Lipid-based Polymeric Biomaterial-mediated *ex vivo* Natural Killer Cell Surface Engineering

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Table. S1. Representative clinical trials of NK cell-based immunotherapies

Genetic modification	Disease indication	NK cell Source / Type	Delivery method	Dose (interval)	Phase	Ref.
Anti-CD19 CAR	relapsed/refractory $CD19^+$ B lymphoid malignancies	CB-derived NK Cell	i.v. injection	1×10^5, 1×10^6 or 1×10^7/kg	Phase 1/2	NCT03056339
NKG2D-ligand targeted CAR	Metastatic solid tumor	Autologous or allogeneic PBMC-derived NK cell	i.p. injection	1×10^8 of autologous or $1 – 7 \times 10^8$ of allogeneic NK cells	Phase 1	NCT03415100
Anti-Trop2 CAR-NK cell	Non-small cell lung cancer	N/A	N/A	N/A	Phase 2	NCT06454890
anti-mesothelin CAR-NK cells	Malignant Ovarian Epithelial Tumor	Human primary NK cell	i.v. injection	$5 \times 10^5 – 3 \times 10^6$ /kg	Early Phase 1	NCT03692637
NKG2D CAR-NK	Metastatic Colorectal Cancer	N/A	Stage 1: i.p. injection Stage 2: i.v. injection Stage 3: undecided	N/A	Phase 1	NCT05213195
CLDN6/GPC3/Mesothelin/ AXL-CAR-NK	Solid tumors (Ovarian cancer and others)	Autologous PBMC-derived NK cell	i.v. / i.a. / i.t. injection	N/A	Phase 1	NCT05410717
DLL3-CAR-NK cells	Small Cell Lung Cancer	N/A	N/A	Group A: 1×10^7 /kg Group B: 1×10^8 /kg Group C: 1×10^9 /kg	Phase 1	NCT05507593
CAR.70/IL15-transduced CB-derived NK cells	Advanced renal cell carcinoma, advanced mesothelioma, advanced osteosarcoma	CB-derived NK cell	i.v. injection	N/A	Phase 1−2	NCT05703854
TROP2-CAR-NK cell	Solid tumors	N/A	i.v. injection	N/A	Phase 1	NCT06066424
CB CAR-NK182	gastric cancer pancreatic cancer.	CB-derived NK cell	N/A	Group 1: 2×10^6 /kg (7 d) Group 2: 4×10^6 /kg (7 d) Group 3: 8×10^6 /kg (7 d)	Phase 1	NCT06464965

N/A, Not available; i.v., Intravenous; i.p., Intraperitoneal; i.a., intra-arterial; i.t., intratumoral; PBMC, Peripheral Blood Mononuclear Cell; CB, cord blood; CLDN6, Claudin6; DLL3, Delta-like ligand 3