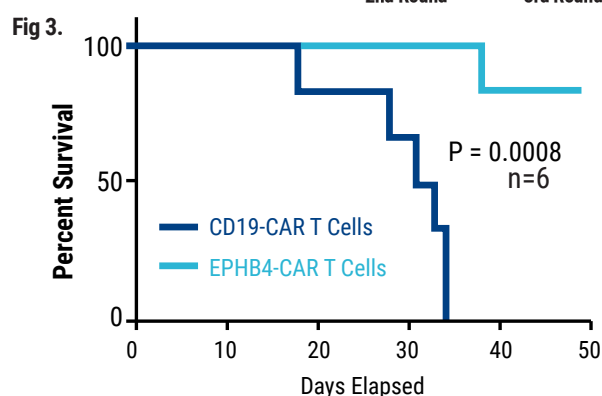
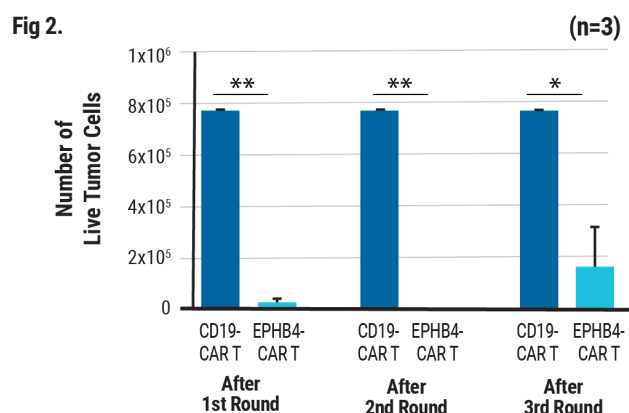
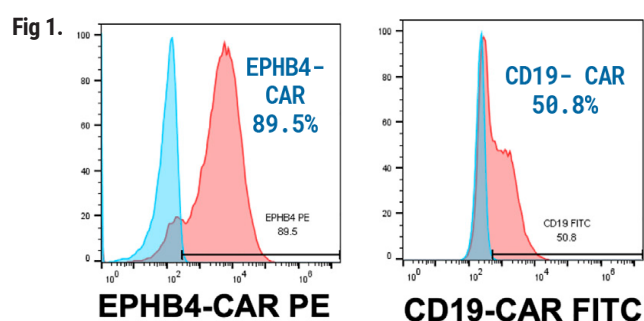




Abstract

Chimeric antigen receptors (CAR) T cells are a revolutionary approach to enhancing the body's natural anti-cancer immune responses and have shown the best efficacy in clinical trials as adoptive cell therapies for treating hematological malignancies. However, excitement surrounding this sophisticated therapy has been tempered by complications including T cell exhaustion, limited efficacy in solid tumors, and the cost and complexity of manufacturing. Here, Professor Shigeki Yagyu and his team from Kyoto Prefectural University of Medicine, developed a simple gene editing strategy to engineer T cells to target solid tumors via tumor-associated antigen. Transposons encoding a CAR capable of targeting Ephrin type-B receptor 4 (EPHB4) were delivered to peripheral blood mononuclear cells (PBMCs). MaxCyte® enabled highly efficient engineering of EPHB4-CAR T cells that had a non-exhaustive phenotype and demonstrated sustained tumor cell killing *in vitro* and *in vivo*. MaxCyte is empowering the next generation CAR T cell therapeutics and streamlining progress from concept to clinic.



Summary

- MaxCyte enabled efficient and scalable delivery of piggyBac transposons for the development of novel CAR T cells targeting EPHB4.
- MaxCyte enabled highly efficient gene editing as EPHB4-CAR T cells displayed stable CAR expression with favorable non-exhaustive phenotypes.
- EPHB4-CAR T cells demonstrated potent, specific and sustained killing activity *in vitro*.
- EPHB4-CAR T cells debulked rhabdomyosarcoma tumors and prolonged survival in murine xenograft models.
- MaxCyte is streamlining the development of next generation of CAR T cell therapeutics for rhabdomyosarcoma and pediatric solid tumors.

Reference

1. Kubo H, Yagyu S, Nakamura K, et al. Development of non-viral, ligand-dependent, EPHB4-specific chimeric antigen receptor T cells for treatment of rhabdomyosarcoma. *Mol Ther Oncolytics*. 2021;20:646-658. Published 2021 Mar 5. doi:10.1016/j.omto.2021.03.001

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