



Cellix Biochips

Shear Flow Rate and Sample Volume Table

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| Sample | Vena8 Fluoro+ Biochip | | | | | Vena8 Endothelial+ Biochip | | |
|-----------------|--------------------------------------|-------------------------------|--------------------|------------------|-------------------------------|----------------------------|------------------|-------------------------------|
| | Shear Stress (dyne/cm ²) | Shear Rate (s ⁻¹) | Flow Rate (μL/min) | Flow Rate (μL/h) | Vol (μL) for 3 min experiment | Flow Rate (μL/min) | Flow Rate (μL/h) | Vol (μL) for 3 min experiment |
| Cell suspension | 0.5 | 50 | 2 | 120 | 6 | 6 | 259 | 17 |
| Cell suspension | 1 | 100 | 4 | 240 | 12 | 12 | 518 | 35 |
| Cell suspension | 5 | 500 | 20 | 1,200 | 60 | 58 | 2,592 | 173 |
| Cell suspension | 10 | 1,000 | 40 | 2,400 | 120 | 115 | 5,184 | 346 |
| Cell suspension | 15 | 1,500 | 60 | 3,600 | 180 | 173 | 7,776 | 518 |
| Cell suspension | 18 | 1,800 | 72 | 4,320 | 216 | 207 | 9,331 | 622 |
| Cell suspension | 20 | 2,000 | 80 | 4,800 | 240 | 130 | 10,368 | 691 |
| Whole blood | 2.25 | 50 | 2 | 120 | 6 | 6 | 346 | 17 |
| Whole blood | 4.5 | 100 | 4 | 240 | 12 | 12 | 691 | 35 |
| Whole blood | 22.5 | 500 | 20 | 1,200 | 60 | 58 | 3,456 | 173 |
| Whole blood | 50 | 1,111 | 44 | 2,667 | 133 | 128 | 7,680 | 384 |
| Whole blood | 60 | 1,333 | 53 | 3,200 | 160 | 153 | 9,200 | 460 |
| Whole blood | 67.5 | 1,500 | 60 | 3,600 | 180 | 173 | 10,368 | 518 |
| Whole blood | 81 | 1,800 | 72 | 4,320 | 216 | 207 | 12,442 | 622 |
| Whole blood | 90 | 2,000 | 80 | 4,800 | 240 | 230 | 13,824 | 691 |

Specifications of Vena8 Fluoro+ and Vena8 Endothelial+ Biochips

| | Vena8 Fluoro+ | Vena8 Endothelial+ | | |
|--|---------------|--------------------|-------------------------|---|
| Channel width, b (cm) | 0.04 | 0.08 | Flow rate: | Viscosity of cell culture suspension, $\mu = 0.01$ dynes/cm ² ·s |
| Channel height, h (cm) | 0.01 | 0.012 | $Q = \tau b h^2 / 6\mu$ | Viscosity of whole blood, $\mu = 0.045$ dynes/cm ² ·s |
| Channel length, l (cm) | 2.8 | 2.8 | Shear Stress: | Equivalent to: cm ³ /s = 0.001 L/s = 0.06 L/min = 60 mL/min = 60000 μL/min |
| Microcapillary/channel volume (cm ³) | 0.00113 | .00267 | $\tau = 6Q\mu / b h^2$ | |
| Microcapillary/channel volume (μL) | 1.13 | 2.67 | | |