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皮膚のかたちの科学
—マクロからミクロまで—

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Science of Shape in the Skin: From Macro to Micro

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Abstract

Morphology is a science regarding the structures in various level of analysis in living object. Genetics is now considered as a finest end of a spectrum of the morphology. Dermatology has developed by precise description of the morphology of each skin lesion, which was also used as a name of a disease. The descriptive dermatology was then studied by light and electron microscopy and the names of the skin diseases have further been classified with consideration of the clinical course and prognosis. Bullous pemphigoid (BP) is one of the life-threatening disorders of autoimmune blistering skin diseases. The mechanism of blister formation was not clear until the subcellular location of the target epitope of the autoantibodies was elucidated. We have shown that two different autoantibodies, anti-collagen XVII and anti-BP230 antibodies attack different area of the hemidesmosomes, a main adherent structure between epidermis and dermis. Autoantibody against collagen XVII have its epitope on the extracellular domain, whereas the autoantibody against BP230 bind only to the intracellular domain of hemidesmosomes. Therefore, anti-collagen XVII antibody is important to initiate the inflammation at the basement membrane zone. In epidermolysis bullosa, genetic blistering skin diseases, gene mutation in one of every hemidesmosomal proteins causes skin fragility resulting in blister formation. The location of the responsible molecules, the depth of blister and the severity of the diseases, are closely related to each other, and the observation of the ultrastructure is the clue to give a correct diagnosis. Thus macroscopy-microscopy-genomics should be comprehensively analyzed and interpreted. In the field of cosmetology, so-called functional cosmetics developing for improvement of external appearance should be evaluated not only with macroscopy and biochemistry but also with microscopic morphology and genomics.

Key words: morphology, microscopy, macroscopy, genomics.