**Supplementary Materials List:**



**Supplementary Materials:**

## Materials & Methods

*Determining cell ratios in human skin.* Discarded skin from panniculectomy surgeries at the University of Massachusetts Medical School was treated with 50U/mL Dispase II in PBS for 1h at 37°C or overnight at 4°C (patient consent for experiments was not required because human tissue left over from surgery is considered discarded material, and is IRB exempt). The epidermis was removed as one sheet with a razor blade and was mechanically dissociated with a syringe plunger and 70μm mesh filter paper. Samples were stained in 1% FBS-PBS with LiveDead Blue (Invitrogen, 1:1000) and the following antibodies from Biolegend per the manufacturer's instructions: Fc block, CD45 AF700, CD49f PerCP-Cy5.5, cKit APC, CD31 AF488, Langerin PE,

CD11c PE-Cy7 and CD3 Pacific Blue. Samples were fixed in 2% PFA and run on an LSR II flow cytometer. Data was analyzed with FlowJo software version X.

*Cell sorting*. To confirm the gating strategy, epidermal cell populations were stained as samples used for flow cytometry and sorted with a FACSAria II (BD Biosciences). Sorted cells were further processed for RNA extraction (Qiagen kit) to confirm enrichment of cell-specific transcripts.

*qPCR.* RNA was isolated from sorted cells or mouse ear tissue using RNeasy kits (Qiagen). cDNA was prepared using iScript kits (Biorad), and qPCR was performed with SYBR green kits in an iCycler iQ according to the manufacturer's recommendations (Biorad). Mouse primers used were as follows: K6 forward 5-GGAGGCTGTGTCCTCTCG-3, K6 reverse 5-TAGAAAAAGTTACTTTTTATAAATCTG-3; K8 forward 5-TGCAGAACATGAGCATTC-3, K8 reverse 5-CAGAGGATTAGGGCTGAT-3 (Peters *et al.*, 2001); CD68 forward 5-TGGACAGCTTACCTTTGGATTCA-3, CD68 reverse 5-TGTATTCCACCGCCATGTAGTC-3 (Kothapalli *et al.*, 2007); CD3ε forward 5-AAGTCGAGGACAGTGGCTACTAC-3, CD3ε reverse 5-CATCAGCAAGCCCAGAGTGATACA-3 (Nakamura *et al.*, 2007); CD11c forward 5-CTGGATAGCCTTTCTTCTGCTG-3, CD11c reverse 5-GCACACTGTGTCCGAACTC-3 (Shaul *et al.*, 2010); Langerin forward 5-ACGCACCCCAAAGACCTGGTACAG-3, Langerin reverse 5-AGACACCCTGATATTGGCACAGTG-3 (Takahara *et al.*, 2002); CXCL9 forward 5-AATGCACGATGCTCCTGCA-3, CXCL9 reverse 5-AGGTCTTTGAGGGATTTGTAGTGG-3; CXCL10 forward 5-GCCGTCATTTTCTGCCTCA-3, CXCL10 reverse 5-CGTCCTTGCGAGAGGGATC-3 (Groom *et al.*, 2012); β-actin forward 5-

GGCTGTATTCCCCTCCATCG-3, β-actin reverse 5- CCAGTTGGTAACAATGCCATGT-3 (Rashighi *et al.*, 2014).

**Supplementary Figures & Legends:**

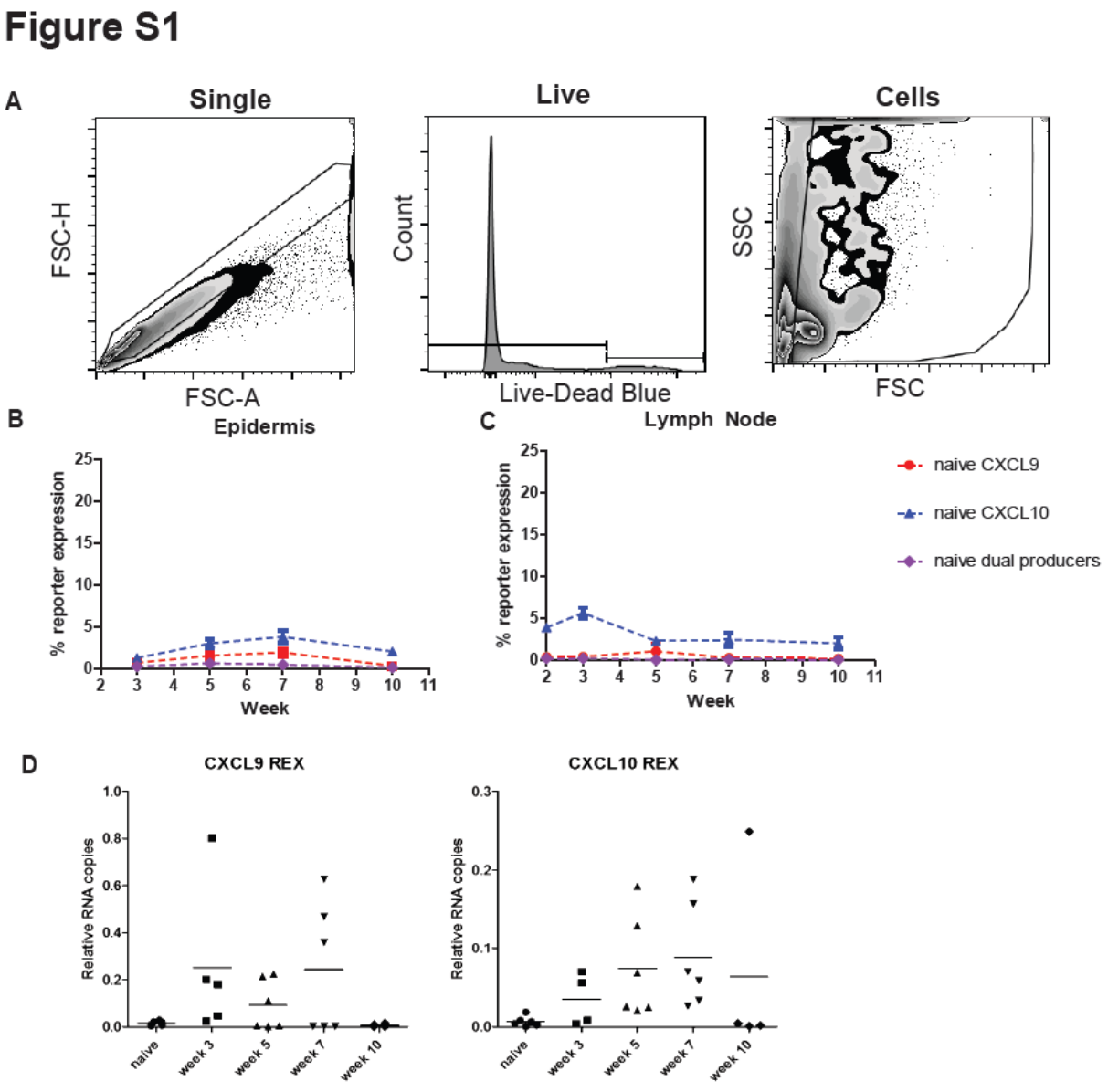


**Fig. S1. Gating strategy and qPCR validation of REX3 mice. A.** Gating strategy for determining chemokine expression for all samples included single, live cells. **B**. Variation of chemokine expression in epidermis and **C**. lymph nodes of naïve mice taken down at each time point was not significant. **D**. CXCL9 and CXCL10 expression in the skin of REX3 vitiligo mice were confirmed via qPCR.

## Figure S2

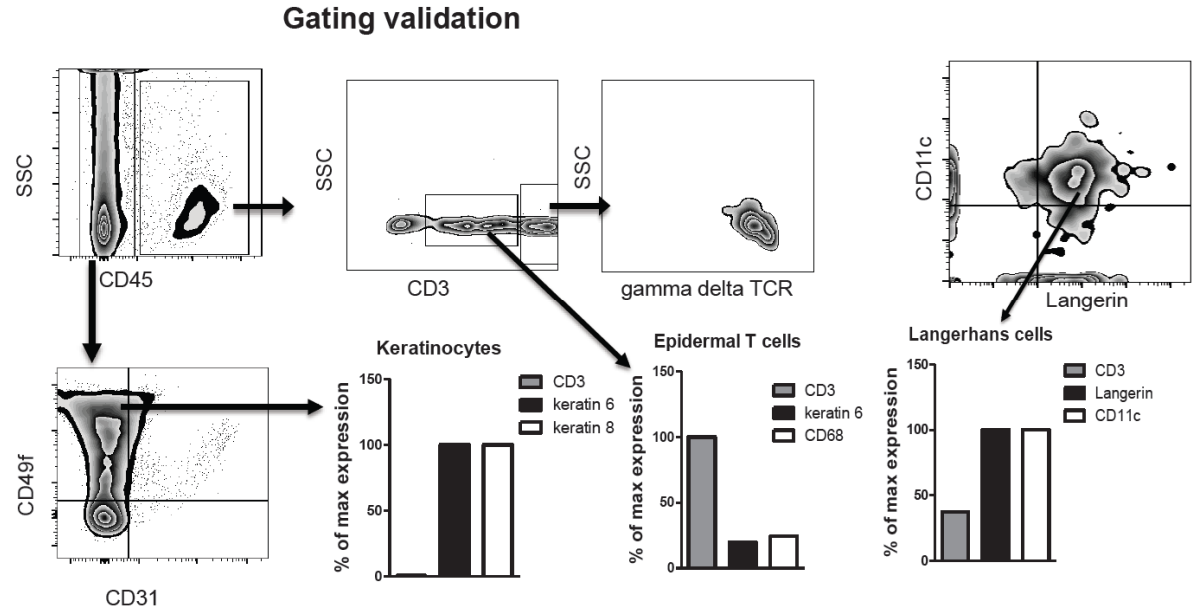


**Fig. S2. Gating strategy and qPCR validation for identifying epidermal cell types.** Sample flow cytometry plots for determining epidermal cell types are shown. These gates were also used to sort cells and perform qPCR for cell specific transcripts as shown. Data were normalized to β-actin expression and are represented as % of max expression.

## Figure S3

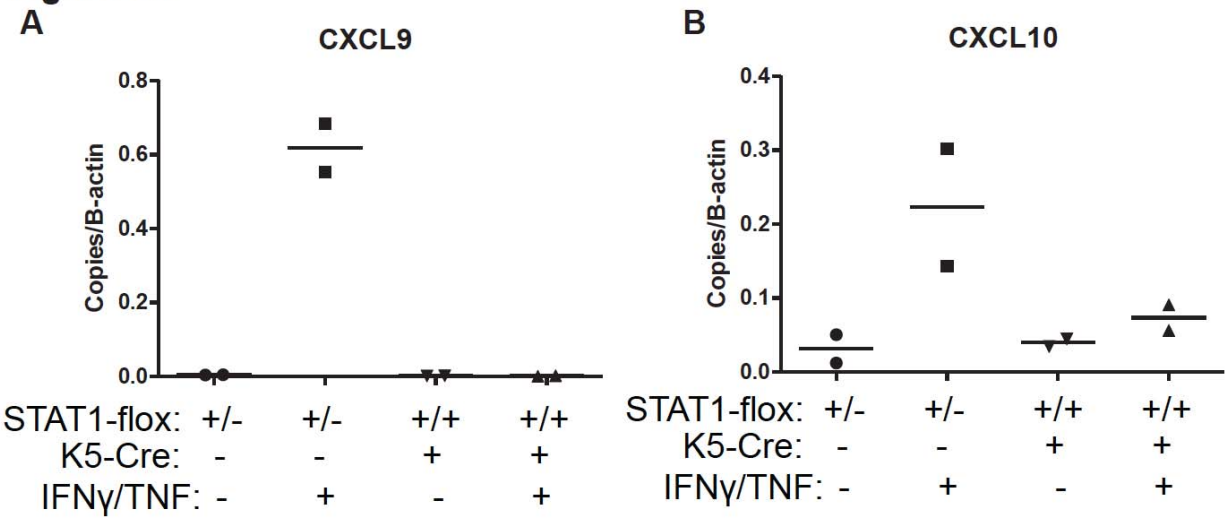


**Fig. S3. Validation of the STAT-1 flox K5-Cre mouse strain tested in the vitiligo model**. **A**. CXCL9 and **B**. CXCL10 are not produced by tail epidermis from STAT1-flox +/+ K5-cre+ when stimulated in vitro with IFN-γ and TNF-α ($EC_{50}$, 24h, qPCR normalized to actin, representative experiment run in duplicate).

**Supplementary Tables:**

**Table S1. Surface markers used to identify epidermal cell types.**

| Cell Type | Markers |
|---|---|
| T cells | CD45+CD3+ |
| γδ T cells (mouse) | CD45+CD3$^{hi}$ |
| Keratinocytes (basal) | CD45-CD49f+ |
| Langerhans cells | CD45+CD11c+ and/or Langerin+ |

**Table S2. Keratinocyte-cell ratios in the epidermis.**

| | Human abdomen (n=3-4) | Krt14-Kitl* Mouse tail (n=8-9) |
|---|---|---|
| # Keratinocytes per T cell | 13.3 ± 6.1 | 22.1 ± 10.6 |
| # Keratinocytes per Langerhans cell | 30.7 ± 14.3 | 43.8 ± 35.3** |
| # Keratinocytes per melanocyte | 28.7 ± 22.7* | 5.3 ± 0.4 |

*high variability may be due to donor site sampling; see also Cichorek et al 2013 (Cichorek *et al.*, 2013)

**high variability may be due to mouse skin/hair cycling; see also Paus et al 1998 (Paus *et al.*, 1998)

## Supplementary References:


Cichorek M, Wachulska M, Stasiewicz A, Tyminska A (2013) Skin melanocytes: biology and development. *Postepy dermatologii i alergologii* 30:30-41.

Groom JR, Richmond J, Murooka TT, Sorensen EW, Sung JH, Bankert K, *et al.* (2012) CXCR3 chemokine receptor-ligand interactions in the lymph node optimize CD4+ T helper 1 cell differentiation. *Immunity* 37:1091-103.

Kothapalli D, Zhao L, Hawthorne EA, Cheng Y, Lee E, Pure E, *et al.* (2007) Hyaluronan and CD44 antagonize mitogen-dependent cyclin D1 expression in mesenchymal cells. *J Cell Biol* 176:535-44.

Nakamura K, Hirai H, Torashima T, Miyazaki T, Tsurui H, Xiu Y, *et al.* (2007) CD3 and immunoglobulin G Fc receptor regulate cerebellar functions. *Mol Cell Biol* 27:5128-34.

Paus R, van der Veen C, Eichmuller S, Kopp T, Hagen E, Muller-Rover S, *et al.* (1998) Generation and cyclic remodeling of the hair follicle immune system in mice. *J Invest Dermatol* 111:7-18.

Peters B, Kirfel J, Bussow H, Vidal M, Magin TM (2001) Complete cytolysis and neonatal lethality in keratin 5 knockout mice reveal its fundamental role in skin integrity and in epidermolysis bullosa simplex. *Molecular biology of the cell* 12:1775-89.

Rashighi M, Agarwal P, Richmond JM, Harris TH, Dresser K, Su MW, *et al.* (2014) CXCL10 Is Critical for the Progression and Maintenance of Depigmentation in a Mouse Model of Vitiligo. *Sci Transl Med* 6:223ra23.

Shaul ME, Bennett G, Strissel KJ, Greenberg AS, Obin MS (2010) Dynamic, M2-like remodeling phenotypes of CD11c+ adipose tissue macrophages during high-fat diet--induced obesity in mice. *Diabetes* 59:1171-81.

Takahara K, Omatsu Y, Yashima Y, Maeda Y, Tanaka S, Iyoda T, *et al.* (2002) Identification and expression of mouse Langerin (CD207) in dendritic cells. *Int Immunol* 14:433-44.