**Supplementary Methods**

**Primary cells**

Murine CD3+ T cells were isolated from murine splenocytes derived from C57BL/6 using a mouse T cell isolation kit (STEMCELL Technologies) and cultured in RPMI 1640 supplemented with 10% heat-inactivated FBS, 0.05mM 2-ME, 100 U/mL penicillin, 0.1 mg/mL streptomycin and 100 IU/ml recombinant human IL-2.

Bone marrow-derived dendritic cells (BM-DCs) were generated as previously described ([1](#_ENREF_1)). Bone marrow flushed from femurs and tibias of C57BL/6 mice were plated in 10cm dishes in RPMI 1640 supplemented with 10% heat-inactivated FBS, 0.05mM 2-ME, 100 U/mL penicillin, 0.1 mg/mL streptomycin, 200U/mL GM-CSF and 2 mM L-glutamine. The cells were fed on day 3, day 6 and day 8 and were stimulated as mature DCs using 1 μg/mL LPS on day 10.

**Flow cytometry**

CLDN18.2 expression of tumor cell lines was detected by mAb 8E5-2I (CARsgen Therapeutics) followed by goat anti-human IgG-PE (Santa Cruze). To assess CAR expression, T cells were stained with biotin-conjugated anti-Fab antibody (Jackson ImmunoResearch), followed by PE-conjugated streptavidin (eBioscience). Cell surface molecules were stained with FITC-conjugated anti-CD3ε antibody (eBioscience), PE-conjugated anti-CD4 antibody (eBioscience), Percp-Cy5.5-conjugated anti-CD8α antibody (biolegend), BV510-conjugated anti-CD44 antibody (BD), APC-conjugated anti-CD62L antibody (BD), BV421-conjugated anti-CCR7 antibody (BD), APC-conjugated anti-CD45 antibody (BD), BV421-conjugated anti-F4/80 antibody (biolegend), FITC-conjugated MHCⅡ antibody (BD), PE-conjugated anti-CD11c antibody (BD), FITC-conjugated anti-CD11b antibody (biolegend), PE-conjugated anti-Gr-1 antibody (BD), BV421-conjugated anti-PD-1 antibody (BD), APC-conjugated anti-LAG-3 antibody (invitrogen), APC-conjugated anti-TIM-3 antibody (ebioscience). The fluorescence was analyzed using a BD FACSCelesta Flow cytometer, and the data were analyzed using FlowJo V10 software.

**Cell proliferation and apoptosis assay**

CAR-T cells were plated in 96-well plates for 2 days without IL-2 and absolute cell number of CAR-T cells was measured by trypan blue staining. For analysis of cell division and apoptosis in CAR-T cells, the CellTrace Violet (Invitrogen) and FITC-conjugated Annexin V/PI (BD) reagent were used respectively to stain T cells according to the manufacturer’s instructions. Data were acquired using a FACS (BD) and analyzed using FlowJo V10 software.

**Real-time PCR**

The genomic DNA was purified from tumor tissues using QIAamp DNA Mini Kit according to the handbook. The CAR copy numbers were analyzed by quantitative real-time PCR and normalized in accordance with the plasmid encoding hu8E5-2I-mBBZ measurement using TaqMan Fast Advanced Master Mix (Thermo-Fisher Scientific). The former primer sequences 5’-GACGTTGGGTTACCTTCTGC-3’ and reverse primer sequence 5’-TTCCCAGGTCACGATGTAGG-3’ were used for amplifying the specific CAR sequence. The TaqMan probe sequence is 5’-ATGGCCGCGAGACGGCACCT-3’.

***In vivo* immune cells detection**

Tumor tissues were isolated from mice and minced using surgical scissors. Tissues were then resuspended in digestion medium containing 0.05 mg/mL Collagenase Ⅰ (Sigma Aldrich), 0.05 mg/mL Collagenase Ⅳ (Sigma Aldrich), 0.025 mg/ml hyaluronidase (Sigma Aldrich) and 0.01 mg/mLDNase Ⅰ (StemCell Technologies) for 30 min at 37℃ on a shaker and then strained through a 70 μm filter (BD Falcon). Cell suspensions were stained with fluorochrome labeled antibodies in PBS containing 1% FBS.

**References**

1. Lutz MB, Kukutsch N, Ogilvie AL, Rossner S, Koch F, Romani N*, et al.* An advanced culture method for generating large quantities of highly pure dendritic cells from mouse bone marrow. Journal of immunological methods **1999**;223(1):77-92 doi 10.1016/s0022-1759(98)00204-x.