

Ms. Liu

Research Scientist | Cell & Gene Therapy R&D;

Shanghai, China | Senior Scientist / Cell Therapy R&D; / Project R&D; | liulicart@outlook.com

Professional Profile

Ph.D. in Cell Biology with four years of industry R&D; experience across scientific hypothesis decomposition, CAR architecture, vector construction, CRISPR editing, immune-cell engineering, in vitro functional assessment, in vivo studies, and CMC interface. Able to lead critical technical modules and translate mechanistic hypotheses into product-oriented candidate designs.

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universal CAR-T programs advanced to CMC	enhanced solid-tumor CAR-T program led	first-author publications	granted invention patents

Professional Experience

Research Scientist / Drug R&D;

Well-known Domestic Cell Therapy Company · Jun 2022 - Present

- Led CAR architecture and non-viral site-specific integration development for two universal CAR-T programs; completed critical validation and advanced both programs to CMC development.
- Led an enhanced solid-tumor CAR-T program targeting TGF-beta-mediated immunosuppression through structural optimization, phenotyping, cytokine analysis, and serial-killing assessment.
- Led Super gamma-delta T / V-delta-2 T-cell design and explored NKG2D plus gamma-delta TCR cooperative recognition to improve coverage of heterogeneous tumor samples.
- Owned Cas9/Cas12 editing, CAR knock-in, electroporation, donor-DNA, and homology-arm optimization to improve editing efficiency and process controllability.
- Performed immune-cell culture, flow phenotyping, cytotoxicity, cytokine, and safety assays; supported approved oncology research programs through technical reports, data synthesis, and cross-functional coordination.

Education

Ph.D. in Cell Biology, synthetic biology research focus · University of Science and Technology of China · 2017-2022

B.S. in Biology · Sichuan Agricultural University · 2013-2017

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Selected Programs & Research Output

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Selected Programs

Non-Viral Site-Specific CAR-T Platform

Platform Development / CMC Interface

- Built a CRISPR RNP/electroporation workflow and optimized donor-DNA and homology-arm parameters.
- Balanced knock-in efficiency, expression uniformity, and quality-control needs across program-specific integration strategies.
- Outcome: two universal CAR-T programs completed key validation and advanced into CMC development.

Enhanced Solid-Tumor CAR-T Program

TGF-beta Immunosuppression

- Designed enhanced CAR architectures to counter immunosuppressive signaling.
- Assessed CAR expression, phenotype, cytokines, short-term killing, and serial killing.
- Outcome: candidates showed improved sustained cytotoxic function under immunosuppressive conditions.

Super V-delta-2 T Cells for R/R AML

CRISPR/Cas9 Non-Viral Integration

- Inserted NKG2D-CD3-zeta at TRAC to combine NKG2D-ligand and gamma-delta TCR recognition.
- Established expansion, two-step editing, flow, Co-IP/WB, cytotoxicity, and xenograft assays.
- Outcome: 90%-93% CAR expression, approximately 3,600-fold expansion, approximately 4-fold higher in vivo persistence, and no observed GvHD in the reported study context.

Technical Portfolio

Editing & molecular design	Cas9/Cas12, CBE, ABE, PE; RNP, knockout, HDR knock-in, donor DNA/homology arms, vector construction, amplicon sequencing, and circular RNA.
CAR & cell engineering	CAR architecture; hinge, transmembrane, and costimulatory domains; universal CAR-T, enhanced T cells, and gamma-delta/V-delta-2 T-cell engineering.
Culture & flow cytometry	T cells, gamma-delta T cells, PBMCs, CD34+ HSPCs; culture optimization, CAR expression, memory/exhaustion, cell cycle, and apoptosis.
Function & safety	Short-term and serial killing, cytokines, ELISA, CBA, primary samples, normal-cell toxicity, and safety assessment.
In vivo & data	Xenograft design, bioluminescence, persistence analysis, experimental data synthesis, technical reporting, and CMC-facing communication.

Research Output

Selected Publications

- ACS Synthetic Biology: "Circular Guide RNA for Improved Stability and CRISPR-Cas9 Editing Efficiency..." - co-first author, listed first.
- International Immunopharmacology: "Development of Super V-delta-2 T Cells for R/R AML..." - co-first author, listed first.

Selected Granted Patents

- CN113755512B, "Method and Application for Preparing Tandem-Repeat Proteins" - third inventor.
- CN116103284B, "Circular gRNA and Related Biological Materials and Applications" - third inventor.

Postdoctoral Fellowship

Jul 2024 - Jun 2026 · Joint training through Soochow University; enhanced gamma-delta T-cell antitumor research.