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Cell Development, Differentiation, & Trafficking

# ADAP plays a pivotal role in CD4$^+$ T cell activation but is only marginally involved in CD8$^+$ T cell activation, differentiation, and immunity to pathogens

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## Abstract

The adhesion and degranulation promoting adaptor protein (ADAP) is a multifunctional scaffold involved in many different signaling pathways that are important for the function of T cells, including the inside - out and outside - in signaling of integrins, the activation of NF - κ B, and the subsequent production of proinflammatory cytokines (e.g., IFN - γ and IL - 2). Strikingly, despite its well - established role in T cells, previous studies did not distinguish between CD4$^+$ and CD8$^+$ T cells, and thus, it is unknown whether ADAP fulfills equally important functions in both T cell subsets. We show here that despite comparable ADAP expression levels in CD4$^+$ and CD8$^+$ T cells, their function is differentially dependent on ADAP. Whereas in vitro TCR - stimulation experiments revealed that activation, proliferation, and adhesion are severely compromised in CD4$^+$ T cells lacking ADAP, their CD8$^+$ counterparts are hardly affected by ADAP deficiency. Accordingly, antigen - specific in vivo stimulation of adoptively transferred CD8$^+$ T cells during *Listeria monocytogenes* (*Lm*) and influenza A virus (IAV) infection revealed only moderate effects of ADAP deficiency in terms of CD8$^+$ T cell activation, proliferation, and differentiation, which, however, did not impair pathogen - specific immunity. Thus, we show for the first time that ADAP fulfills different functions in CD4$^+$ and CD8$^+$ T cells, with CD8$^+$ T cells being less dependent on ADAP. Our data identify ADAP as a potential molecular target for T cell subset - specific therapeutic interventions.

Citing Literature

Supporting Information