Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B. This journal is © The Royal Society of Chemistry 2020

## **Supporting information**

## Carbon Dot Targeting to Nitrogen Signaling Molecules for Inhibiting Neuronal Death

Lufei Ouyang,<sup>a</sup> Xiaoyu Mu,<sup>a</sup> Junying Wang,<sup>a</sup> Qifeng Li,<sup>c</sup> Yalong Gao,<sup>c</sup> Haile Liu,<sup>a</sup> Si Sun,<sup>a</sup> Qinjuan Ren,<sup>a</sup> Ruijuan Yan,<sup>a</sup> Jingya Wang,<sup>d</sup> Qiang Liu,<sup>d</sup> Yuanming Sun,<sup>d</sup> Changlong Liu,<sup>a</sup> Hua He,<sup>\*b</sup> Wei Long,<sup>\*d</sup> and Xiao-Dong Zhang<sup>\*a,e</sup>

<sup>a</sup> Tianjin Key Laboratory of Low Dimensional Materials Physics and Preparing Technology,
School of Sciences, Tianjin University, Tianjin 300350, China

<sup>b</sup> State Key Laboratory of Heavy Oil Processing and Center for Bioengineering and Biotechnology, China University of Petroleum (East China), Qingdao 266580, China

<sup>c</sup> Department of Neurosurgery and Key Laboratory of Post-trauma Neuro-repair and Regeneration in Central Nervous System, Tianjin Medical University General Hospital, Tianjin 300052, China

 <sup>d</sup> Tianjin Key Laboratory of Molecular Nuclear Medicine, Institute of Radiation Medicine, Chinese Academy of Medical Sciences and Peking Union Medical College, Number 238, Baidi Road, Tianjin 300192, China

<sup>e</sup> Tianjin International Joint Research Center for Neural Engineering, Academy of Medical Engineering and Translational Medicine, Tianjin University, Tianjin 300072, China

\*Correspondence should be addressed to X.D. Zhang (<u>xiaodongzhang@tju.edu.cn</u>), W. Long. (<u>longway@irm-cams.ac.cn</u>) and H. He (<u>huahe@upc.edu.cn</u>).



Fig. S1 Schematic diagram of CD synthesis.



Fig. S2 (A) TEM image of CD. (B) Statistical analysis of the sizes of CD measured by TEM.



Fig. S3 (A) AFM image of CD. (B) Height profiles along the red lines in the Figure (A).



Fig. S4 (A) Whole, (B) and (C) fine XPS spectra of CD for O 1s and C 1s state, respectively.



**Fig. S5 (A)** 'OH and **(B)**  $O_2^{-}$  scavenging activities of CD, respectively.



Fig. S6 (A, B) Intracellular ROS level after stimulation with  $H_2O_2$  and LPS for 24 hours using DCFH-DA probe, respectively. (C, D) Fluorescent microscopic images of intracellular ROS after  $H_2O_2$  and LPS stimulation for 24 hours using DCFH-DA probe. Blue: cell nuclei stained by Hoechst 33342. Green: fluorescent product of DCFH-DA being oxidized by ROS. (\*p<0.05 compared with  $H_2O_2$ - or LPS-treated group, one-way ANOVA)