

Fig. S1. (a) SEM image of rGO@MnO<sub>2</sub>/MB/Dox nanoparticles (b) size distribution of rGO@MnO<sub>2</sub> and rGO@MnO<sub>2</sub>/MB/Dox nanoparticles determined by DLS (c) Size distribution changes of rGO@MnO<sub>2</sub>/MB/Dox nanoparticles in water with different time determined by DLS.

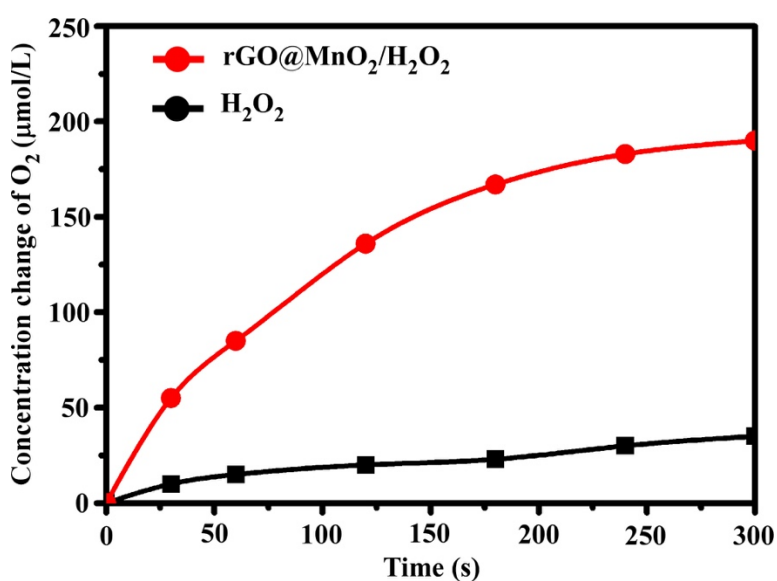


Fig. S2. O<sub>2</sub> generation in pH 7.4 solution with rGO@MnO<sub>2</sub>.

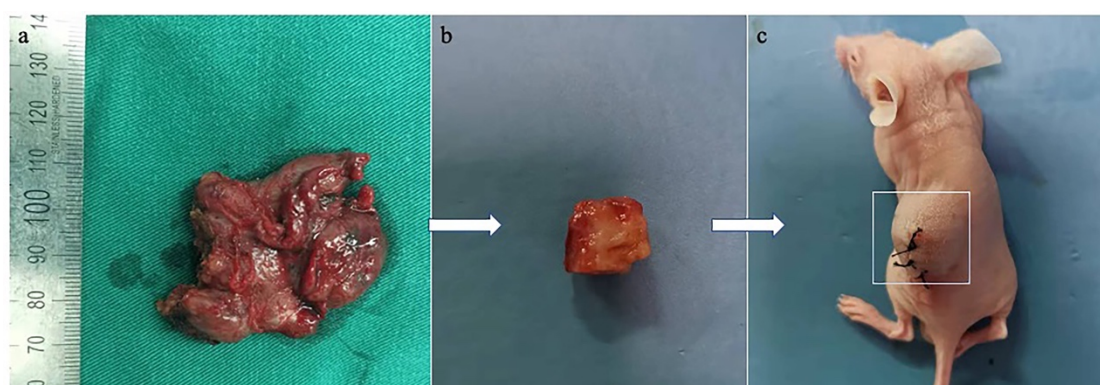
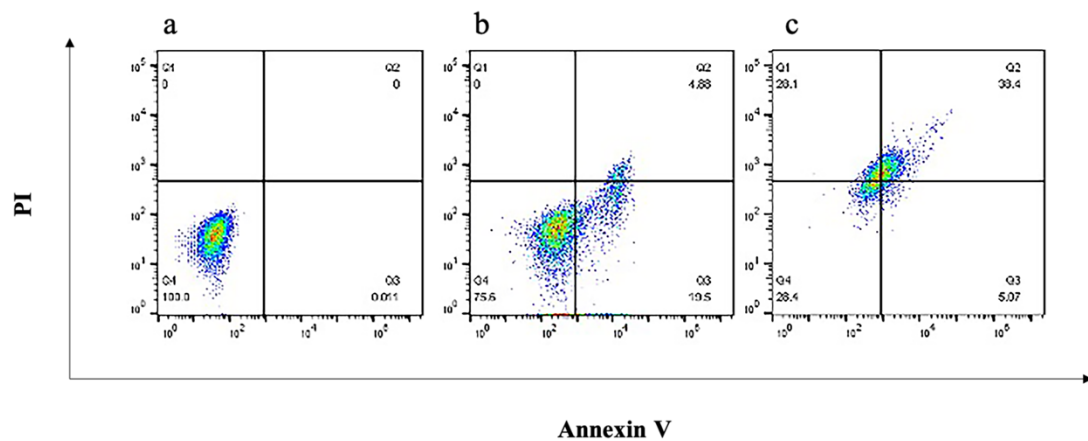


Figure S3. Preparation of *Carotid body tumor* model

(a) Surgically resected specimens of patients diagnosed with *CBT*. (b) The *CBT* was cut into multiple 1cm<sup>3</sup> masses. (c) the *CBT* masses were buried subcutaneously in the back of the nude mice.



**Figure S4** Flow cytometry analysis of PC-12 apoptosis after different treatments. (a) control (b) rGO@MnO<sub>2</sub>/MB/Dox (c) rGO@MnO<sub>2</sub>/MB/Dox + NIR