



## **Isolation of T cells**





## **Expansion of CAR-T cells**



Activation and amplification of T cells Transduction of synthesized CAR complexes into T cells

Supplementary Fig. 1. The clinical infusion process of CAR-T cell in NSCLC

patient. Firstly, peripheral blood is collected from NSCLC patient. Then, T

lymphocytes are isolated, and T cells are activated and amplified. The synthesized

CAR complexes are transduced into T cells using lentivirus carrier. Subsequently,

genetically engineered CAR-T cells are expanded. Eventually, these CAR-T cells

are injected into a patient as cytotoxic agents attacking cancer cells.



Supplementary Fig. 2. The diagram of current challenges in CAR-T-cell therapy

for NSCLC and strategies to overcome these. The strategies for overcoming the

current barriers include: (1) select safer antigens to overcome on-target/off-tumor

toxicity; (2) gain insights into the pathophysiology of neurological toxicity to reduce adverse events; (3) supply cytokine inhibitors to reduce inflammation to solve the issue of cytokine release syndrome; (4) decrease the affinity of the scFv

to address the paucity of tumor-specific antigens; (5) use CAR-T along with

immune checkpoint inhibitors to reduce an immunosuppressive tumor

microenvironment; (6) block chemokines and overexpress chemokine receptors to

solve the issue of low levels of infiltration into tumor tissue; and (7) recognize

multiple TAAs and lower level TAAs to decrease tumor antigen escape.