

# DC Maturation: A Brief Comparison between Three Different Processes

**Maria Toloudi, Ioannis Papatiriu**

Research and Development Department, Research Genetic Cancer Centre Ltd., Florina, Greece

Email: [toloudi.maria@rgcc-genlab.com](mailto:toloudi.maria@rgcc-genlab.com), [papatiriu.ioannis@rgcc-genlab.com](mailto:papatiriu.ioannis@rgcc-genlab.com)

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## Abstract

Dendritic cell (DC) maturation appeared to be a pivotal process for initiating immunity. Many protocols were established in order the isolated peripheral blood mononuclear cells (PBMCs) from healthy donors to mature into dendritic cells (DCs). The purpose of this study was to present an effective and reliable DC maturation procedure by comparing three different protocols (Interleukin-4/Tumor Necrosis Factor- $\alpha$  (IL-4/TNF $\alpha$ ) DC protocol, Interferon  $\alpha$  (IFN $\alpha$ ) DC protocol and FAST DC protocol). Whole blood was collected from six healthy donors and PBMCs were isolated by Ficoll gradient centrifugation. The counted cells were incubated with the addition of three different cocktails of supplements for appropriate time period. The final mature DC population was examined either by its phenotypic characteristics under light microscope or by measuring the expression of antigen presenting molecules such as CD80 and CD86 by flow cytometry. It was found that the mature DCs, generated from the IL-4/TNF $\alpha$  DC protocol, expressed higher levels of CD80 and CD86. Furthermore, they sharply exhibited their phenotypic hallmarks.

## Keywords

DC Maturation, TNF $\alpha$ , IL-4, IFN $\alpha$

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## 1. Introduction

DCs are exceptionally powerful initiators of immunity, with the ability to activate an immune response more potently than any other cell in the immune repertoire. Because of this unique hallmark, DCs are now a major focus of laboratory and clinical study and are critical targets in cancer vaccine development [1] [2]. Cancer malignancies are often treated by administering a DC vaccine during the premalignant stages, prior to development of immune suppression [3].

As it is well-known, DCs are antigen-presenting cells of the mammalian immune system. Their main function