Journal of Immunology Research

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Special Issue on

Dendritic Cells in Tolerance and Immunity against Pathogens

CALL FOR PAPERS

Infectious diseases have always been a concern for human health. Survival depends heavily on an individual's ability to control and eliminate a variety of pathogens. Generally, our innate immune system deals with the majority of invading organisms before they can even establish a successful infection. However, some pathogens are able to surpass these defenses and invade different tissues and organs. When this happens, our bodies resort to a second line of defense that is collectively known as adaptive immunity and comprises the activation of T and B cells. Adaptive immunity provides long-term and specific protection through antibodies and memory T cells.

Dendritic cells (DCs) are a highly specialized population of antigen-presenting cells that play a key role in the induction of adaptive immune responses against different pathogens and in the maintenance of peripheral tolerance. Since their discovery by Ralph Steinman in the 70s, much has been learned about their ontogeny, migration, and antigen presentation capacities in lymphoid and nonlymphoid organs. Advances in flow cytometry allowed the selection of surface markers that help distinguish different DC subpopulations. In addition, the identification of many receptors has added information on how these cells sense the environment and respond to different stimuli. The role of DCs in the induction of immune responses and/or peripheral tolerance has been studied using mouse models that lack the whole DC population or even specific subpopulations. In mice, much has been learned about how distinct DC subpopulations regulate immune responses against different pathogens or self-antigens. In recent years, knowledge about DC subpopulations in humans has also increased, and differences and similarities to murine DC subpopulations still need to be fully explored. DCs have been used as "natural adjuvants" in an attempt to induce immune responses especially against tumors. Novel vaccination strategies that efficiently engage DCs are needed to induce long lasting T- and B-cell responses.

Dissecting the different functions of DCs in such complex scenarios as immunity or tolerance is fundamental for our understanding of how our immune system deals with infections and maintains the steady state. Such knowledge could be used in the design of better vaccines and also in the treatment of autoimmune diseases.

Potential topics include, but are not limited to:

- DC biology
- DC development and precursors
- Regulation of immune responses by DCs
- DCs and induction of tolerance
- Pattern recognition by DCs
- DC intracellular signaling
- DC as vaccines

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