Supplementary Figures

Fig.S1

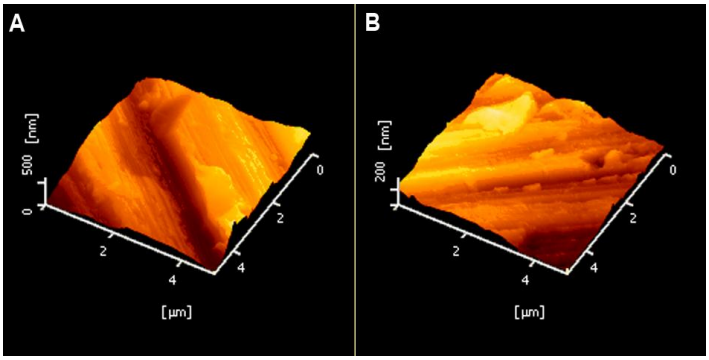

Fig. S1 AFM images of the surfaces of cpTi (A) and ECAPed Ti (B) substrates after polishing.

Fig.S2

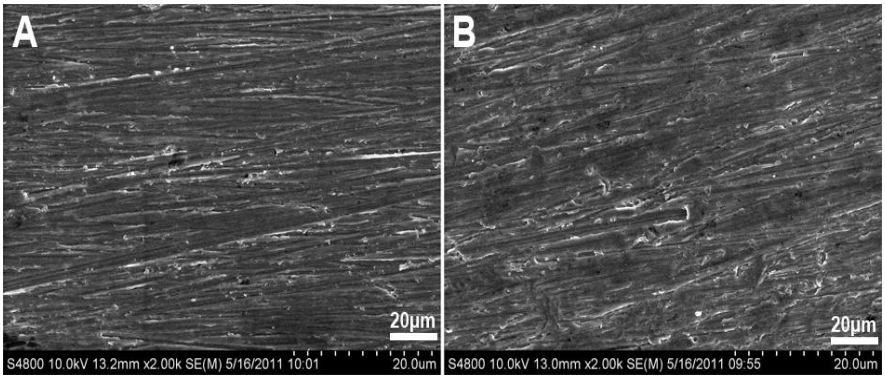

Fig. S2 Scanning electron microscopy of the surfaces of cpTi (A) and ECAPed Ti (B) after polishing.

Fig.S3

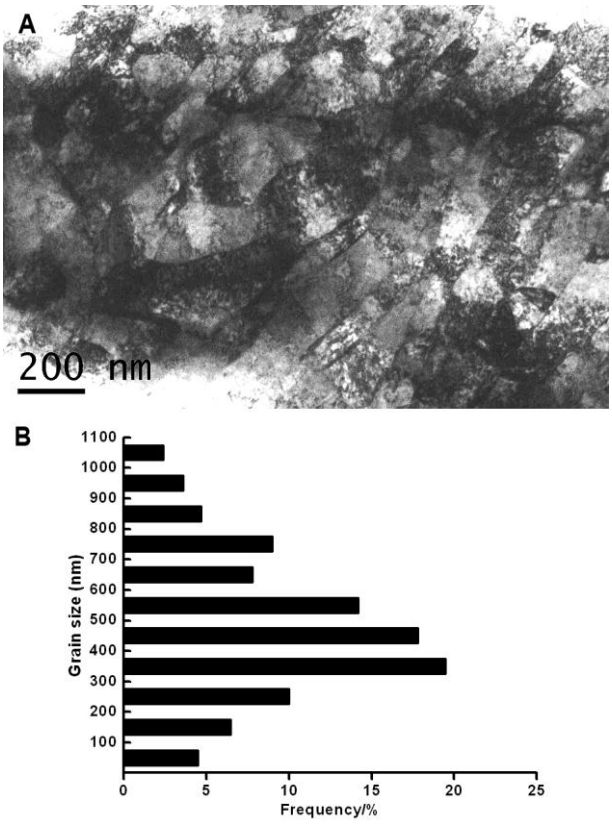

Fig. S3 A, TEM image of the ECAPed Ti in bright field; B, the histogram of grain size distribution from the TEM bright field image.

Fig.S4

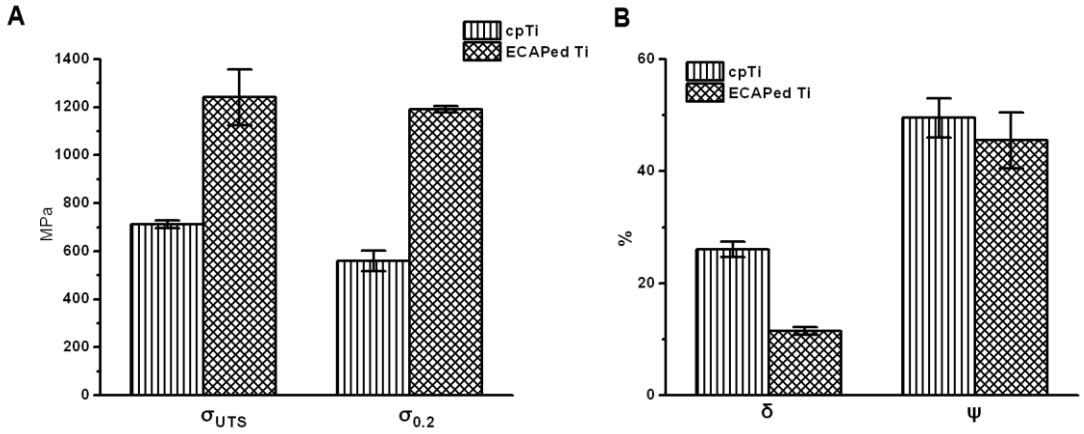

Fig. S4 Mechanical Properties of cpTi and ECAPed Ti. A, σ_{UTS} stands for ultimate tensile strength, $\sigma_{0.2}$ for yielding stress; B, δ stands for elongation, ψ for reduction of area.

Fig.S5

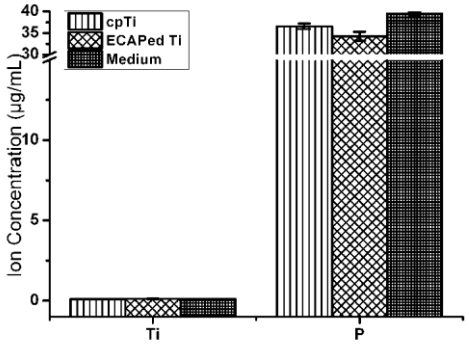

Fig. S5 Titanium and phosphorus concentrations in extraction media on cpTi and ECAPed Ti substrates after three day incubation.

Fig.S6

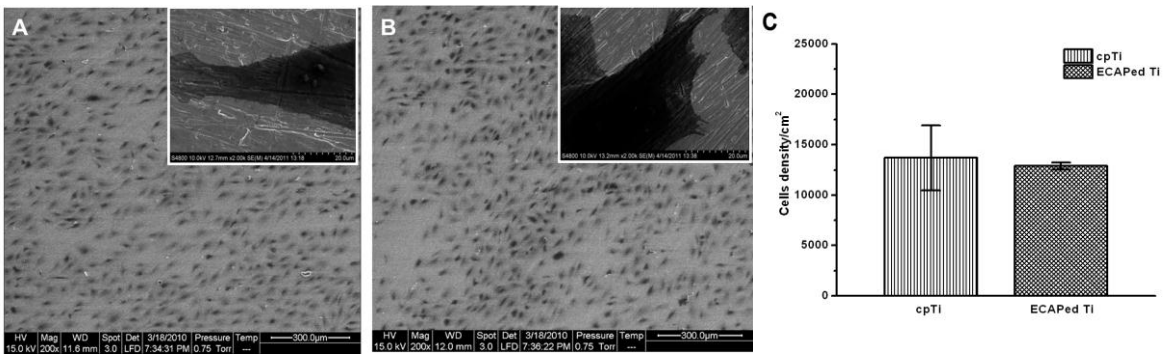

Fig. S6 SEM images of MG 63 cell cultured on cpTi (A) and ECAPed Ti (B) substrates after 4 hour incubation. Insets are the higher-magnification images. C, the amount of cells attached on these two substrates.

Fig.S7

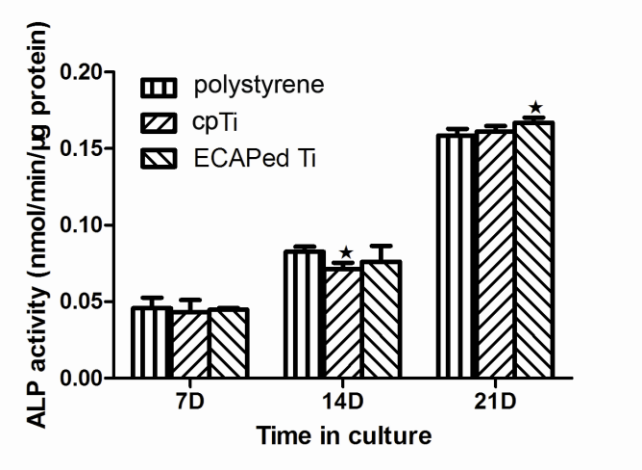

Fig. S7 ALP activity of osteoblast cultured on cpTi and ECAPed Ti, with polystyrene as control (*: $p<0.05$).

Fig.S8

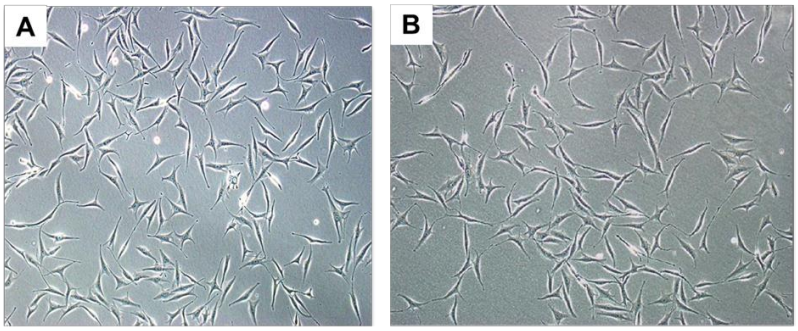

Fig. S8 Comparison of cell morphology cultured on polystyrene of "light" (L-lysine and L-arginine) (A) and "heavy" (L-$^{13}C_6$-lysine and L-$^{13}C_6{}^{15}N_4$-arginine) (B) culture medium.

Supplementary Table Captions

Table S1 Whole identification and quantification data at protein level of ECAPed Ti compared to cpTi from MaxQuant software.

Table S2 The enrichment clustering results of over-expressed proteins by the DAVID platform.

Table S3 The enrichment clustering results of under-expressed proteins by the DAVID platform.