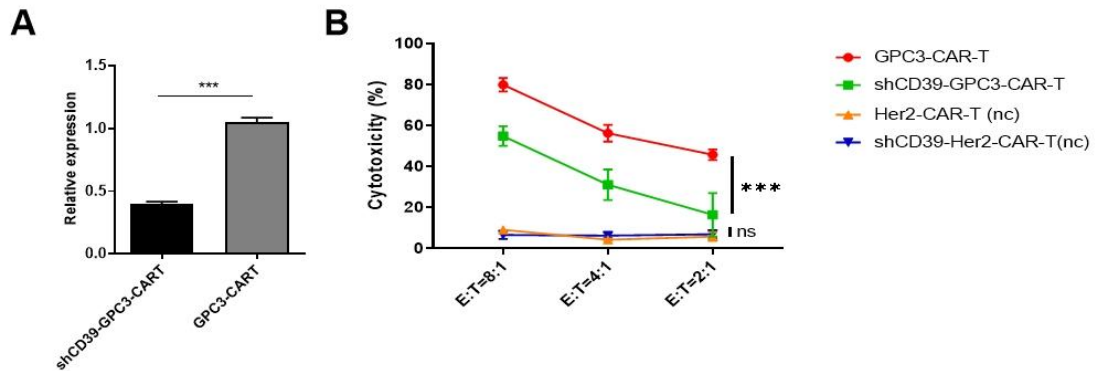
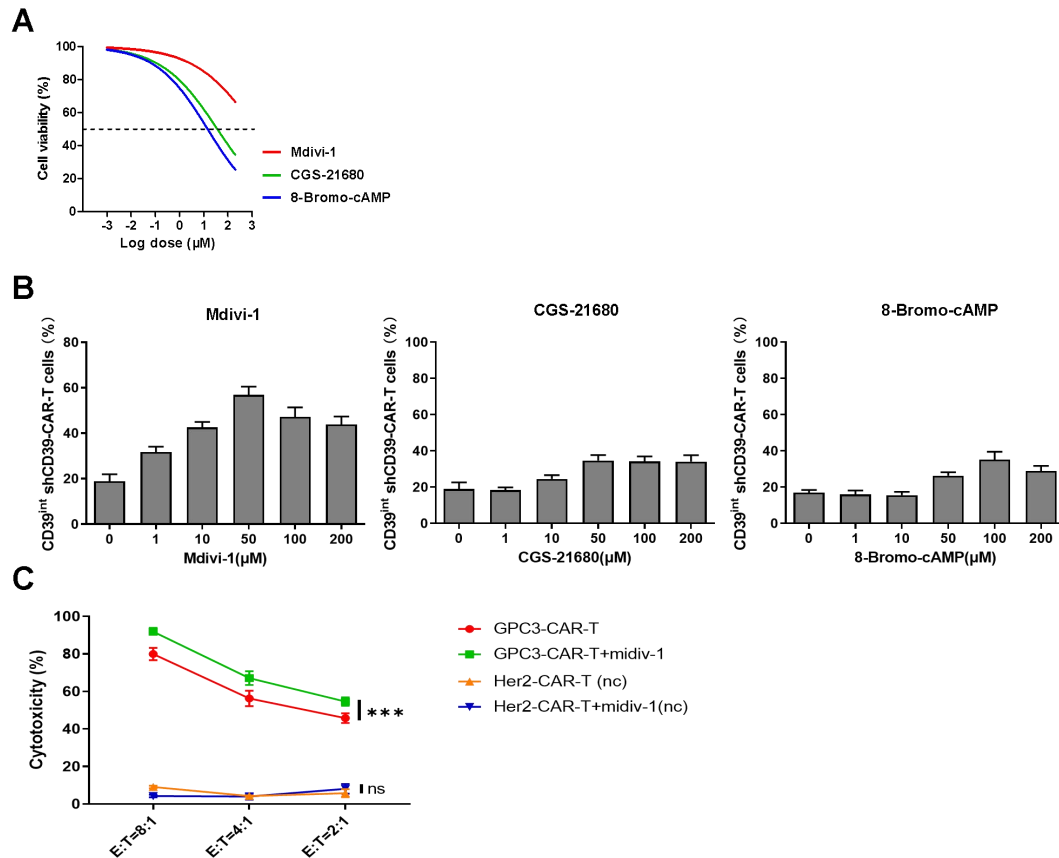


Supplementary Material



Supplementary Fig 1. Efficiency and cytotoxicity of GPC3-CAR-T and shCD39-GPC3-CAR-T cells. (A) Relative mRNA expression level of CD39 in shCD39-GPC3-CAR-T cells (14 days post infection) (n = 3, 3 healthy donors). (B) Cytotoxic activity of GPC3-CAR-T and shCD39-GPC3-CAR-T cells on Huh7 target cells were detected by LDH assay (Her2-CAR-T and shCD39-Her2-CAR-T cells act as negative control). All data were the mean of three independent experiments performed in duplicate. Mean  $\pm$  SEM, unpaired t test, \* $p$  < 0.05, \*\* $p$  < 0.01, \*\*\* $p$  < 0.001.



Supplementary Fig 2. Mdivi-1 added the frequency of CD39<sup>int</sup> subcluster and increased cytotoxic activity of GPC3-CAR-T cells. (A) The dashed line represented the IC<sub>50</sub> of three compounds on shCD39-GPC3-CAR-T cells. (B) Bar plots showed the proportion of CD39<sup>int</sup> shCD39-GPC3-CAR-T cells with different dosage of compounds stimulation. (C) Cytotoxic activity of GPC3-CAR-T with or without the addition of 50  $\mu\text{M}$  (final concentration) mdivi-1 on Huh7 targets cells were detected by LDH assay (Her2-CAR-T and shCD39-Her2-CAR-T cells act as negative control). All data were the mean of three independent experiments performed in duplicate. Mean  $\pm$  SEM, unpaired t test, \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

Supplementary Table S1. Sequences of CD39 shRNA and primer for qPCR used in this study.

<b>Target gene</b>	<b>Sequence (5'-3')</b>
shCD39 siRNA	5'-CTATGTCTTCCTCATGGTT-3'
<b>Primer of qRT-PCR</b>	<b>Sequence (5'-3')</b>
Forward Sequence	5'-TCGCCTCTATGGCAAGGACTAC-3'
Reverse Sequence	5'-TCCAGGATGAAAGCATGGGTCC-3'