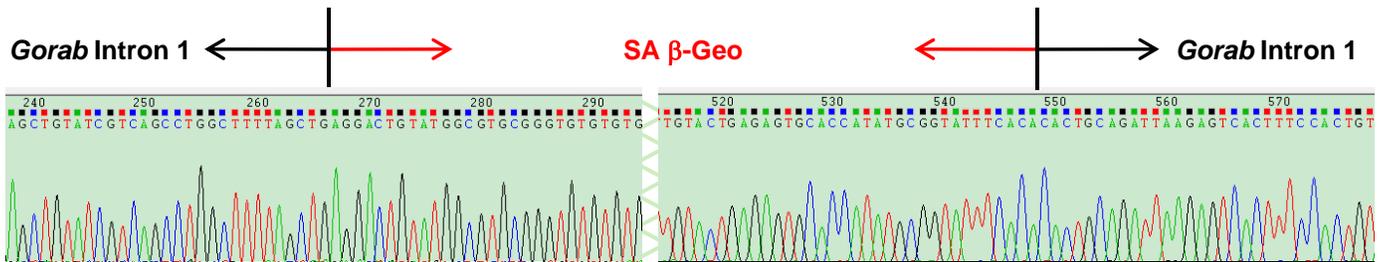


Supplemental Figure S1

**Primers used for genotyping and sequencing**

Intron1-F: 5'-GATTGGACCCAGAGTGTGCATAATGGTTC-3'

Intron1-R: 5'-GCCAGACACTCATTATCACAATTTAAAAGC-3'

Wild-type allele: 451 bp

Trapped allele: Not detectable

Trap-F: 5'-GCAGTGCACGGCAGATACACTTG-3'

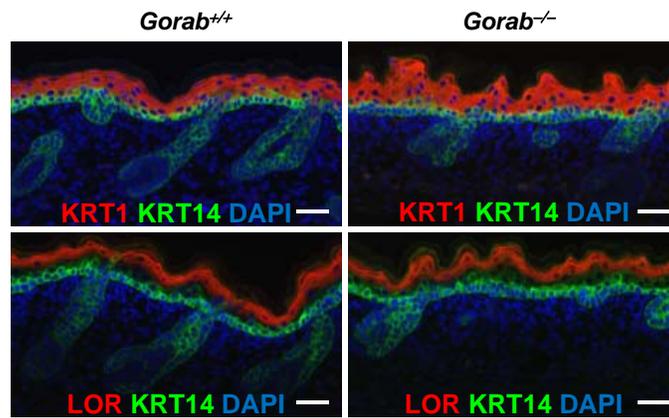
Trap-R: 5'-CTGATCGACAAGACCGGCTTCC-3'

Wild-type allele: Not detectable

Trapped allele: 1,100 bp

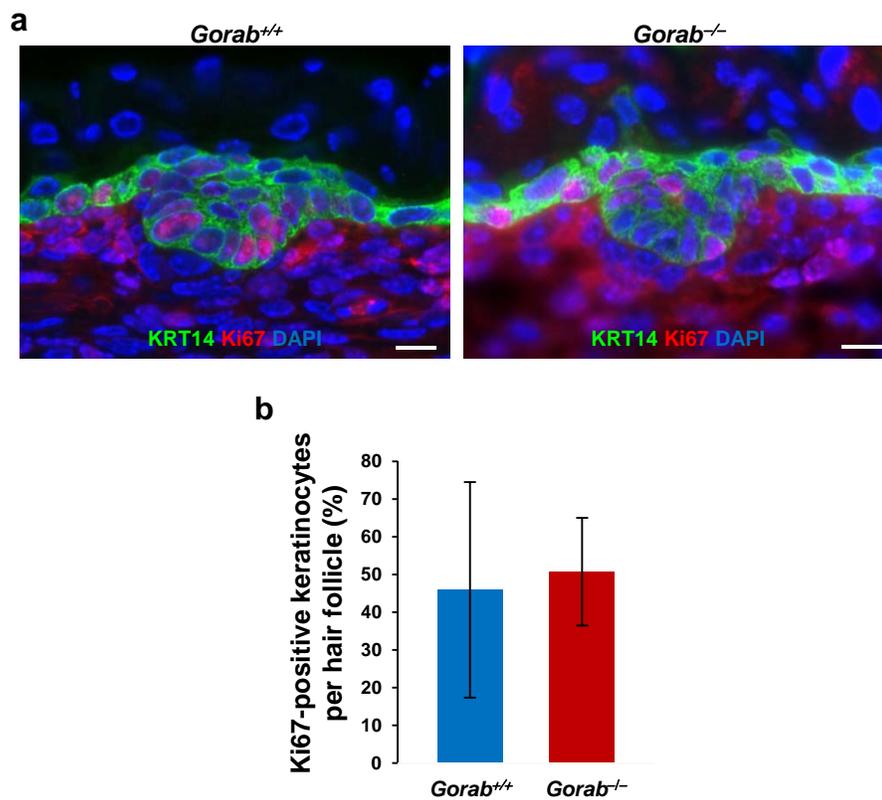
Supplemental Figure S1. Location of gene-trap vector insertion site by sequencing and primers used in genotyping and sequencing.

Supplemental Figure S2



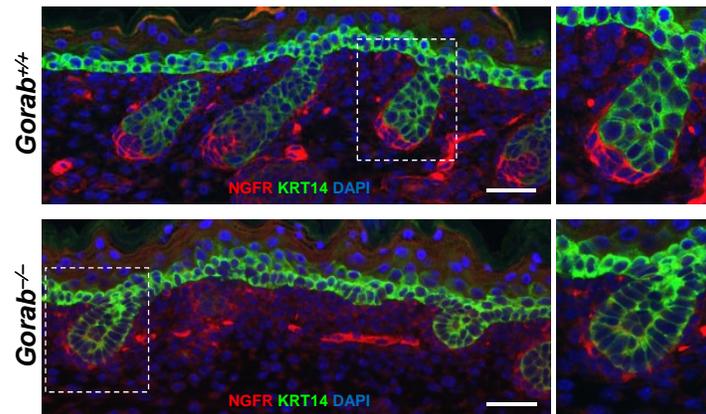
Supplemental Figure S2. Examination of epidermal differentiation. Immunofluorescence labeling of keratin 1 (KRT1, red in upper panels) and loricrin (LOR, red in lower panels) in E18.5 dorsal skin of control (*Gorab*^{+/+}) and homozygous *Gorab* mutants (*Gorab*^{-/-}). Keratin 14 (KRT14) was labeled green; Nuclei were stained with DAPI (blue). Scale bars: 50 μ m.

Supplemental Figure S3

**Supplemental Figure S3. Examination of proliferating cells in hair germs. (a)**

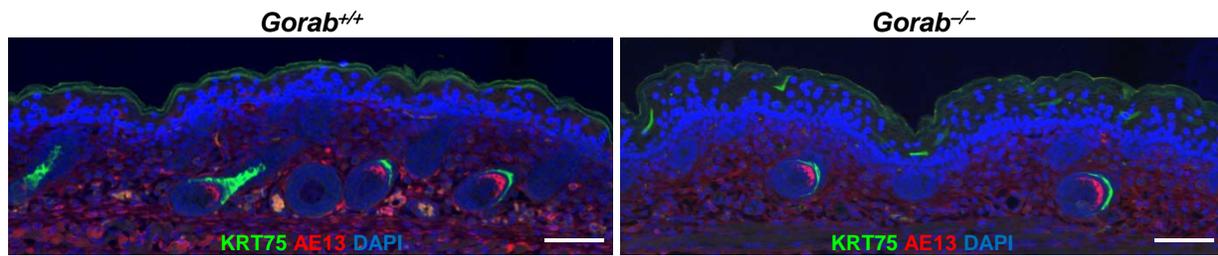
Representative images of Ki67-positive cells in stage 2 hair follicles in E15.5 control (*Gorab*^{+/+}) and homozygous *Gorab* mutants (*Gorab*^{-/-}). KRT14 was labeled in green; Ki67 was labeled in red; nuclei were stained with DAPI (blue). **(b)** Quantification of Ki67-positive follicular keratinocytes in stage 2 and stage 3 hair follicles in E15.5 dorsal skins. Scale bar: 5 μ m.

Supplemental Figure S4

**Supplemental Figure S4. Examination of dermal condensate cells in E18.5 hair germs.**

Immunofluorescence labeling of dermal condensate cells with NGFR (red) in the dorsal skin of control (*Gorab*^{+/+}) and homozygous mutants (*Gorab*^{-/-}). Panels on the right represent magnified boxed areas on left. KRT14 was labeled in green; nuclei were stained with DAPI (blue). Scale bar: 50 μ m.

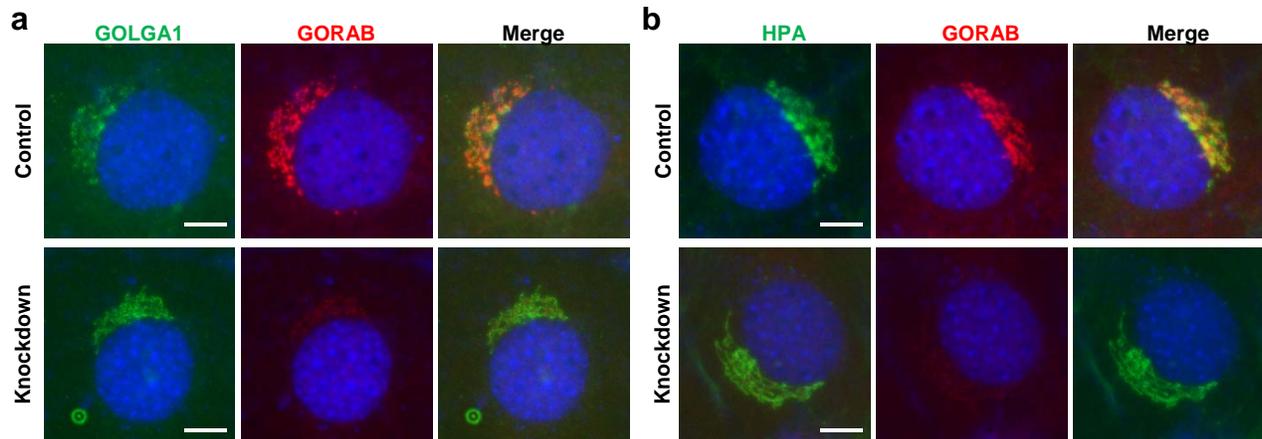
Supplemental Figure S5



Supplemental Figure S5. Hair follicle differentiation in *Gorab*^{+/+} and *Gorab*^{-/-} mice.

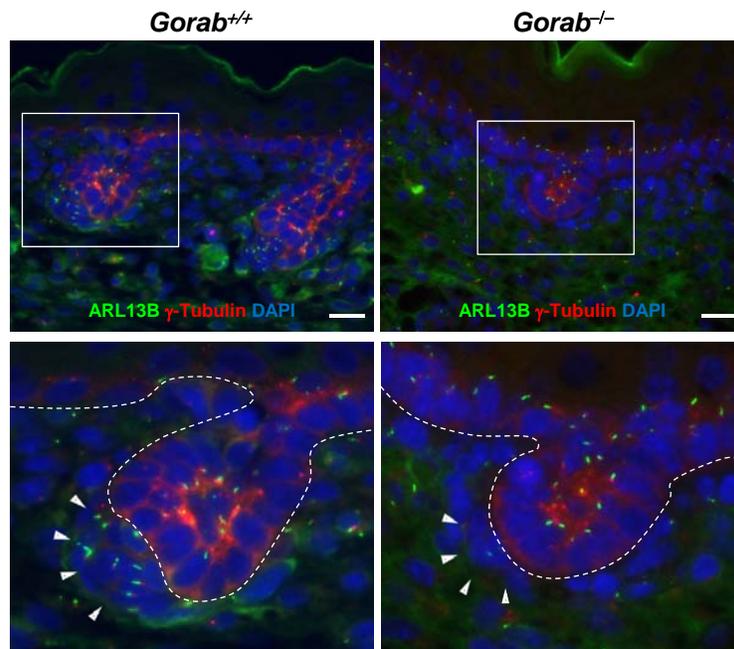
Immunofluorescence labeling of dorsal skin of E18.5 control (*Gorab*^{+/+}) and homozygous mutant (*Gorab*^{-/-}) with KRT75 (red) and AE13 (green). Nuclei were stained with DAPI (blue). Scale bars: 100 μ m.

Supplemental Figure S6



Supplemental Figure S6. Expression of Golgi proteins in *Gorab*-knockdown cells. (a) Immunofluorescence labeling of *trans*-Golgi marker Golgin-97 (GOLGA1, green) and GORAB (red) in control and *Gorab*-knockdown mouse embryonic fibroblasts (MEFs). **(b)** Immunofluorescence labeling of *cis*-medial Golgi marker lectin *Helix pomatia* agglutinin (HPA, green) and GORAB (red) in control and knockdown MEFs. Scale bars: 10 μ m.

Supplemental Figure S7



Supplemental Figure S7. Primary cilia in dermal condensate cells. Immunofluorescence labeling of primary cilia with ARL13B (green) in dorsal skin of E15.5 control (*Gorab*^{+/+}) and homozygous *Gorab* mutants (*Gorab*^{-/-}). Lower panels are magnified images of boxed hair germs above. Dotted lines represent basement membrane. Basal bodies were labeled with γ -tubulin (red); nuclei were stained with DAPI (blue). Dotted lines illustrate the basement membrane. Arrowheads point to dermal papilla cells. Scale bar: 20 μ m.