

## Mechanism of atopic march using filaggrin knockout rat

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Allergy March (atopic march) means a series of allergic diseases induced by one allergic disease. In recent years, atopic dermatitis has attracted attention as a first step of allergy march. From the mouse model or human genetic analysis, the mechanism of allergy march is gradually being elucidated. In allergy march, percutaneous sensitization is regarded as important for the induction of other allergic diseases, and among them, there is a high possibility that the mutation of the filaggrin gene responsible for the skin barrier function is triggered. The application of zinc-finger nucleases (ZFNs) as a gene-targeting technology has been successful in rats, which is faster and more efficient than embryonic stem cell-mediated knockout technology. Herein, we report the generation and characterization of Flg knockout (Flg KO) rats. FLG KO rats showed an increase in transepidermal water loss. we found that OVA-induced asthma exacerbated using atopic dermatitis-induced FLG KO rat compared to that of wild type rat. It is expected that new allergy march therapy development focusing on filaggrin expression control will be developed in the future.