

**P045** PI3K p110 $\delta$  plays a role in the development and function of Foxp3<sup>+</sup> T regulatory cells

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Mice with an inactive form of p110 $\delta$ , p110 $\delta$ <sup>D910A</sup>, spontaneously develop colitis. Regulatory T cells (Treg) are a subset of T cells that express the transcription factor Foxp3 and able to suppress the responses of autoimmunity and inflammation. We have thus investigated the role of p110 $\delta$  in Treg differentiation and function. In p110 $\delta$ <sup>D910A</sup> mice, selection of CD4<sup>+</sup> T cells in the thymus appears normal, however a larger proportion of these cells are FoxP3<sup>+</sup>, suggesting enhanced selection of Treg cells. In contrast, the proportion of FoxP3<sup>+</sup> cells is lower in the peripheral lymphoid organs of p110 $\delta$ <sup>D910A</sup> mice.

The function of the Treg cells was also examined. *In vitro*, Treg cells from the p110 $\delta$ <sup>D910A</sup> mice were less able to suppress the responses of CD25<sup>-</sup> cells. In a colitis mouse model, where disease is induced using CD4<sup>+</sup>CD45RB<sup>high</sup> T cells and cured by co-injection of WT Treg, p110 $\delta$ <sup>D910A</sup> Treg were unable to prevent disease.

Hence, Treg lacking functional p110 $\delta$  show reduced suppressive capacity, which may explain the development of colitis in this mouse.