Tracking IL-12/IL-23 p40 Expression *In Vivo* Using a Fluorescent Marker

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Interleukin-12 is a dimeric cytokine produced by innate immune cells and important for IFN-γ production and type 1 immunity. The p40 gene is induced in response to microbial products, such as LPS, where it can complex with p35 to form IL-12 and p19 to form IL-23, cytokines important in adaptive immunity. To follow the induction of p40 in vivo, we generated knockin mice expressing the p40 gene linked via a viral IRES element with enhanced yellow fluorescent protein (eYFP). Using bone marrow-derived dendritic cells, and primary dendritic cells isolated from spleen and lymph nodes, we confirmed faithful biallelic p40 gene induction as assessed by eYFP production in discrete dendritic cell populations after incubation with Toll receptor ligands in vivo and in vitro. Although there is a low level of p40 expression in the center of the T cell area within lymph nodes of naïve mice, p40 expression quickly spreads throughout the paracortex by eight hours after injection of LPS, and peaks around 16 hours before returning to baseline. Dendritic cells expressing eYFP express higher levels of B7 and MHC-II on the cell surface, migrate more efficiently to the draining lymph node, and induce greater clonal expansion and cytokine production from antigen-specific T cells than dendritic cells that fail to express p40. Thus, p40 expression marks a subset of dendritic cells poised to promote T cell differentiation and effector function. These mice will be a valuable reagent for tracking the course of p40 gene expression in vivo during a broad range of immune responses.