

Biophysical Properties and Motility of Human Dendritic Cells Deteriorated by Suppressive Cytokines Through Cytoskeleton Remodeling

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Abstract: Dendritic cells (DCs) play a crucial role in initiating and amplifying both the innate and adaptive immune responses [1]. Clinically, the DCs-based immunotherapy against cancer is considered one of the most promising therapies to overcome cancers, but there are still many challenges need to be overcome [2]. The motility of DCs is especially crucial for migration of immature DCs into peripheral tissue and dynamic physical interaction between mature DCs and naive T cells in the secondary lymph node. This study focuses on the investigations of DCs at different differentiation stages and under various suppressive cytokines (VEGF, TGF- β 1 and IL-10) conditioned microenvironments from the interdisciplinary viewpoints. The biophysical characteristics of cells can reflect their relationship between structures and functions [3-5]. The results showed that the DCs at different differentiation stages appear various biophysical characteristics, including the suppressive cytokines deteriorate the motilities and immune functions of DCs through derangement of biophysical characteristics and reorganization of F-actin cytoskeleton, moreover, these changes are closely correlated with the expression levels of some cytoskeleton-binding proteins [6-9]. It is significant for further understanding of the biological behaviors of DCs and how to enhance the clinical effectiveness of DCs-based immunotherapy against cancers.

Keywords: Dendritic cells; motility; immune function; suppressive cytokines; biophysics

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