Regulation of TFR cell differentiation by KLF2 Mediated by KLF2 mediated BLIMP1 and T-Bet expression.

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Editorial Note

In normal circumstances, the germinal centre reaction (GC) in response to infectious agent results in production of antibodies (Ab) preventing aberrant inflammation and autoimmune diseases. In germinal centre the production of Ab is triggered by T follicular helper (TFH) cells. In this fundamental process TFR (T cell subset) play critical role in suppression of TFH and B cell priming by maintaining the GC reaction. Many studies have reported that follicular regulatory T (TFR) cell have derived by T regulatory cell (Treg) in response to viral infection. The follicular regulatory T cells shares many similar characters as TFH and Treg cells [1]. The transcription factors Bcl6 and BLIMP1 shows antagonistic effect for each other, this ultimate process play indirect role in GC maintenance. The regulator BLIMP1 activates the expression of the TFR cell marker PD-1 [2]. Here, we focused to clarify the mechanism behind the TFR cell differentiation, factors involved in this mechanism and the extent to which KLF2 and T-bet independently govern TFR cell differentiation by using previous research and review on TFR, TFH, Bcl-6, BLIMP1, T-bet (Tbex21), NAFT2 and KLF2 as a reference. Our results will provide a novel mechanism by gene expression of T-bet and KLF2 in regulation of TFR differentiation through Bcl-6 - BLIMP1 inhibition and activation. It will also illuminate the role of NAFT2 controlling the T-bet (Tbx21) expression in TFR cell differentiation as a future research focus.

We are focusing on our hypothesis that whether KLF2 show its efficiency in T-bet – BLIMP1 complex formation in TFR cell which is previously reported in TFH cell.

To determine T-bet/KLF2 dependently or independently regulate TFR differentiation. Since it’s an interesting question to investigate in detail as no group has reported any detailed information yet. To analyse T-bet/KLF2 play a direct or indirect role in TFR differentiation by regulating BLIMP1. It is still unclear if BLIMP1 is activated by T-bet/KLF2 by direct pathway or any alternative pathway. This research direction will shed light on some novel transcription factor which could be involved in TFR differentiation [3].

The transcription factor KLF2 regulates many processes in TFH and Treg cell. More focus is needed to know the regulators involved in Treg, TFH and TFR differentiation by KLF2. It is also important to know the transcriptional and epigenetic modification of KLF2 and T-bet in TFR differentiation.

References


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