



### Cellix Biochips Shear Flow Rate and Sample Volume Table

Biochip	Vena8 Fluoro+ Biochip					Vena8 Endothelial+ Biochip		
	Shear stress (dyne/cm <sup>2</sup> )	Shear rate (s <sup>-1</sup> )	Flow rate (μL/min)	Flow rate (μL/hr)	Volume (μL) for 3 min experiment	Flow rate (μL/min)	Flow rate (μL/hr)	Volume (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/Vena8 Fluoro+	Vena8 Endothelial+
Channel width, b (cm):	0.04	0.08
Channel height, h (cm):	0.01	0.012
Channel length, L (cm):	2.8	2.8
Microcapillary/channel volume (cm <sup>3</sup> )	0.00113	.00267
Microcapillary/channel volume (μL)	1.13	2.67

$$\text{Shear Stress: } \tau = \frac{6Q\mu}{bh^2}$$

$$\text{Flow Rate: } Q = \frac{\tau bh^2}{6\mu}$$

Equivalent to: cm<sup>3</sup>/s = 0.001L/S = 0.06 L/min = 60mL/min = 60000μL/min

Viscosity of cell culture suspension, μ = 0.01 dynes/cm<sup>2</sup> · s

Viscosity of whole blood, μ = 0.045 dynes/cm<sup>2</sup> · s