

〈教育セミナー〉

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表皮バリアを一定に保つ仕組み

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**Epidermal Barrier Homeostasis**

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**Abstract**

The surface of the skin is covered by a stratified epithelium, the surface of which is cornified. After leaving the basal layer, epidermal keratinocytes differentiate and move upward, forming a tight junction barrier in the second layer of stratum granulosum, then move outside the tight junction barrier and become cornified. The terminal differentiation of keratinocytes, *i.e.* cornification and lipid lamellae formation between keratinocytes, occurs at the outside tight junction barrier. While each cell undergoes its own series of differentiation processes, the structure and barrier function of the entire epidermis is always maintained in a steady state. The key mechanisms maintaining the homeostasis of the tight junction barrier are the shape of keratinocytes in granular layer, Kelvin's tetrakaidecahedron, and the relocation of tight junctions from one edge to another edge on the tetrakaidecahedron cells. The spatiotemporal orchestration of the upward movement of tetrakaidecahedron cells and downward relocation of tight junctions maintain the tight junction barrier at the second layer of stratum granulosum during continuous cell turnover.

**Key words:** Stratum corneum, tight junction, Kelvin's tetrakaidekahedron, Langerhans cell, percutaneous sensitization.