



The Skin

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The Skin: More Than a Mechanical Barrier

More than a century and a half ago, the noted pathologist Rudolph Virchow described the skin as a mere protective covering for more delicate and functionally sophisticated internal viscera. Then, and for most of the time that followed, the skin was viewed as a necessary but rather uninteresting barrier to fluid loss and mechanical injury. Over the last several decades, however, the skin has come to be appreciated as a surprisingly complicated organ—the largest in the body—in which precisely regulated cellular and molecular interactions govern many essential processes.

Although the human integument may appear drab compared with the skin and pelage of other members of the animal kingdom, it is extraordinarily vibrant with regard to the diversity of functions that it carries out. Chief among these is its role as one of the first lines of defense against

potentially harmful infectious and physical agents. However, the skin is also a highly sophisticated sensory organ, and even has important endocrine roles, particularly the synthesis of vitamin D (Chapter 9), which is “powered” by sun exposure. It is composed of several cell types and structures that function interdependently and cooperatively (Fig. 25-1).

- *Squamous epithelial cells (keratinocytes)* are normally “glued” tightly together by cell junctions known as desmosomes and produce abundant amounts of keratin protein, both of which serve to create a tough, durable physical barrier. In addition, keratinocytes secrete soluble molecules such as cytokines and defensins that augment and regulate cutaneous immune responses (described later).
- *Melanocytes* within the epidermis are responsible for the production of melanin, a brown pigment that absorbs and protects against potentially injurious ultraviolet (UV) radiation in sunlight.