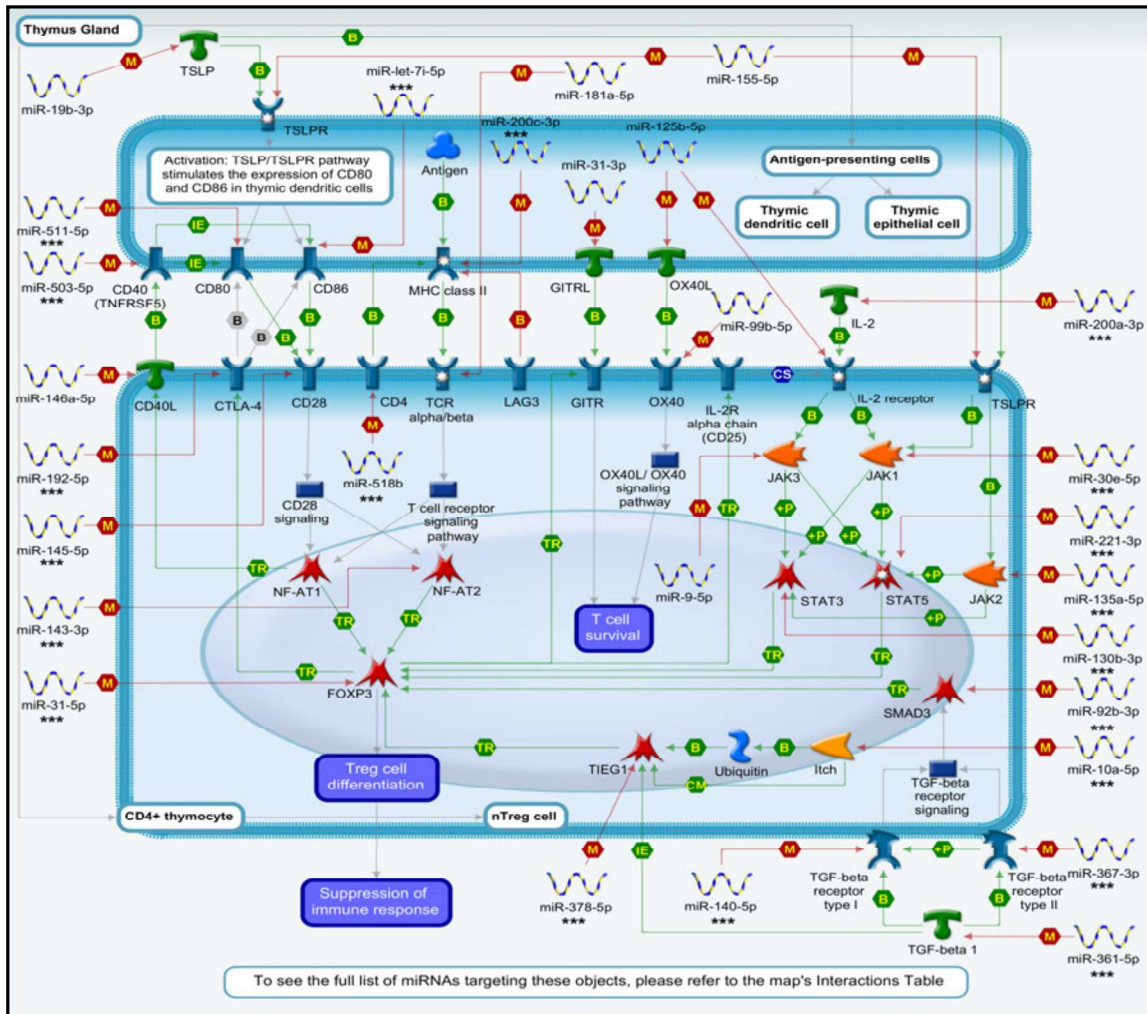


Differentiation of natural regulatory T cells



Natural regulatory T (nTreg) cells are a critical subset of T cells that mediate peripheral tolerance. nTreg cells undergo their lineage commitment and maturation in the thymus, where thymic dendritic cells and/or thymic epithelial cells act as antigen-presenting cells (APCs) to induce differentiation of thymocytes. nTreg cells are characterized by expression of FOXP3. Differentiation of nTreg cells is regulated by coordinated action of several signaling cascades: (1) TCR alpha/beta stimulation by Antigen-MHC class II complex presented by APCs, (2) CD28 signaling induced by CD80 and CD86 expressed in APCs, and (3) IL-2 and, probably, TGF-beta 1 signaling pathways. These signaling cascades lead to expression of FOXP3. In turn, FOXP3 up-regulates IL-2R alpha chain (CD25), CTLA-4 and GITR gene expression. FOXP3 is a master regulator for the nTreg cell lineage and is required to maintain the lineage identity and immunomodulatory functions of peripheral mature nTreg cells.

MiRXES has 145 miRNAs targeting 30 proteins on this signaling cascade, indicating that most proteins involved in the natural regulatory T cells signaling are miRNA targets and may therefore be affected by miRNA action.

Hi-resolution
Pathway Map



Full pathway
summary & Citations



Relevant microRNA
and gene transcripts



Interactions Table

