

〈教育セミナー〉

表皮機能の新展開

表皮ケラチノサイトのタイトジャンクション, アドヘレンス
ジャンクション, デスモソームの構造と機能

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**Structure and Functions of Tight Junction, Adherens Junction and
Desmosome in Epidermal Keratinocytes**

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Abstract

The skin, especially the epidermis, provides a barrier function between air and water circumstances, i.e., the dead and the alive worlds, of the outside and the inside of the human body, respectively. The epidermis also functions as a biological and immunological barrier against toxic substances and microorganisms, such as fungus, bacteria and virus by generating immunologic responses and/or secreting cytokines leading to inflammation. It is the lipid lamellar structure embedded in the stratum corneum that comprises the most important structure for the barrier functions. Keratinocytes produce these lipids and the stratum corneum cells, which sustain these lamellar lipids as multi-layered sheets, resulting in the formation of flexible, but tough, barrier structures against trans-epidermal water leakages. In order to exert these functions, keratinocytes must form dynamic and strong cell-cell junctions to construct a tough and flexible alive-epidermal cell sheet, and this, in turn, sustains the stratum corneum as a tough and flexible sheet. These cell-cell junctions are adherens junctions, desmosomes, tight junctions, gap junctions and hemidesmosomes, which also involve in the regulation of keratinization in addition to structural contributions. In this short review, I would like to focus on their functions and diseases due to their impairments.

Key words: tight junction, adherens junction, desmosome, cadherin, corneodesmosome