Supporting Information

The interactions of single-wall carbon nanohorns with polar epithelium

Yujie Shi[1], Zujin Shi[2], Suxin Li[1], Yuan Zhang[3], Bing He[1], Dong Peng[4], Jie Tian[4], Ming Zhao[5], Xueqing Wang[1], Qiang Zhang[1]

[1]Beijing Key Laboratory of Molecular Pharmaceutics and New Drug Delivery Systems, School of Pharmaceutical Sciences, [2]Beijing National Laboratory for Molecular Sciences, State Key Lab of Rare Earth Materials Chemistry and Applications, College of Chemistry and Molecular Engineering, Peking University, Beijing, People's Republic of China; [3]Department of Biomedical and Pharmaceutical Sciences, College of Pharmacy, University of Rhode Island, Kingston 02881, USA; [4]Key Laboratory of Molecular imaging of Chinese Academy of Sciences, Institute of Automation, Chinese Academy of Sciences, Beijing, People's Republic of China; [5]Department of Chemical Biology, School of Pharmaceutical Sciences, Peking University, Beijing, People's Republic of China.

Correspondence:

Ming Zhao

Tel +86-10-82801539

E-mail sunmoonzhao@sohu.com

Xueqing Wang

Tel +86-10-82805935

E-mail wangxq@bjmu.edu.cn

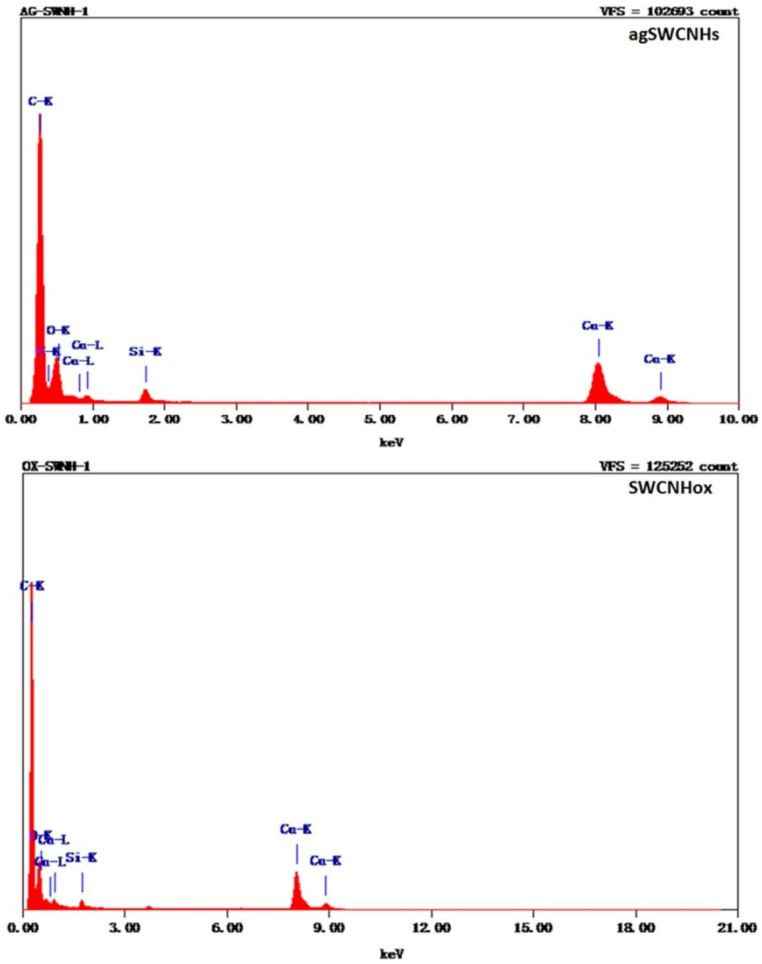

Figure S1. The energy dispersive spectrum of agSWCNHs and SWCNHox.

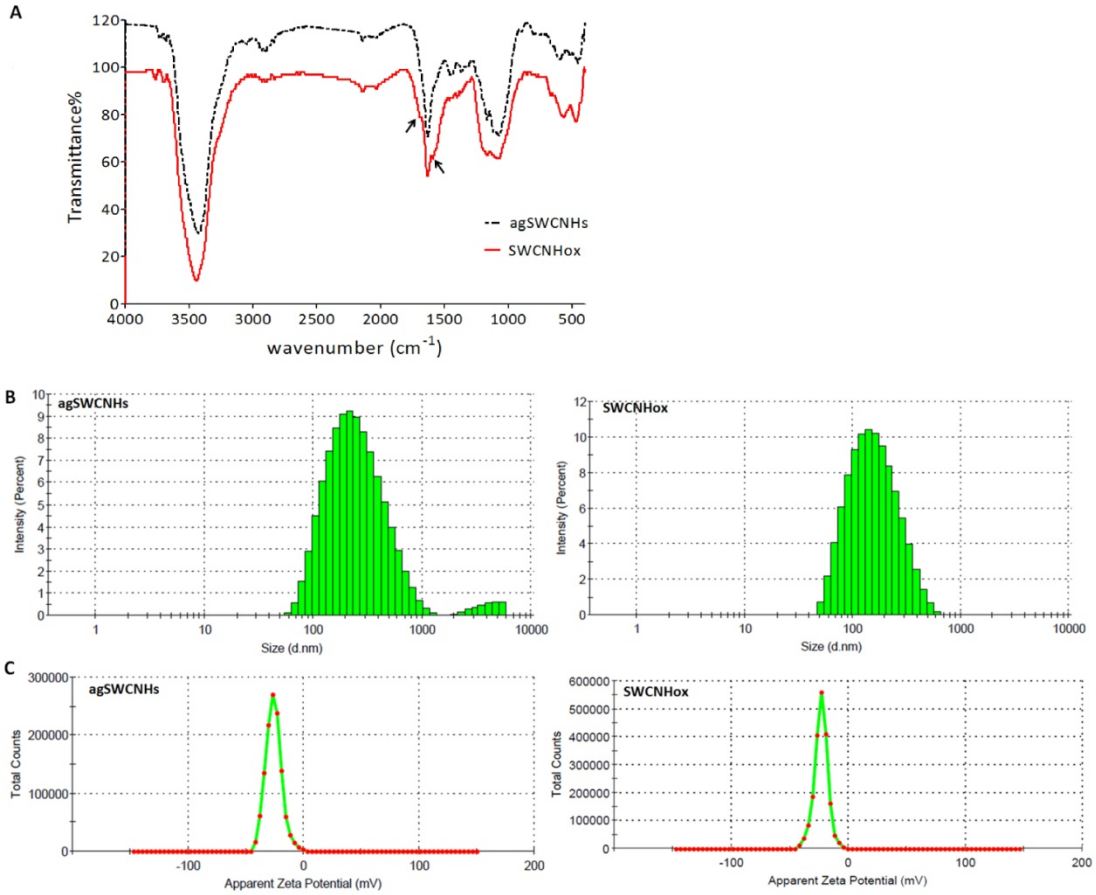

Figure S2. A, FTIR spectrum of agSWCNHs and SWCNHox. Black arrows indicate the additional absorption peaks besides the original ones; B, Particle size distribution of suspensions of agSWCNHs and SWCNHox in distilled water with 10 mg mL^{-1} BSA as suspending agent by dynamic light scattering analysis; C, Zeta potentials of agSWCNHs and SWCNHox in distilled water with 10 mg mL^{-1} BSA as suspending agent.

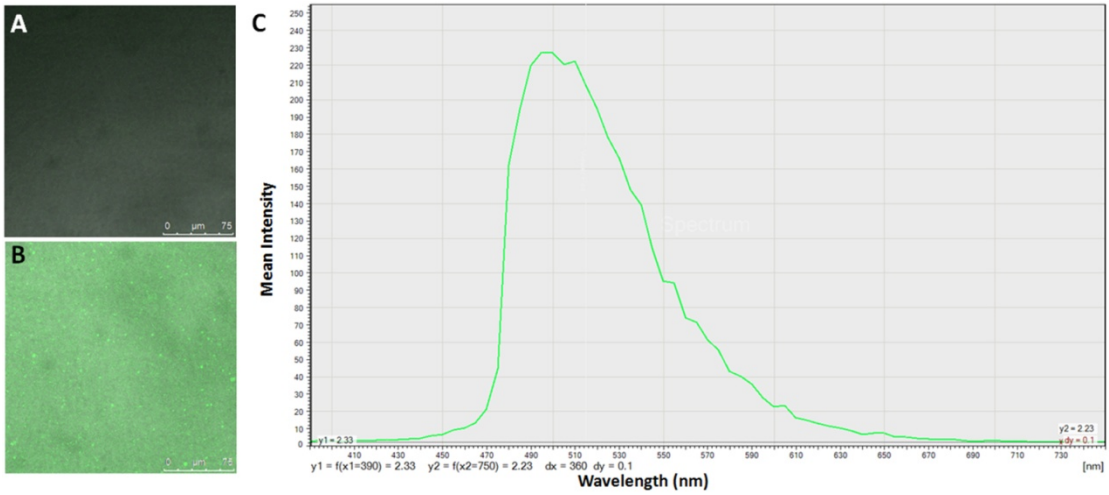

Figure S3. Fluorescence CLSM images of DMEM (control, A) and F-B-SWCNHox (B) suspensions in DMEM; (C) Fluorescence spectrum of F-B-SWCNHox in DMEM.

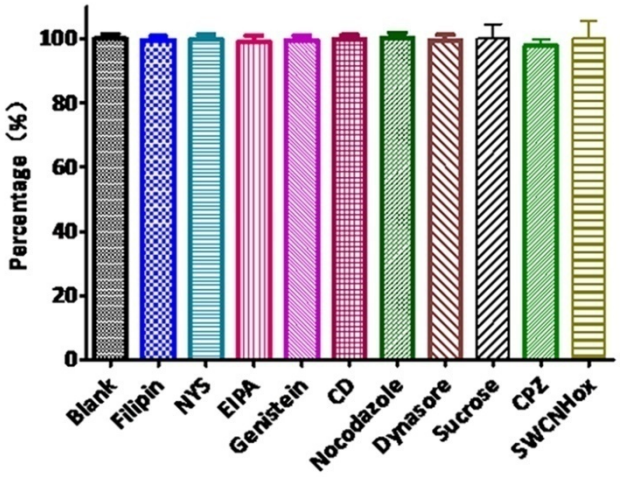

Figure S4. Cell viability was detected by CCK-8 assays after incubation with inhibitors and 100 $\mu g ml^{-1}$ SWCNHox for 3h. Untreated cell was used as the control.

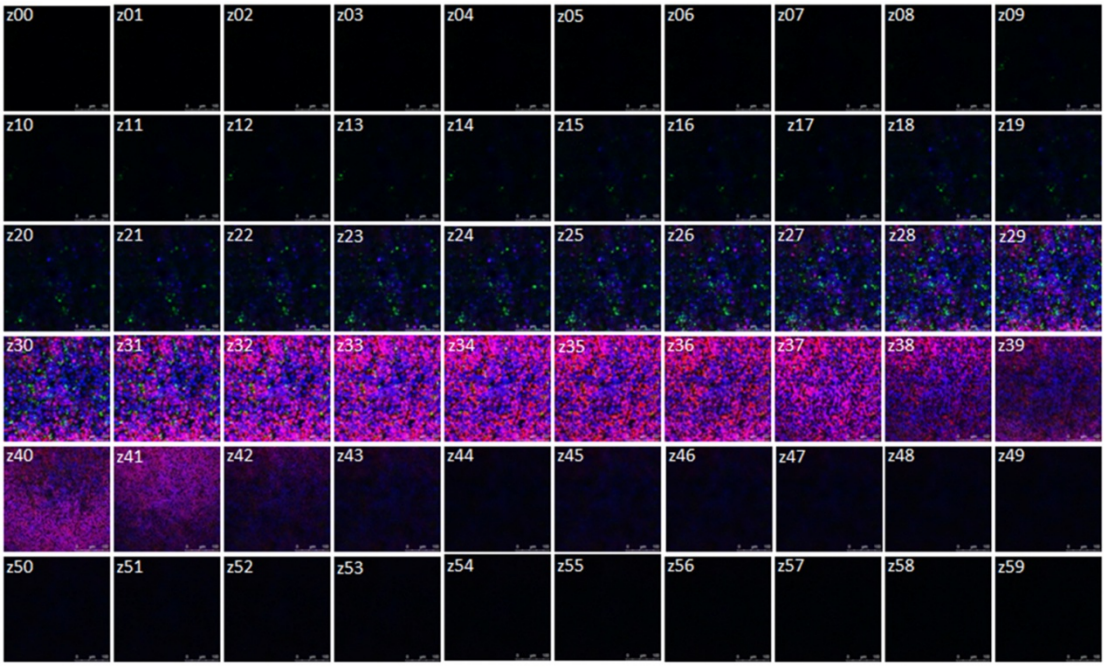

Figure S5. Confocal image series of MDCK cell monolayer along the Z-axis after incubation with 40 μg ml^{-1} F-B-SWCNHox suspensions for 12 h at 37°C. Green represents F-B-SWCNHox, blue represents nuclei, red represents the pseudo-color of transwell membrane.

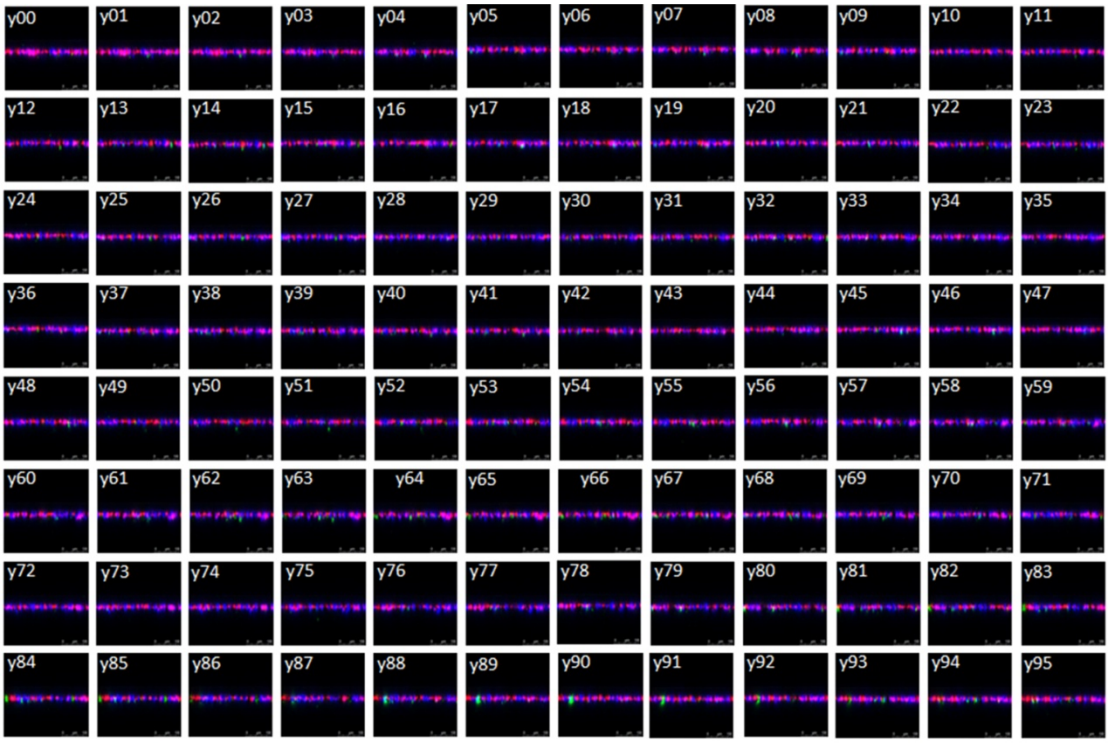

Figure S6. Confocal image series of MDCK cell monolayer along the Y-axis after incubation with 40 μg ml^{-1} F-B-SWCNHox suspensions for 12 h at 37°C. Green represents F-B-SWCNHox, blue represents nuclei, red represents the pseudo-color of transwell membrane.

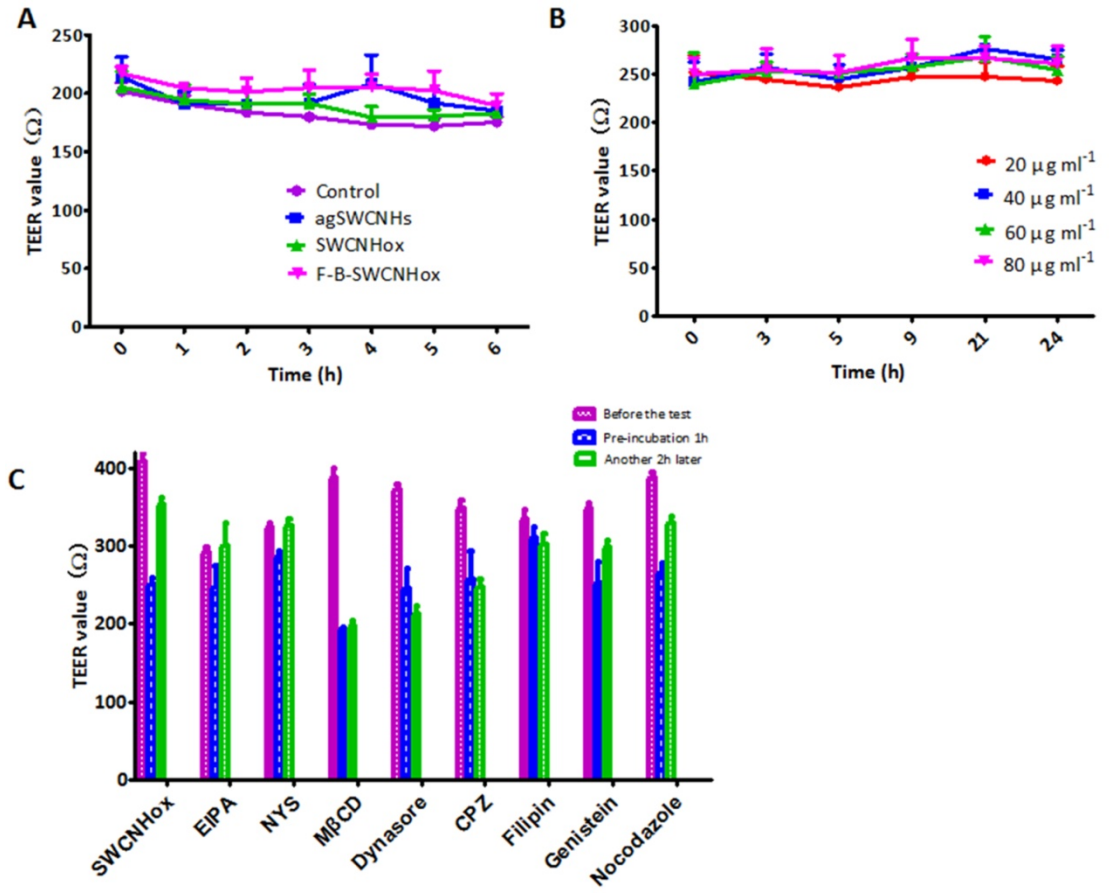

Figure S7. The TEER value changes of MDCK cell monolayers incubated with (A) different types of SWCNHs for different time periods at the concentration of 20 μgml^{-1}, (B) different concentrations of SWCNHox for different time periods, (C) different inhibitors used in endocytosis pathway study, and the influence of 100 μg ml^{-1} SWCNHox on TEER was determined simultaneously.

Table S1 Results of elemental analysis

Element assay	C%	N%	H%
agSWCNHs	95.3	4.23	Not detected
SWCNHox	91.5	0.564	0.728

Table S2 Characteristics of agSWCNHs and SWCNHox in different media

sample	Medium	Centrifugation (rpm)	Time of repose (h)	Particle Size(d.nm)	PDI
agSWCNHs	water		0	2155.3±348.0	0.881±0.131
agSWCNHs	water with BSA	12 thousand	0	220.5±10.9	0.230±0.019
agSWCNHs	water with BSA	12 thousand	48	210.1±12.1	0.308±0.037
agSWCNHs	PBS with BSA	12 thousand	0	191.4±8.55	0.295±0.019
agSWCNHs	PBS with BSA	12 thousand	48	224.2±14.1	0.331±0.004
SWCNHox	water		0	465.4±13.5	0.840±0.122
SWCNHox	water with BSA	12 thousand	0	139.6±2.87	0.214±0.01
SWCNHox	water with BSA	12 thousand	48	183.2±4.05	0.270±0.020
SWCNHox	PBS with BSA	12 thousand	0	161.3±9.77	0.265±0.027
SWCNHox	PBS with BSA	12 thousand	48	239.0±1.38	0.270±0.020