

# LDB2 expression in mouse hair follicles and its knock out provokes skin problem

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## ABSTRACT

The mammalian epidermis and hair follicles are highly dynamic tissues that undergo frequent turnover and cycling. Numerous stem cells reside in epidermis and hair follicles and they interact with a stem cell niche environment. This interaction maintains epidermal and hair follicle proliferation and differentiation program. If these systems broke down, skin abnormality would be occurred like severe alopecia, hyperkeratosis and skin inflammation, etc. Here, we show that LDB2 is important for skin epidermal homeostasis and hair follicle stem cell maintenance. LDB2 KO mouse began to show severe alopecia phenotype about 5-week-old (P35) age. But it recovered at 6-week-old age, but as follicle cycling goes on, severe hair shedding occurs. This alopecia phenotype may be due to the hair follicle stem cell and epidermal keratinocyte maintenance problem. Hair follicle stem cells are significantly reduced in LDB2 KO mouse versus WT mouse. Moreover, epidermal differentiation marker is irregularly expressed in LDB2 KO mouse. Synthetically, LDB2 that acts as a co-transcriptional factor of various genes has a very important function in skin environment.

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