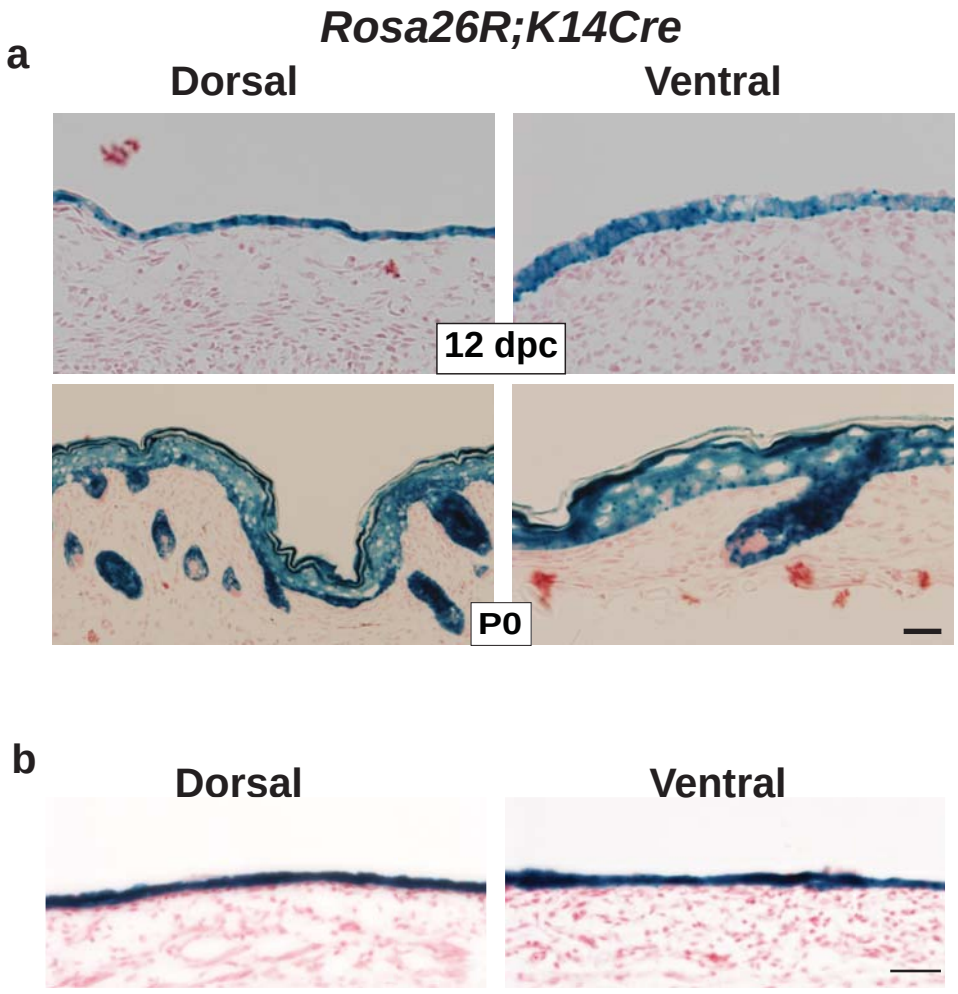
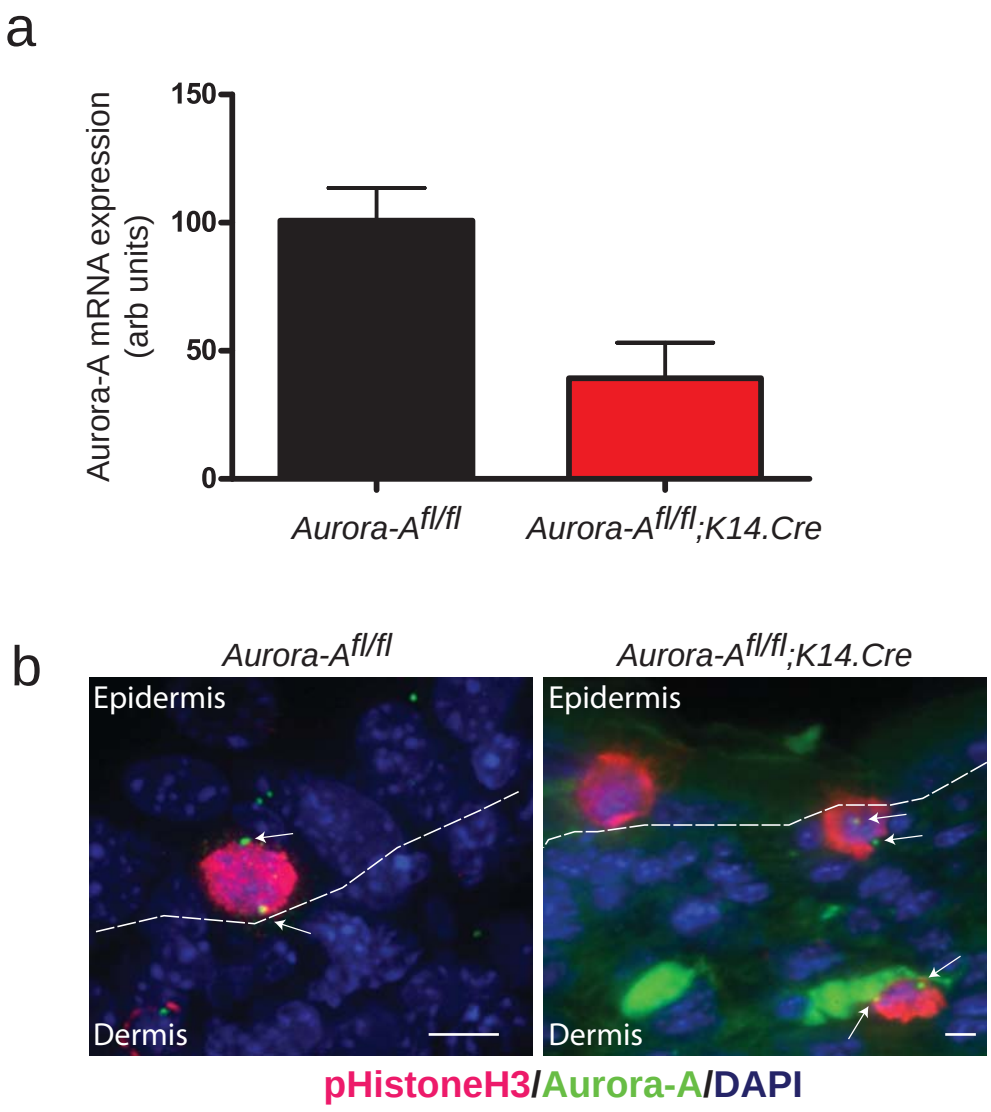
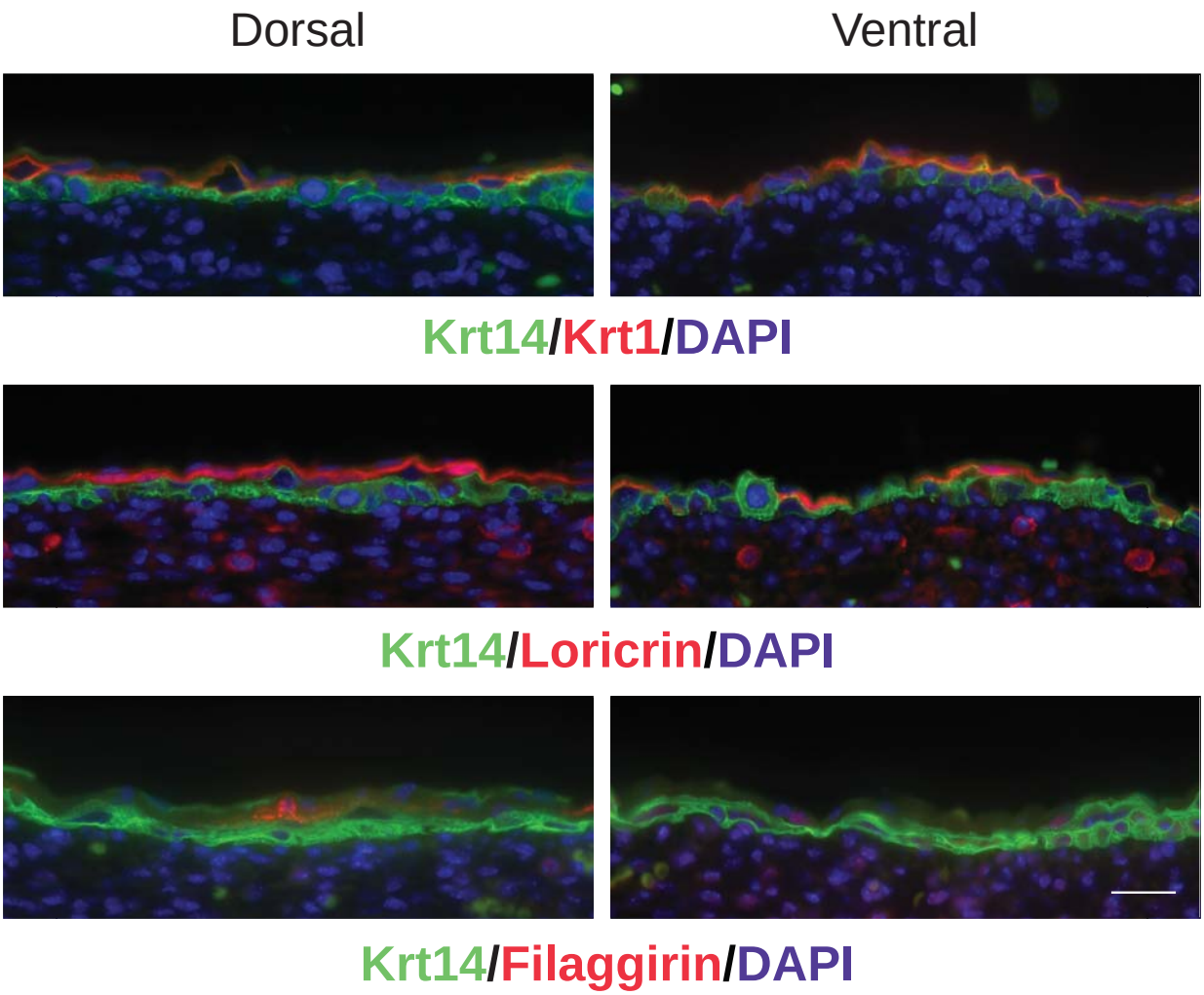


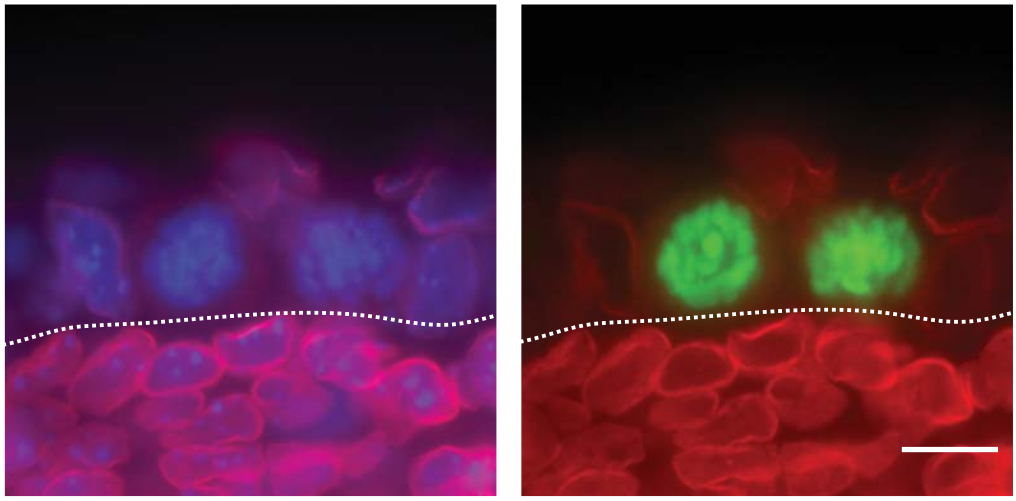
Supplemental Figure 1. K14.Cre-mediated activation of the Rosa26R allele. (a) Rosa26R β-galactosidase reporter mice were bred with the Cre deleter strain, K14.Cre. Frozen sections at E12.5 and newborn *Rosa26R;K14.Cre* mice were stained for β-galactosidase activity (X-gal). (b) Frozen sections from 17 dpc *Aurora-A$^{fl/fl}$;Rosa26R;K14.Cre* embryos were stained for X-gal activity. Bar= 25 μm.



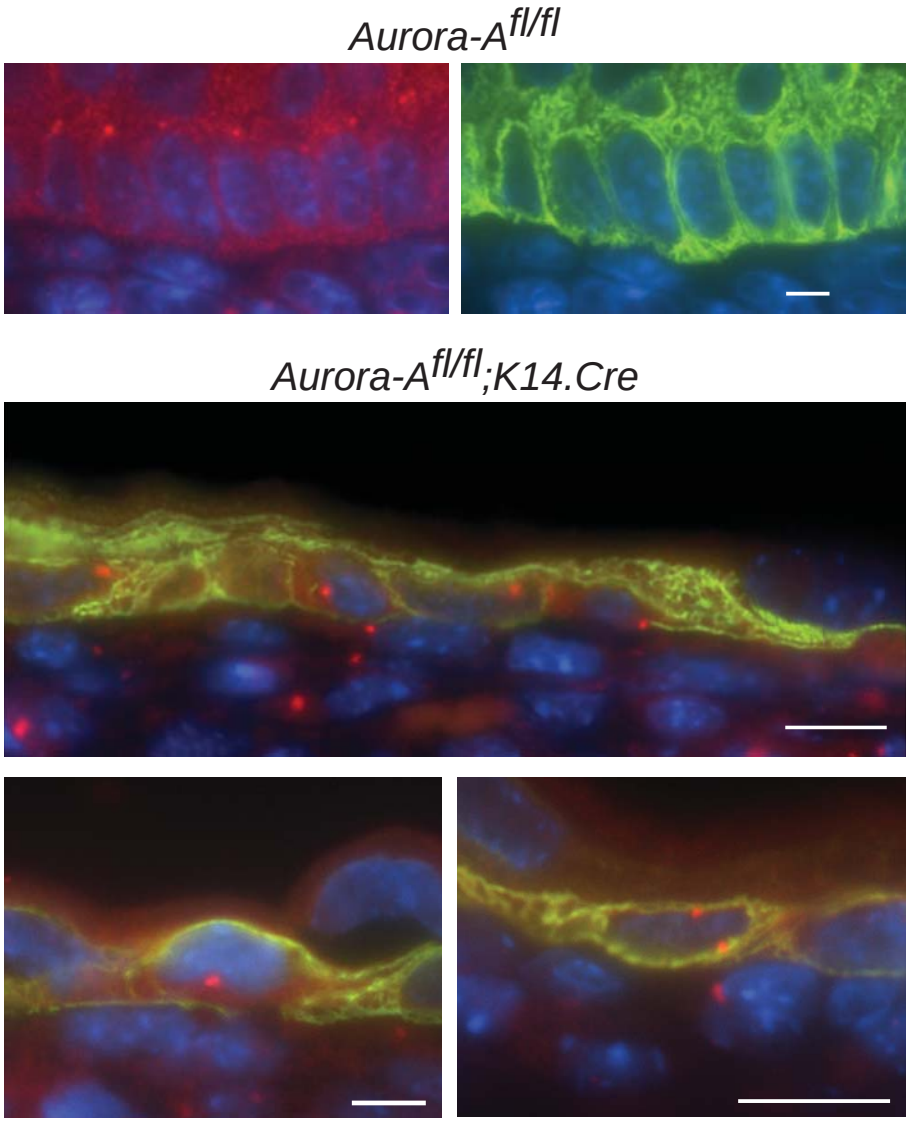
Supplemental Figure 2. Suppression of Aurora-A expression in *Aurora-A$^{fl/fl}$; K14.Cre* keratinocytes. (a) Total RNA was isolated from whole skin of *Aurora$^{fl/fl}$* (n=4) and *Aurora$^{fl/fl}$;K14.Cre* (n=2, each from separate litters) embryos at E18.5. QPCR analysis was then performed on reversed transcribed total RNA to quantitate the levels of *Aurora-A* relative to *Gapdh* gene expression. Columns are mean values for each group ± standard deviation. (b) Aurora-A and phospho-Histone H3 expression was detected by immunofluorescence confocal microscopy in skin sections from E16.5 *Aurora$^{fl/fl}$* and *Aurora$^{fl/fl}$; K14.Cre* embryos. Bar= 5 μm. Note the frequency of mitotic cells (red cells) in *Aurora$^{fl/fl}$* epidermis and absence of Aurora-A at centrosomes (arrows) in mitotic cells from the *Aurora$^{fl/fl}$; K14.Cre* epidermis.



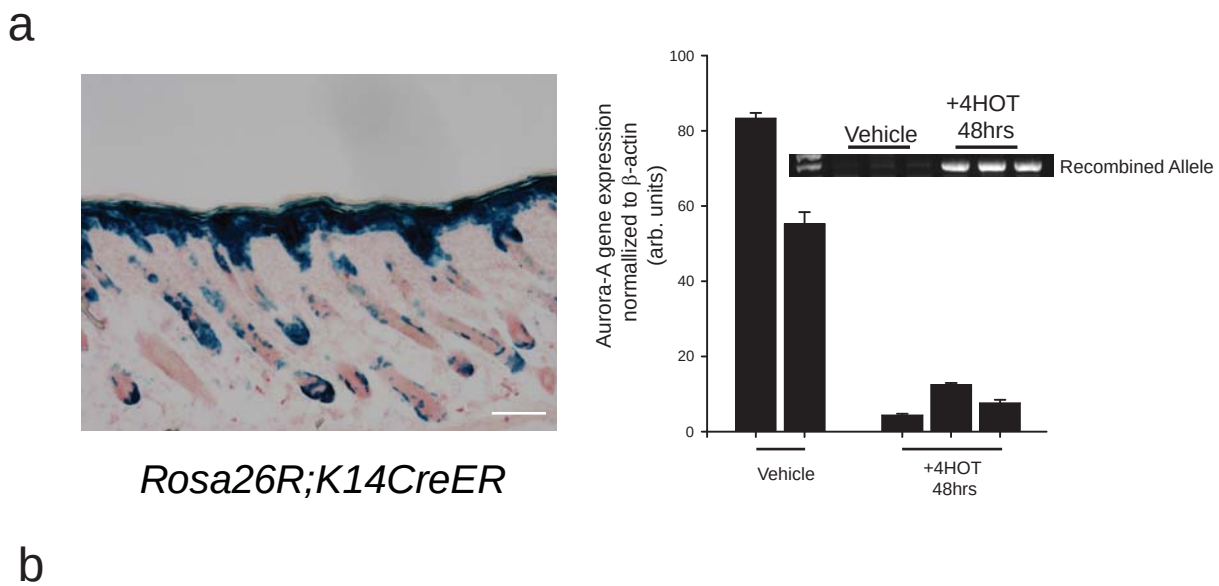
Supplemental Figure 3. Reduced terminal differentiation in the ventral skin of *Aurora-A$^{fl/fl}$; K14.Cre* mice. Skin differentiation markers were compared between dorsal and ventral skin at E17.5. Note the reduced levels of Loricrin and Filaggrin in ventral skin sections. Transverse sections were analyzed from the middle of the embryos. Bar=50 μm.



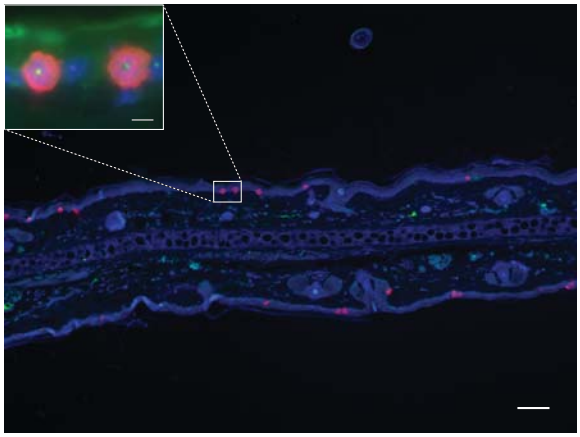
Supplemental Figure 4. Lack of a nuclear envelope in mitotic keratinocytes found in *Aurora-A*$^{-/-}$ epidermis. E13.5 *Aurora-A*$^{-/-}$ epidermis was immunostained for Lamin A/C, a marker of the nuclear envelope (NE). Note the presence of the NE in dermis or cells that do not express the mitotic marker phosho-Histone H3 (Ser 10). Bar=10 μm.



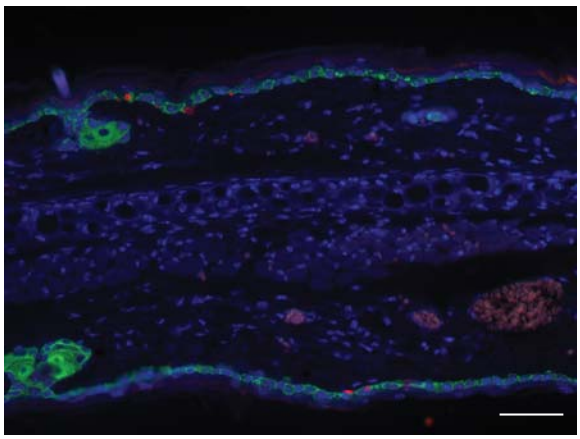
Supplemental Figure 5. Centrosome location in Aurora-A deficient keratinocytes. Skin sections from E16.5 *Aurora-A*$^{fl/fl}$ and *Aurora-A*$^{fl/fl}$*; K14.Cre* embryos were immunostained for Krt14, γ-tubulin, and Dapi. Bar=10 μm.



Supplemental Figure 6. Deletion of *Aurora-A^{fl}* alleles by CreER in keratinocytes. (a) Left panel shows β-galactosidase staining of the dorsal skin in *Rosa26R;K14.CreER* mice treated with 4HOTamoxifen for 4 days. Bar=100 μm. Right panel shows the *in vitro* Cre-mediated recombination of primary keratinocytes isolated from *Aurora-A$^{fl/fl}$; K14.CreER* P3 mice. Cultures were treated with 1 μM 4HOTamoxifen or vehicle for 48 hrs. DNA and RNA was then isolated. The level of Cre-mediated recombination of the Aurora-A floxed allele was determined by PCR (inset) and mRNA abundance of Aurora-A by reverse transcription and qPCR. The data shown is the mean of the technical replicates ± standard deviation. (b) Aurora-A and phospho-Histone H3 expression was detected by immunofluorescence confocal microscopy in tissue sections from adult *Aurora$^{fl/fl}$* and *Aurora$^{fl/fl}$; K14.CreER* skin at 10 day post tamoxifen administration. Arrows depict location of Aurora-A in mitotic cells. Bar= 5 μm.



γ-tubulin/pHistoneH3/DAPI



Krt14/Active Caspase 3/DAPI

Supplemental Figure 7. Increased mitosis and apoptosis in *Aurora-A*$^{-/-}$ adult epidermis. Ten days post Tamoxifen treated *Aurora-A*$^{fl/fl}$*;K14CreER* skin was stained for mitotic (phospho-Histone H3) and apoptotic cells (Active Caspase 3). Note the presence of active Caspase 3 positive cells and mitotic cells with a centrally located centrosome stained by γ-tubulin (Inset, Bar 5= μm). Bar 50=μm.