

**Abstract:**

The crucial function of the thymus is the establishment of central tolerance. In this process, developing T-cells are tested for their self-reactivity, since self-reactive T-cells might cause the autoimmunity if they would escape from the thymus to the periphery. Many thymic antigen-presenting cells are essential for establishment of central tolerance. Their role is to present self-antigens to the developing T-cells. Such presentation is capable to reveal the self-reactive potential of T-cells which can be then directly removed or deviated into suppressive T-regulatory cells. In the last several years, a high level of heterogeneity has been described among the thymic antigen-presenting cells and the molecular mechanisms that govern their functions towards enforcement of tolerance began to be uncovered.

This thesis summarises recent knowledge in the field of heterogeneity of the thymic antigen-presenting cells and its relevance for establishment of the central tolerance, with the major focus on conventional dendritic cells and post-AIRE medullary thymic epithelial cells. This thesis also outlines recent advances in understanding of functional mechanisms and regulations of maturation of the antigen-presenting cells.