Creating new mouse strains to selectively track plasmacytoid dendritic cells across tissues and monitor their functions

---

Plasmacytoid dendritic cells (pDC) are characterized by rapid, high production of type I and III interferons in response to viruses. Besides this well accepted role, other functions for pDC have been described, including antigen presentation, promoting immune tolerance and wound healing. However, there are still controversies remaining about the identity and the exact functions of pDC. This is due to a major technical limitation: the lack of proper tools to visualize, constitutively deplete or genetically manipulate pDC in vivo. To overcome this bottleneck, we have generated novel transgenic mouse strains, which allow us to selectively fate map and track pDC by fluorescence detection of a gene reporter. At steady state, we have studied the phenotype and the distribution of pDC in different organs including the spleen, the lymph nodes and the intestine. Comparative analysis by flow cytometry of pDC identified with conventional antibody-based gating strategy or by fluorescence using our new mouse model revealed the presence of non-negligible contaminants within the former pDC, which can potentially lead to misinterpretation, in particular in the context of functional assays or transcriptomics analysis. Consequently, by using our new model, we are aiming to generate a “core” and “tissue-specific” transcriptional signatures of pDC at single cell resolution. With spectral confocal microsocopy, we could unambiguously visualize pDC distribution in the tissues, and we found that at steady state these cells are mainly located in the T-cell zone of the spleen and the lymph nodes, while in the intestine they were mainly in the lamina propria of the small intestine. These observations will be extended to other organs but also in the context of infection and upon inflammatory conditions. Our work highlights the importance to have proper tools to unambiguously track pDC and study their functions in different pathological contexts.

Keywords : plasmacytoid dendritic cells, homeostasis, microsocopy
Authors :
References : , , ,

Authors

Michael Valente 1, Nils Collinet 1, Karima Naciri 1, Marc Dalod 1, Elena Tomasello 1,

1. CNRS UMR7280 INSERM U1104 AMU M2, CIML, Marseille, FRANCE