Figure S1

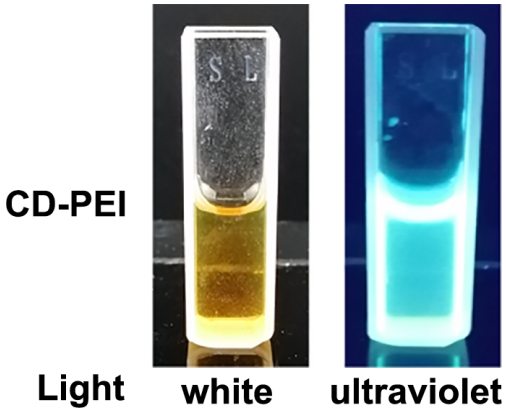
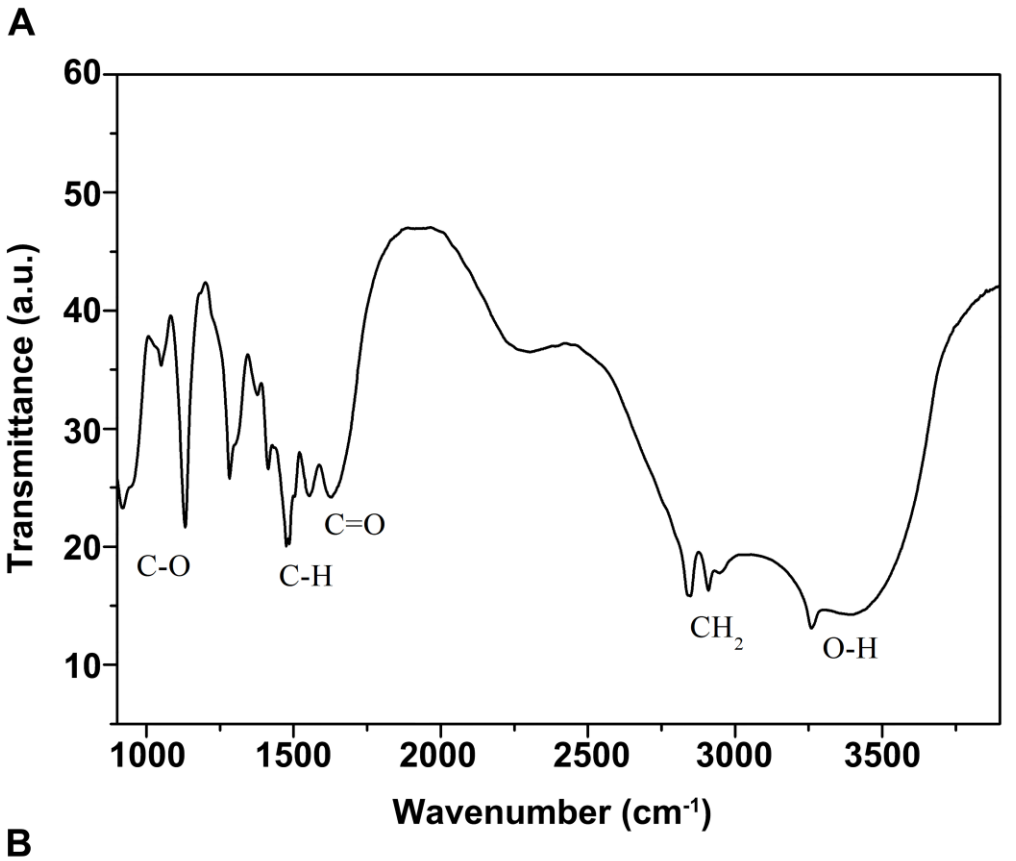


Figure S2


A
Transmittance (a.u.)
60
50
40
30
20
10
C-O
C-H
C=O
CH2
O-H
1000
1500
2000
2500
3000
3500
Wavenumber (cm-1)

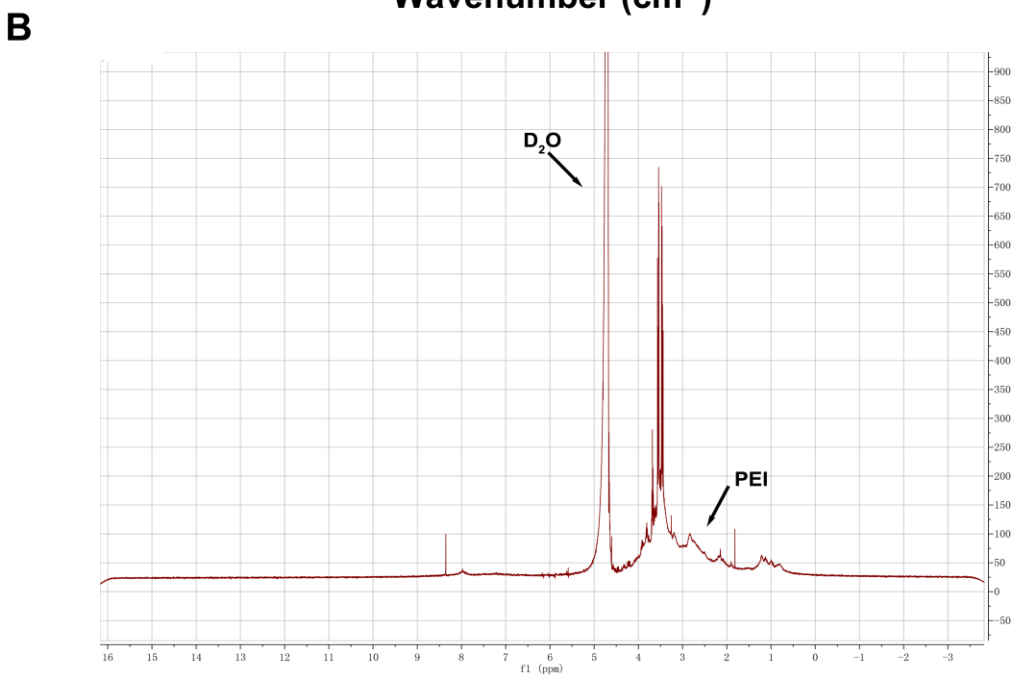

B
D2O
PEI
f1 (ppm)

Figure S3

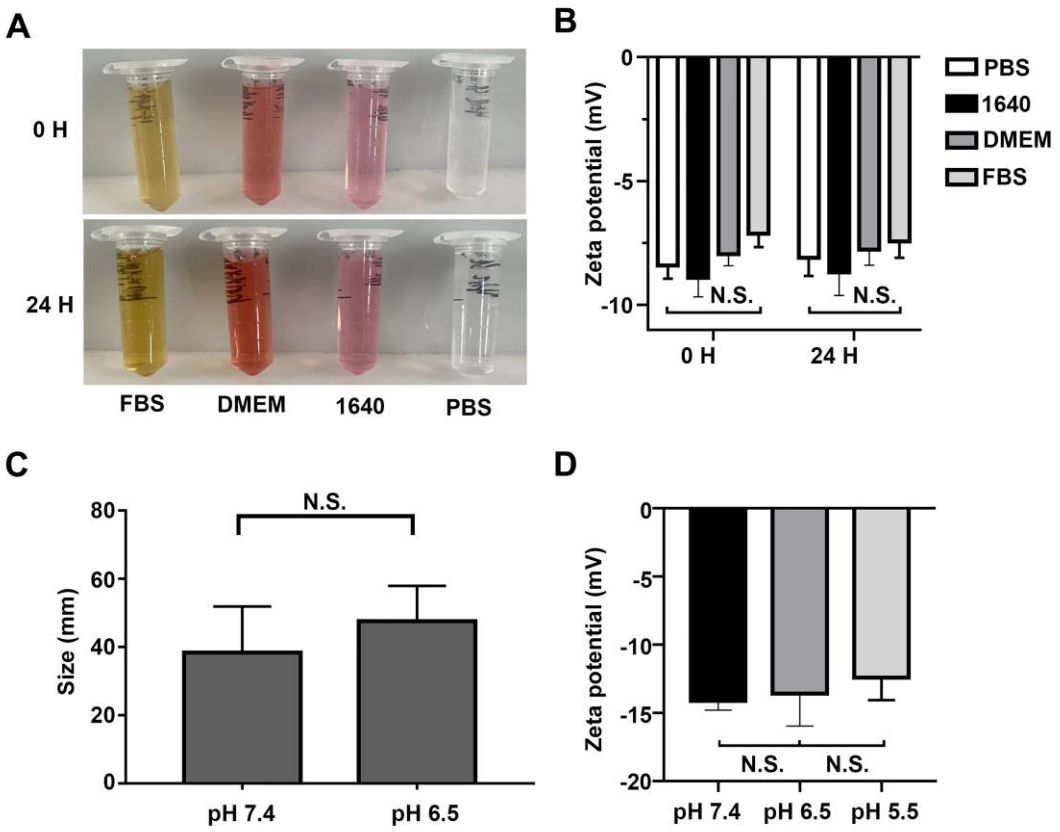

A
0 H
24 H
FBS
DMEM
1640
PBS
B
Zeta potential (mV)
0
-5
-10
N.S.
N.S.
0 H
24 H
PBS
1640
DMEM
FBS
C
Size (mm)
80
60
40
20
0
N.S.
pH 7.4
pH 6.5
D
Zeta potential (mV)
0
-5
-10
-15
-20
N.S.
N.S.
pH 7.4
pH 6.5
pH 5.5

Figure S4

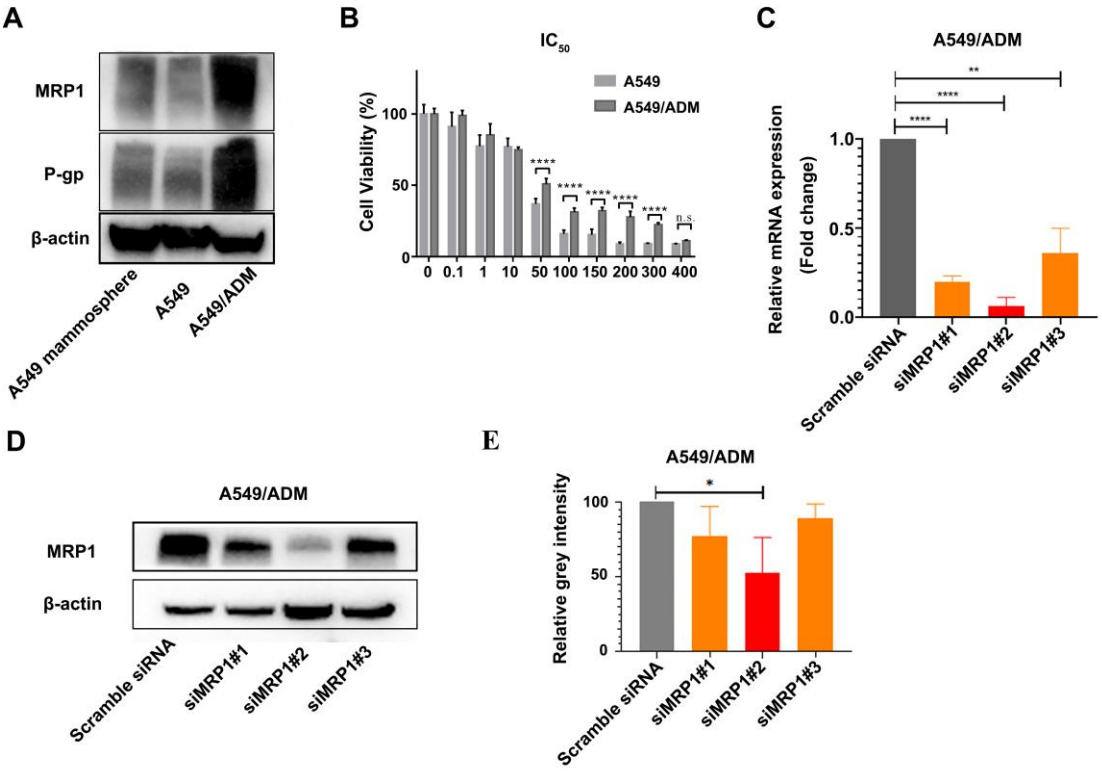
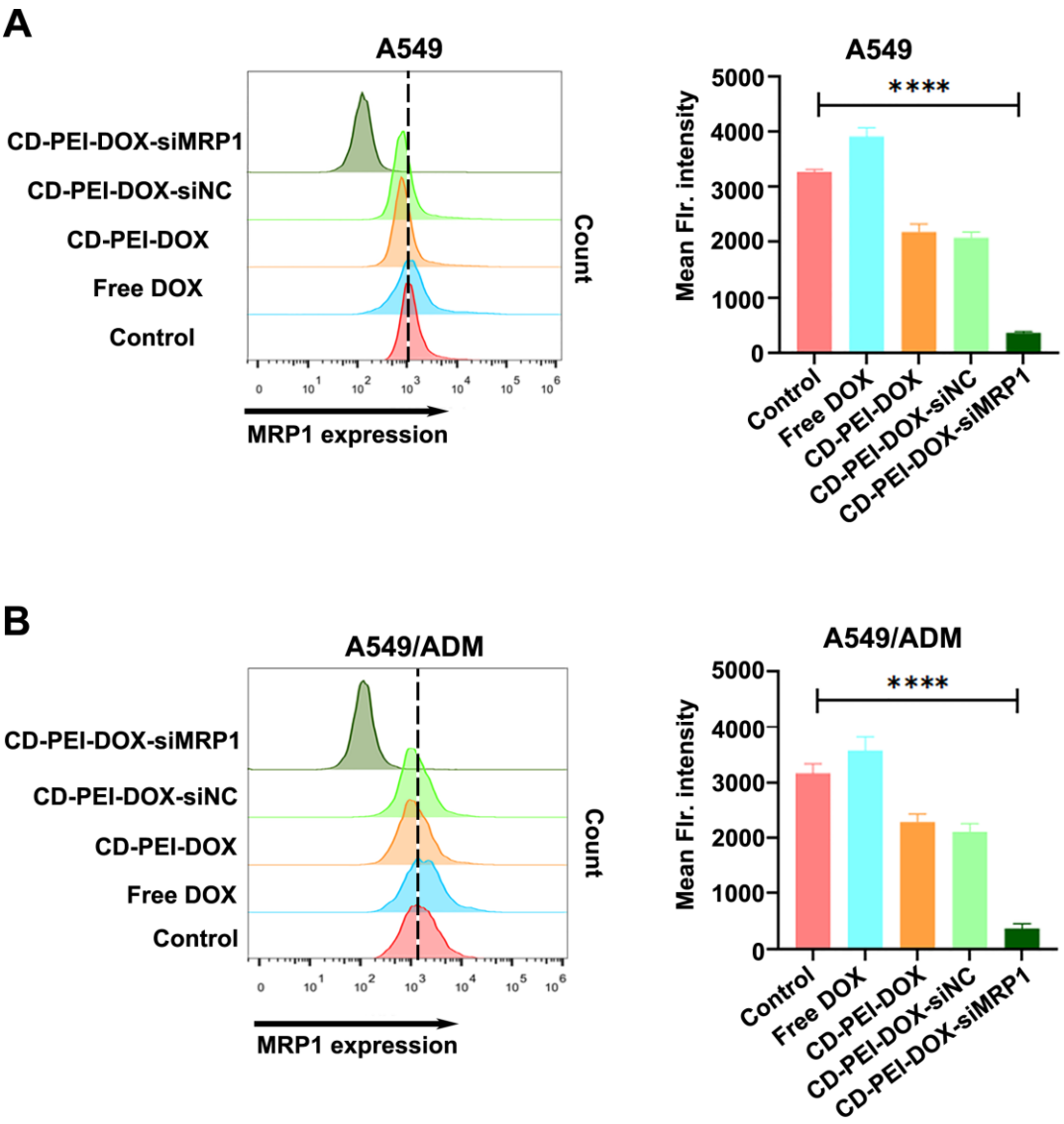

A
MRP1
P-gp
β-actin
A549 mammosphere
A549
A549/ADM
B
IC50
A549
A549/ADM
Cell Viability (%)
100
50
0
0 0.1 1 10 50 100 150 200 300 400
****
n.s.
C
A549/ADM
Relative mRNA expression (Fold change)
1.0
0.5
0.0
**
****
****
Scramble siRNA
siMRP1#1
siMRP1#2
siMRP1#3
D
A549/ADM
MRP1
β-actin
Scramble siRNA
siMRP1#1
siMRP1#2
siMRP1#3
E
A549/ADM
Relative grey intensity
100
50
0
*
Scramble siRNA
siMRP1#1
siMRP1#2
siMRP1#3

Figure S5


A
A549
CD-PEI-DOX-siMRP1
CD-PEI-DOX-siNC
CD-PEI-DOX
Free DOX
Control
Count
MRP1 expression
A549
Mean Flr. intensity
****
Control
Free DOX
CD-PEI-DOX
CD-PEI-DOX-siNC
CD-PEI-DOX-siMRP1
B
A549/ADM
CD-PEI-DOX-siMRP1
CD-PEI-DOX-siNC
CD-PEI-DOX
Free DOX
Control
Count
MRP1 expression
A549/ADM
Mean Flr. intensity
****
Control
Free DOX
CD-PEI-DOX
CD-PEI-DOX-siNC
CD-PEI-DOX-siMRP1

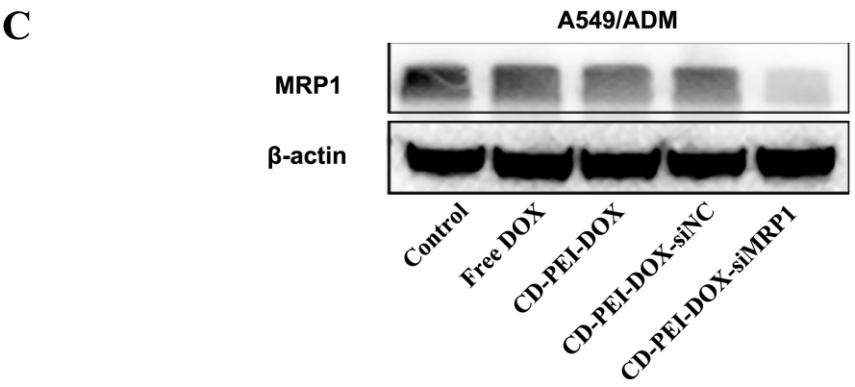

C
A549/ADM
MRP1
β-actin
Control
Free DOX
CD-PEI-DOX
CD-PEI-DOX-siNC
CD-PEI-DOX-siMRP1

Figure S6

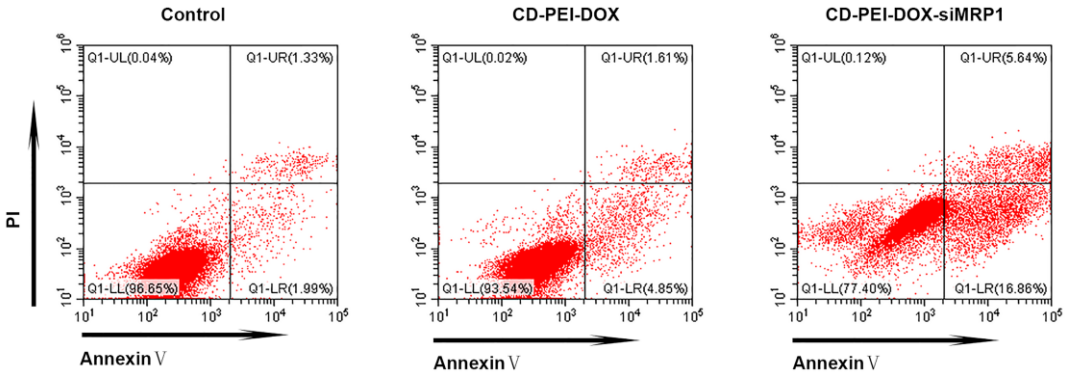

Control
CD-PEI-DOX
CD-PEI-DOX-siMRP1
PI
Annexin V
Q1-UL(0.04%)
Q1-UR(1.33%)
Q1-LL(96.65%)
Q1-LR(1.99%)
Q1-UL(0.02%)
Q1-UR(1.61%)
Q1-LL(93.54%)
Q1-LR(4.85%)
Q1-UL(0.12%)
Q1-UR(5.64%)
Q1-LL(77.40%)
Q1-LR(16.86%)

Figure S1
The optical images of CD-PEI under white light and UV light.

Figure S2
(A) The FTIR spectrum of PEI. (B) NMR analysis were conducted on CD-PEI nano particles. Characteristic peak of CD-PEI were shown in black arrow.

Figure S3
The stability of CD-PEI-siMRP1 were explored. (A) CD-PEI-siMRP1 were incubated with Fetal Bovine Serum (FBS), DMEM culture medium, 1640 medium and PBS control for 0 hour or 24 hour. (B) Zeta potential of CD-PEI-siMRP1 under different treatment as indicated were measured. (C) Size of CD-PEI-siMRP1 were measured after being incubated with pH 7.4 and pH 6.5 solutions. (D) Zeta-potential of CD-PEI-siMRP1 were measured after being incubated with pH 7.4, pH 6.5 and pH 7.4 solutions.

Figure S4
Analysis of chemoresistance of lung cancer cells against doxorubicin. (A) Expression of MRP1 and P-gp on A549, A549 mammosphere, and chemoresistant A549/ADM cells by western blot. β-actin was used as a loading control. (B) Cell viability was detected after treatment by indicated concentrations of doxorubicin in A549 and A549/ADM cells. **** indicates $p<0.0001$. (C) The expression of MRP1 was detected by qPCR after knockdown by three siRNA sequences in A549/ADM cells. (D) The expression of MRP1 in A549/ADM cells was detected by western blot after knockdown by three siRNA sequences. (E) Quantification of grey intensity were calculated from each group after MRP1 knockdown in A549/ADM cells was shown.

Figure S5
Expression of MRP1 on lung cancer cells treated by different drugs. (A) Expression and quantification of MRP1 on A549 cells by flow cytometry. (B) Expression and quantification of MRP1 on A549/ADM cells by flow cytometry. (C) Examination of MRP1 expression after treatment with the indicated drugs in A549/ADM cells, β-actin was used as a loading control.

Figure S6
Apoptosis in CD-PEI-siMRP1 treated cells were investigated. A549/ADM cells were pre-incubated with PBS, CD-PEI-siNC or CD-PEI-siMRP1 solutions respectively. Then cells were subjected to Annexin Ⅴ/PI staining. Annexin $Ⅴ^{+}$/PI^{-} were considered apoptotic cells and detected by flow cytometry.