Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Supporting Information

Supplementary Figures

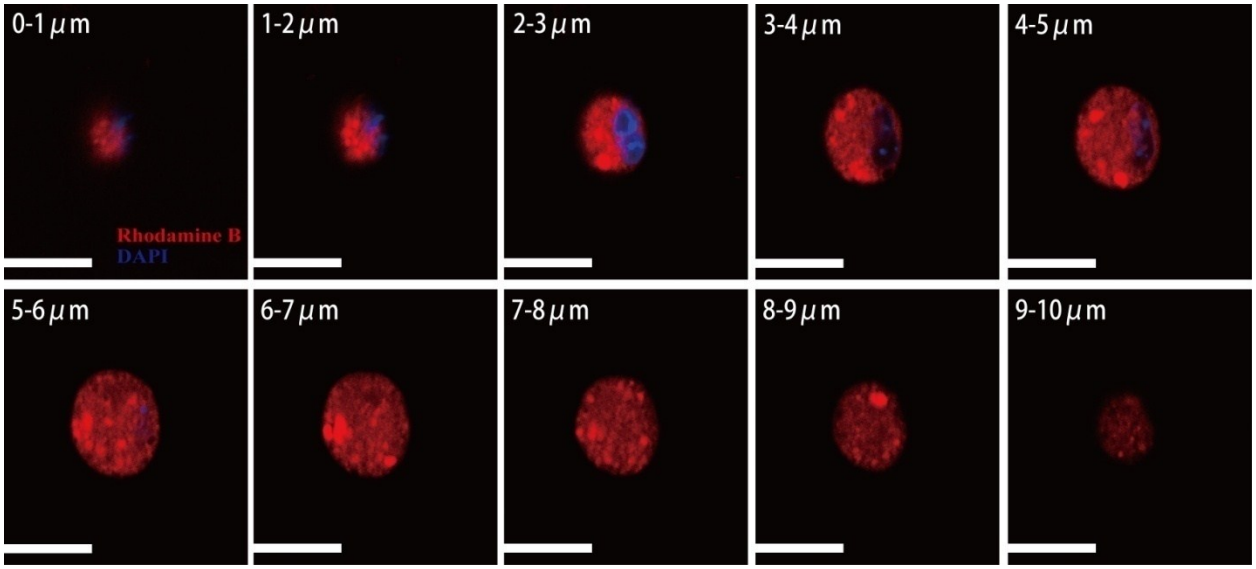

Figure S1. Using the CLSM imaging, a 3D scanning was performed, where DPCs were encapsulated with gelatin and alginate-rhodamine B. Sections presented a homogenous nano-coating around DPC through the whole scanning. (Red: alginate-rhodamine B; lue: DAPI). Scale bars: 10μm.

Supplementary Tables

Table S1. Loading efficiency of FGF-2 to alginate.

Sample	Total amount (ng)	Amount in supernatant (ng)	Loaded amount (ng)	Encapsulation efficiency %
N=3	100	47.8±8.6	52.2±8.6	52.2±8.6

$y = (0.23865+0.86261)/[1+(x/1.72709)^{2.70024}]-0.86261$

$R^2 = 0.99912$

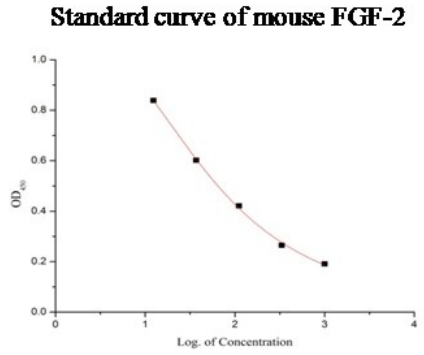

Table S1. Loading efficiency of FGF-2 to alginate. For drug loading, 100ng of FGF-2 was absorbed with 1ml 0.1% alginate and loaded into LBL coating of DPCs. After incubated for 15-20 min, the mixed solution was then centrifuged, and the supernatant that containing the unloaded protein was collected and tested by a microplate reader using FGF-2 ELISA kit. 1ml 0.1% alginate in PBS without FGF-2 was used as the control. The encapsulation efficiency was calculated by normalizing the loaded amount of protein to the total amount of added protein. The concentration of FGF-2 was calculated using the four parameter logistic nonlinear regression (4PL). The experiment was conducted in triplicates.

Table S2. The density of hair follicles induced by implanted DPCs.

Group	Number of Sample	Count of induced HFs			Inductive efficiency %		
		≤1	2-6	>6	≤1	2-6	>6
DPC	N=5	1	0	0	20	0	0
DPC+FGF-2	N=8	1	2	0	12.5	25	0
LBL-DPC	N=7	2	0	0	28.5	0	0
LBL(FGF-2)-DPC	N=8	1	2	2	12.5	25	25

Table S2. The density of hair follicles induced by implanted DPCs. The inductive efficiency is defined as the percentage of positive hair-inductions to total experiments. The average count of hair follicles induced by LBL(FGF-2)-DPCs was greater than that of DPCs treated with FGF-2, demonstrating a higher inductive efficacy. LBL-DPCs and DPCs alone exhibited a relative low efficiency of hair follicle induction.

Supplementary Videos

Supplementary Video 1

A single DPC was observed by 3D scanning under bright field.

Supplementary Video 2

A merged confocal scanning demonstrated a single DPC encapsulated with nano-coating, where a ultrathin matrices consisted of gelatin-FITC (green) and alginate-Rhodamine B (red) were shown around the cell surface. Nucleus was stained with DAPI (blue).

Supplementary Video 3

A Merged 3D Projection of confocal image stacks exhibites a single DPC encapsulated with different fluorescence (green = gelatin-FITC; red = alginate-Rhodamine B; blue = DAPI).