

Supporting information for

Highly efficient single cell arraying by integrating acoustophoretic cell pre-concentration and dielectrophoretic cell trapping

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Supplementary Table 1. Summary of volumetric concentration ratio for continuous flow-based rare-cell isolation devices.

	Sample inlet flow rate	Collection outlet flow rate	Volumetric concentration ratio (inlet flow rate/outlet flow rate)
Antfolk et al. ¹	100 $\mu\text{L}/\text{min}$	25 $\mu\text{L}/\text{min}$	4.0
Li et al. ²	20 $\mu\text{L}/\text{min}$	$\sim 37.5 \mu\text{L}/\text{min}^a$	~ 0.5
Sollier et al. ³	NA (volume of blood: 500 μL)	NA (volume of purified sample: 300 μL)	1.7 (volume of blood/volume of purified sample)
Karabacak et al. ⁴	$\sim 120 \mu\text{l}/\text{min}$	$\sim 54 \mu\text{l}/\text{min}$	~ 2.2
Shim et al. ⁵	20 $\mu\text{l}/\text{min}$	20 $\mu\text{l}/\text{min}$	1.0
Hou et al. ⁶	50 $\mu\text{L}/\text{min}$	150 $\mu\text{L}/\text{min}$	0.3
Augustsson et al. ⁷	70 $\mu\text{L}/\text{min}$	280 $\mu\text{L}/\text{min}$	0.25

^a The collection outlet flow rate was not given but it was calculated from the geometry of the microfluidic device.

Supplementary References

1. M. Antfolk, C. Antfolk, H. Lilja, T. Laurell and P. Augustsson, *Lab on a chip*, 2015, 15, 2102-2109.
2. P. Li, Z. Mao, Z. Peng, L. Zhou, Y. Chen, P. H. Huang, C. I. Truica, J. J. Drabick, W. S. El-Deiry, M. Dao, S. Suresh and T. J. Huang, *Proceedings of the National Academy of Sciences of the United States of America*, 2015, 112, 4970-4975.
3. E. Sollier, D. E. Go, J. Che, D. R. Gossett, S. O'Byrne, W. M. Weaver, N. Kummer, M. Rettig, J. Goldman, N. Nickols, S. McCloskey, R. P. Kulkarni and D. Di Carlo, *Lab on a chip*, 2014, 14, 63-77.
4. N. M. Karabacak, P. S. Spuhler, F. Fachin, E. J. Lim, V. Pai, E. Ozkumur, J. M. Martel, N. Kojic, K. Smith, P. I. Chen, J. Yang, H. Hwang, B. Morgan, J. Trautwein, T. A. Barber, S. L. Stott, S. Maheswaran, R. Kapur, D. A. Haber and M. Toner, *Nature protocols*, 2014, 9, 694-710.
5. S. Shim, K. Stemke-Hale, A. M. Tsimberidou, J. Noshari, T. E. Anderson and P. R. Gascoyne, *Biomicrofluidics*, 2013, 7, 11807.
6. H. W. Hou, M. E. Warkiani, B. L. Khoo, Z. R. Li, R. A. Soo, D. S. Tan, W. T. Lim, J. Han, A. A. Bhagat and C. T. Lim, *Scientific reports*, 2013, 3, 1259.
7. P. Augustsson, C. Magnusson, M. Nordin, H. Lilja and T. Laurell, *Analytical chemistry*, 2012, 84, 7954-7962.