

Supporting Information

Optimization of hair follicle spheroids for the hair-on-a-chip

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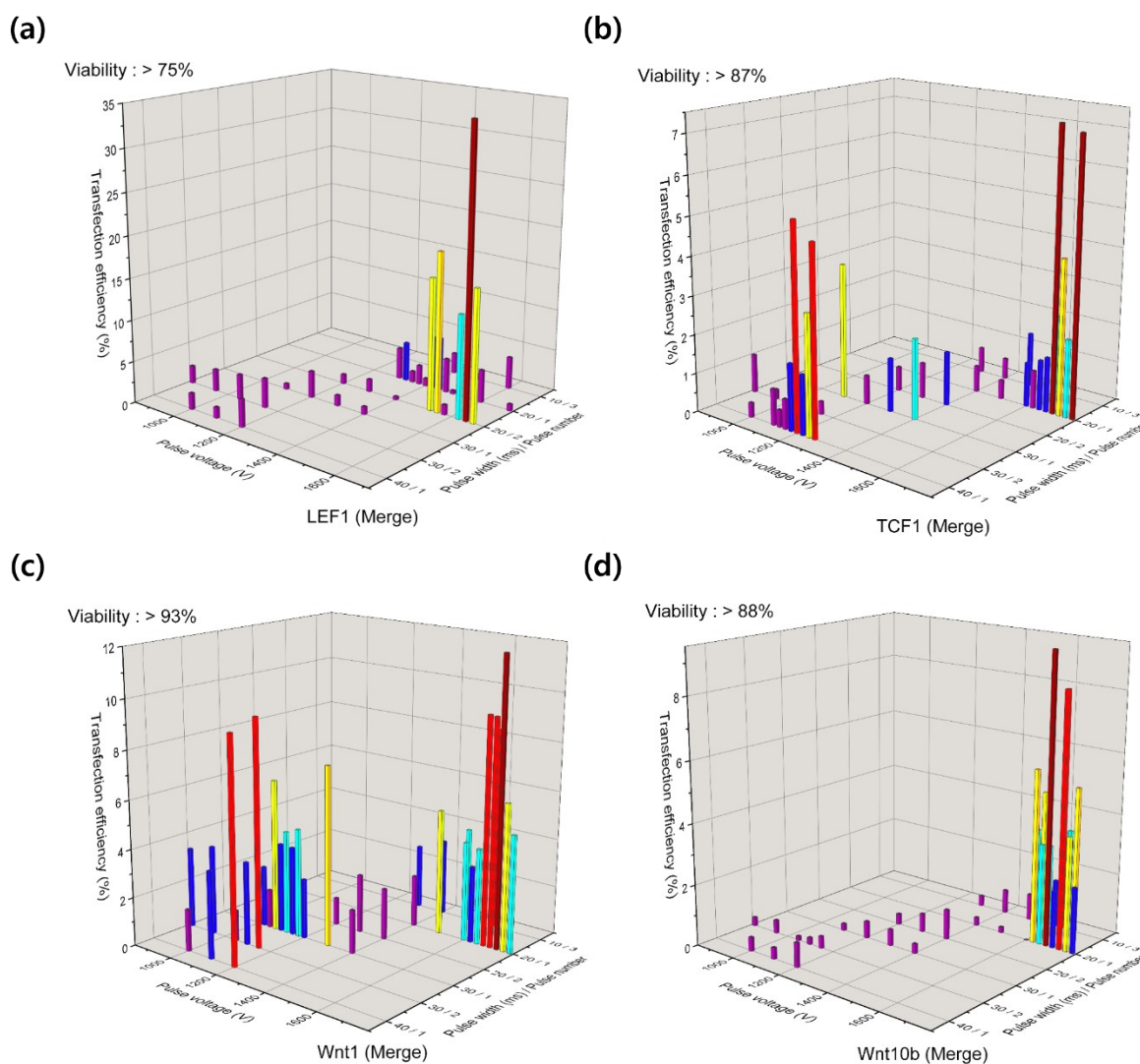


Fig. S1 transfection efficiency measured by pDNA when electroporation is applied. transfection efficiency was calculated using equation (1) and cell viability was calculated using equation (2).

Equation S1

$$\left(\frac{\text{number of transfected cells}}{\text{number of live cells}} \right) \times 100\% \quad (1)$$

Equation S2

$$\left(\frac{\text{number of stained nuclei} - \text{number of stained dead cell nuclei}}{\text{number of stained nuclei}} \right) \times 100\% \quad (2)$$

Table. S1 Optimal conditions for electroporation using pDNA. Calculate transfection efficiency and cell viability using equation (1) and equation (2).

Plasmid DNA	Pulse voltage	Pulse width	Pulse number	Transfection efficiency	Cell viability
LEF1	1450 V	20 ms	1	6.46 %	98.7 %
TCF1	1700 V	20 ms	1	7.3 %	91 %
Wnt10b	1675 V	20 ms	1	9.5 %	88.6 %
Wnt1	1725 V	20 ms	1	11.9 %	97.6 %

Table. S2 Comparison of effectiveness and viability of lipofection and electroporation. Transfection efficiency is calculated using equation (1) and cell viability is calculated using equation (2).

Type of transfection	Plasmid DNA	Transfection efficiency (LEF1)	Transfection efficiency (TCF1)	Cell viability
Lipofection	LEF1 & TCF1	0.4%	0.68%	66.51%
	LEF1	0.82%	-	82.53%
	TCF1	-	0.98%	90.69%
Electroporation	LEF1 & TCF1	0.98%	0.49%	96.63%
	LEF1	6.46%	-	98.7%
	TCF1	-	7.3%	91%

Table. S3 list of primer sequences used for qPCR.

Gene	Forward	Reverse
GAPDH	5'-CTCCTCTGACTTCAACAGCG-3'	5'-GCCAAATTCGTTGTCATACCAG-3'
LEF1	5'-CTACCCATCCTCACTGTCAGTC-3'	5'-GGATGTTCTGTTTGACCTGAGG-3'
TCF1	5'-CTGACCTCTCTGGCTTCTACTC-3'	5'-CAGAACCTAGCATCAAGGATGGG-3'
Wnt1	5'-CTCATGAACCTTCACAACAACGA-3'	5'-TGGCGCATCTCGGAGAAT-3'

Wnt10b

5'-CTCGGGATTCTTGGATTCCAGG-3'

5'-GCCATGACACTTGCATTCCGC-3'
