

The dermis is a dense connective tissue layer that supports the epidermis. The bulk of the dermis consists of bundles of collagen and elastic fibers that form a reticular network to support the vasculature, nerves, lymphatics, and adnexal structures (hair, sweat glands, and such). *Fibroblasts*, which secrete the reticular fibers, represent the major cell population within the dermis. *Mast cells*, which are in close proximity to the blood vessels, represent the major inflammatory immunocompetent cell population of the dermis. These cells synthesize and secrete a number of active inflammatory mediators. Other immunocompetent and inflammatory cells within the dermis include: resident antigen-presenting cells and transient inflammatory-lymphoid cells (e.g., polymorphonucleocytes, monocytes, and lymphocytes).

Distinct immunocompetent cell populations do not reside within the subcutaneous tissue layer of the skin. However, this layer of the skin does support blood vessels, lymphatics, and lymph nodes that are important structural components of the immune system. Transient inflammatory and lymphoid cells are also observed in the hypodermis.

III. INFLAMMATION AND IMMUNE RESPONSES IN THE SKIN

To understand the immunobiology of the skin, it is important to distinguish between inflammation and immunity, because the consequences and approaches to circumventing the two are different. *Inflammation* is a basic nonspecific response localized in various tissue sites in all multicellular animals. A variety of stimuli are capable of triggering an inflammatory response, which is characterized by a series of interacting and interdependent physiologic reactions. The initial phase of an inflammatory reaction is marked by edema resulting from an increase in both the blood supply to the local site and the permeability of the capillary walls. Phagocytic cells (primarily neutrophils and monocytes) leave the circulation and accumulate at these sites. This is accompanied by the release of a large number of soluble mediators produced by lymphoid cells, macrophages, and neutrophils, as well as by the clotting, kinin, and complement systems. The inflammatory response is a complicated series of reactions that sets the stage for the repair of damaged tissues by stimulating collagen biosynthesis and the proliferation of both connective tissue cells and small blood vessels.

The hallmarks of *immunologically mediated responses*, on the other hand, are specificity and memory. The lymphoid cells, which compose the immune system, are separated into two broad catego-