# Identifying a Gene Responsible for Maturation of the Dendritic Cells in the Mammalian Immune System

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The role of the gene IKKß in the development of lymphocytes, macrophages and neutrophils is well known, but little is known about its role in the development of dendritic cells (DCs). In this project, we showed that mice with inducible deletion of the gene IKKß exhibited defective development and maturation of splenic DC subsets including CD4+, CD8+ and plasmacytoid DCs (pDCs). We also showed that the loss of the gene IKKß severely impaired differentiation of bone marrow cells into DCs, strongly inhibited CpG-DNA- and LPS-induced DC maturation, and dramatically decreased IL-6 and IL-12 production. Thus, the results establish a novel genetic role of the gene IKKß in the development and maturation of DCs. The degrees of the development and the maturation of the DCs largely determine the effectiveness of vaccines, especially cancer vaccines. Therefore, this study has potential applications in cancer research.

**Awards Won:**