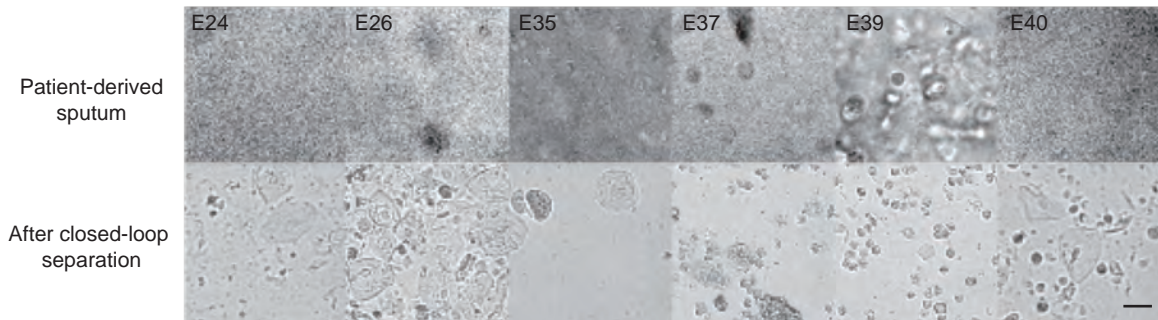
A

Patient-derived
sputum

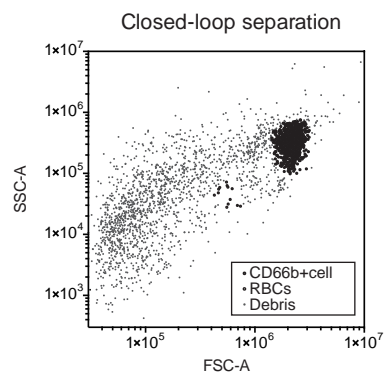
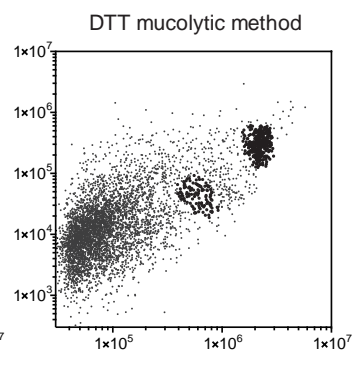


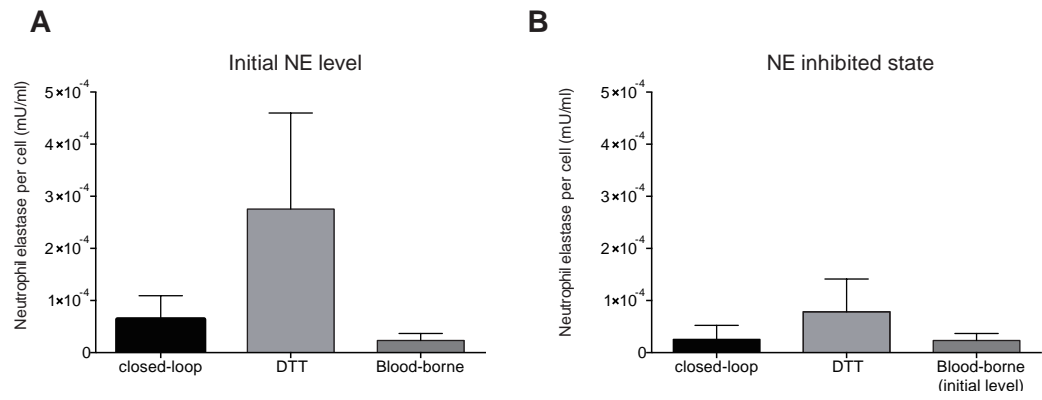
After closed-loop
separation

B

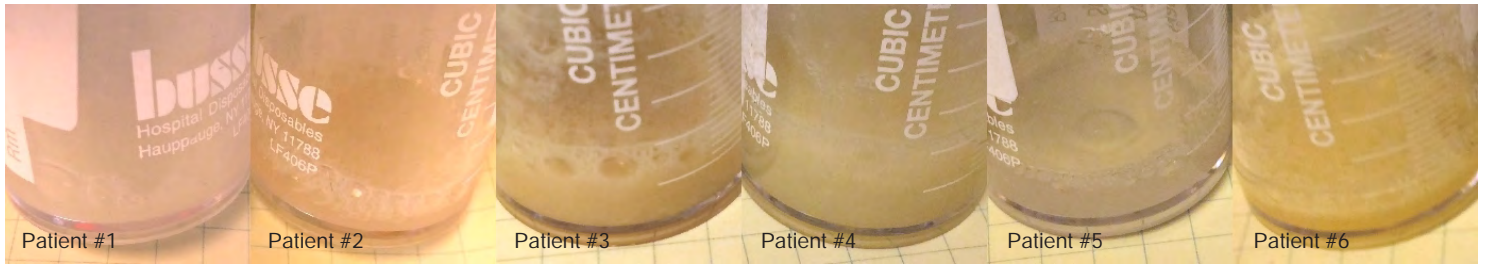


Supp. Figure S2

A**B****Supp. Figure S3**



Supp. Figure S4



Supp. Figure S5