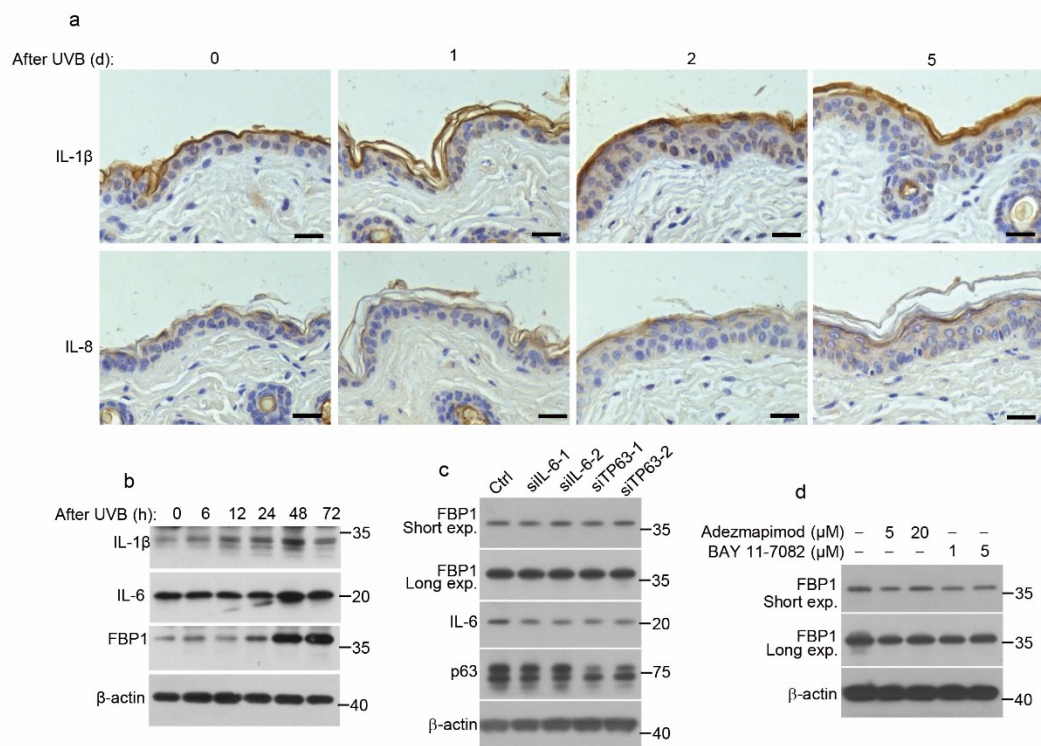


SUPPLEMENTARY INFORMATION

FBP1 orchestrates keratinocyte proliferation/differentiation and suppresses psoriasis through metabolic control of histone acetylation

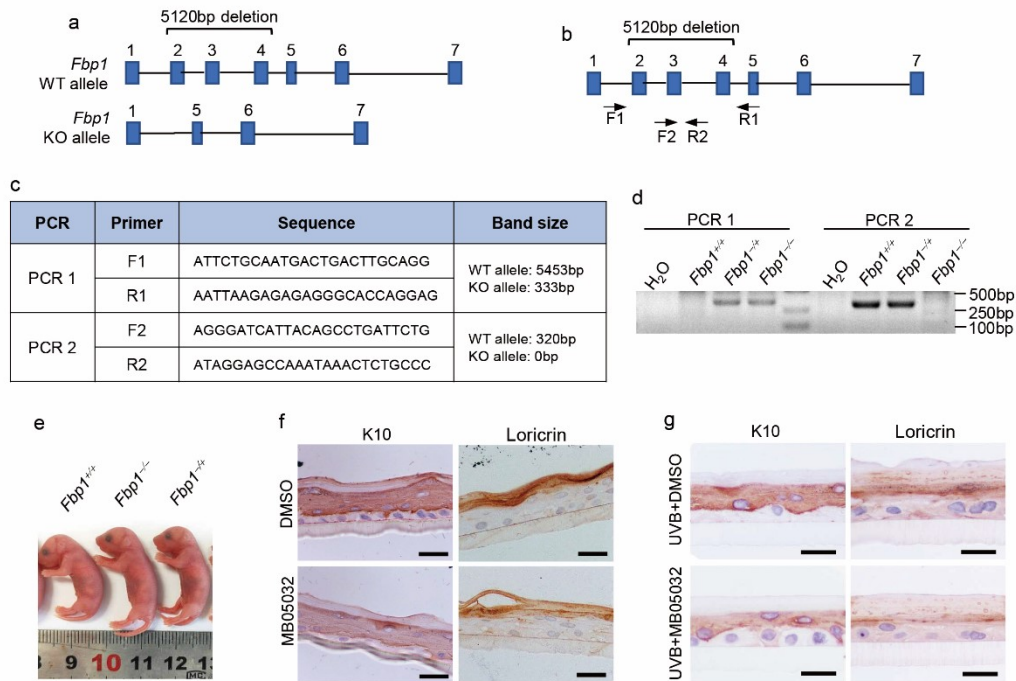
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SUPPLEMENTARY FIGURES

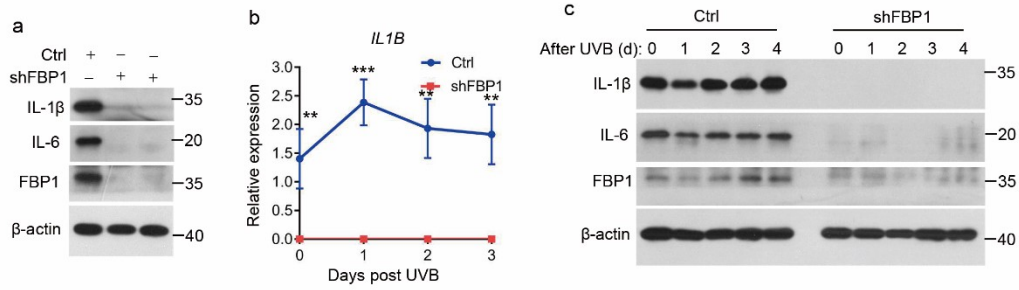


Supplementary Fig. 1 a, Representative immunohistochemical staining for IL-1β and IL-8 of mice skin collected at indicated days after irradiation. Scale bars: 25 μm. **b**, Western blot analysis of IL-1β, IL-6, FBP1 and β-actin in HaCaT cells at indicated time after UVB irradiation. **c**, Western blot analysis of the expression of indicated proteins in keratinocytes 72 hours after transfection of *IL-6* siRNA (siIL-6-1, siIL-6-2) or *TP63* siRNA (siTP63-1, siTP63-2). **d**, Western blot analysis of the expression of

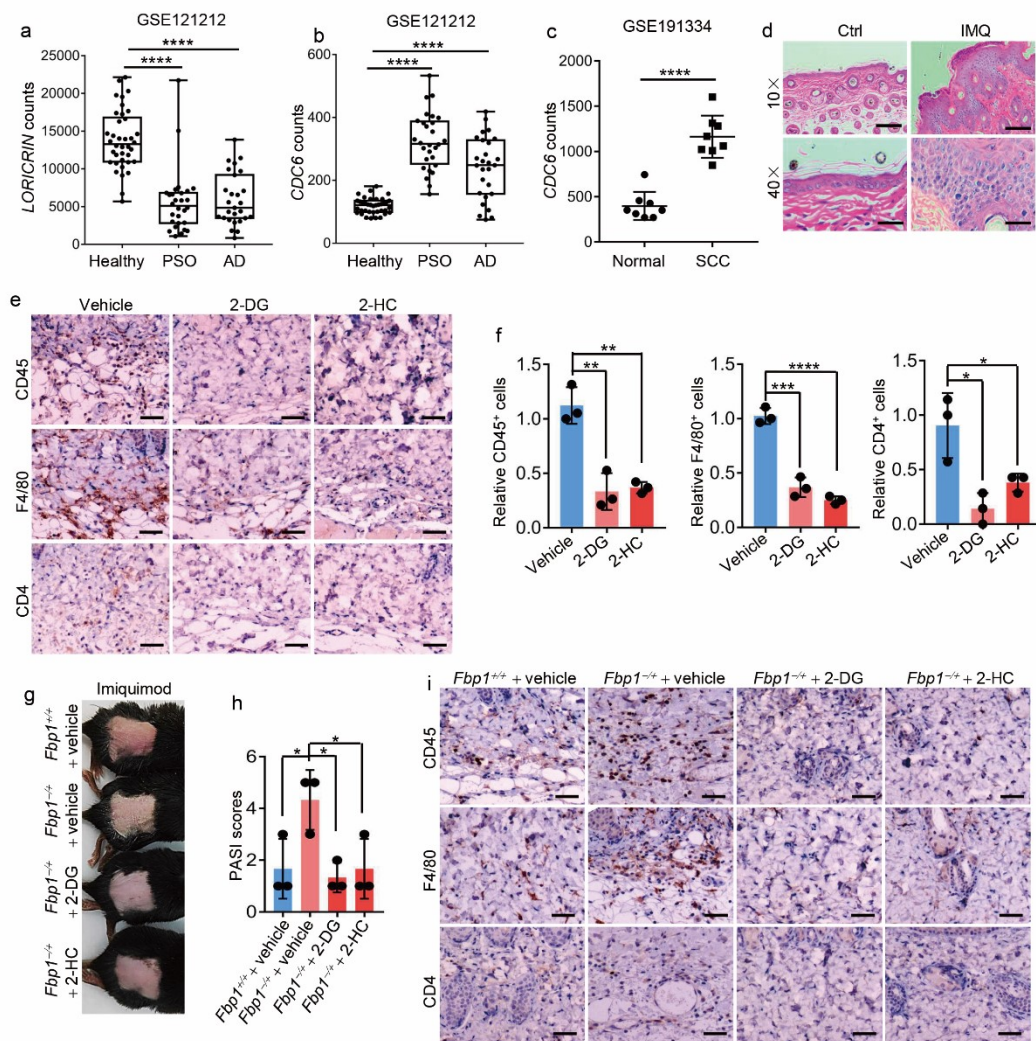
indicated proteins in keratinocytes 48 hours after adezmapimod or BAY 11-7082 treatment.



Supplementary Fig. 2 a, Schematic diagram for *Fbp1* deletion in mice. **b**, Schematic diagram for genotyping primers of *Fbp1*. **c**, Sequence of genotyping primers of *Fbp1*. **d**, PCR detection of a deletion in the *Fbp1* gene. Genomic DNA from *Fbp1*^{+/+}, *Fbp1*^{-/+} and *Fbp1*^{-/-} mice were amplified with primers shown in c and detected by agarose gel electrophoresis. **e**, Photos of neonatal *Fbp1*^{+/+}, *Fbp1*^{-/+} and *Fbp1*^{-/-} littermates. **f**, Representative immunohistochemical staining (K10, loricrin) of DMSO or MB05032 (40 μ M) treated human epidermal equivalents. Scale bars: 25 μ m. **g**, Human epidermal equivalents were exposed to 500 mJ/cm² UVB irradiation and then treated with DMSO or MB05032 (40 μ M) for 3 days and collected. Representative immunohistochemical staining for K10 and loricrin were shown. Scale bars: 25 μ m.



Supplementary Fig. 3 a, Western blot analysis of the IL-1 β , IL-6, FBP1 and β -actin in Ctrl and shFBP1 HaCaT cells. **b**, Relative mRNA levels of *IL-1 β* in Ctrl and shFBP1 HaCaT cells at indicated days after UVB irradiation (50 mJ/cm²). n = 3 independent experiments. **c**, Western blot analysis of the IL-1 β , IL-6, FBP1 and β -actin in Ctrl and shFBP1 HaCaT cells at indicated days after UVB irradiation (50 mJ/cm²). Data are shown as mean \pm s.d. Statistical analyses in **(b)** were performed with Student's t-tests. ** p < 0.01, *** p < 0.001.



Supplementary Fig. 4 a, b, *LORICRIN* (a) or *CDC6* (b) levels in healthy skin, psoriatic lesions or atopic dermatitis lesions based on RNA-Seq datasets from public databases GSE121212. **c**, *CDC6* levels in normal skin or squamous cell carcinoma based on GSE191334. **d**, Representative H&E staining of skin from Ctrl or imiquimod treated mice. Scale bars in upper images: 200 μm , scale bars in lower images: 50 μm . **e**, Immunohistochemical staining for CD45, F4/80 or CD4 of imiquimod induced skin lesions from vehicle, 2-DG or 2-HC pretreated mice. Scale bars: 50 μm . **f**, Relative leukocytes (CD45⁺), macrophages (F4/80⁺) or T cells (CD4⁺) numbers of imiquimod induced skin lesions (8 days) from vehicle, 2-DG or 2-HC pretreated mice. n = 3 mice per group. **g**, Photos of imiquimod induced skin lesions (5 days) from vehicle pretreated *Fbp1*^{+/+} mice, vehicle, 2-DG or 2-HC pretreated

Fbp1^{-/-} mice. **h**, The Psoriasis Area and Severity Index (PASI) score for imiquimod induced skin lesions (5 days) from vehicle pretreated *Fbp1*^{+/+} mice, vehicle, 2-DG or 2-HC pretreated *Fbp1*^{-/-} mice. n = 3 mice per group. **i**, Immunohistochemical staining for CD45, F4/80 or CD4 of imiquimod induced skin lesions (8 days) from vehicle pretreated *Fbp1*^{+/+} mice, vehicle, 2-DG or 2-HC pretreated *Fbp1*^{-/-} mice. Scale bars: 50 µm. Data are shown as mean ± s.d. Statistical analyses in **(a)**, **(b)**, **(c)**, **(f)** and **(h)** were performed with Student's t-tests. * p< 0.05, ** p< 0.01, *** p< 0.001, **** p< 0.0001.

SUPPLEMENTARY TABLES

Supplementary table 1. RT-qPCR primers used in this study.

| Gene | Forward primers | Reverse Primers |
|------------------|-------------------------|-------------------------|
| <i>CYP24A1</i> | GCAGCCTAGTGCAGATTT | ATTCACCCAGAACTGTTG |
| <i>FBP1</i> | ACCCTGCCGTCACCTGAGTA | GCCCCATAAGGAGCTGAAT |
| <i>HRNR</i> | TCGAGACCATAACAAGAAAGTGG | GTGAGTGTCATCTCTCAGCTTTG |
| <i>GAST</i> | ATGCAGCGACTATGTGTGTATG | GCCCCTGTACCTAAGGGTG |
| <i>TNFRSF10C</i> | TGCACAGAGGGTGTGGATTAC | ATTCCGGAAGGTGCCTTCTTT |
| <i>CDC6</i> | CCAGGCACAGGCTACAATCAG | AACAGGTTACGGTTTGGACATT |
| <i>TP63</i> | GGACCAGCAGATTCAGAACGG | AGGACACGTCGAAACTGTGC |
| <i>MYC</i> | GGCTCCTGGCAAAGGTCA | CTGCGTAGTTGTGCTGATGT |
| <i>IL1B</i> | CTGTCCTGCGTGTTGAAAGA | TTCTGCTTGAGAGGTGCTGA |

Supplementary table 2. The target sequences of lentiviral shRNAs used in this study.

| siRNA | Target sequence |
|----------|---------------------|
| siIL-6-1 | GCAAAGAGGCACTGGCAGA |
| siIL-6-2 | AGACTTGCCTGGTGAAAAT |
| siTP63-1 | GGACAGCAGCATTGATCAA |
| siTP63-2 | CCACTGAACTGAAGAACT |