

POSTER PRESENTATION

Open Access

Chimeric antigen receptor (CAR)+ T cell selection method affects transgene efficacy

David Rushworth^{1,2*}, Tiejuan Mi¹, Simon Olivares¹, Rosa Santana Carrero³, Ge Yang¹, Amer Najjar¹, Laurence Cooper^{1,2}

From Society for Immunotherapy of Cancer 28th Annual Meeting
National Harbor, MD, USA. 8-10 November 2013

The use of CAR+ T cells for the treatment of cancer is growing as multiple centers participate in Phase I/II clinical trials. Prior studies of CAR-dependent T cell effector function evaluated CAR design on T-cell responses in vitro and in vivo. Our study assesses the effect ex vivo co-stimulation imparts on in vitro and in vivo effector function of CAR+ T cells. In this study, the well characterized CD19-specific 2nd generation CAR, signaling through CD28 and CD3- ζ endodomains, was expressed in donor T cells. Non-virally transformed T cells, induced to genomically integrate CAR by Sleeping Beauty transposase, were numerically expanded on artificial antigen presenting cells (aAPC) derived from K562. The aAPC were genetically modified to present the target antigen CD19 along with no co-stimulation, or co-stimulation via CD86, CD137L, or both molecules. The addition of co-stimulation to the culture impacted the expression of CAR and the phenotype of the CAR+ T cells. The co-expression of a second transgene, inducible Caspase 9 (iC9) - a suicide gene, with CAR was also affected by the choice of aAPC. Furthermore, the anti-tumor activity of the CAR+ T cells numerically expanded on aAPC with or without co-stimulation was tested by adoptive transfer into mice containing CD19+ tumor. These data highlight that the use of co-stimulation in the ex vivo culture could potentially impact the therapeutic potential of CAR+ T cells.

Authors' details

¹Pediatrics, MD Anderson Cancer Center, Houston, TX, USA. ²Graduate School of Biomedical Sciences, UT Houston Health Science Center, Houston, TX, USA. ³Medical Sciences, University of Puerto Rico School of Medicine, San Juan, US Minor Outlying Islands.

¹Pediatrics, MD Anderson Cancer Center, Houston, TX, USA
Full list of author information is available at the end of the article

Published: 7 November 2013

doi:10.1186/2051-1426-1-S1-P32

Cite this article as: Rushworth et al.: Chimeric antigen receptor (CAR)+ T cell selection method affects transgene efficacy. *Journal for ImmunoTherapy of Cancer* 2013 **1**(Suppl 1):P32.

Submit your next manuscript to BioMed Central and take full advantage of:

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit

