Abstract

Segmented filamentous bacteria (SFB) are member of mice intestinal microbiota with very unique life strategy involving tight interaction with the host's intestinal epithelium. This association with intestinal epithelial cells (IECs) induces strong immune response characterized by Th17-mediated immune response. However, recent findings revealed that SFB induce also huge accumulation of CD4+ intraepithelial lymphocytes (IELs) by the upregulation of MHCII expression on IECs in an IFNγ-dependent manner. Likewise to SFB, *Lactobacillus reuteri* was recently found to have a similar capacity of IELs induction. In contrast to SFB, *L.reuteri* induces IELs through the activation of the Aryl hydrocarbon receptor (AhR) by its ligands, which originate from the metabolism of tryptophan amino acid. Moreover, *L.reuteri* cannot induce IELs by itself and needs a complex microbiota for this induction. However, if these two bacteria can cooperate in the induction of IELs remains unknown. This thesis focuses on the interaction of SFB and *L.reuteri* in the context of IELs induction and investigates the contribution of each bacteria to the IELs phenotype. Data presented in my thesis indicate that SFB induce accumulation of IELs, however, interaction of SFB and L.reuteri induce full cytotoxic activation and vesicle secretion of induced IELs. The next part of my thesis focuses on antigen-specific T cells and shows the effect of IFNγ and AhR activation on SFB-specific IELs. Furthermore, I reveal previously not reported indications of the origin of SFB-specific IELs. Presented data indicate that SFB-specific IELs preferentially arise from Th1 cells rather than Th17 cells. Altogether, these data point to previously unrecognized interaction between two members of mice intestinal microbiota and also shed light on the origin and regulation of SFB-specific IELs.