Supporting information

Bisphosphonate stabilised calcium phosphate nanoparticles for effective delivery of plasmid DNA to Macrophages

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1 Synthesis and characterization of BCP NPs

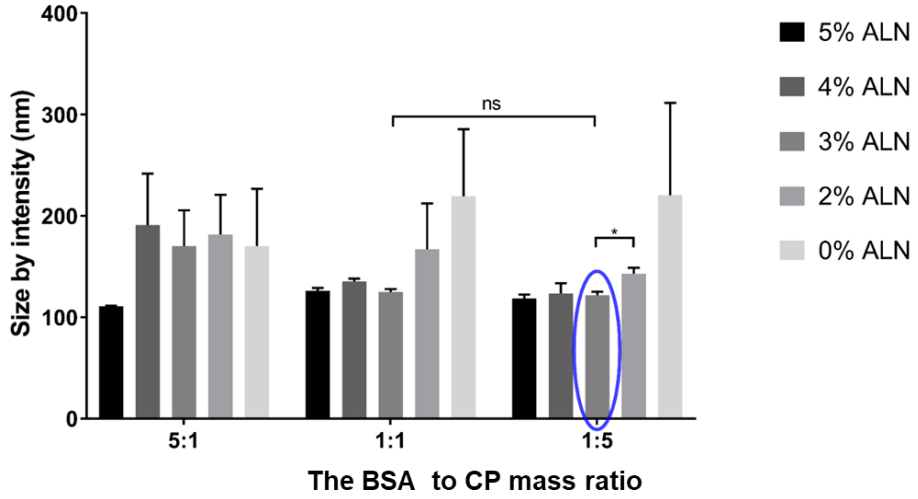

Figure S1. The size of CP NPs with different ALN and BSA coating ratio.

Table S1. The PdI of CP NPs with different ALN and BSA coating ratio.

	BSA:CP ratio		
	5:1	1:1	1:5
5% ALN	0.229 ± 0.006	0.196 ± 0.009	0.231 ± 0.015
4% ALN	0.229 ± 0.013	0.210 ± 0.025	0.247 ± 0.008
3% ALN	0.208 ± 0.017	0.247 ± 0.007	0.200 ± 0.013
2% ALN	0.229 ± 0.008	0.223 ± 0.008	0.208 ± 0.021
0% ALN	0.235 ± 0.012	0.254 ± 0.013	0.370 ± 0.019

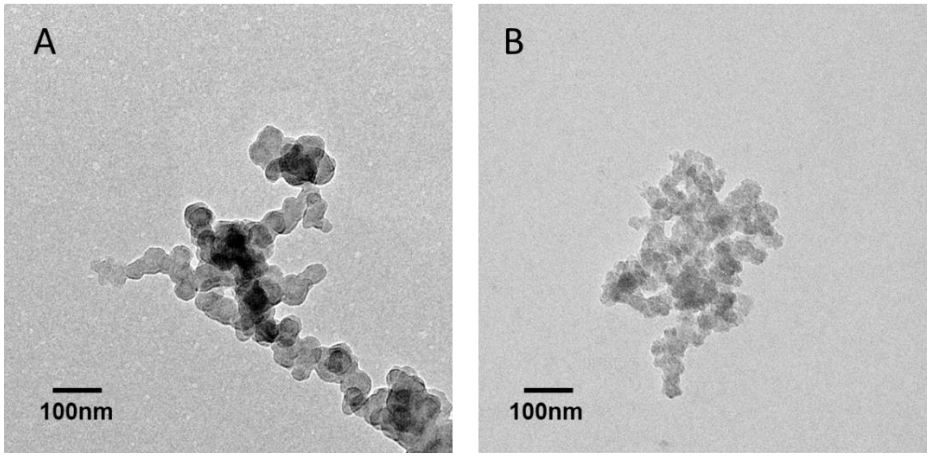

Figure S2. The TEM images of CP NPs (A) and CP-pEGFP NPs (B)

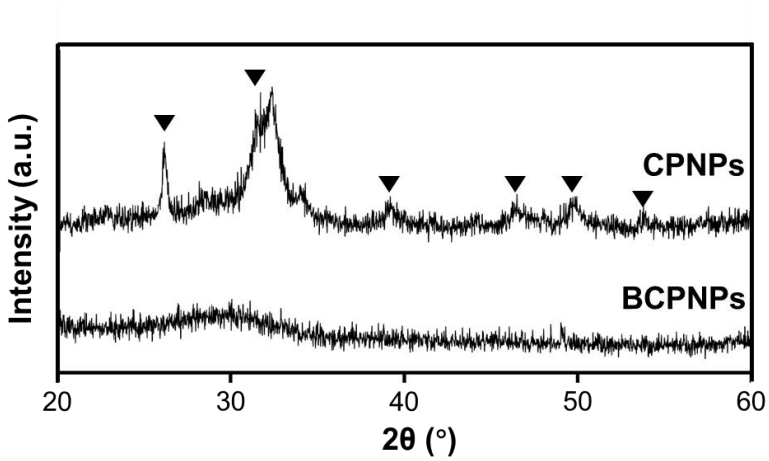

Figure S3. The XRD spectrum of CPNPs and BCPNPs. The BCPNPs show an amorphous pattern while CPNPs show a crystalline apatite pattern.

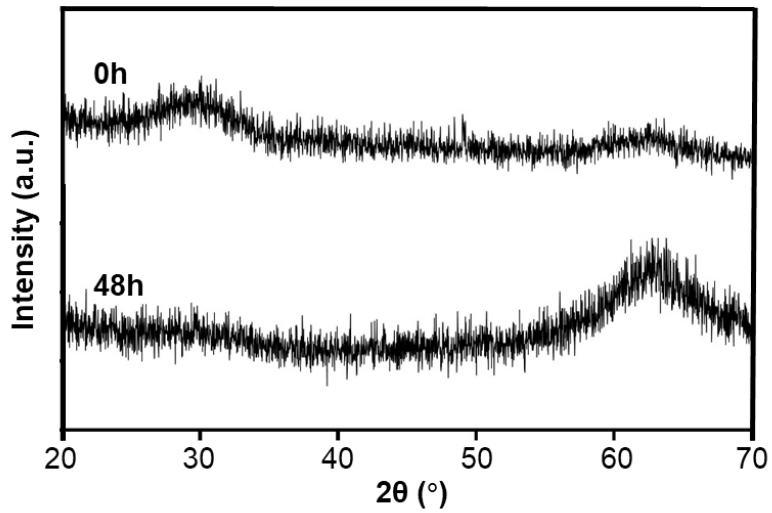

Figure S4. The XRD spectrum of BCP NPs incubated in medium with 10% serum for 0 h and 48 h

2. The plasmid DNA loading and release profiles

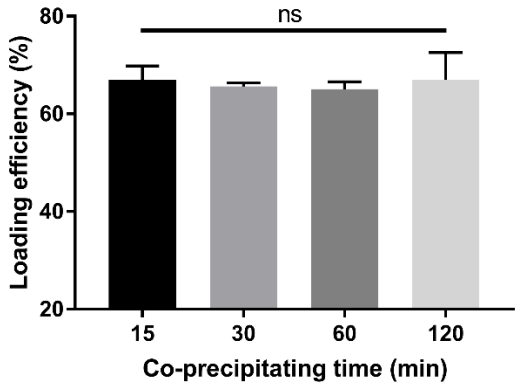

Figure S5. The time-related DNA loading efficiency for 15 to 120 min.

3. Endo/lysosomal escape of BCPNPs

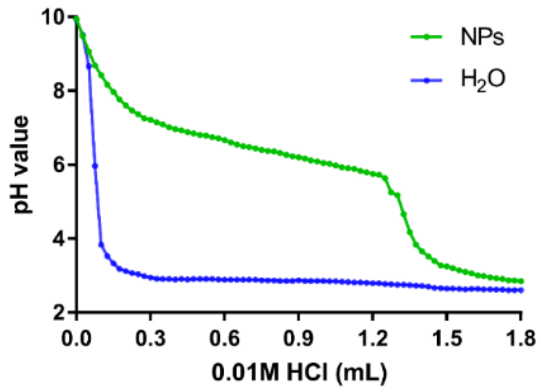

Figure S6. The titration assay of the buffering capacity of BCP NPs.

4. *In vitro* transfection of pEGFP by BCP NPs

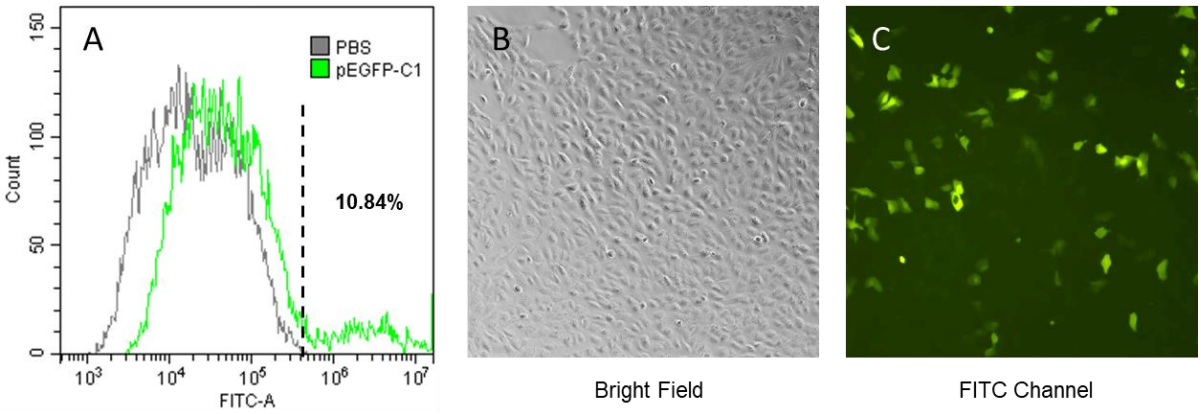

Figure S7. The pEGFP transfection to U2OS cell line. For quality control of pEGFP-C1 plasmid, the U2OS cell line was used for plasmid transfection. A: the FACS result of pEGFP transfected U2OS cells. B and C: the microscopy images of pEGFP transfected U2OS cells.

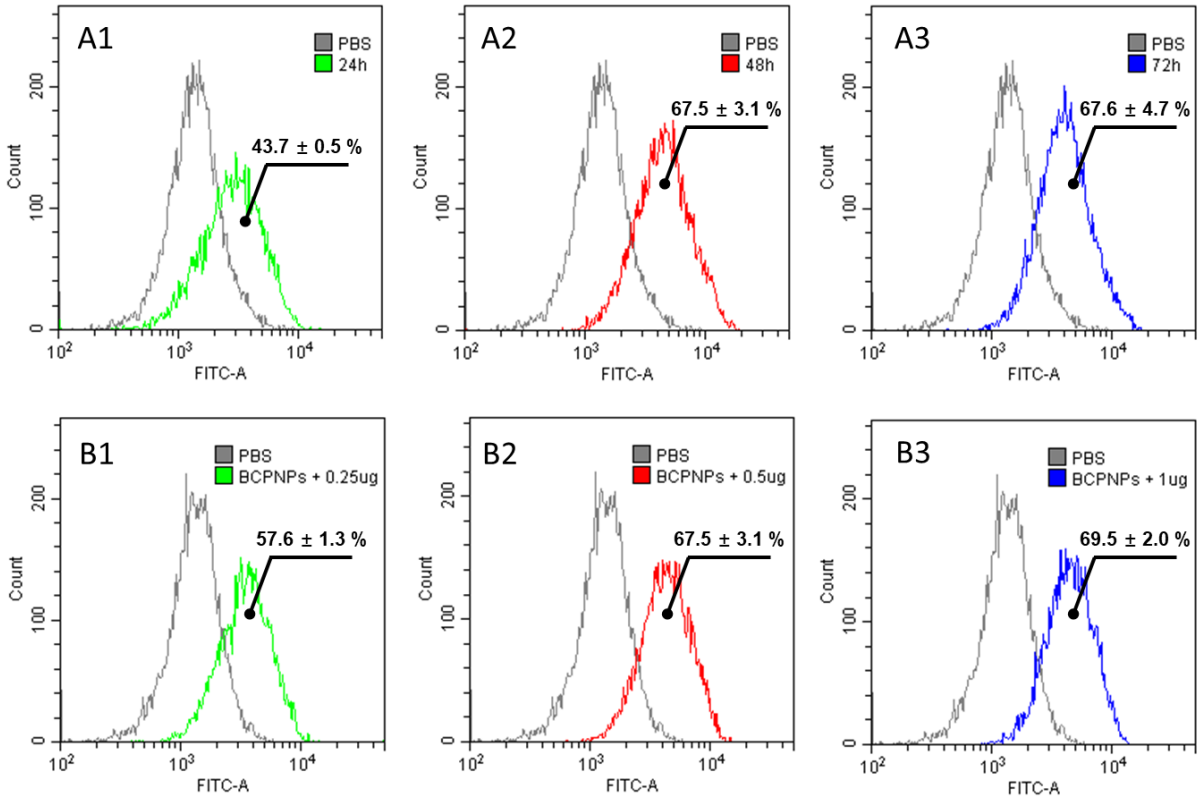

Figure S8. The pEGFP transfection to RAW 264.7 cell line. The FACS results of GPF expression showing by the histogram, which is corresponding to Fig 5. A1 to A3: The time (24, 48, and 72h) related GFP expression on RAW 264.7 cell shows by FITC channel fluorescent intensity. B1 to B3: The DNA dose (0.25, 0.5 and 1 μg/well) related GFP expression on RAW 264.7 cell shows by FITC channel fluorescent intensity.