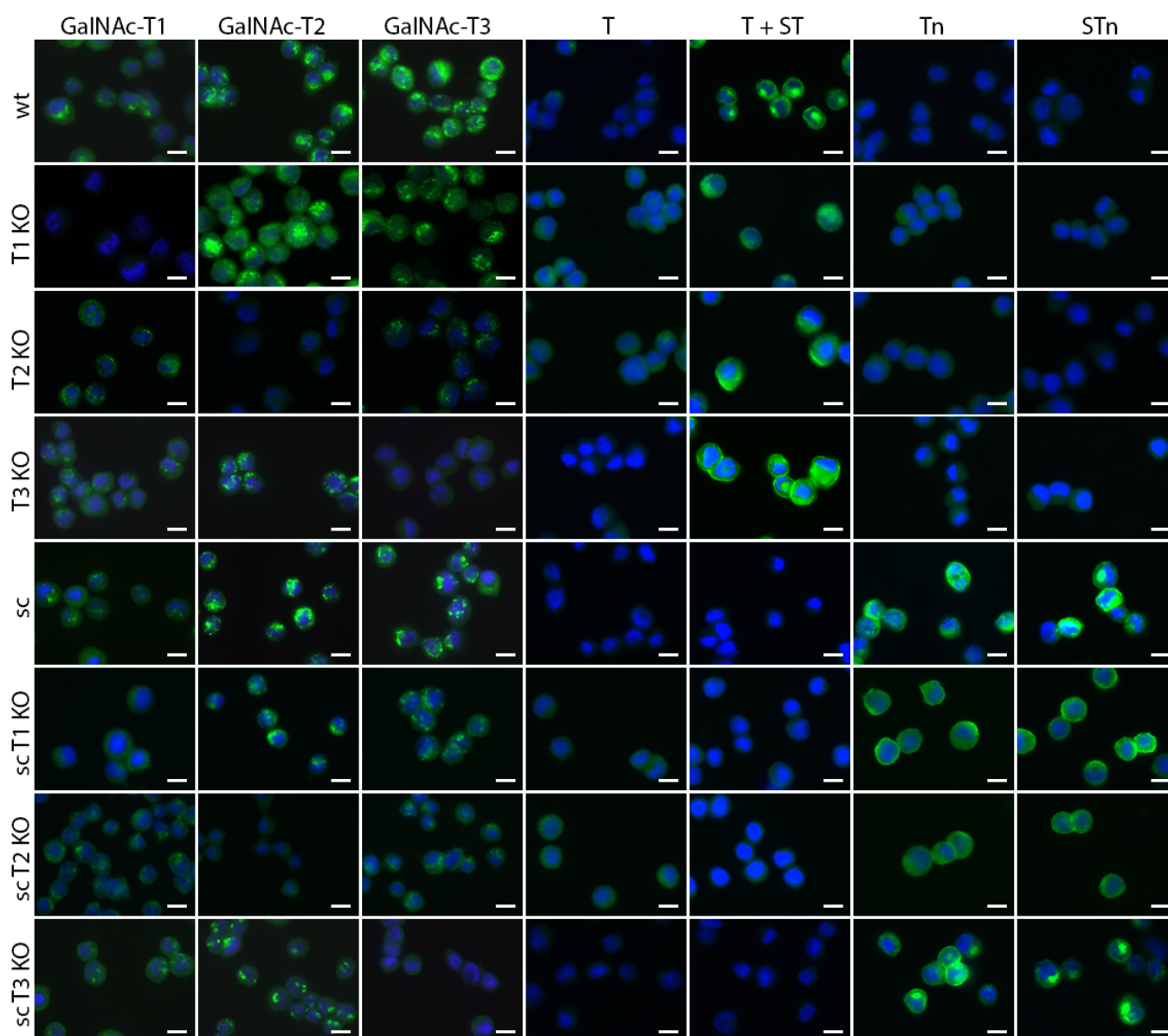
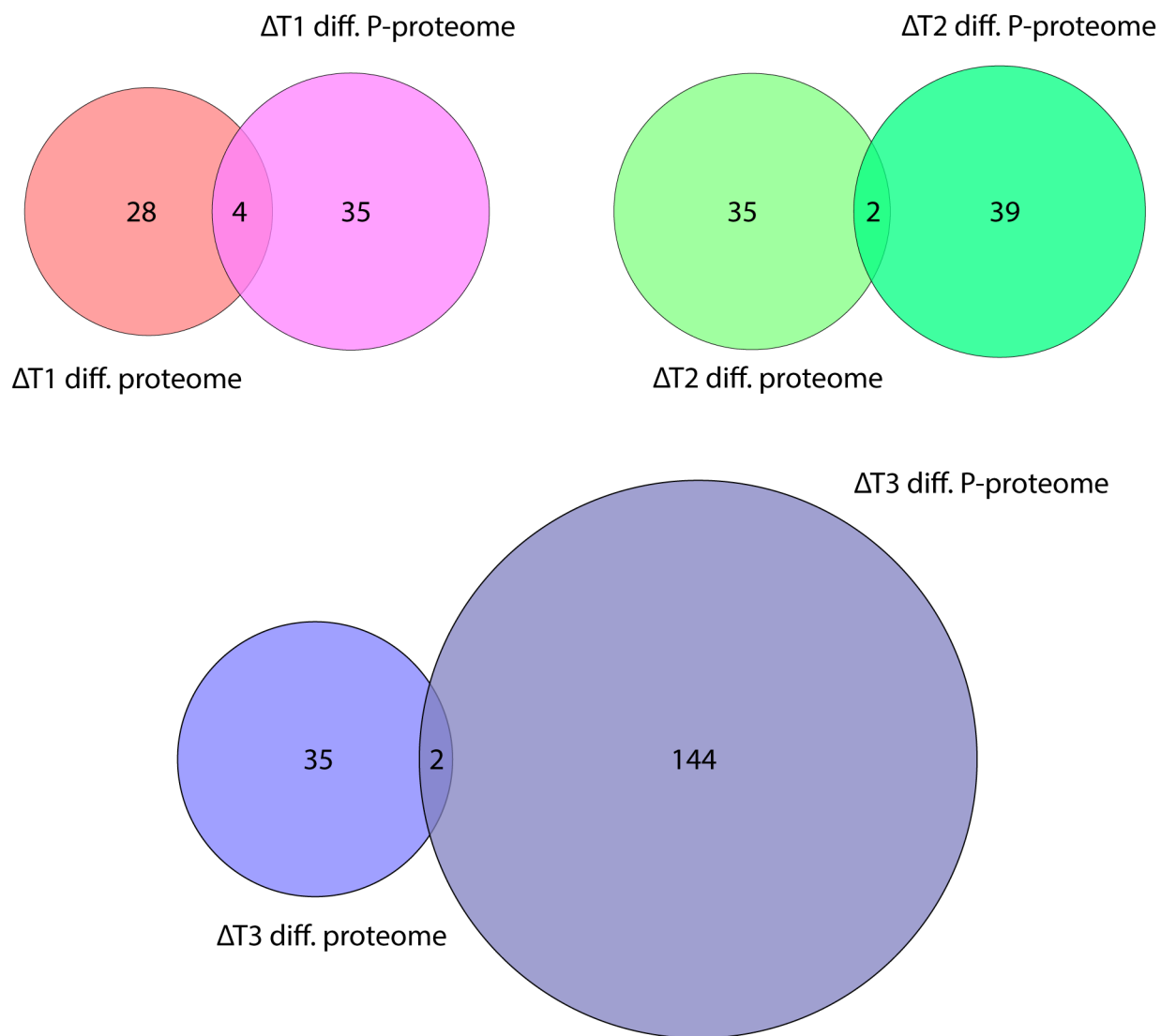


## Expanded View Figures



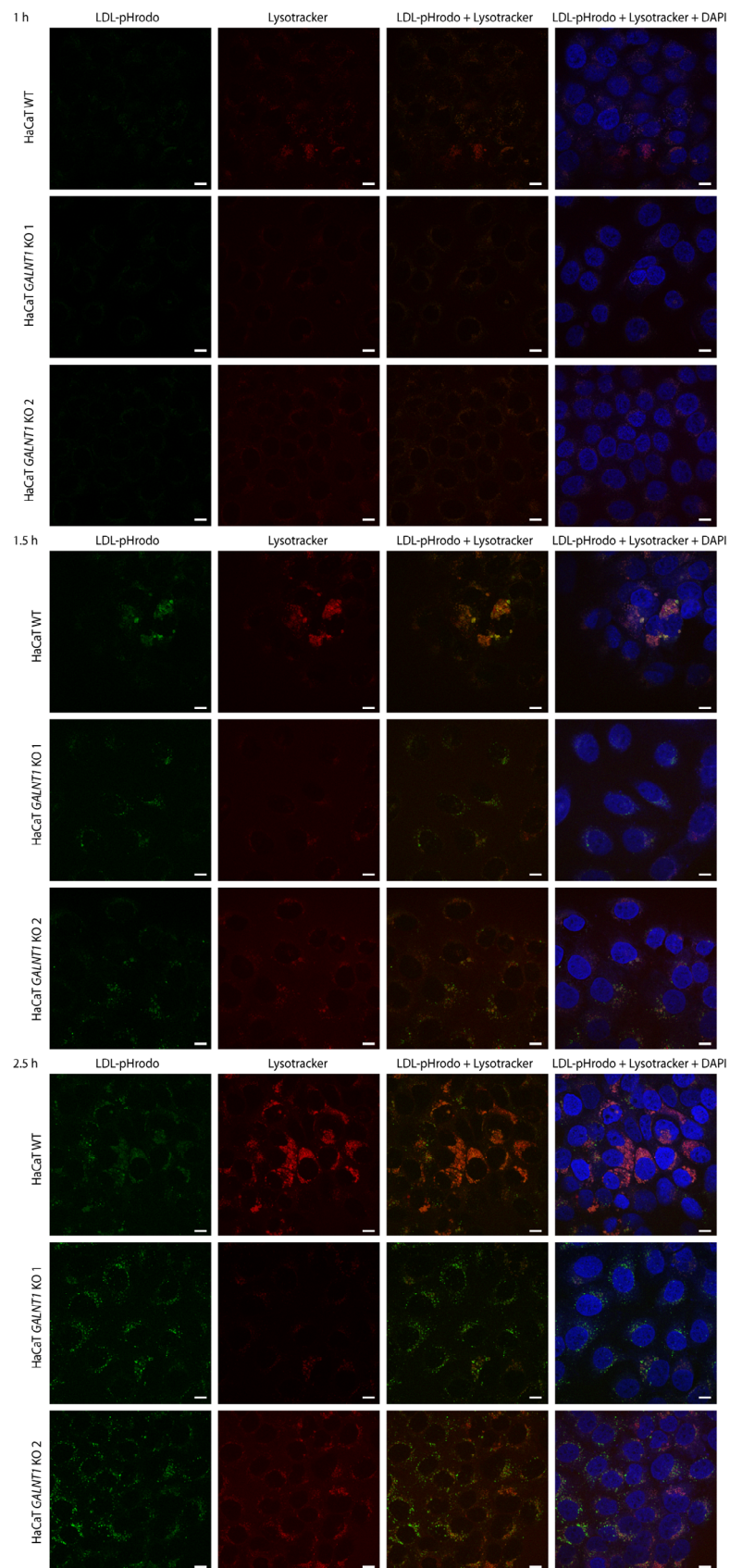
**Figure EV1. Characterization of GALNT KO cell lines.**

GALNT KO cell lines in WT or COSMC KO (sc, "SimpleCell") background were stained for GalNAc-T1, GalNAc-T2, and GalNAc-T3, as well as T (with (ST (sialyl-T) + T) or without (T) neuraminidase treatment), Tn, and STn (sialyl-Tn) glycoforms using monoclonal antibodies and lectins. Scale bar—10  $\mu$ m.



**Figure EV2. Overlap between differential proteome and phosphoproteome.**

Venn diagrams indicate overlap between proteins identified in differential proteomic and phosphoproteomic analyses of the individual *GALNT* isoform KOs.



**Figure EV3. LDL trafficking in HaCaT WT and GALNT1 KO cells.**

Cells grown on coverslips were cultured in media with lipoprotein-depleted serum for 24 h, followed by pulsing with Lysotracker Red DND-99 (–1 h) and LDL-pHrodo (0 h). Coverslips were fixed at 1 h (upper panels), 1.5 h (middle panels), and 2.5 h (lower panels) and imaged using confocal microscopy. Scale bar—10  $\mu$ m.

**Figure EV4. Cell adhesion in HaCaT WT and GALNT2 KO cells.**

Cells grown on coverslips were fixed, permeabilized, and stained for cell–cell and cell–matrix adhesion molecules, followed by imaging by confocal microscopy. Green—relevant staining and blue—DAPI. Scale bar—50  $\mu\text{m}$ .



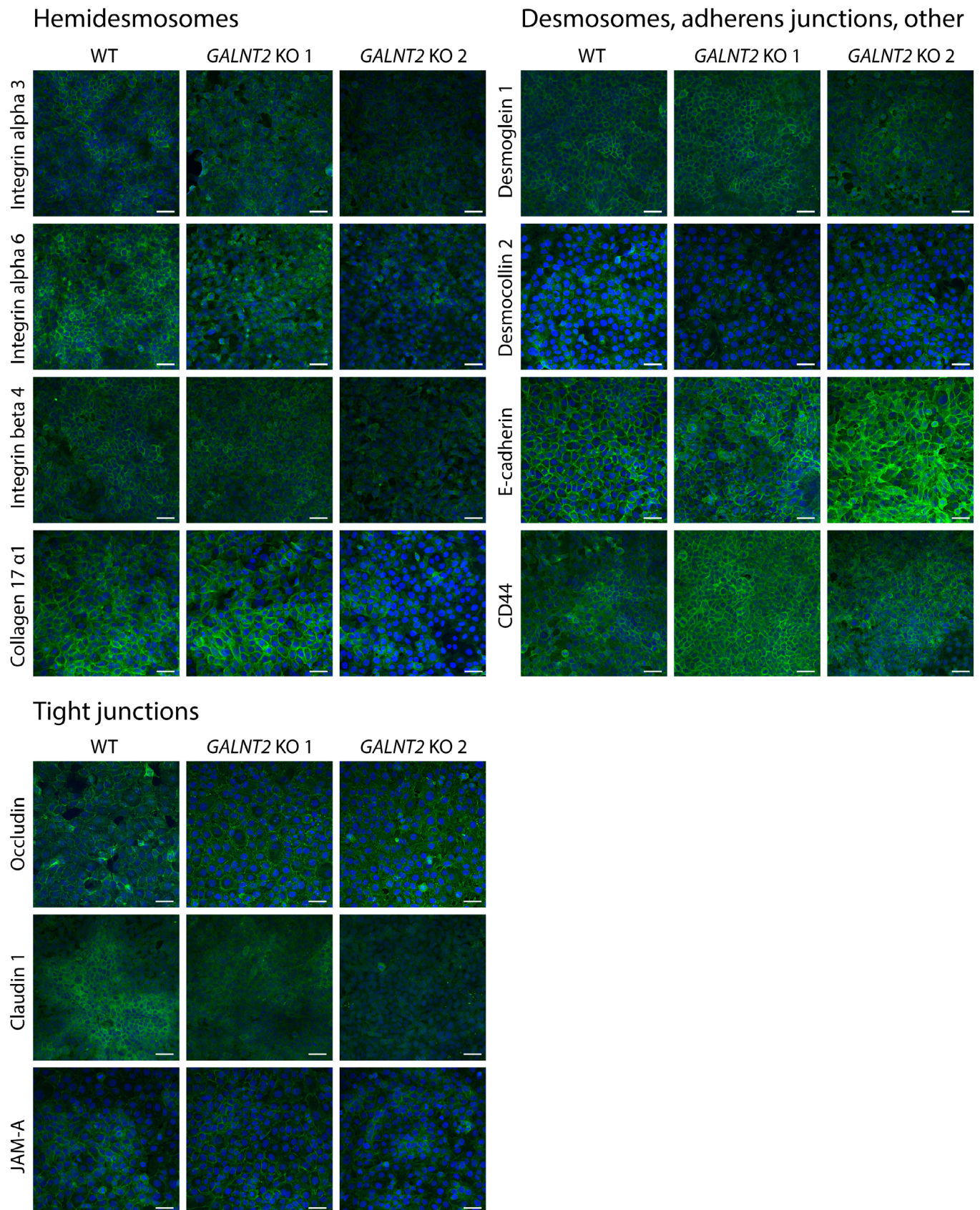
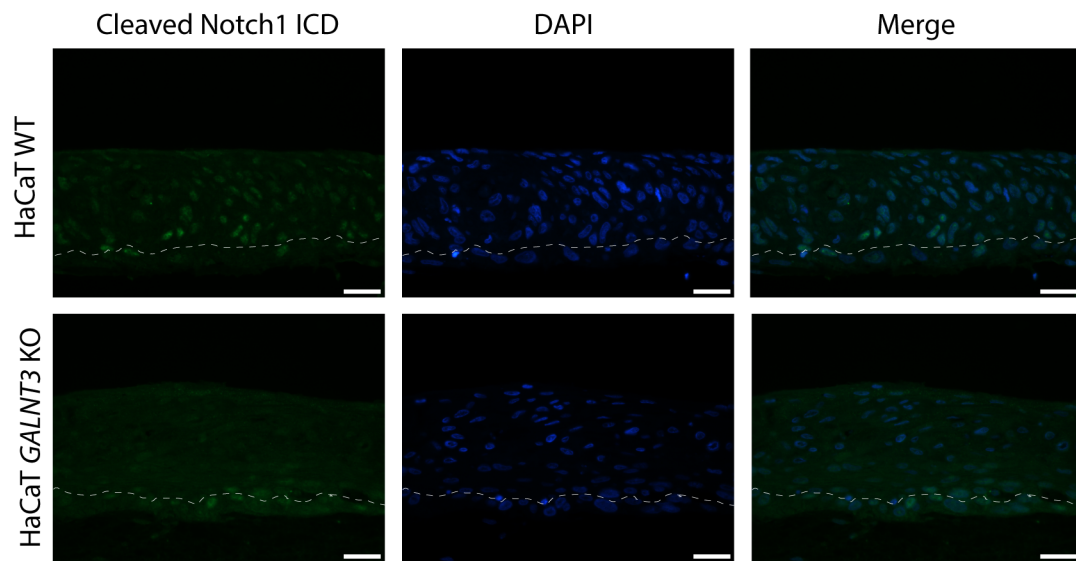


Figure EV4.



**Figure EV5.** Notch1 activity in HaCaT WT and *GALNT3* KO organotypic skin.

Immunofluorescence imaging of organotypic skin sections probed using cleaved Notch1 intracellular domain-specific mAb (green). Nuclei were counterstained with DAPI (blue). Scale bar—20  $\mu\text{m}$ .