

## Supporting Information

### Advances in Single-Cell Printing

Xiaohu Zhou, Han Wu, Haotian Wen, Bo Zheng\*

Institute of Cell Analysis, Shenzhen Bay Laboratory, Shenzhen 518132, Guangdong, China;

[zhouxh@szbl.ac.cn](mailto:zhouxh@szbl.ac.cn) (X.Z.); [wuhan@szbl.ac.cn](mailto:wuhan@szbl.ac.cn) (H.W.); [wenht@szbl.ac.cn](mailto:wenht@szbl.ac.cn) (H.W.);

\*Correspondence: [bozheng@szbl.ac.cn](mailto:bozheng@szbl.ac.cn)

Table S1 Summary of the single-cell printing strategies

Technique	Mechanism	Performance	Application
<b>Contact printing</b>	Surface patterning by contract transfer	Micropattern size and shape controllable [56,57]	Cell patterns [56]
		Cell immobilization selectivity: > 75% [56]	Single cell array [57]
		Single cell capture efficiency: 94% [57]	
<b>Acoustic field-assisted inkjet printing</b>	Acoustic field	Number of cells per printing: Random [45] or 1 [46]	Single cell array [45,46]
		Cell encapsulation efficiency: 98.4% [45]	Cell patterns [46, 105]
		Throughput: 1000 Hz [45]	Cell-laden 3D hydrogel structures [103]
<b>Label-free computer vision-based single-cell printing</b>	Piezoelectric actuation triggered by a computer vision system	Number of cells per printing: 1 or multiple [40, 41, 81, 98]	Single cell array [40,41, 81]
		Single cell efficiency: 87% [40]; 90.3% [41]	Single cell real-time sorting [98]
		Cell viability: 75% [40]; 96.6% [41]	
		Throughput: 2 Hz with 90.3% single-cell efficiency [41]	
<b>Electric signals based single-cell printing</b>	Piezoelectric pressure actuated by an electric signal	Number of cells per printing: 1 or multiple [42]	Single-cell array [42]
		Single-cell efficiency: 73% [42]	
<b>Pneumatic valves-based single-cell printing</b>	Pneumatic pressure	Number of cells per printing: 1 [43, 99]	Single oocyte array [43]
		Single cell efficiency: ~100% [43, 99]	Cell size screening [99]
		Cell viability: 70% [43]; 90.64% [99]	
<b>FACS based single-cell printing</b>	Dispensing droplets containing single cells based on the fluorescent signals	Number of cells per printing: 1 or multiple [93, 116]	Single cell arrays and cell patterns [93, 116]
		Cell encapsulation efficiency: 99.5% [116]	Single-cell calcium release assay [93]
		Single cell efficiency: 98% [93]	

		Cell viability: 94% [116] Throughput: 1.5 Hz [93]; 100 Hz [116]	3D well-defined spheroid [116]
<b>Limiting dilution based single-cell printing</b>	Dispensing droplets containing single cells with diluting cell suspension	Number of cells per printing: Random (almost Poisson distribution) [89, 110, 113] Cell encapsulation efficiency: 46% [110] Single cell efficiency: 91% (multiple droplets for each spot) [89]; 39% [110]; 43.8% [113] Cell viability: 100% [89] Throughput: 3~4 Hz [110]	Single cell assays [89] Mass spectrometry-based single-cell analysis [110, 113]