Journal for ImmunoTherapy of Cancer

POSTER PRESENTATION Open Access

Wnt pathway activation functionally reprograms human antigen-specific T cells

Yen-Ling Chiu[1], Bo-yi Sung[2], Catherine Bessell[3*], Mathias Oelke[4], Jonathan Schneck[4]

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

Polyfunctionality is a hallmark of protective immunity, yet the molecular mechanisms governing polyfunctional T cells are poorly understood. After TCR activation, naïve $CD8^+$ T cells undergo proliferation and differentiation, which lead to effector functions and memory subset development. However only a portion of activated T cells develop into memory $CD8^+$ T cells and with chronic stimulation become terminally differentiated and exhausted $CD8^+$ T cells, as defined by $CCR7^-/CD45RA^+$, and functionally impair effective immune responses [1]. We therefore probed the ability to reverse terminally differentiated antigen-specific cells using pharmacological agents. Stimulating human memory $CD8^+$ T cells with cognate TCR stimulation in the presence of Wnt agonist enhances polyfunctionality and stemness. Both M1-influenza$^+$ and CMV^+ $CD8^+$ T cell responses were reprogrammed and revealed sustained effects from initial Wnt pathway activation *in vitro*. Future work with cancer antigens and reprogramming of differentiated $CD8^+$ responses could lead to improved *in vitro* culture conditions for adoptive immunotherapy.

doi:10.1186/2051-1426-2-S3-P4
Cite this article as: Chiu *et al.*: Wnt pathway activation functionally reprograms human antigen-specific T cells. *Journal for ImmunoTherapy of Cancer* 2014 **2**(Suppl 3):P4.

Authors' details
[1]Department of Medicine, Far-Eastern Memorial Hospital, New Taipei City, Taiwan, Taiwan. [2]Department of Pathology Johns Hopkins University School of Medicine, Baltimore, Maryland, USA. [3]Department of Medicine, and Institute for Cell Engineering, Johns Hopkins University School of Medicine, Baltimore, Maryland, USA. [4]Johns Hopkins School of Medicine, Department of Pathology, Institute for Cell Engineering, Baltimore, Maryland, USA.

Published: 6 November 2014

Reference

1. Seder R, Darrah P, Roederer M: **T-cell quality in memory and protection: implications for vaccine design.** *Nat Rev Immunol* 2008, **8**:247-258.

[3]Department of Medicine, and Institute for Cell Engineering, Johns Hopkins University School of Medicine, Baltimore, Maryland, USA
Full list of author information is available at the end of the article