Supplement

Supplemental methods

Antibodies used: B220 (RA3-6B2), CD11b (M1/70), CD11c (HL3), CD45 (30-F11), CD3 (17A2), CD4 (GK1.5), CD27 (LG.3A10), CLA (HECA-425), Gr-1 (RB6-8C5), CCR6 (29-2L17), IL-17A and IL-17F, Ki-67 (20Raj1), NKp46 (29A1.4), TCRγδ (GL3), Vγ4 (UC10A6) and Vγ5 (536), (BD, eBioscience, R&D and Biolegend). IL-22–specific antibody (Genentech). Staining was performed according to the manufacturers' instructions.

Scoring. The skin and ear thickness were measured every day using caliper (Mitutoyo). The changes in skin and ear thickness were converted into percentage increase to make the differences between the experiments comparable to each other.

Culture of splenocytes. Splenocytes from Rorc-Cre X YFP X *Rag1*$^{-/-}$ mice were cultured at 10^6/ml in complete RPMI, supplemented with DMSO (1:1000), Aldara (final concentration 2μg/ml), Imiquimod (Sequoia Research Products) (final concentration 0.1μg/ml), both initially dissolved in DMSO or DMSO (1:1000) and IL-23 (20ng/ml).

Supplemental figure legends

Supplemental figure 1. (A) Images show a representative back skin of a WT mouse treated for 5 days with Aldara or control cream. (B) Kinetics of Aldara-induced skin inflammation was quantified over 6 days as percentage increase in the thickness of ear (left) and back (right) skin. Data are shown as the mean percentage ± SEM (n=4). (C) Back (day 3) and ear (day 5) skin sections of Aldara treated vs. control treated mice

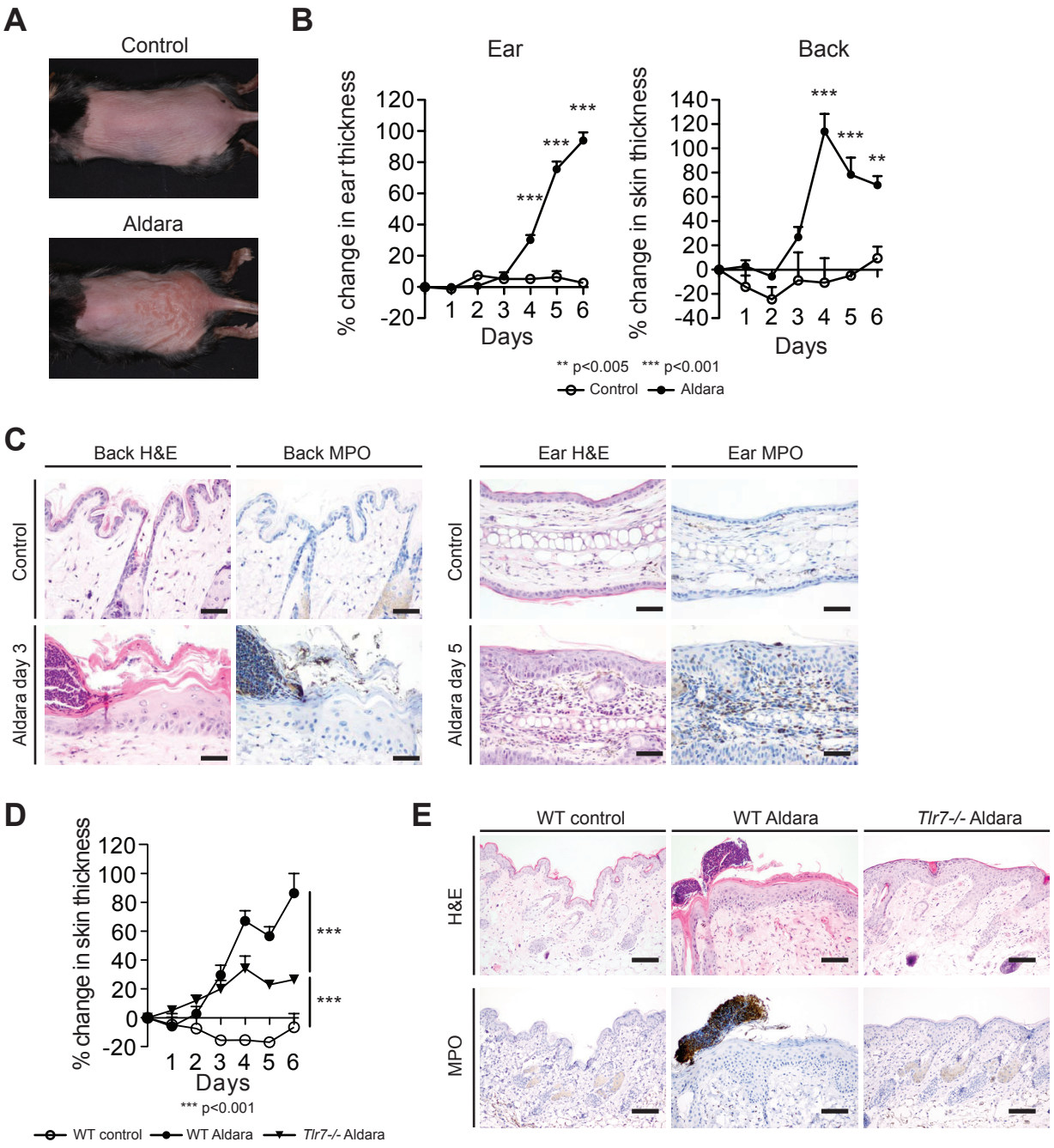
were stained with H&E and for anti-MPO. Original magnification: x40 Scale bar: 50 μm. (D) Kinetics of Aldara-induced skin inflammation in WT vs. *Tlr7*$^{-/-}$ mice showing mean percentage change of back skin thickness ± SEM (n=4). (E) skin sections of Aldara-treated vs. control-treated WT and *Tlr7*$^{-/-}$ mice were stained with H&E and MPO. Scale bar: 100 μm.

Supplemental figure 2. (A) Dot plots of different TCRγδ^{+} cell populations in the skin of WT mice treated with Aldara, analyzed on day 5 gated on CD3^{+} cells (n=4). (B) Dot plots of Vγ chain use by different γδ T cell populations in the skin of WT mice treated with Aldara, gated on CD3^{+} cells (n=3). (C-D) Plots display the percentages (C) and absolute cell number (D) of Vγ5^{+} and Vγ4^{+} cells among CD45^{+} cells isolated from the ear skin of WT mice treated with Aldara or control cream for 5 days (n=3). (E) Dot plots of Vγ4^{+} and Vγ5^{+} γδ T cell populations in the skin of naïve WT and *Il-15Ra*$^{-/-}$ mice gated on TCRγδ^{+} cells (n=3). (F) Vγ4^{+}, CD4^{+} T cells and DETCs derived from the back skin and the draining lymph nodes of Control (shaded) vs. Aldara-treated (transparent) mice on day 5 (pre-gated on CD45+ live cells) were analyzed for the expression of Ki-67. (G) Flow cytometric analysis of CLA and CCR6 expression in the draining lymph nodes of Aldara treated and control mice on day 5, pre-gated on Vγ4^{+} cells.

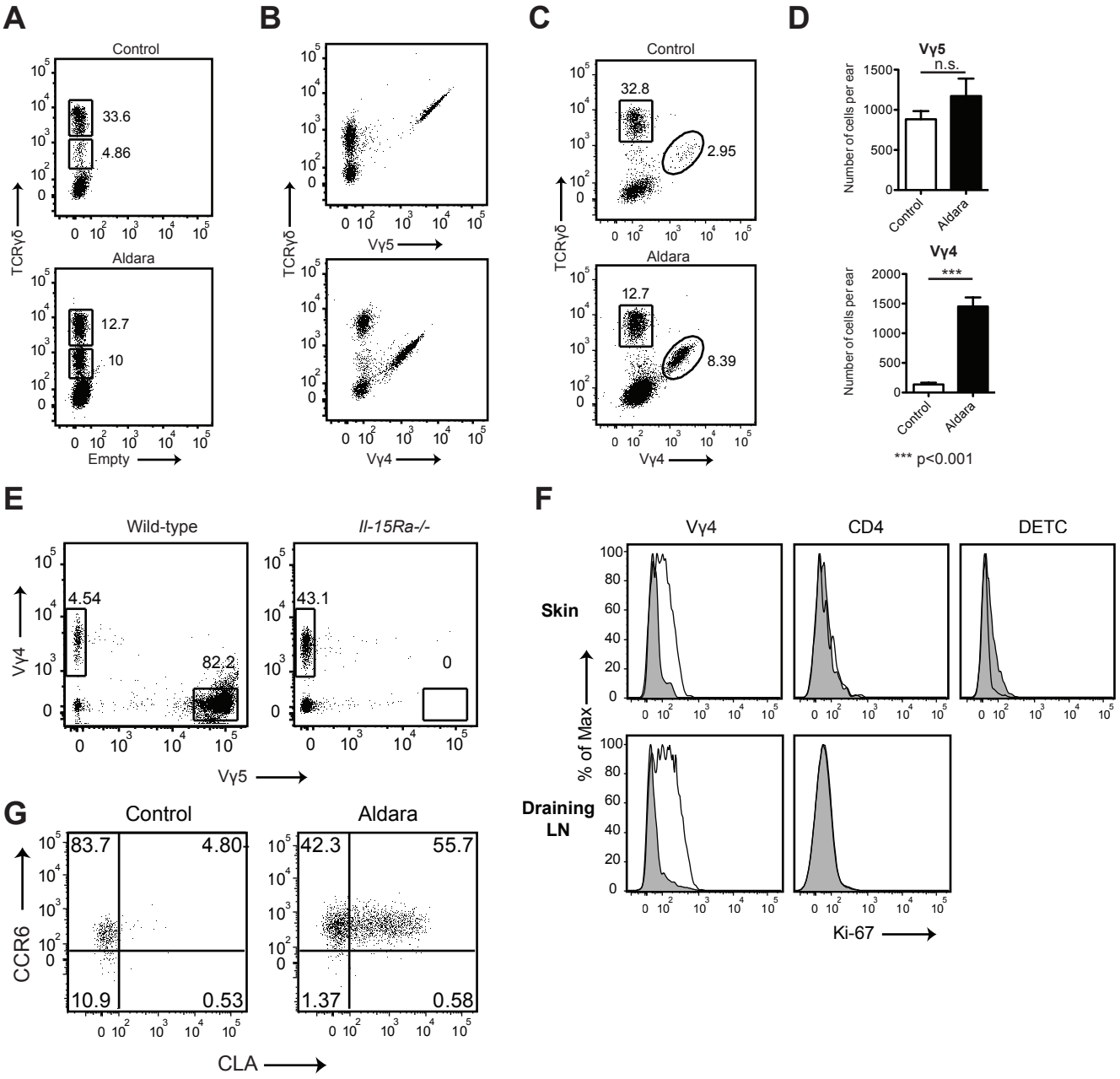
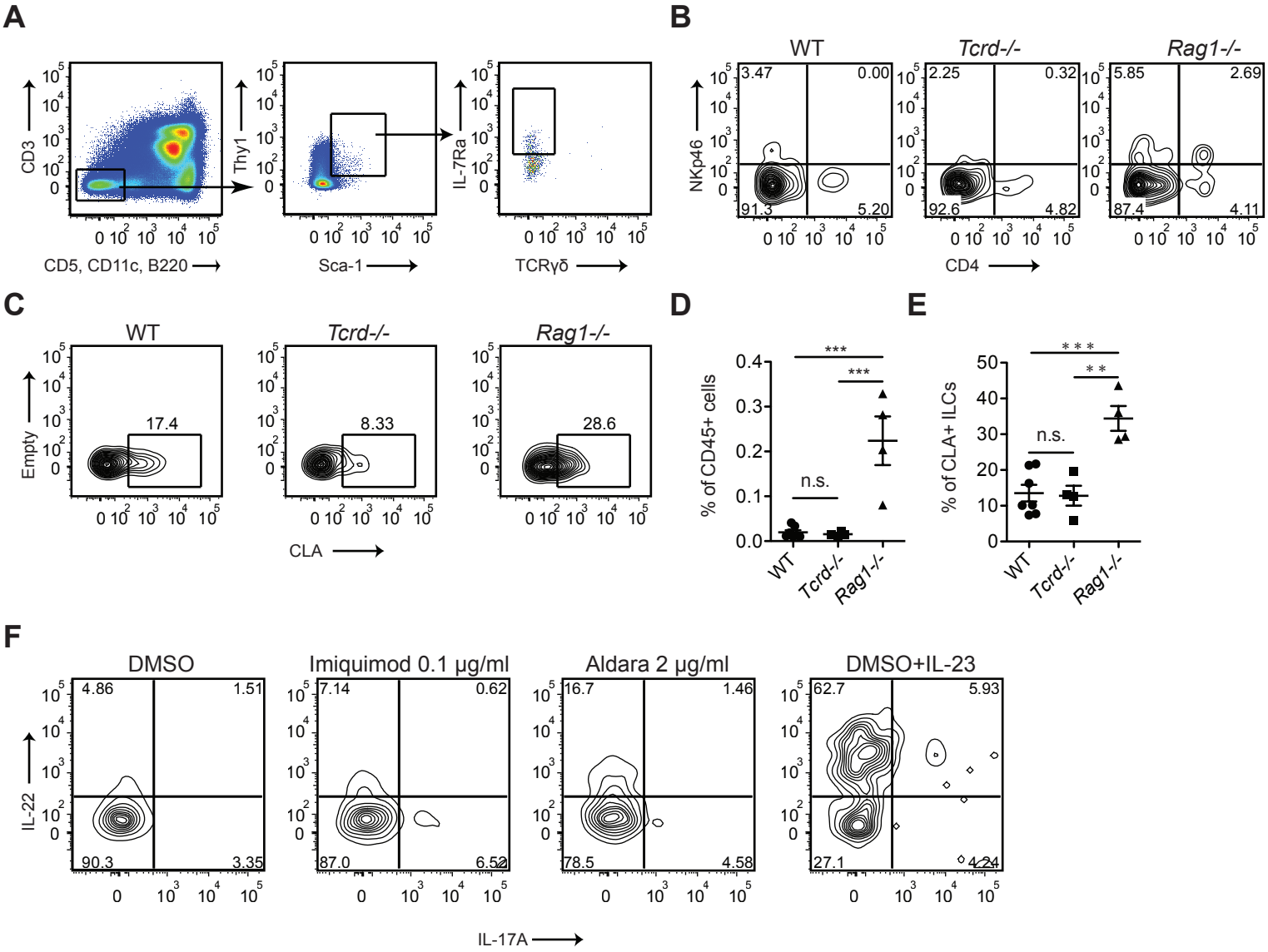
Supplemental figure 3. (A) gating strategy for ILCs, pre-gated on CD45^{+} cells and (B) analyzed for NKp46 vs. CD4 and (C) CLA expression in wt vs. *Tcrd*$^{-/-}$ and *Rag1*$^{-/-}$ mice. (D) Scatter plots showing ILCs as a percentage of CD45^{+} cells and (E) % of CLA^{+} ILCs in WT vs. *Tcrd*$^{-/-}$ and *Rag1*$^{-/-}$ mice. (F) Intracellular cytokine staining of

splenocytes from Rorc-Cre X YFP X *Rag1*$^{-/-}$, cultured for 3 days with specified conditions, pre-gated on YFP^{+} cells.

Supplemental figure 1



Supplemental figure 2



Supplemental figure 3