

Article in press in Proceedings of the National Academy of Sciences:

**Interleukin 7 (IL-7) selectively promotes mouse and human IL-17-producing  $\gamma\delta$  cells.**

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**Abstract**

IL-17-producing CD27<sup>-</sup>  $\gamma\delta$  cells ( $\gamma\delta^{27-}$  cells) are widely viewed as innate immune cells making critical contributions to host protection and autoimmunity. However, factors that promote them over interferon- $\gamma$ -producing  $\gamma\delta^{27+}$  cells are poorly elucidated. Moreover, although human IL-17-producing  $\gamma\delta$  cells are commonly implicated in inflammation, such cells themselves have proved difficult to isolate and characterise. Here murine  $\gamma\delta^{27-}$  T cells and thymocytes are shown to be rapidly and substantially expanded by IL-7 *in vitro* and *in vivo*. This owes in substantial part to the capacity of IL-7 to activate STAT3 selectively in such cells. Additionally, IL-7 promotes strong responses of IL-17-producing  $\gamma\delta$  cells to TCR agonists, thus re-emphasizing the cells' adaptive as well as innate potentials. Moreover, human IL-17-producing  $\gamma\delta$  cells are also substantially expanded by IL-7 plus TCR agonists. Hence, IL-7 has a conserved potential to preferentially regulate IL-17-producing  $\gamma\delta$  cells, with both biological and clinical implications.