Skin biopsy is the most frequently used and important test for dermatological diagnosis. In a biopsy, a sample of skin is collected for observation under the microscope. There are many cases in which it is impossible to make a diagnosis based only on the clinical symptoms. A blister, for example, may be caused by various pathomechanisms, including viruses, bacteria and autoimmune diseases, or by heredity. It is often difficult to diagnose a blister just by naked-eye observation and disease history. To specify the cause of the disease and reach a final diagnosis, dermatopathological examination is essential.

A. Skin biopsy

In skin biopsy, a biopsy site is selected, a skin specimen is removed, and the sample is fixed and stained. It is necessary to select a site that is without secondary changes and that is cosmetically acceptable. In inflammatory diseases, it is recommended to include the peripheral normal skin for comparison with the lesion. When a disease presents various lesions, it is preferable to collect multiple skin samples from different stages of inflammation.

After local anesthesia, a biopsy specimen is removed (Figs. 2.1-1 and 2.1-2). The main methods for removing a sample are punch biopsy (clipping of a round sample), incisional biopsy (removal of a spindle-shaped sample with a surgical knife), and excisional biopsy (removal of the entire site). Shave biopsy (sample excision by razor blade) is another method for observing a lesion in the epidermis. The removed sample is fixed immediately with 10% formaldehyde to avoid secondary degeneration. The sample may be divided for cryo fixation or 2% glutaraldehyde fixation for an immunofluorescence test or electron microscopy.

A skin specimen is prepared for hematoxylin-eosin (HE) staining. As shown in Table 2.1, various staining methods, known collectively as special staining procedures, are often used in combination. Immunostaining using monoclonal antibodies is also effective for diagnosis.
When observing a pathological specimen, it is necessary to identify the abnormality in the specimen by comparison with normal findings (Figs. 2.2-1 and 2.2-2). This section introduces fundamental terms for skin pathological changes and diseases.

**B. Dermatopathology**

When observing a pathological specimen, it is necessary to identify the abnormality in the specimen by comparison with normal findings (Figs. 2.2-1 and 2.2-2). This section introduces fundamental terms for skin pathological changes and diseases.

**a. Epidermis**

1. **Acanthosis (epidermal hyperplasia)**

Acanthosis describes thickening of the epidermis. It is classified into flat (the entire site thickens moderately; e.g., in chronic eczema), proraisiform (epidermal protrusions are extended), papillomatous (the epidermis projects upwards; e.g., with viral warts or seborrheic keratosis), and pseudocarcinomatous (pseudosquamous cell carcinomas project irregularly downward; e.g., chronic ulcer margin, deep mycoses) (Figs. 2.3 and 2.4).

2. **Epidermal atrophy (epidermal hypoplasia)**

Epidermal atrophy (epidermal hypoplasia) is caused by reduction of keratinocytes (Fig. 2.5). It leads to thinning of the epidermis. As a result, the papillary processes are diminished or lost. It