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Generation of Mouse and Human Dendritic Cells *in vitro*

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Abbreviations: Flt3, fms-like tyrosine kinase 3; Flt3L, Flt3 ligand; GM-CSF, granulocyte macrophage colony stimulating factor; M-CSF, macrophage colony stimulation factor; IL, Interleukin; ChIP, chromatin immunoprecipitation; seq, sequencing; CCR7, C-C chemokine receptor 7; TNFα, tumor necrosis factor α; TLR, toll-like receptor; LPS, lipopolysaccharide; Th1, type 1 T helper cell; iNOS, inducible nitric oxide synthase; TGFβ, transforming growth factor β; BMP4, bone morphogenetic protein 4.

Abstract

Dendritic cells (DC) that can orchestrate immune responses and maintain host homeostasis, are indispensable components of the immune system. Although distributed widely in many lymphoid and non-lymphoid tissues, their rarity in number has become a limiting factor for DC research and therapies. Therefore, methods for efficiently generating large numbers of DC resembling their *in vivo* counterparts are urgently needed for DC related research and therapies. Herein we summarize the current methods for generating mouse and human DC *in vitro* and hope that these will facilitate both studies of DC biology and their clinical applications.

1. Introduction

Dendritic cells (DC) are specialized antigen presenting cells crucial for activation of T cell-mediated immune responses and maintenance of host immune homeostasis. DC are patrolling around the body to recognize invading pathogens and initiate innate and ultimately adaptive immune responses by connecting innate and