Chapter 1
Structure and Function of the Skin

The skin is the human body’s its largest organ, covering 1.6 m² of surface area and accounting for approximately 16% of an adult’s body weight. In direct contact with the outside environment, the skin helps to maintain four essential bodily functions: ① retention of moisture and prevention of permeation or loss of other molecules, ② regulation of body temperature, ③ protection of the body from microbes and harmful external influences, and ④ sensation. To understand cutaneous biology and skin diseases, it is very important to learn the structure and functions of normal human skin.

A. Skin surface

The skin surface is not smooth, but is laced with multiple networks of fine grooves called sulci cutis. These can be deep or shallow. The slightly elevated areas that are surrounded by shallower areas of sulci cutis are called cristae cutis. Sweat pores fed by the sweat glands open to the cristae cutis (Fig. 1.1).

The orientation of the sulci cutis, which differs depending on body location, is called the dermal ridge pattern. Fingerprints and patterns on the palms and soles, which are unique to each person, are formed by the sulci cutis. Elastic fibers also run in specific directions in deeper parts of the skin, with the direction depending on the site. Some skin diseases, such as epidermal nevus, are known to occur along specific lines distributed over the body, the Blaschko lines (Fig. 1.2). These lines are thought to be associated

Fig. 1.2 The Blaschko lines.
Many dermatological disorders appear along these lines, such as epidermal nevus and linear scleroderma (Bolognia JL, et al. J Am Acad Dermatol 1994; 31:175-90).

Fig. 1.1 Appearance of the skin surface.
a: Cristae cutis (triangle) and sulci cutis (arrows). b: Nevus-cell nevus along the cristae cutis. c: Sweat pores fed by sweat glands open to the cristae cutis (arrows).
Skin generally consists of a three-layer structure: the epidermis, dermis and subcutaneous tissues (Fig. 1.3). At the boundary between the epidermis and dermis are finger-like projecting structures (the dermal papillae) that project into the overlying tissue (the epidermis) (Fig. 1.30). The portion of the epidermis that projects into the dermis is called the epidermal rete ridge, and the portion of the dermis that projects into the epidermis is called the dermal papilla.

with the direction in which the differentiated cell clones extend during fetal skin development.