

POSTER PRESENTATION

Open Access

# IL7 signaling confers polyfunctionality to antitumor CD4<sup>+</sup> T cells

Gang Zhou<sup>\*</sup>, Zhi-Chun Ding

From Society for Immunotherapy of Cancer 29th Annual Meeting  
National Harbor, MD, USA. 6-9 November 2014

Mounting evidence indicates that polyfunctional T cells, effector T cells capable of simultaneously producing multiple pro-inflammatory cytokines, are more efficacious in controlling infection and cancer. Our previous study reported that adoptive transfer of tumor-specific CD4<sup>+</sup> T cells following chemotherapy gave rise to polyfunctional CD4<sup>+</sup> effector cells, characterized by concomitant expression of CD40L, IFN $\gamma$ , TNF $\alpha$ , IL2 and granzyme B. One unique feature of these highly activated polyfunctional CD4<sup>+</sup> effector cells was the high level expression of IL7 receptor, suggesting that IL7 plays a critical role in the generation and maintenance of these cells. In this project, we studied how IL7 signaling confers polyfunctionality to CD4<sup>+</sup> T cells. We found that only IL7, but not other IL2 family cytokines can promote the acquisition of polyfunctionality in naïve CD4<sup>+</sup> T cells upon antigenic stimulation *in vitro*. IL7 signaling resulted in increased histone acetylation in the promoters of effector molecules including IFN $\gamma$  and IL2. Mechanistically, PI3K activation was required for polyfunctionality. Administration of rIL7 following chemotherapy and CD4<sup>+</sup> T cell adoptive therapy led to enhanced and sustained presence of polyfunctional CD4<sup>+</sup> effector cells which mediated durable antitumor effects in mice with advanced B cell lymphomas. Our results provide novel insights into the mechanisms by which IL7 drives the generation of polyfunctional CD4<sup>+</sup> effector cells.

Published: 6 November 2014

doi:10.1186/2051-1426-2-S3-P43

**Cite this article as:** Zhou and Ding: IL7 signaling confers polyfunctionality to antitumor CD4<sup>+</sup> T cells. *Journal for ImmunoTherapy of Cancer* 2014 **2**(Suppl 3):P43.

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](http://www.biomedcentral.com/submit)



Georgia Regents University, Augusta, GA, United States



© 2014 Zhou and Ding; licensee BioMed Central Ltd. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated.