

## Support Information

# The Heterogeneity of Physiological Activity for Chiral Carbon Dots Derived from L/D/DL-Arginine

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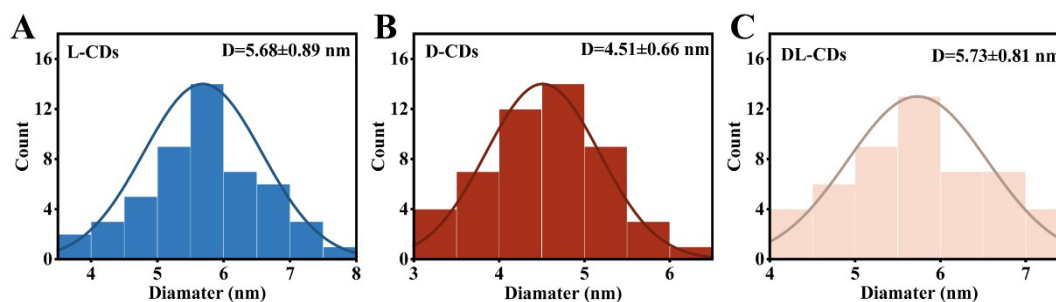


Fig. S1 Particle size of (A) L-CDs, (B) D-CDs and (C) DL-CDs analyzed from TEM image.

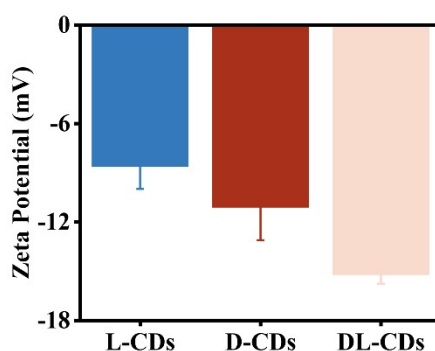
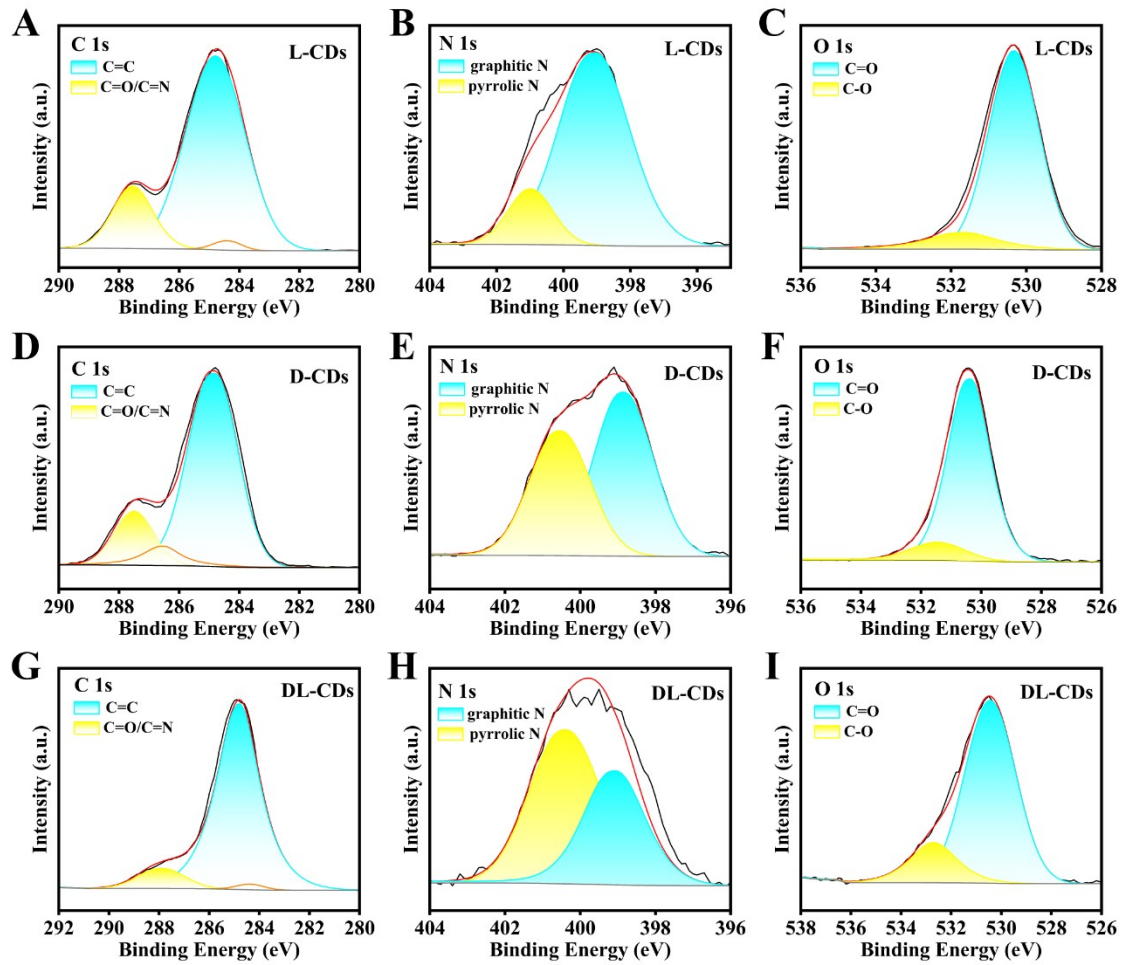


Fig. S2 Zeta potential of L-CDs, D-CDs and DL-CDs in H<sub>2</sub>O.



**Fig. S3** The High resolution XPS spectra of (A) C 1s, (B) N 1s, (C) O 1s of L-CDs with identification of peaks by curve fitting. the High resolution XPS spectra of (D) C 1s, (E) N 1s, (F) O 1s of D-CDs with identification of peaks by curve fitting. the High resolution XPS spectra of (G) C 1s, (H) N 1s, (I) O 1s of DL-CDs with identification of peaks by curve fitting.

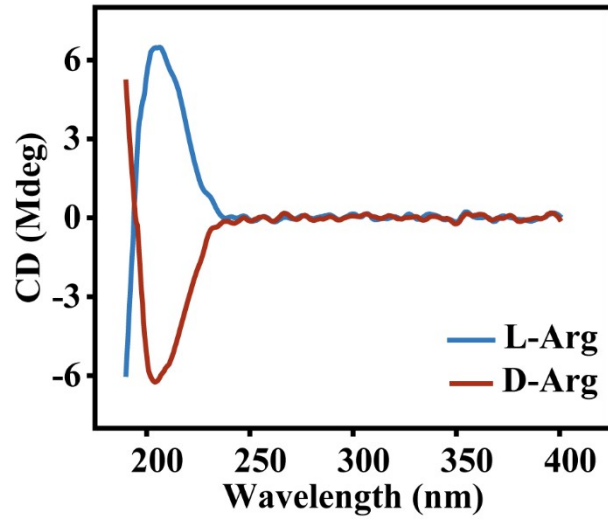


Fig. S4 CD spectra of L-Arg and D-Arg.

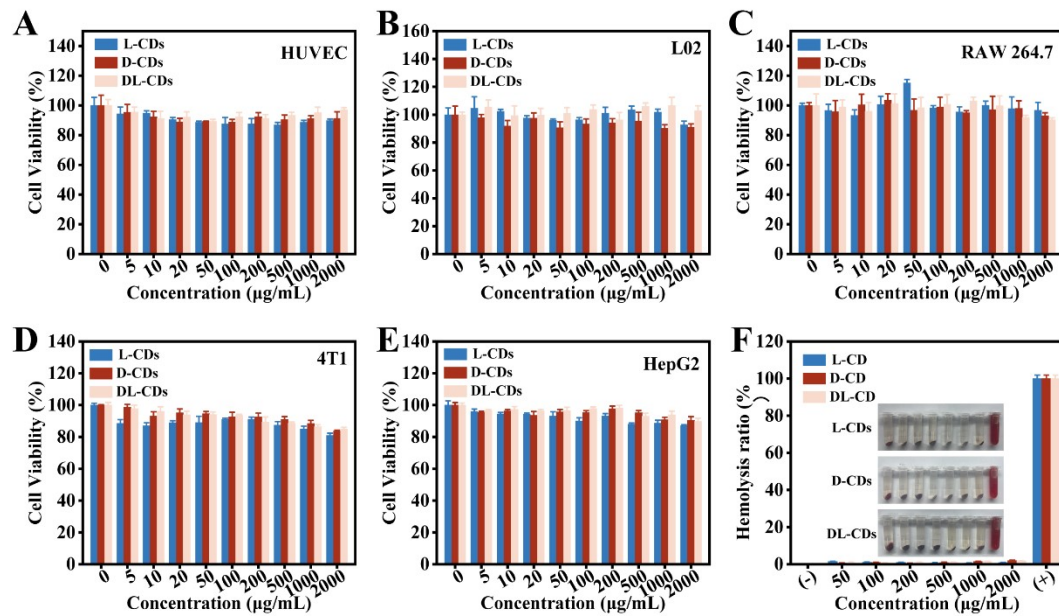
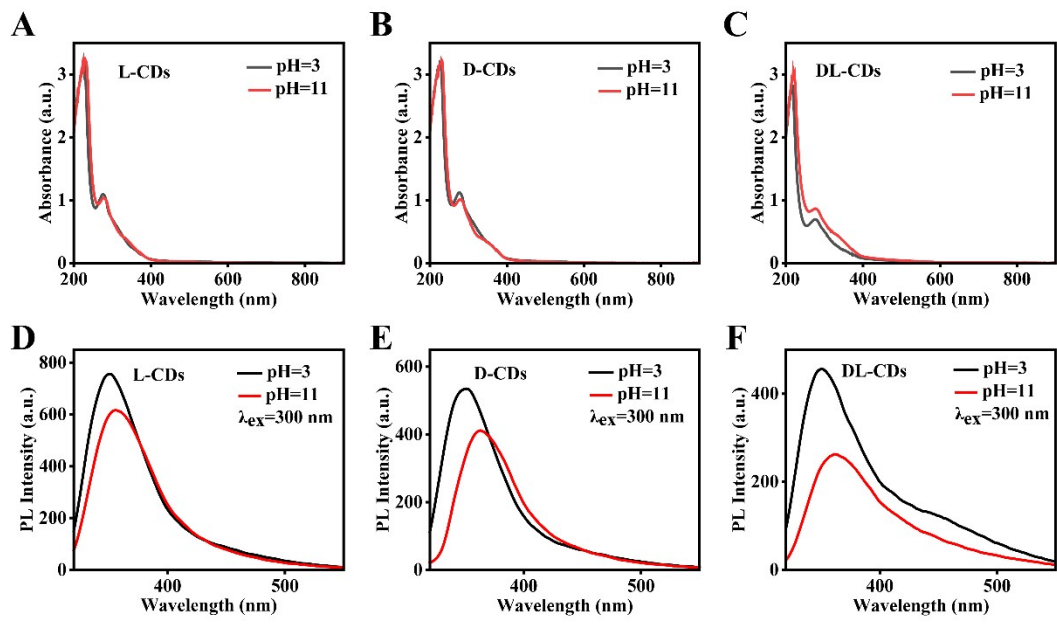
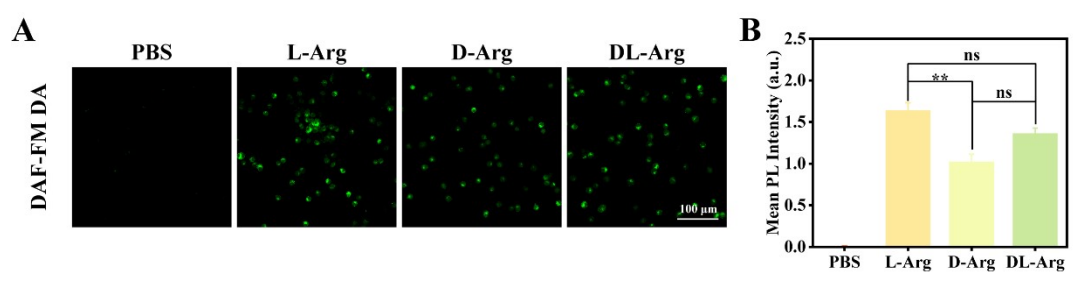


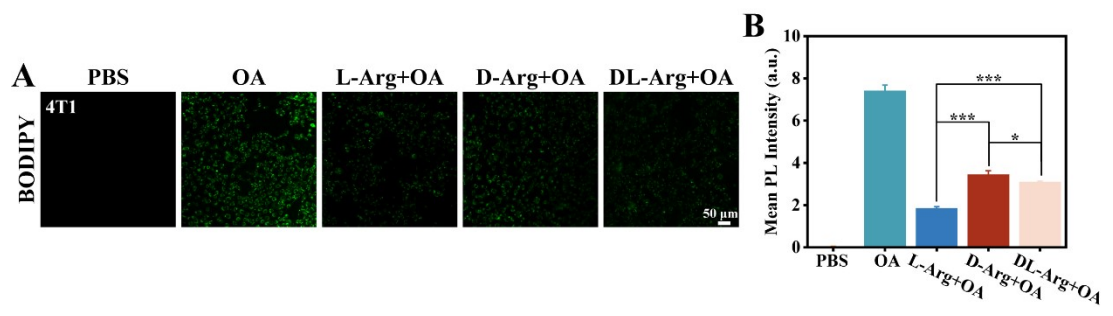
Fig. S5 Cytotoxicity test of L-CDs, D-CDs and DL-CDs to (A) HUVEC, (B) L02, (C) RAW 264.7, (D) 4T1 and (E) HepG2 cells. (F) Hemolytic activities of L-CDs, D-CDs and DL-CDs to red blood cells (RBCs). Insets: photographs of corresponding RBC solutions. (n = 5/group)



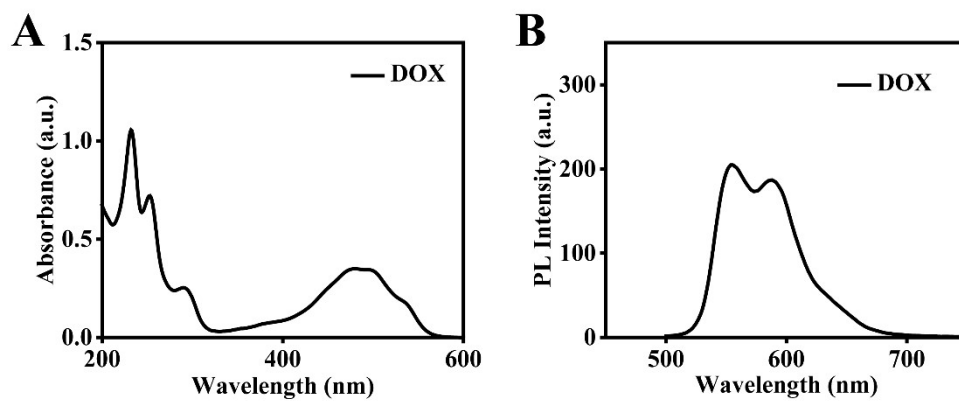
**Fig. S6** The UV spectra of (A) L-CDs, (B) D-CDs and (C) DL-CDs at pH 3 and 11. The emission spectra of (D) L-CDs, (E) D-CDs and (F) DL-CDs at the excitation wavelength of 300 nm.



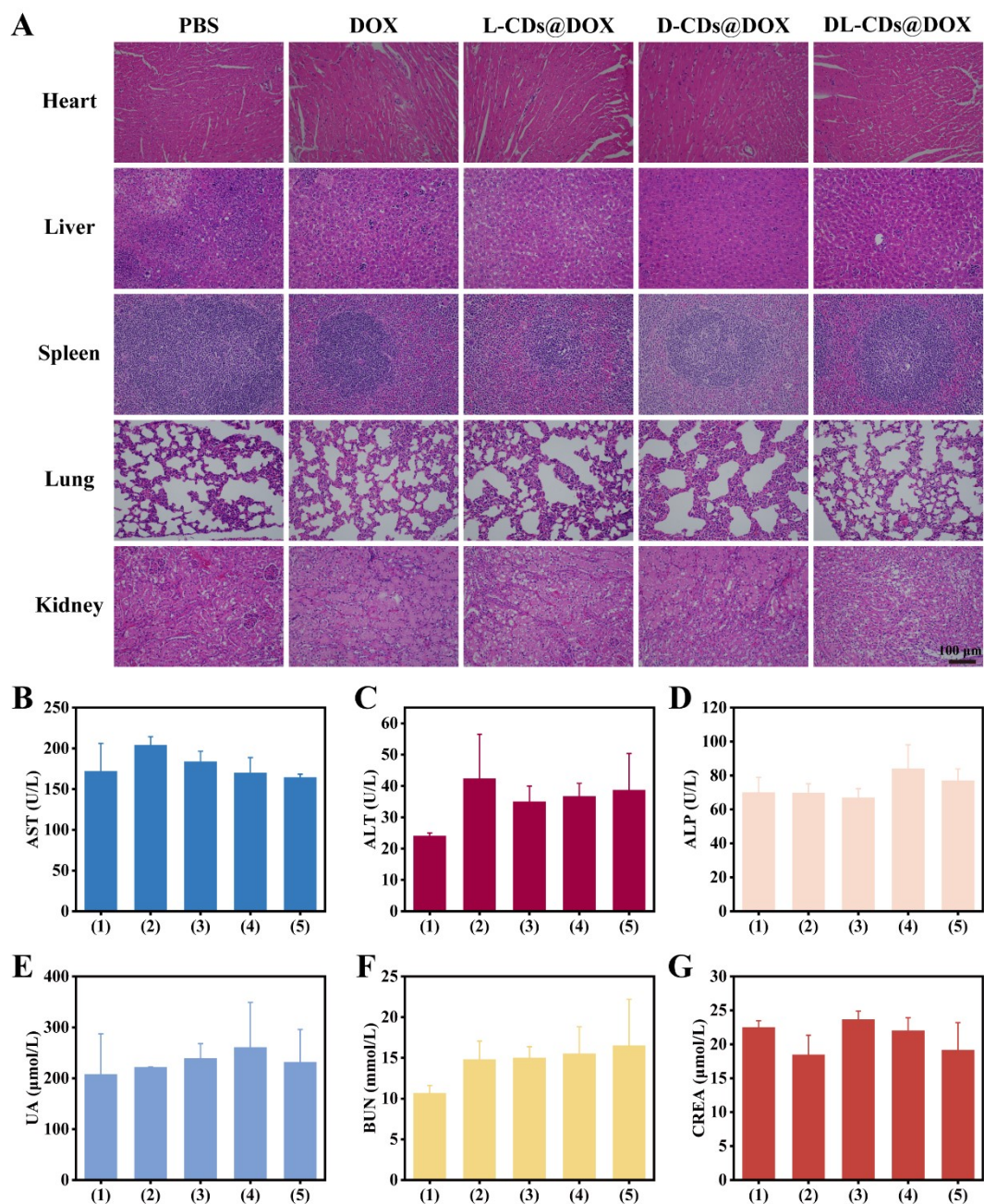
**Fig. S7** (A) Respective fluorescence images of RAW 264.7 cells under L-Arg, D-Arg and DL-Arg after incubation with DAF-FM DA. Scale bar: 100  $\mu$ m. (B) The statistics of mean fluorescence intensity by using ImageJ according to the images.



**Fig. S8** (A) Respective fluorescence images of 4T1 cells under indicated treatment after incubation with BODIPY 493/503. Scale bar: 50  $\mu$ m. (B) The statistics of mean fluorescence intensity by using ImageJ according to the images.



**Fig. S9** (A) The UV spectra of DOX. (B) The emission spectra of DOX at the excitation wavelength of 488 nm.



**Fig. S10** (A) H&E staining images of major organs from different groups. Scale bar: 100  $\mu\text{m}$ . The liver function of mice evaluated by (B) AST, (C) ALT and (D) ALP. The kidney function of mice evaluated by (E) UA, (F) BUN and (G) CREA. (n=6/group)