# THE EFFECT OF ZAP-70 DEFICIENCY UPON THE HISTOLOGICAL COMPOSITION OF PRIMARY- AND SECONDARY LYMPHOID ORGANS IN MICE

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The ZAP-70 kinase (70kDa Zeta-Chain Associated Protein) plays a critical role in both T cell signalling and maturation. In its absence, the development of thymocytes is blocked in the double positive (CD4+CD8+) stage, thus no mature T cells can be found in the peripheral lymphoid organs, which results in severe combined immunodeficiency (SCID) in both humans and mice.

In our work we wanted to investigate the effect of ZAP-70 deficiency upon the lymphoid structures of the thymi, spleens and lymph nodes of wild type, heterozygous and homozygous ZAP-70 knockout mice using immunohistochemistry and flow cytometry.

During the investigation of thymic structure we have observed that no single positive (CD4+ or CD8+) thymocytes are present in samples from homozygous knockout animals. This change was accompanied with the disappearance of mature medullary epithelial cells. According to our results heterozygous knockout animals do have single positive thymocytes and medullary regions, but in diminished number and size, respectively. In spleens and lymph nodes of homozygous knockout animals the T cell zones completely disappeared, which was coupled with an increased size of B cell zones. In heterozygous knockout animals similar, but not so fundamental changes were observable. Some scattered CD3 positivity was detectable in ZAP-70-/- animals' lymph nodes, which were identified as γδ T cells. All of our immunohistochemical results were supported by quantitative, flow cytometric measurements.

Our results support the theory that there is a mutual cross-talk between the stromal- and lymphoid cells in the thymus during T cell development. ZAP-70 deficiency inhibits the formation of T cell zones in the peripheral lymphoid organs, however it has less effect on the development of γδ T cells.

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