Skin dendritic cells: The sentinel paradox

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As the largest barrier organ in the body, the skin is a challenging immune site, requiring vigilance for invading pathogens, coupled with tolerance to self, environmental antigens, and the microbiota. Dendritic cells (DC) are professional pathogen-sensing and antigen-presenting cells (APC) that are central to the initiation and regulation of immune responses. In the skin, three subsets of ontogenetically-distinct and functionally-specialized conventional DC (cDC) exist: cDC1, cDC2 and Langerhans cells. Together, these APC populations sense and integrate multiple signals from the internal and external environments in order to initiate and shape optimal immune responses. Thus DC biology is at the center of allergic and autoimmune skin conditions, as well as pathogen infections, wound healing and skin cancers and promising targets for next-generation immunotherapies. However, understanding the roles of the DC populations and their interactions with other immune cells in the skin is necessary for the development of improved therapies for such conditions. In this symposium, I will introduce a new and essential role for cDC1 in the regulation of neutrophil biology and highlight a new role of the minor cDC1 subset in the regulation of mouse and human skin innate immunity that goes beyond antigen presentation and T cells priming.

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