

## Supplementary Information

### Charge injection based electrical stimulation on polypyrrole planar electrodes to regulate cellular osteogenic differentiation

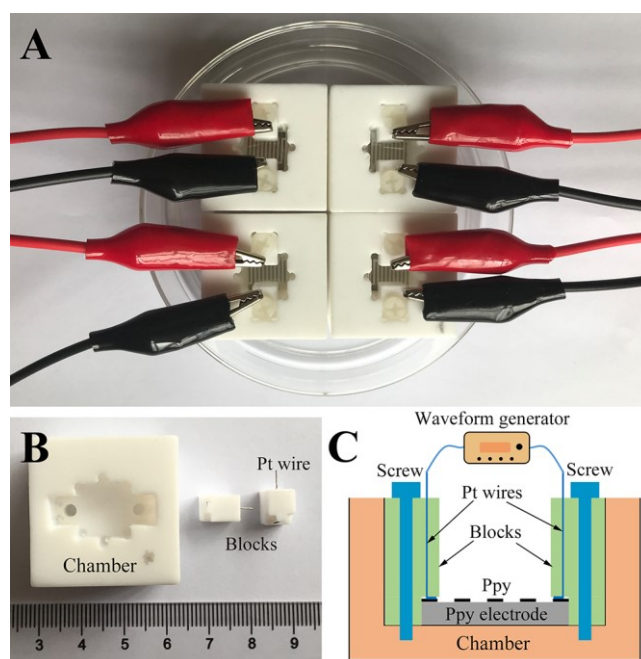
Zongguang Liu<sup>a</sup>, Lingqing Dong<sup>a,b</sup>, Kui Cheng<sup>a</sup>, Zhongkuan Luo<sup>c</sup>, Wenjian Weng<sup>a,\*</sup>

<sup>a</sup> School of Materials Science and Engineering, State Key Laboratory of Silicon Materials, Zhejiang University, Hangzhou 310027, China

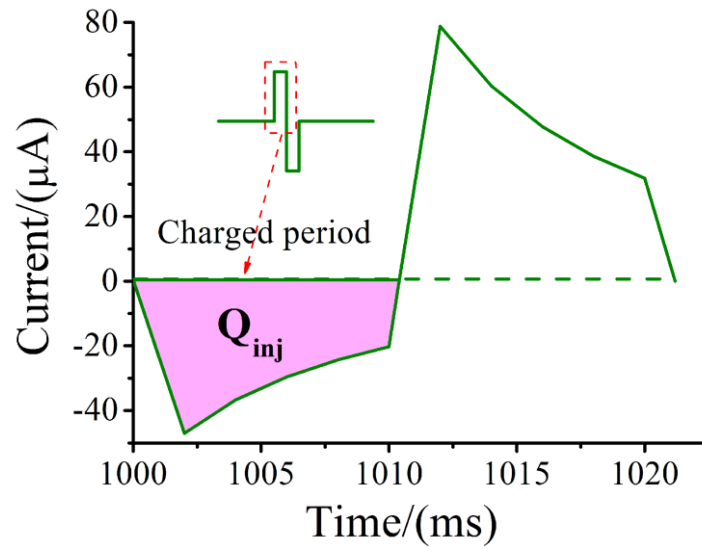
<sup>b</sup> The Affiliated Stomatologic Hospital, School of Medicine, Zhejiang University, Hangzhou 310003, China.

<sup>c</sup> Zhejiang-California International NanoSystems Institute, Hangzhou 310058, China

\*Corresponding author: wengwj@zju.edu.cn



**Fig. S1** The photos (A and B) and schematic (C) of the home-made culturing device used in this study. The device was consisted of four parts: (1) Culture chamber; (2) Pt wires; (3) Screws; and (4) Blocks used to press the Pt wires onto electrodes.



**Fig. S2** The current-time curve was collected under a biphasic pulse signal with an applied voltage, illustrating the concept of charge injection quantity ( $Q_{inj}$ ) (the total amount of charge injected on the electrode during a stimulus pulse). The current was integrated over time in the charged period in each curve using Originpro 8.5 software. The obtained integral area was the  $Q_{inj}$  on electrode.