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**Title:** The roles of PCDH1 on epithelial barrier function in the airway

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**Body:** [Background] PCDH1 is recently identified as a susceptibility gene of bronchial hypersensitivity (BHR). Although PCDH1 seems to be involved in the differentiation of the airway, the roles of PCDH1 on epithelial barrier functions have not been determined. [Methods] A human airway epithelial cell line, 16HBE, cells were cultured on Transwell chamber for 5days. Barrier function was evaluated by Trans Electric Resistance and dextran permeability. Expression of inflammatory cytokine was measured by RT-PCR. Morphology of cell junctions was analyzed by immunostaining using anti-PCDH1, anti-ZO-1, anti-Ocludin and an anti-E-cadherin antibody. [Results] The paracellular barrier function of 16HBE cell monolayer increased over time in culture. Similarly, the expression of PCDH1 increased for the period. The knockdown of PCDH1 significantly inhibited the paracellular barrier function. In addition, it inhibited the dsRNA-induced inflammatory cytokines expressions. Immunocytostaining revealed that PCDH might coexist with E-cadherin at the cell-cell contact sites. [Conclusion] Our results indicated that a susceptibility gene of PCDH1 plays an important roles on the immunological and physiological barriers of airway epithelium.