CHOICE OF SERUM FOR EX VIVO EXPANSION DETERMINES IN VIVO CAR T CELL FUNCTION

Adapted from
poster presentation at
2019 3rd Annual Clinical Application of
CAR T cells Conference
at MSKCC.

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T LIVEN IMPROVES TUMOR CELL KILLING FUNCTION OF CAR T CELLS

T-LIVEN PR

PATHOGEN-REDUCED HPL

Adapted from poster presentation
at 2018 ASGCT Annual Meeting,
abstract # 468,
Molecular Therapy, vol. 26,
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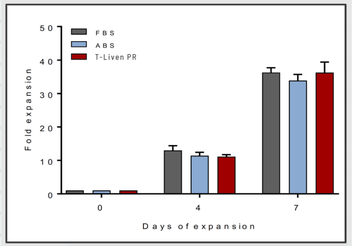
Center for Cell and Gene Therapy
COOK REGENTEC

EFFECTS ON CAR T CELLS

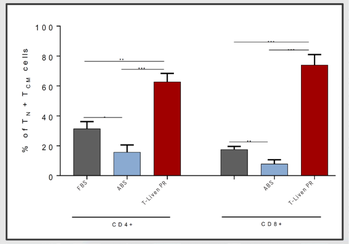
T-LIVEN PR SUPPORTS EXPANSION OF CAR T CELLS

- PSCA-CAR T (prostate stem cell antigen) cell generation was initiated in 10% fetal bovine serum (FBS) supplemented media.
- On Day 3 post transduction cells were split into 3 conditions: 10% FBS, 10% human AB serum (ABS) or 10% T-Liven PR and maintained with IL-2 (50U/mL) for 7 more days.
- Data are a mean ± S.E. of n=6 donors.



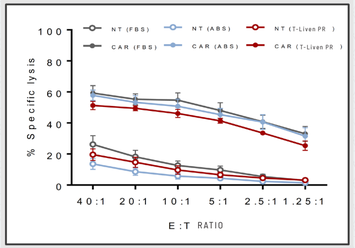
T-LIVEN PR IMPROVES MAINTENANCE OF LESS DIFFERENTIATED CAR T CELLS

- CAR T cell phenotype was analyzed measuring CCR7 expression by FACS on day 7 of expansion.
- The combined total percentage of T naïve (TN) and T central memory (TCM) cells for both CD4+ and CD8+ T cells are shown.
- Data are a mean ± S.E. of n=3 donors, *:p<0.05 **:p<0.01, ***:p<0.001.



T-LIVEN PR SUPPORTS IN VITRO CYTOTOXIC EFFECT OF CAR T CELLS

- The cytotoxicity of CAR T cells expanded for 7 days with different media supplements was tested against a PSCA positive cell line (Capan-1) using a ^{51}Cr-release assay.
- Data are a mean ± S.E. of n=4 donors, NT = nontransduced cells, CAR = PSCA transduced cells, E:T = Effector to Target cell ratio.

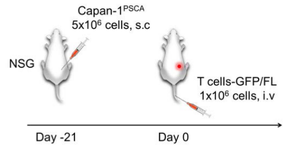


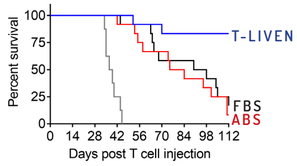
CONCLUSION

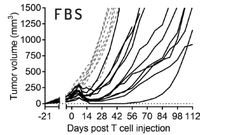
T-LIVEN PR, COMPARED TO FETAL BOVINE SERUM AND HUMAN AB SERUM LEADS TO **EXPANSION** OF T CELLS, **IMPROVED MAINTENANCE** OF THE NAÏVE AND CENTRAL MEMORY PHENOTYPES AND **EFFICIENT TUMOR CELL KILLING.**

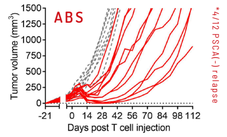
SOLID TUMOR: T-LIVEN PR IMPROVED IN VIVO CYTOTOXIC EFFECTOF CAR T CELLS

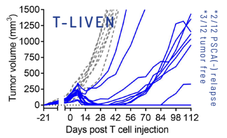
- Tumor cells injected SC (n=12/group)
- Animals treated with IxIO^6 CAR T cells grown in either AB Serum, FBS, or T-Liven
- Survival increased in T-Liven group





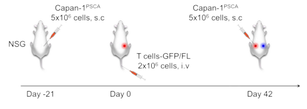


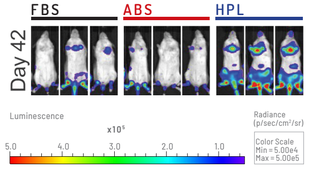


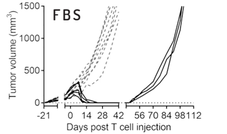


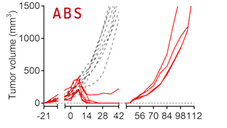
SOLID TUMOR: T-LIVEN PR SUPPORTS IN VIVO CYTOTOXIC EFFECT OF CAR T CELLS IN TUMOR RE-CHALLENGE MODEL

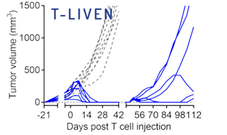
- Experimental design, re-challenge model.
- T cell bioluminescence on day of re-challenge.
- Re-challenge tumor measurement. Arrow indicates tumor re-challenge





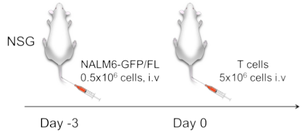


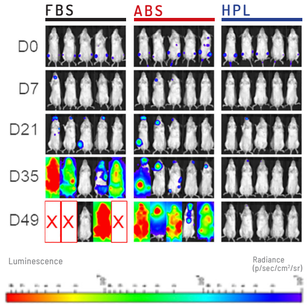


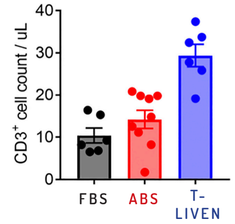


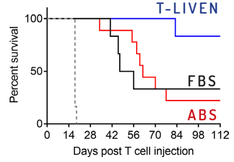
LIQUID TUMOR: T-LIVEN PR IMPROVED IN VIVO CYTOTOXIC EFFECT OF CAR T CELLS

- Treated mice re-challenged with new tumor injection
- T-Liven group had higher residual CAR T cells at re-challenge
- T-Liven group maintained better tumor killing effect after re-challenge









CONCLUSION

THIS STUDY SHOWS THAT EXPOSURE OF CAR T CELLS TO **T-LIVEN PR** DURING EX VIVO CULTURE LEADS TO **ENHANCED PERSISTENCE**, BETTER IN VIVO **ANTI-TUMOR ACTIVITY**, AND **SURVIVAL.**