

nodes (9). While in transit in the afferent lymphatics, the LC are histologically identified as veiled cells. Once in the draining lymph nodes, the LC initiate the afferent phases of a CH immune response by presenting the cell surface-bound antigen to responsive clones of T cells (41). The antigen-stimulated T cells undergo clonal expansion and seed the peripheral lymph nodes with memory cells that are capable of mediating the intense CH responses observed in allergic contact dermatitis after subsequent challenge with the immunizing contact sensitizer. Thus, under normal conditions, any agent that is introduced through the skin (assuming it has the properties of a foreign antigen) can induce or elicit an immune response through the actions of the LC to stimulate an effector T-cell response.

Although immune responses (whether cell-mediated immunity or antibody production) are generally attributed to the activities of the effector cells, it must be appreciated that the immune system is highly regulated. The induction of T_S -cell responses by most antigens serves to regulate the intensity and duration of an immune response. It has been shown that distinct populations of antigen-specific T_S cells are capable of inhibiting the afferent and efferent phases of a CH response (47,48). Thus, the balance between the activities of the T_{CH} -cell and T_S -cell populations dictates whether or not an allergic contact dermatitis reaction will occur. It has been suggested that a population of epidermal APC that are distinct from LC may selectively elicit antigen-specific T_S -cell responses (15). Likewise, a soluble antigen absorbed through the skin that gains access into the blood may also selectively stimulate a T_S -cell-dominated immune response (50). This may account for the elicitation of T_S -cell responses to the topical administration of high doses of contact sensitizing agents (51). The immunological conditions and mechanisms responsible for the selective elicitation of T_S -cell-mediated responses are outlined in detail in Section VI of this chapter.

B. Dermal Mast Cells

The dermal mast cell population plays a central role in the efferent phases of CH responses, inflammatory reactions to skin irritants, and immediate-type hypersensitivity responses (52-54). Mast cells reside in close approximation to the dermal capillaries. These cells synthesize and store in cytoplasmic granules a number of vasoactive compounds (e.g., serotonin and histamine; 55). When activated, the mast cells release the contents of these storage granules into the interstitium where the soluble mediators are able to activate endothelial cells to cause increased vascular permeability. The actions of the mast cell products thus account for the edema and ery-