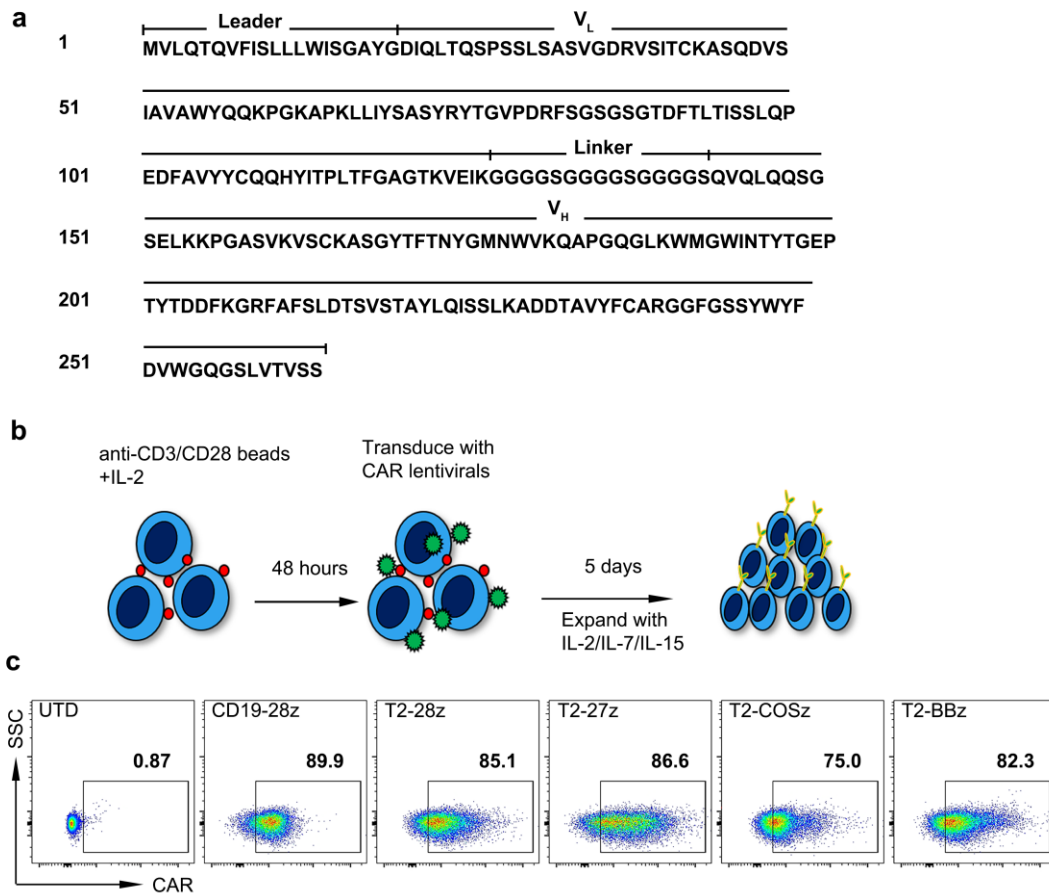
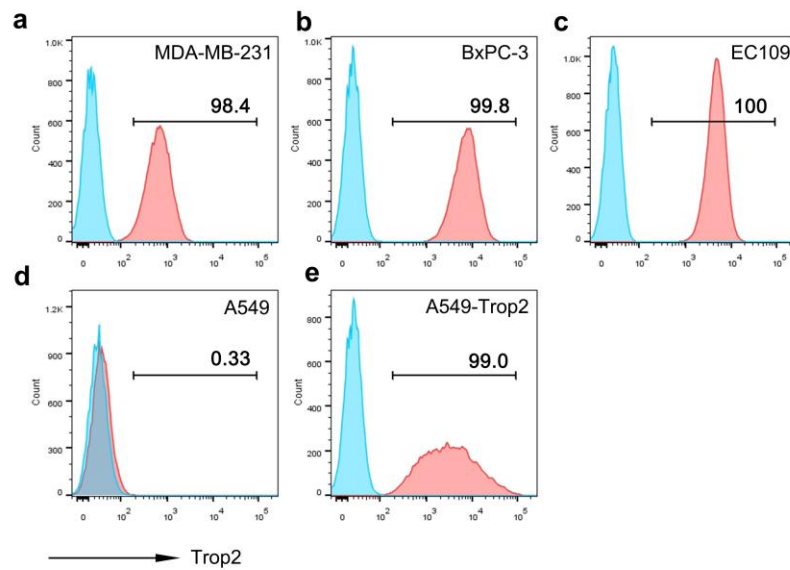


Supplementary Figure 1



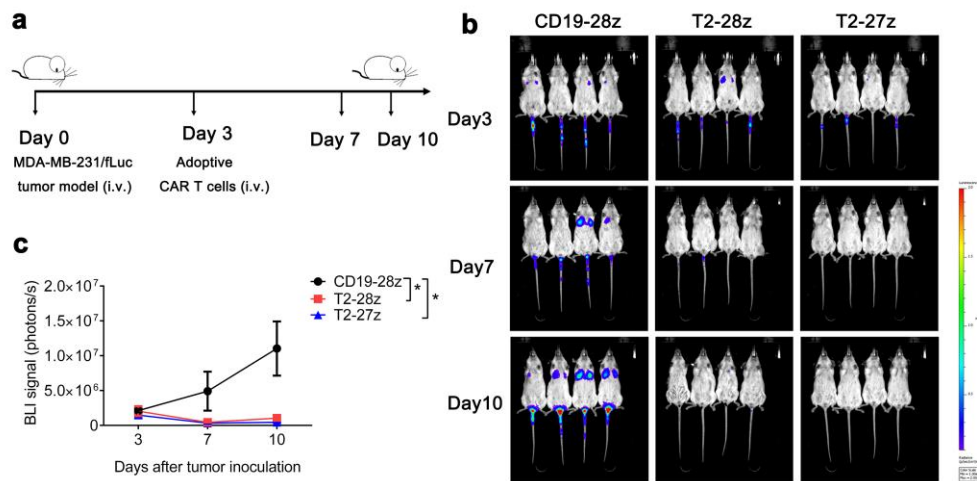
Supplementary Fig. 1 The Generation of T2-CAR T cells. (a) The amino acid sequence of anti-Trop2 scFv derived from hRS7 in the construct of T2-CAR. (b) Schematic of the process of human T cells activation and transduction by lentivirus. (c) Transduction efficiency of CAR T cells were detected by using flow cytometry, meanwhile untransduced (UTD) T cell was used as the negative control.

Supplementary Figure 2



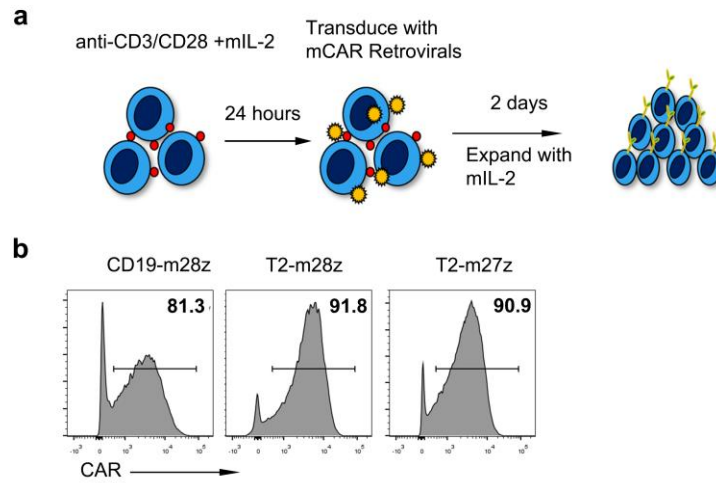
Supplementary Fig. 2 Expression of Trop2 antigen on human cancer cell lines. (a) MDA-MB-231, (b) BxPC-3, and (c) EC109 are Trop2 positive cell lines. A549 (d) expressed Trop2 negatively. (e) Trop2 ectopic expression A549 cell line was established which called A549-Trop2⁺ following.

Supplementary Figure 3



Supplementary Fig. 3 T2-CAR T cells effectively inhibited lung metastases of MDA-MB-231 cells *in vivo*. (a) Schematic representation of animal experiment for TNBC lung metastasis. (b) MDA-MB-231-fLuc cells were inoculated (i.v.) into NCG mice. On day 3, various CAR-T cells were infused (i.v.) and CD19-28z T cells were used as control. All the mice were analyzed on the IVIS on day 3, day 7, and day 10 after tumor inoculation. (c) Bioluminescence intensities of TNBC were recorded. All data are presented as mean \pm SEM (N=4 mice/group (two-way ANOVA)). * $p < 0.05$

Supplementary Figure 4



Supplementary Fig. 4 The Generation of T2-mCAR T cells. (a) Schematic of the process of mouse T cells activation and transduction by retrovirus. (b) Transduction efficiency of mCAR T cells were detected by using flow cytometry.