

TSLP expressing Hassall's corpuscles in human thymus switch DCs from negative selection to positive selection of Treg

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The function of Hassall's corpuscles, groups of epithelial cells within the thymic medulla, has remained an enigma during the last 150 years since they were discovered¹. We report our finding that human thymic Hassall's corpuscles express thymic stromal lymphopoietin (TSLP). TSLP-conditioned, thymic dendritic cells then induce the proliferation and differentiation of CD4⁺CD8⁻CD25⁻ thymic T cells into CD4⁺CD25⁺Foxp3⁺ regulatory T cells, which depends on the presence of peptide-major histocompatibility class II complexes, CD80 and CD86, as well as interleukin-2. In situ studies reveal that CD25⁺cytotoxic T lymphocyte antigen-4 (CTLA-4)⁺ regulatory T cells associate in the thymic medulla with activated or mature dendritic cells and TSLP-expressing Hassall's corpuscles. These findings suggest that Hassall's corpuscles play a critical role in dendritic cell-mediated tolerance, by generating the CD4⁺CD25⁺ regulatory T cells that subsequently regulate many forms of immunity, including autoimmunity.

Reference:

Watanabe N, Wang YH, Lee H, Ito T, Wang YH, Cao W, and **Liu Y-J**. Hassall's corpuscles instruct dendritic cells to induce CD4 + CD25 + regulatory T cells in human thymus. *Nature* 436, 1181-1185, 2005.