Dependence of homeostatic maturation of thymic antigen presenting cells on TNF receptor family signaling

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T cell selection in the thymic medulla region is critical for preventing onset of autoimmunity. Self-antigen presentation by thymic antigen-presenting cells (APCs) is required for thymic T cell selection. APCs in the thymic medulla are classified into medullary thymic epithelial cells (mTECs), thymic B cells, and thymic dendritic cells (DCs). These APCs undergo maturation, which is required for eliminating self-reactive T cells by negative selection and generating regulatory T cells.

Previous studies suggested roles of TNF receptor family signaling on maturation of thymic APCs. Partially redundant signaling of TNF receptor family RANK and CD40 promote maturation of mTECs. Moreover, several studies indicated that CD40 signaling is essential for maturation of thymic B cells. A recent study revealed that thymic conventional DCs (tDCs) undergo homeostatic maturation, thereby contributing to thymic T cell selection to prevent autoimmunity onset. However, mechanisms underlying the homeostatic maturation of tDCs remain unclear. We here describe a dependency of mature tDC development on redundant signaling of RANK and CD40.