

## **Supplementary Information :**

### **Graphene oxide-mediated Cas9/sgRNA delivery for efficient genome editing**

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*This document contains the following supplementary information:*

SI 1. Sequences of DNA oligos

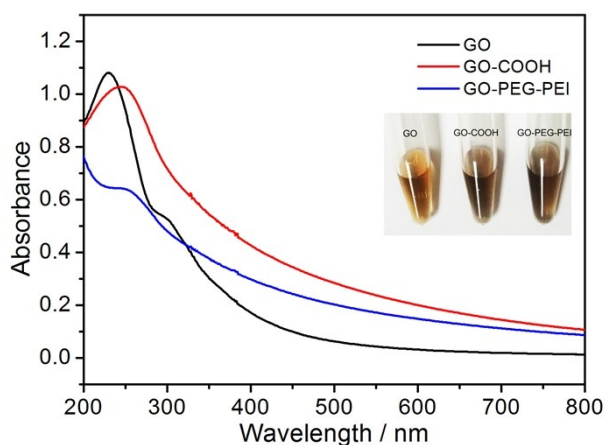
SI 2. Figures

## SI 1. Sequences of DNA oligos

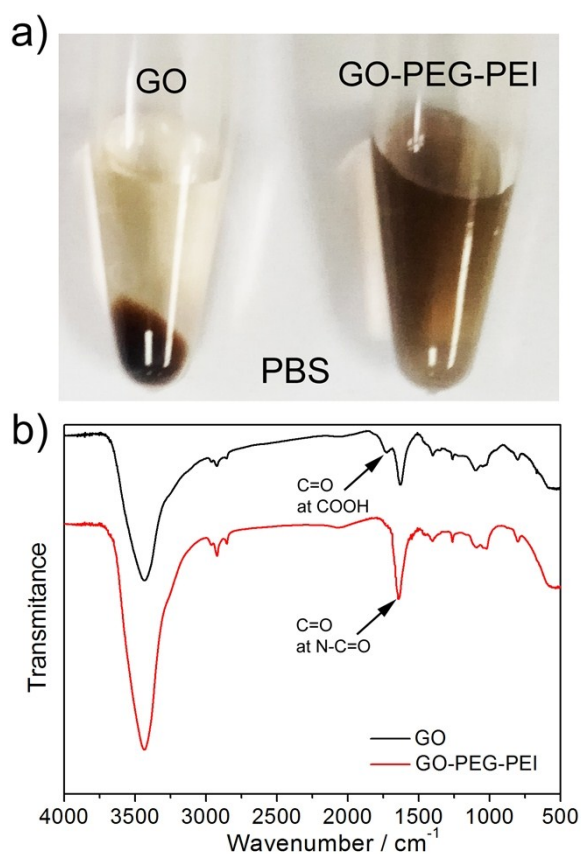
**Tab. S1** Sequences of DNA oligos

| Nucleic Acid ID          | sequences (5'-3')                                                                      | Notes                                    |
|--------------------------|----------------------------------------------------------------------------------------|------------------------------------------|
| sgRNA-F<br>(sgEGFP-F)    | GAAATTAATACGACTCACTATAGGGAAGGAGGACGGC<br>AACATCCTGTTT TAGAGCTAGAAATAGC                 | T7 Promoter<br>EGFP Targeting            |
| sgRNA-R<br>(sgEGFP-F)    | AAAAGCACCGACTCGGTGCCACTTTTTCAAGTTGATAA<br>CGGACTAGCCTTATTTAACTTGCTATTCTAGCTCTAA<br>AAC |                                          |
| non targeting<br>sgRNA-F | GAAATTAATACGACTCACTATAGGGAAGGAAATTAGGTGC<br>GCTTGCGTTTTAGAGCTAGAAATAGC                 | T7 Promoter<br>Non-Targeting<br>Sequence |
| non targeting<br>sgRNA-R | AAAAGCACCGACTCGGTGCCACTTTTTCAAGTTGATAA<br>CGGACTAGCCTTATTTAACTTGCTATTCTAGCTCTAA<br>AAC |                                          |
| EGFP-F                   | ATGGTGAGCAAGGGCGAG                                                                     |                                          |
| EGFP-R                   | TTACTTGTACAGCTCGTCCATGC                                                                |                                          |
| T7E1-F                   | ATGGTGAGCAAGGGCGAG                                                                     |                                          |
| T7E1-R                   | TTACTTGTACAGCTCGTCCATGC                                                                |                                          |
| DNA-FAM                  | GGACGGCAACAT-FAM                                                                       |                                          |
| Actin-F                  | TCACCCACACTGTGCCCATCTACGA                                                              |                                          |
| Actin-R                  | CAGCGGAACCGCTCATTGCCAATGG                                                              |                                          |
| CXCR4-F                  | CGACCTCCTCTTTGTCATCACGC                                                                | Cleavage region<br>targeting             |
| CXCR4-R                  | CACACCCTTGCTTGATGATTTCCA                                                               |                                          |
| sgCXCR4-F                | GAAATTAATACGACTCACTATAGGGAAGCGTGATGA<br>CAAAGAGGGTTTTAGAGCTAGAAATAGC                   | CXCR4 Targeting                          |
| sgCXCR4-R                | AAAAGCACCGACTCGGTGCCACTTTTTCAAGTTGATAA<br>CGGACTAGCCTTATTTAACTTGCTATTCTAGCTCTAA<br>AAC |                                          |

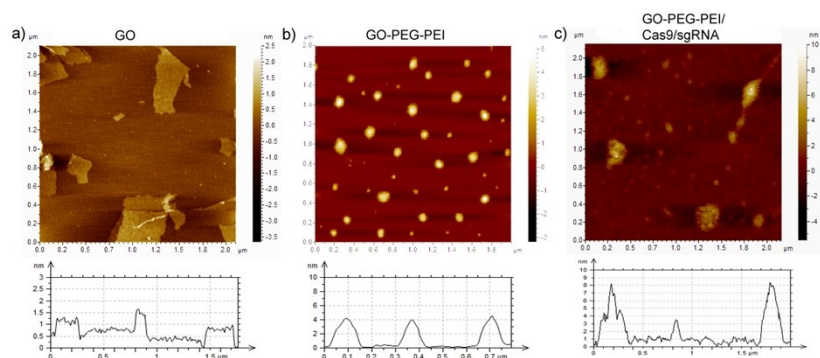
## SI 2. Figures



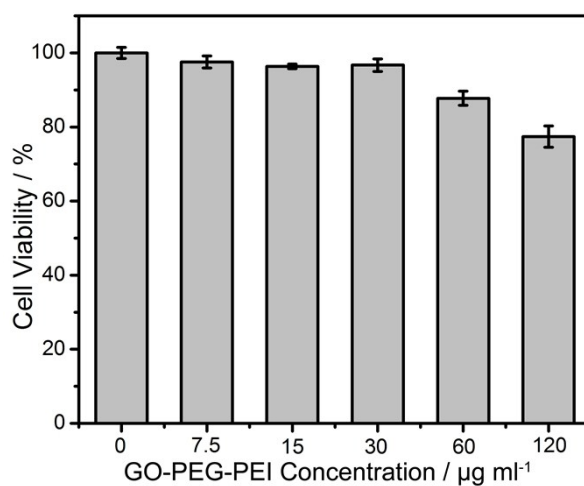
**Fig. S1** UV-Vis absorbance spectra of GO, GO-COOH, and GO-PEG-PEI. Inset: a photograph of GO, GO-COOH and GO-PEG-PEI solutions at the same graphitic carbon concentration to show the visible color difference.



**Fig. S2** Characterizations of GO and GO-PEG-PEI complexes. (a) Photos of GO and GO-PEG-PEI in PBS after centrifugation at 5,000 rpm for 5 min. GO aggregated in both PBS while GO-PEG-PEI complexes were stable. (b) IR spectra of GO, GO-COOH, and GO-PEG-PEI measured in KBr pellet.



**Fig. S3** AFM images of GO, GO-PEG-PEI, GO-PEG-PEI/Cas9/sgRNA. (a) GO, (b) GO-PEG-PEI, and (c) GO-PEG-PEI/Cas9/sgRNA with thicknesses of about 1 nm, 4 nm, and 9 nm, respectively.



**Fig. S4** Relative viability of AGS.EGFP cells after being incubated with GO-PEG-PEI/Cas9/sgRNA composites (0-120  $\mu\text{g ml}^{-1}$  and 100 nM Cas9/sgRNA) at 48 h. The viable cell percentage was measured by MTT assay.