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## **Appendix S1**

### SUPPLEMENTAL METHODS

#### *Evaluation for skin dryness*

The rostral back of each mouse was shaved at least 2-days before the assay.

The levels of (transepidermal water loss) TEWL and stratum corneum (SC) hydration were measured using Tewameter TM300 (Courage+Khazaka, Köln, Germany) and Corneometer CM825 (Courage+Khazaka, Köln, Germany), respectively. Eight mice were included in each group.

#### *Behavioral tests*

##### *Locomotor activity test*

On the test day, mice were acclimatized for at least 1 h in a new acrylic cage (19.5 × 24 × 35 cm). Locomotor activity was assessed by measuring the distance traveled in 12 h with distance calculated based on the center the mouse mass movement, as recorded by the SCLABA tracking system. Each group comprised eight mice.