

Electronic Supplementary Information

Upconversion nanoparticle-integrated fibrillar scaffold combined with NIR-optogenetic strategy to regulate neural cell performance

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Table S1. Primer Sequences for Target Genes

Gene	Primer sequences
TuJ1	5'-ACAATGAGGCCTCTCTCAC-3' 5'-TATAGTGCCCTTTGGCCAG-3'
SYP1	5'-AAACCACAGCTGGCTCAGAAA-3' 5'-AGAGACTGGGATTTGTTGAGCTG-3'
Ina	5'-AGGCTGGAAGGTAAACTCAGAC-3' 5'-CAATTCAGGAGTGAAGCAGGA-3'
MAP-2	5'-GAGGCCCAACACAAGGATCA-3' 5'-TTCGAGGCTTCTCCAGTGC-3'
GAPDH	5'-AACCTGCCAAGTATGATGAC-3' 5'-GGAGTTGCTGTTGAAGTCA-3'

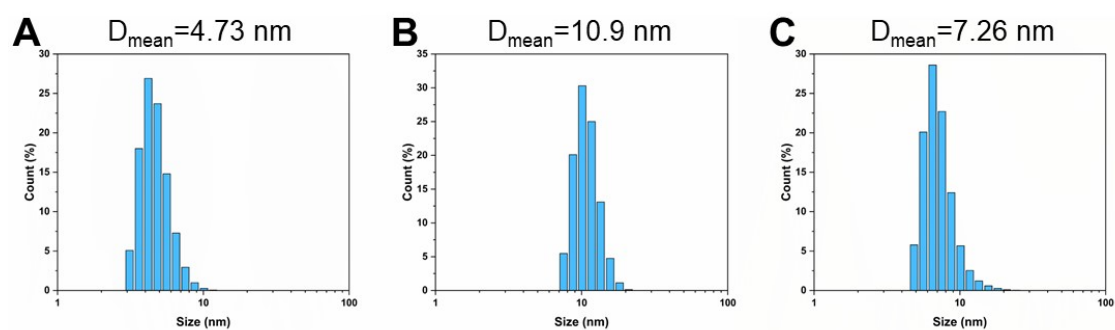


Figure S1. The particle size distribution of OA-capped UCNPs core, OA-capped core-shell UCNPs and OA-free core-shell UCNPs measured by DLS.

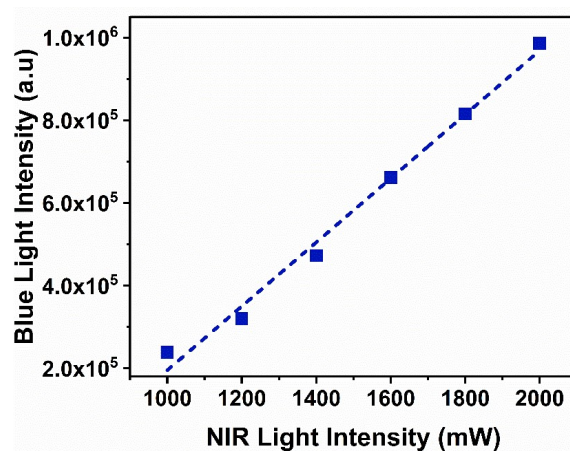


Figure S2. The relationship between the fluorescence intensity of PCU60 scaffold and the excitation intensity of NIR light.

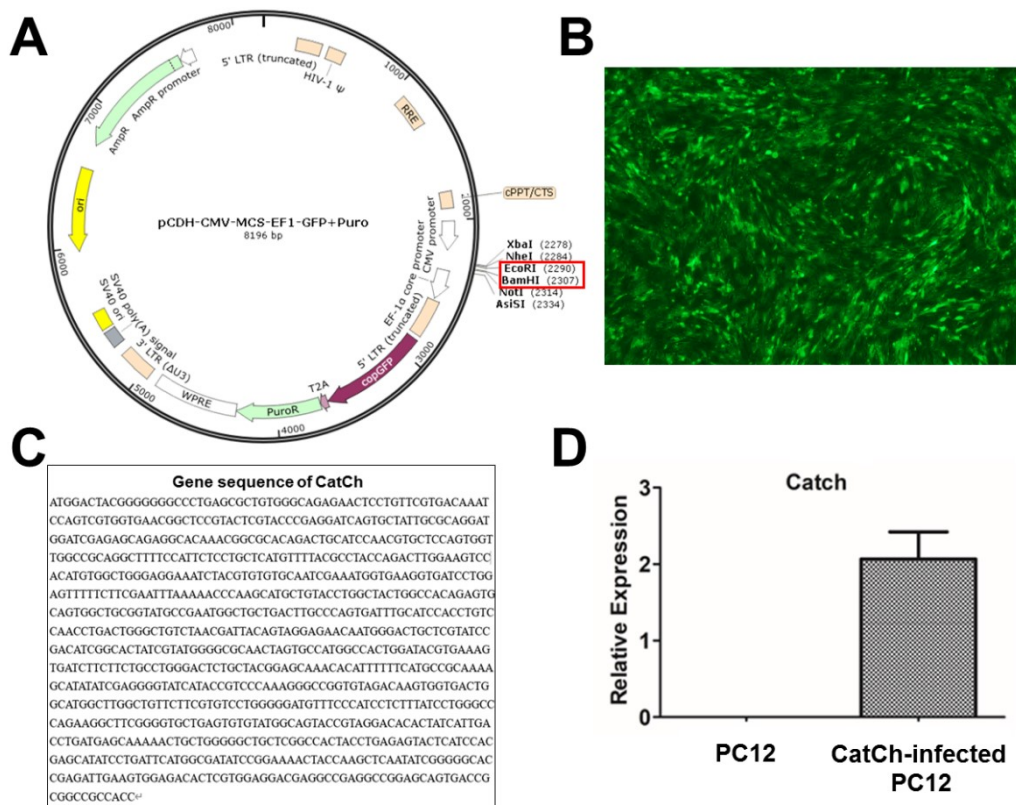


Figure S3. (A) The Lentiviral plasmid vector carrying the green fluorescent protein reporter gene, and the CatCh gene is connected through BamHI and EcoRI. (B) Fluorescence microscopy of CatCh-infected PC12 cells excited by 488 nm laser. (C) Gene sequence of CatCh. (D) Analysis of CatCh gene expression in CatCh-infected PC12 cells by RT-PCR.

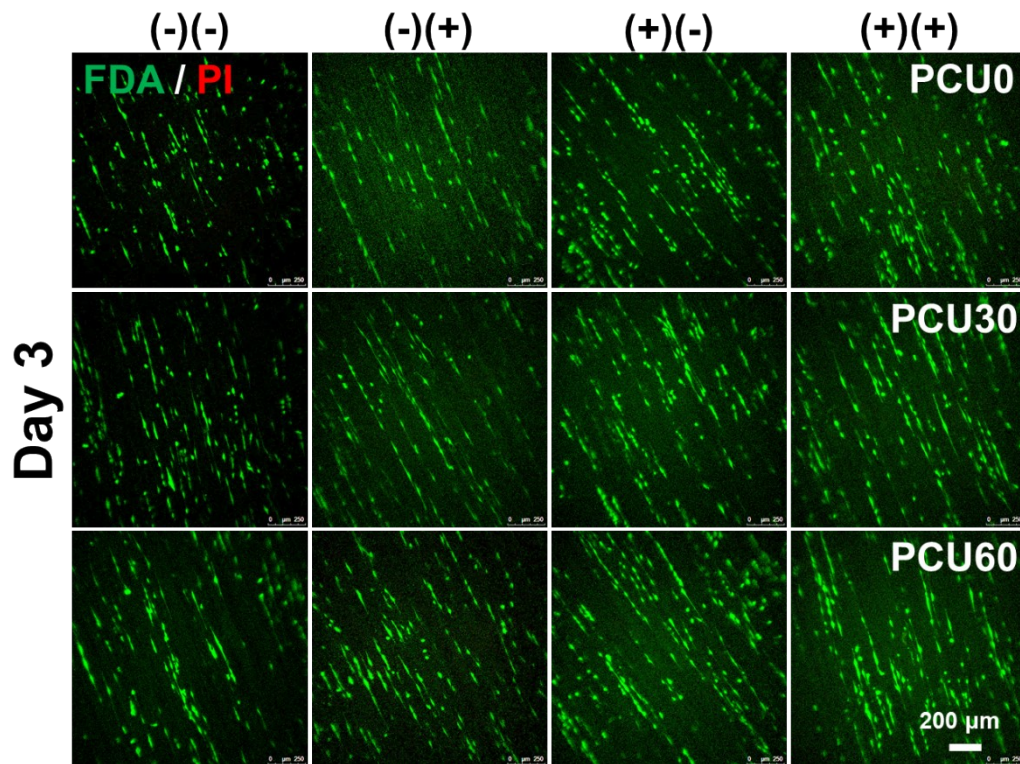


Figure S4. FDA (green)/PI (red) staining images of PC12 cells on different scaffold surfaces in response to NIR stimulation after 3 days.